

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

Division of Forestry and Wildlife

Honolulu, HI 96813

September 27, 2019

Chairperson and Members  
Board of Land and Natural Resources  
State of Hawaii  
Honolulu, Hawaii

SUBJECT: REQUEST FOR APPROVAL OF THE SUPPLEMENTAL ENVIRONMENTAL  
IMPACT STATEMENT FOR THE KAWAIOLOA WIND ENERGY PROJECT ON THE  
ISLAND OF O'AHU, HAWAII

APPLICANT:

Kawailoa Wind, LLC

LEGAL REFERENCE:

Hawaii Revised Statutes (HRS) Section 343-5 and Hawaii Administrative Rules (HAR) Section 11-200-23

LOCATION:

Wind farm site: 1-6-1-006:001, 1-6-1-007:001, and 1-6-2-011:001

AREA:

Wind farm site (footprint of permanent facilities and wildlife search areas) - approximately 251 acres  
Overhead lines - approximately 4 miles

CHARACTER OF USE:

Wind farm operation

PUBLIC NOTICES:

A Supplemental Environmental Impact State Preparation Notice was published in The Environmental Notice of the Office of Environmental Quality on July 8, 2018. Kawailoa Wind, LLC published the Draft Supplemental Environmental Impact Statement (SEIS) in The Environmental Notice on May 8, 2019. Public comments on the Draft SEIS were accepted during the 45-day comment period and the responses included in the Final SEIS.

## DESCRIPTION OF PROJECT:

The Kawaiiloa Wind Farm Project (Project) operates a 30-turbine, 69-megawatt wind energy generation facility on agricultural lands in Kawaiiloa on the northern portion of O‘ahu. The Project operates under a Habitat Conservation Plan (HCP) and associated Incidental Take License (ITL) which authorizes take of endangered species protected under Hawai‘i Revised Statute HRS 195D. Kawaiiloa Wind, LLC is pursuing a major amendment to the HCP to increase the amount of incidental Hawaiian Hoary Bat take authorized under the ITL, and add authorized incidental take of the Hawaiian Petrel.

Pursuant to Hawai‘i Revised Statutes (HRS) Chapter 343, an Environmental Impact Statement (EIS) was accepted by the State of Hawaii Department of Business, Economic Development and Tourism in July 2011. The Project was constructed in 2012 and has been in operation since that time.

Post-construction mortality monitoring data indicate that the wind turbines are causing a greater number of endangered Hawaiian Hoary Bat fatalities than anticipated in the approved Habitat Conservation Plan and authorized under the Incidental Take License. Additionally, on two occasions take has occurred of the threatened Hawaiian Petrel, not included in the 2012 approved HCP or ITL. For these reasons Kawaiiloa Wind, LLC is pursuing a major amendment to the HCP. In all other aspects there have been no substantive changes to the Project; the size, scope, intensity, type of use, and location of the wind farm facilities are consistent with the description provided in the 2011 EIS. However, given the increase in intensity of impacts due to the increased take of the Hawaiian Hoary Bat and the unanticipated take of the Hawaiian Petrel this Supplemental EIS has been prepared.

The purpose of this SEIS is to disclose the increase in Project-related impacts to the Hawaiian Hoary Bat and the Hawaiian Petrel and the additional measures that will be implemented to avoid, minimize and mitigate those impacts, within the context of the HRS Chapter 343 requirements. It is based on the information presented in the HCP Amendment, which was published for public review in October 2018, pursuant to the requirements of HRS Chapter 195D, and was subsequently revised in response to the comments received. This Final SEIS also reflects comments received on the Draft SEIS. A separate but parallel HCP Amendment and environmental review process was conducted in compliance with federal requirements, pursuant to the Endangered Species Act and National Environmental Policy Act.

## PROPOSED ACTION:

To reduce impacts to the Hawaiian Hoary Bat, low wind speed curtailment (LWSC) with a 5.0 m/s cut-in speed and 0.2 m/s hysteresis will be implemented at the Project year-round from sunset to sunrise. Acoustic bat deterrents were installed on all turbines in 2019. Mitigation for the Hawaiian Hoary Bat incidental take under newly added tier 4 consists of funding acquisition and protection of the Helemano Wilderness Recreation Area. Mitigation for tiers 5 and 6 is proposed as land restoration/management at the Central Ko‘olau Riparian Restoration Area, Waimea Native Forest, Helemano Wilderness Recreation Area, or similar site, or funding further land acquisition and protection.

Existing seabird avoidance and minimization measures will be continued to reduce impacts to the Hawaiian Petrel. Mitigation for the Hawaiian Petrel will consist of funding predator control and burrow monitoring at Hawaiian Petrel breeding colonies on Kaua‘i.



#### ALTERNATIVES TO THE PROPOSED ACTION:

Two alternatives and a no action alternative were briefly discussed but were not carried forward in the SEIS for detailed analysis. Reasons provided were lack of site specific and/or fiscal feasibility.

#### FEIS ACCEPTABILITY EVALUATION:

Pursuant to HAR Section 11-200-23(b), a statement shall be deemed to be an acceptable document by the accepting authority or approving agency only if all of the following criteria are satisfied:

- 1) The procedures for assessment, consultation process, review and the preparation and submission of the statement, have all been completed satisfactorily as specified in this chapter;
- 2) The content requirements described in this chapter have been satisfied; and
- 3) Comments submitted during the review process have received responses satisfactory to the accepting authority, or approving agency, and have been incorporated in the statement.

The Final SEIS contains the applicant's responses to public comments received, both in favor and in opposition to the project. The primary issues of concern were the effects on the Hawaiian Hoary Bat and the Hawaiian Petrel. The applicant will address take issues related to impacts to the Hawaiian Hoary Bat and the Hawaiian Petrel through Board approval of a Habitat Conservation Plan for issuance of an Incidental Take License as well as consultation with the U.S. Fish and Wildlife Service for issuance of a federal Incidental Take Permit (ITP).

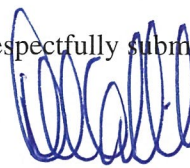
The final SEIS for Kawaihoa Wind Farm is available in the September 23, 2019 Environmental Notice here:

[http://oeqc2.doh.hawaii.gov/layouts/15/start.aspx#/The\\_Environmental\\_Notice/Forms/AllItems.aspx](http://oeqc2.doh.hawaii.gov/layouts/15/start.aspx#/The_Environmental_Notice/Forms/AllItems.aspx).

#### RECOMMENDATION:

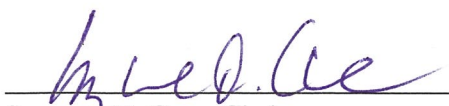
That the Board accept the Final Supplemental Environmental Impact Statement for the Kawaihoa Wind Farm located on O'ahu, Hawai'i.

Respectfully submitted,



David G. Smith, Administrator  
Division of Forestry and Wildlife

#### APPROVED FOR SUBMITTAL:



Suzanne D. Case, Chairperson  
Board of Land and Natural Resources





# **Kawailoa Wind Farm**

## **FINAL Supplemental Environmental Impact Statement**

**Applicant:**

Kawailoa Wind, LLC  
1166 Avenue of the Americas, 9th Floor  
New York, NY 10036

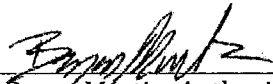
**Prepared by:**

Tetra Tech, Inc.  
737 Bishop Street, Suite 2340  
Honolulu, HI 96813

# Final Supplemental Environmental Impact Statement

**Kawailoa Wind  
O'ahu, Hawai'i**

This Final Supplemental Environmental Impact Statement and all ancillary documents were prepared under my direction or supervision and the information submitted, to the best of my knowledge, fully addresses document content requirements as set forth in Section 11-200-18, Hawai'i Administrative Rules.



Bryan Martin, Authorized Signatory  
Kawailoa Wind, LLC

9/4/19

DATE

**Prepared for:**

State of Hawai'i  
Department of Land and Natural Resources, Division of Forestry and Wildlife



## PROJECT SUMMARY

Project Name	Kawailoa Wind Farm
Applicant/ Project Owner	Kawailoa Wind, LLC
Project Summary <sup>1</sup>	<p>The Kawailoa Wind Project (Project) is an approximately 69-megawatt (MW) wind farm located approximately 5 miles northeast of Hale'iwa town on the north shore of O'ahu. Pursuant to Hawai'i Revised Statutes (HRS) Chapter 343, an Environmental Impact Statement (EIS) was accepted by the State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) in July 2011. The Project was subsequently constructed and has been in operation since 2012.</p> <p>The Project is operating under an approved Habitat Conservation Plan (HCP) and associated Incidental Take Permit (ITP) and Incidental Take License (ITL), which authorize take of threatened and endangered species protected under federal and state regulations, respectively. Post-construction mortality monitoring data indicate that operation of the wind turbines is resulting in a greater number of endangered Hawaiian hoary bat or 'ōpe'ape'a (<i>Lasiurus cinereus semotus</i>) fatalities than anticipated in the HCP and authorized by the ITP/ITL. As such, Kawailoa Wind is pursuing an amendment to the HCP as part of the request to increase the amount of Hawaiian hoary bat take authorized by the ITP/ITL. Additionally, Kawailoa Wind is requesting to add take authorization for the endangered Hawaiian petrel or 'ua'u (<i>Pterodroma sandwichensis</i>).</p> <p>Except for the need for an amendment to the HCP and ITP/ITL, there have been no substantive changes to the Project; the size, scope, intensity, type of use and location of the wind farm facilities are consistent with the description provided in the 2011 EIS. However, given that the impacts to the Hawaiian hoary bat and Hawaiian petrel are greater than anticipated, the State of Hawai'i Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW) requested that a Supplemental EIS (SEIS) be prepared to support its decision making for the requested amendment to the HCP and ITL. The Draft HCP Amendment was published for public review in October 2018, pursuant to the requirements of HRS Chapter 195D, <u>and was subsequently revised based on comments received</u>. Based on the information presented in the <del>Draft</del> HCP Amendment, this <del>Draft</del> SEIS documents the increase in Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel and the additional measures that will be implemented to avoid, minimize and mitigate those impacts, within the context of the HRS Chapter 343 requirements.</p> <p>A separate but parallel HCP Amendment and environmental review process is being conducted in compliance with federal requirements, pursuant to the Endangered Species Act and National Environmental Policy Act.</p>
Project Location	Former Kawailoa Plantation, North Shore, O'ahu
Land Ownership	Kamehameha Schools
Tax Map Keys (TMK) <sup>2</sup>	(1) 61006001, 61007001 and 62011001
State Land Use District	Agriculture
County Zoning	AG-1 (Restricted Agricultural) and P-1 (Restricted Preservation)

Required Permits/ Approvals	Amendment to HCP and ITP/ITL <sup>3</sup>
Actions Requiring Environmental Review Under HRS Chapter 343	<p>The Project originally required compliance with HRS Chapter 343 based on the provisions of HRS Chapter 201N, as well as for the use of State lands and use of lands within the Conservation District.<sup>4</sup></p> <p>Although an HCP and ITP is not a trigger for compliance with HRS Chapter 343, DOFAW requested that an SEIS be prepared to support its decision making regarding the requested amendment to the HCP and ITP.</p>
Approving Agency	DLNR DOFAW <sup>5</sup>
Contact Information	<p>Kawailoa Wind, LLC 1166 Avenue of the Americas, 9th Floor New York, NY 10036 Contact: Brita Woeck BRIWO@orsted.com</p> <p>Tetra Tech, Inc. 737 Bishop Street, Suite 2340, Honolulu, Hawai'i 96813 Contact: Lisa Kettley lisa.kettley@tetrattech.com</p>
<p>1. The proposed action described in the 2011 EIS included possible communication equipment located on Mt. Ka'ala, as well as an optional battery energy storage system. It was subsequently determined that neither equipment was needed and thus, were not installed. Therefore, these components are not addressed as part of the Project in this document. Additional discussion is provided in Section 2.1.3.</p> <p>2. The wind farm facilities addressed by the HCP Amendment are within TMKs (1) 61006001, 61007001 and 62011001. The onsite access roads and unoccupied portions of the Project area are within other TMKs, as listed in the 2011 EIS.</p> <p>3. A complete list of the approvals that were required for construction of the Project is provided in the 2011 EIS. Amendment of the HCP and ITP/ITL (and the associated NEPA and HRS Chapter 343 environmental review) are the only approvals currently requested.</p> <p>4. Pursuant to HRS Chapter 201N, a request for development of a permit plan for a renewable energy facility was submitted to DBEDT; HRS Chapter 201N-8 specifies that HRS Chapter 343 applies to any permit plan application. The anticipated use of State lands and use of lands within the Conservation District were associated with possible communication equipment to be installed near Mt. Ka'ala to accommodate interconnection with the Hawaiian Electric Company, Inc. (HECO) electric grid. As noted above, these facilities were not constructed.</p> <p>5. Pursuant to HRS Chapter 201N, DBEDT was the approving agency for the 2011 EIS. Given their request for an SEIS, DOFAW coordinated with DBEDT regarding the role of the approving agency. In coordination with DBEDT, it was determined that DOFAW would serve as the approving agency for the SEIS.</p>	

## EXECUTIVE SUMMARY

The Kawaiiloa Wind Project (Project) is an approximately 69-megawatt (MW) wind farm located on former Kawaiiloa Plantation lands owned by Kamehameha Schools, approximately 5 miles northeast of Hale'iwa town on the north shore of O'ahu. Pursuant to Hawai'i Revised Statutes (HRS) Chapter 343, an Environmental Impact Statement (EIS) was prepared for the Project and was accepted by the State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) in July 2011. The Project was subsequently constructed and has been in operation since 2012.

The Project is operating under an approved Habitat Conservation Plan (HCP) and associated Incidental Take Permit (ITP) and Incidental Take License (ITL), which authorize take of threatened and endangered species protected under the federal Endangered Species Act (ESA) and HRS Chapter 195D, respectively. Post-construction mortality monitoring data indicate that operation of the wind turbines is resulting in a greater number of endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*) fatalities than anticipated in the HCP and authorized by the ITP/ITL. As such, Kawaiiloa Wind is pursuing an amendment to the HCP, in accordance with the ESA and HRS Chapter 195D, as part of the request to increase the amount of Hawaiian hoary bat take authorized by the ITP/ITL. Additionally, Kawaiiloa Wind is requesting to add take authorization for the endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*). This species was not originally covered by the HCP and ITP/ITL as it was not known to occur regularly on O'ahu and was not expected to transit the Project area; therefore, take was thought to be highly unlikely. However, recent acoustic surveys have documented Hawaiian petrel on O'ahu and two fatalities have been observed at the Project.

Except for the need for an amendment to the HCP and ITP/ITL, there have been no substantive changes to the Project; the size, scope, intensity, type of use and location of the wind farm facilities are consistent with the description provided in the 2011 EIS. However, given that the impacts to the Hawaiian hoary bat and Hawaiian petrel are greater than anticipated, DOFAW requested that a Supplemental EIS (SEIS) be prepared to support its decision making for the requested amendment to the HCP and ITL.

The HCP amendment process involves in-depth analysis of the estimated take of Hawaiian hoary bat and Hawaiian petrel over the remainder of the permit term, and development of appropriate minimization and mitigation measures to offset the impacts. A detailed discussion of this process and the resulting information is presented in the Draft HCP Amendment, which was published for public review in October 2018, pursuant to the requirements of HRS Chapter 195D.<sup>1</sup> The HCP Amendment was subsequently revised based on the comments received; the revised HCP Amendment was presented and received a recommendation for approval (with minor revisions

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<sup>1</sup> The Draft HCP Amendment was published by the Office of Environmental Quality Control (OEQC) in the *Environmental Notice*. It can be accessed at: [http://oeqc2.doh.hawaii.gov/Other\\_TEN\\_Publications/2018-10-23-OA-DHCP-Kawaiiloa-Amendment.pdf](http://oeqc2.doh.hawaii.gov/Other_TEN_Publications/2018-10-23-OA-DHCP-Kawaiiloa-Amendment.pdf)

requested) from the Endangered Species Recovery Committee (ESRC) in July 2019.<sup>2</sup> This Draft SEIS is based on the information presented in the revised Draft HCP Amendment (including the minor revisions requested by ESRC); the purpose of this document is to disclose the increased Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel as well as the additional measures that will be implemented to minimize and mitigate those impacts, within the context of the HRS Chapter 343 requirements. Moving forward, the HCP Amendment will be revised based on the comments received through the Draft HCP Amendment review process. Those revisions, as well as comments received on this Draft SEIS, will be incorporated into a Final SEIS, as appropriate. The HCP Amendment requires approval from the Board of Land and Natural Resources (BLNR); approval of the HCP Amendment and ITL would not occur until the Final SEIS has been accepted by DOFAW.

As further discussed in Section 5.1, a separate but parallel HCP Amendment and environmental review process is being conducted in compliance with federal requirements, pursuant to the ESA and National Environmental Policy Act (NEPA).

### **Description of Project**

The 2011 EIS presented a detailed description of the Project, involving construction and operation of a wind energy facility on the former Kawaihoa Plantation lands owned by Kamehameha School. It includes various components which collectively function to generate and transmit electricity to the existing Hawaiian Electric Company, Inc. (HECO) grid; these components include 30 wind turbine generators, an electrical collector system (with both underground and overhead electrical collector lines), and electrical substation, interconnection equipment, an operations and maintenance (O&M) building, and meteorological monitoring equipment.<sup>3</sup> The Project was constructed and has been in operation since 2012.

As specified in the approved HCP, Kawaihoa Wind implemented low wind speed curtailment (LWSC) from the start of Project operations to reduce risk to Hawaiian hoary bats. This operational protocol involves restricting turbine operation by feathering the turbine blades (that is, rotating blades parallel to the wind) during periods of low wind speed (i.e., below 5.0 meters per second [m/s]) between sunset and sunrise from March to November, as pre-construction data showed relatively higher bat activity during these periods. There have been incremental extensions to the LWSC period as an adaptive management response to the occurrence of bat fatalities outside the initial LWSC period. This avoidance and minimization measure does not involve modification of any facilities or other aspects of the Project. Additional information regarding avoidance and minimization measures, including LWSC, is provided in Section 3.5.4.

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<sup>2</sup> The revised HCP Amendment reviewed by the ESRC can be accessed at:

<https://dlnr.hawaii.gov/wildlife/files/2019/07/Kawaihoa-FINAL-HCP-Amendment-6-25-2019.pdf>

<sup>3</sup> Following issuance of the EIS, several components that were included in the Project description (e.g., an optional battery energy storage system and communication equipment on Mt. Ka'ala) were determined to not be needed and thus were not installed. In addition, Turbine 15 (which was originally sited just south of Turbine 16) was re-sited to a central portion of the Project area. Further discussion of these items is provided in Section 2.1.3.

## **Alternatives**

A range of alternative actions were identified and considered through the Project planning and site layout process. The 2011 EIS presents the framework that was used for identification and consideration of alternatives to construction and operation of the Project, including those alternatives that were considered in detail as well as those eliminated from further consideration. Because the Project has been constructed generally as described in the 2011 EIS and no changes are proposed to the Project, the original discussion of Project alternatives in the 2011 EIS is still applicable and no additional Project alternatives are being considered in this SEIS.

Specific to the estimated increase in Hawaiian hoary bat take, two alternative approaches related to modified Project operations ~~have been were~~ identified and considered through the HCP Amendment process. These consist of modifications to Project operational protocols, including full nighttime curtailment, and curtailment with cut-in speeds of 5.5 m/s or above. These alternative approaches from the HCP Amendment, as well as a “No HCP Amendment” alternative (i.e., a “no action” alternative) are addressed in Section 2.2.2.

## **Potential Impacts**

The only Project-related impacts that are known to substantially differ from the information presented in the 2011 EIS relate to the Hawaiian hoary bat and the Hawaiian petrel. The approved HCP and ITP/ITL authorized a take limit of 60 bats for the Project; based on post-construction mortality monitoring and modeling estimates (which also account for unobserved direct take and estimated indirect take), this take limit has been exceeded.<sup>4</sup> As previously described, the Hawaiian petrel was not originally included in the approved HCP and take was not authorized as part of the ITP/ITL, as this species was not known to occur regularly on O‘ahu and was not expected to transit the Project area, and therefore, take was thought to be highly unlikely. However, recent surveys have documented Hawaiian petrel on O‘ahu and two fatalities have been observed at the Project (in 2017 and 2018).

As part of the HCP amendment process, direct and indirect effects to the Hawaiian hoary bat and the Hawaiian petrel were evaluated and the results were used to develop revised take estimates. Based on the site-specific post-construction mortality monitoring data and modeling results, and accounting for implementation of avoidance and minimization measures (as further described below), the total take authorization request for the Hawaiian hoary bat as part of the HCP Amendment is for an additional ~~160~~<sup>205</sup> bats (for a total of ~~220~~<sup>265</sup> bats, including the current authorization of 60 bats). The estimate of total Project-related take and the take authorization request for the Hawaiian petrel is a total of 19 petrels and 5 chicks. Additional detail regarding the estimated Project-related take, as well as updated information regarding each species, is provided in Section 3.5.

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<sup>4</sup> The USFWS and DOWAW require that compliance with ITP/ITL take limits be assessed based on the 80 percent credibility level, which means there is an 80 percent probability that actual mortality is equal to or less than the predicted mortality.



Besides the impacts to Hawaiian hoary bat and Hawaiian petrel, Project-related impacts are commensurate with the assessment provided in the 2011 EIS. Therefore, the discussion contained in the 2011 EIS is incorporated by reference for the following resource categories: climate, geology and topography, soils, natural hazards, hydrology and water resources, vegetation, archaeological and cultural resources, transportation and traffic, hazardous materials, noise, air quality, visual resources, land use, public construction and safety, socioeconomic characteristics, and public infrastructure and services. However, impacts to these resources specific to implementation of the additional mitigation proposed under the HCP amendment is discussed as applicable (see Section 3.5.4).

### **Avoidance, Minimization and Mitigation Measures**

In cases where adverse impacts were identified in the 2011 EIS, Kawaiiloa Wind developed best management practices (BMPs) and mitigation measures to avoid, minimize and mitigate the potential impacts to sensitive environmental resources to the extent possible. These BMPs and mitigation measures have been and continue to be implemented for the Project, as applicable.

Over the course of Project operations, Kawaiiloa Wind has continued to evaluate measures to further reduce the risk to Hawaiian hoary bats. Specifically, Kawaiiloa Wind has implemented multiple adaptive management efforts including modification of the LWSC protocol, implementation of innovative approaches to post-construction mortality monitoring (e.g., use of canine search teams), and support for development of bat deterrent technology. In addition, as the baseline minimization strategy for the HCP Amendment, Kawaiiloa Wind will (1) extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise, (2) increase LWSC cut-in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the “down time” of the wind turbines and reduce the number of stop/start events per night, and (3) conduct an ultrasonic acoustic bat deterrent “proof of concept” test, and (4) install bat deterrents at all 30 Project turbines in May and June 2019, when they are shown to be at least as effective as LWSC at reducing bat take.<sup>5</sup>

In addition to these avoidance and minimization measures, and consistent with the biological goals of the HCP Amendment, Kawaiiloa Wind has been and will continue implementing compensatory mitigation for impacts to the Hawaiian hoary bat. Pursuant to the requirements of HRS Chapter 195D, the mitigation is intended to fully offset the take and provide a net environmental benefit to the species. Mitigation has been developed according to the different tiers of take, with planning and implementation occurring as each tier is triggered. Mitigation for the existing tiers of take (Tiers 1-3, per the approved HCP) is being successfully implemented, in coordination with U.S. Fish and Wildlife Service (USFWS) and the State of Hawai‘i Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW). Proposed mitigation for the additional tiers of take (Tiers 4 – 6), developed as part of the HCP amendment process, is based on the recovery priorities described in the Hawaiian Hoary Bat Recovery Plan (USFWS 1998), agency guidance described in the ESRC Bat Guidance (DLNR 2015), and conservation and management priorities

<sup>5</sup> It is anticipated that acoustic bat deterrents will be commercially available for installation at the Project as soon as May 2019.

identified by the agencies. Tier 4 bat mitigation consists of contributing \$2,750,000 toward acquisition and long-term protection of the Helemano Wilderness Area through a partnership with the Trust for Public Land (TPL), USFWS, DOFAW and other funding partners. Tier 5 and Tier 6 mitigation for the Hawaiian hoary bat will include either (1) ~~contribution of funding to acquire property to protect bat roosting and foraging habitat in perpetuity, or (2) bat habitat management/restoration at the Central Ko'olau Riparian Restoration Area, Helemano Wilderness Area, Waimea Native Forest, or a similar site, or (2) protection and preservation of existing bat habitat through acquisition, easement or other legal conservation instrument.~~

With regard to the Hawaiian petrel, the avoidance and minimization measures previously implemented for the Newell's shearwater are also applicable to the Hawaiian petrel. These measures are based on USFWS guidance for wind energy projects and include: site selection away from known colonies, the selection of monopole towers, the use of red, flashing, and synchronized FAA lighting on a subset of turbines, minimizing nighttime activity, minimizing and shielding on-site lighting at buildings and the use of motion sensor to limit activity; implementation of a Wildlife Education and Observation Program (WEOP) to reduce vehicle collision risk; the use of buried collector lines where possible, and following Avian Power Line Interaction Committee (APLIC) guidelines for overhead collection lines. These measures reflect the current agency guidance for avoidance and minimization of impacts to Hawaiian seabird species; no additional minimization measures specific to wind farms are known for these species. Mitigation for unavoidable impacts to the Hawaiian petrel, which was developed based on the USFWS and DOFAW targeted recovery strategy for this species, will consist of funding predator control and burrow monitoring for the Hanakāpī'ai and Haʻonokoa Hawaiian petrel breeding colonies within the Hono O Nā Pali Natural Area Reserve (NAR), located in the northwest portion of Kauaʻi.

### **Compatibility with Land Use Plans and Policies**

The extent to which Project implementation complies with the full range of applicable federal, state and county regulations and policies was evaluated as part of the 2011 EIS. Further evaluation was conducted in light of the revised analysis of Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel. Accounting for recent plan and policy updates, the Project is still consistent with the applicable plans and policies. An updated discussion of consistency with these plans and policies is provided in Section 5.

### **Required Permits and Approvals**

A range of federal, state and local permits and approvals were required for construction and operation of the Project, as detailed in the 2011 EIS. The necessary permits and approvals were obtained prior to construction and remain in effect, as applicable.

As described above, Kawailoa Wind is seeking an amendment to the HCP and ITP/ITL, in compliance with ESA Section 10 and HRS Chapter 195D. Other discretionary approvals that were previously obtained for Project implementation are not expected to be affected by the increase in estimated take of the Hawaiian hoary bat or the addition of Hawaiian petrel take. An updated list of the required permits and approvals required for the Project is provided in Section 6.

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## 1.0 Purpose and Need

### 1.1 Project Overview

The Kawaiiloa Wind Project (Project) is an approximately 69-megawatt (MW) wind farm located on former Kawaiiloa Plantation lands owned by Kamehameha Schools, approximately 5 miles northeast of Hale'iwa town on the north shore of the island of O'ahu, Hawai'i. Pursuant to Hawai'i Revised Statutes (HRS) Chapter 343, an Environmental Impact Statement (EIS) was prepared for the Project and was accepted by the State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) in July 2011. The required permits and approvals were subsequently obtained, and the Project was constructed with commercial operation commencing in November 2012. The Project is expected to be in operation through 2032, in accordance with the terms of its power purchase agreement (PPA).

As part of the permitting process, Kawaiiloa Wind was issued an incidental take permit (ITP) from the U.S. Fish and Wildlife Service (USFWS) and an incidental take license (ITL) from the Hawai'i Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW), pursuant to Section 10 of the federal Endangered Species Act (ESA) and the State of Hawai'i endangered species law (HRS Chapter 195D), respectively. The ITP/ITL provide coverage for incidental take<sup>6</sup> of federal and state-listed threatened or endangered species that could potentially be impacted by the Project; specific measures to minimize and mitigate impacts to those species were identified as part the associated Habitat Conservation Plan (HCP; SWCA 2011). The ITP and ITL each have a term of 20 years, expiring in 2032.

Post-construction mortality monitoring conducted as part of the Project indicates that operation of the wind turbines is causing a greater number of endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) fatalities than was anticipated in the approved HCP and authorized by the ITP/ITL. Therefore, Kawaiiloa Wind is pursuing an amendment to the HCP (HCP Amendment) as part of the request to increase the amount of Hawaiian hoary bat take authorized by the ITP/ITL. Additionally, Kawaiiloa Wind is requesting incidental take coverage for the Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*). This species was not originally included in the HCP because it was not known to occur regularly on O'ahu and was not expected to transit the Project area; therefore, take was thought to be highly unlikely. However, recent acoustic surveys have documented Hawaiian petrel on O'ahu and two fatalities have been observed at the Project.

In-depth analysis of the estimated Hawaiian hoary bat and Hawaiian petrel take that is expected to occur over the remainder of the permit term has been conducted, and additional minimization and mitigation measures have been identified as part of the HCP amendment process. This information is detailed in the Draft HCP Amendment, which was published for public review by the Office of

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<sup>6</sup> Pursuant to HRS Chapter 195D-2, the term "take" means to means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect endangered or threatened species of aquatic life or wildlife, or to cut, collect, uproot, destroy, injure, or possess endangered or threatened species of aquatic life or land plants, or to attempt to engage in any such conduct.



Environmental Quality Control (OEQC) in the October 23, 2018 edition of the *Environmental Notice*, pursuant to the requirements of HRS Chapter 195D. A copy of the Draft HCP Amendment is available at: [http://oeqc2.doh.hawaii.gov/Other\\_TEN\\_Publications/2018-10-23\\_OA\\_DHCP-Kawailoa-Amendment.pdf](http://oeqc2.doh.hawaii.gov/Other_TEN_Publications/2018-10-23_OA_DHCP-Kawailoa-Amendment.pdf), presented and received a recommendation for approval (with minor revisions requested) from the Endangered Species Recovery Committee (ESRC) in July 2019. The HCP Amendment reviewed by the ESRC can be accessed at: <https://dlnr.hawaii.gov/wildlife/files/2019/07/Kawailoa-FINAL-HCP-Amendment-6-25-2019.pdf>.

The purpose of this Draft SEIS is to disclose the increased Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel as well as the additional measures that will be implemented to minimize and mitigate those impacts, within the context of the requirements of HRS Chapter 343. As a supplemental document, it is based on the structure and format of the 2011 EIS with updated information according to the details presented in the Draft HCP Amendment.

### **1.1.1 Background**

The 2011 EIS included background information regarding the applicant; updated information on the applicant and current Project owner is provided below. Additional background information relating to HRS Chapter 343 compliance, as well as the approved ITP/ITL and the HCP amendment process, is also provided.

#### **1.1.1.1 Applicant**

Kawailoa Wind was formed by First Wind, LLC (First Wind), a Boston-based wind energy company, for the express purpose of developing a wind power facility on former Kawailoa Plantation lands owned by Kamehameha Schools. Following construction, the Project was acquired by D.E. Shaw Renewable Investments, LLC. The Project is a wholly-owned subsidiary of DESRI IV, LLC, which is an investment fund managed by D.E. Shaw Renewable Investments, LLC.

#### **1.1.1.2 HRS Chapter 343 Compliance**

It was originally anticipated that the Project would involve the use of State lands and use of lands within the Conservation District,<sup>7</sup> both of which are actions that require compliance with HRS Chapter 343. In addition, pursuant to HRS Chapter 201N, a request for development of a permit plan for a renewable energy facility was submitted to the State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT); HRS Chapter 201N-8 specifies that HRS Chapter 343 applies to any permit plan application. As such, DBEDT served as the approving agency for the HRS Chapter 343 process, and an EIS was prepared pursuant to the requirements of HRS Chapter 343 and Hawai'i Administrative Rules (HAR) § 11-200. The EIS described the proposed construction, operation and maintenance of the wind farm as well as alternative actions that were

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<sup>7</sup> The anticipated use of State lands and use of lands within the Conservation District were associated with possible communication equipment to be installed near Mt. Ka'ala to accommodate interconnection with the Hawaiian Electric Company, Inc. (HECO) electric grid. It was subsequently determined that this equipment was not needed, and therefore it was not installed.

considered, evaluated the anticipated impacts of the proposed action (and alternatives), and identified measures that would be implemented to avoid, minimize and mitigate the anticipated impacts. The Final EIS was published by the Office of Environmental Quality Control (OEQC) in the *Environmental Notice* on July 8, 2011 and was accepted by DBEDT on July 20, 2011. Subsequently, an Environmental Assessment (EA) was prepared to evaluate the potential impacts associated with implementation of the Project's HCP; based on their role with the HCP, DOFAW was the approving agency for the EA. DOFAW issued a Finding of No Significant Impact (FONSI), which was published by OEQC in the *Environmental Notice* on October 8, 2011 (see Appendix A).

The Project was constructed in 2012 and there have been no substantive changes to the Project, such that the size, scope, intensity, type of use, and location of the wind farm facilities are consistent with the description provided in the 2011 EIS. However, because the impacts to the Hawaiian hoary bat are greater than anticipated and impacts to the Hawaiian petrel have subsequently been identified, DOFAW requested that a Supplemental EIS (SEIS) be prepared to support its decision-making for the requested amendment to the HCP and ITL. The need for an SEIS was identified based on HAR § 11-200-27, which states that *"a supplemental statement shall be warranted when the scope of an action has been substantially increased, when the intensity of environmental impacts will be increased, when the mitigating measures originally planned are not to be implemented, or where new circumstances or evidence have brought to light different or likely increased environmental impacts not previously dealt with."*

Based on their request for an SEIS, DOFAW coordinated with DBEDT as the approving agency for the 2011 EIS. In coordination with DBEDT, it was determined that DOFAW would serve as the approving agency for the SEIS (see Appendix B). On July 8, 2018, DOFAW published their determination regarding the need for an SEIS, simultaneously with an SEIS Preparation Notice (SEISPN) for the Project (see Appendix C). Additional information regarding the SEISPN is provided in Section 5.2.3. The Draft SEIS was subsequently published in May 2019; a 45-day public review period was held from May 8 through June 24, 2019, in accordance with the requirements of HAR § 11-200-22. The comments received on the Draft SEIS have been incorporated into the revisions to this document, as further discussed in Section 7.5.

#### *1.1.1.3 Incidental Take Authorization*

As summarized above, to address the potential for incidental take of federal and state-listed threatened or endangered species, Kawaiiloa Wind sought an ITP from USFWS pursuant to ESA Section 10(1)(1)(B) and an ITL from DOFAW pursuant to HRS Chapter 195D. Both an ITP and an ITL require development and approval of an HCP prior to authorization. The purpose of an HCP is to identify the anticipated effects of a proposed taking and the measures that would be implemented for minimization, mitigation and monitoring, thus providing a net recovery benefit to the affected species.

An HCP was prepared for the Project to address the following species (collectively referred to as "Covered Species"): threatened Newell's shearwater or 'a'o (*Puffinus newelli*), endangered Hawaiian duck or koloa maoli (*Anas wyvilliana*), endangered Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*), endangered Hawaiian coot or 'alae ke'oke'o (*Fulica alai*), endangered Hawaiian moorhen

or 'ālae 'ula (*Gallinula chloropus sandvicensis*), endangered Hawaiian short-eared owl or pueo (*Asio flammeus sandwichensis*), and endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*). The HCP was approved and the ITP and ITL were subsequently issued by USFWS and DOFAW on December 8, 2011 and January 6, 2012, respectively.

### **Monitoring and Compliance**

The approved HCP includes requirements for post-construction mortality monitoring and reporting. These efforts are designed to detect and document impacts to the Covered Species as a result of Project operations, and to ensure compliance with the authorized provisions and take limitations of the HCP and the associated ITP/ITL. Post-construction mortality monitoring and reporting was initiated in 2012 and is ongoing in accordance with protocols approved by USFWS and DOFAW.

Based on the post-construction monitoring data collected to date, operation of the Project has resulted in more take of Hawaiian hoary bats than originally anticipated. Fatality modeling, which is used to estimate total take, indicates the Project has exceeded the currently authorized bat take limit, even with implementation of additional avoidance and minimization measures such as increasing the period of low wind speed curtailment (LWSC).<sup>8,9</sup> In the approved HCP, Kawaiiloa Wind committed to implementing LWSC between sunset and sunrise from March to November, based on pre-construction data that showed relatively higher bat activity during these periods. There have been incremental extensions to the LWSC period as an adaptive management response to the occurrence of bat fatalities outside the initial LWSC period, as further detailed in Section 3.5.4.

Take of Hawaiian hoary bats has been higher than anticipated under the approved HCP, in part because risk to bats from wind energy development in Hawai'i was largely unknown and thus underestimated at the time the HCP was approved. Furthermore, advancements have been made in the ability to statistically model future fatality rates. When the HCP was approved, post-construction mortality monitoring data from Hawai'i wind farms were scant and estimates of take were based on the best available surrogate information, consisting of pre-construction acoustic data which is now recognized as a poor predictor of post-construction fatality rates (Hein et al. 2013). This resulted in an underestimate of the number of bat fatalities expected to occur as a result of Project operations. In addition, since the development of the approved HCP, the USFWS and DOFAW have adopted a more conservative standard for estimating bat take, which is also now used to evaluate HCP compliance. Thus, the initial estimate of take included in the HCP and

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<sup>8</sup> The agencies require that compliance with ITP/ITL take limits be assessed based on the 80 percent credibility level, which means there is an 80 percent probability that actual mortality is equal to or less than the predicted mortality.

<sup>9</sup> LWSC involves removing turbines from service by feathering the turbine blades until the wind reaches a pre-determined speed (greater than the manufacturer's recommended cut-in speed). "Feathering" means that the turbine blades are rotated parallel to the wind, resulting in very slow movement of the rotor (1 rotation per minute or less). LWSC during nighttime hours has been found to reduce risk to bats (Arnett et al. 2011) because bat activity is typically associated with periods when wind speeds are lower. As wind speeds increase, the likelihood of bat activity decreases, and collision risk correspondingly decreases. Additional discussion of LWSC and other avoidance and minimization measures is provided in Section 3.5.4.

subsequent estimates of take for the purpose of evaluating permit compliance (incorporating actual fatality data) were based on different methodologies.

### **HCP Amendment**

In November 2015, Kawaiiloa Wind initiated consultation with USFWS and DOFAW regarding an amendment to the HCP. The amendment process has been underway since that time; as detailed in Section 7.0, extensive consultation has been conducted to support development of the HCP Amendment. The purpose of the HCP Amendment is to support a request to (1) increase the amount of authorized take of the Hawaiian hoary bat beyond that authorized under the approved ITP/ITL, and (2) add the Hawaiian petrel as a Covered Species under the ITP/ITL. In addition, the HCP Amendment identifies associated appropriate minimization measures, mitigation actions, an adaptive management strategy, and a long-term post-construction monitoring plan. It does not propose to change the original 20-year permit term of the ITP/ITL, nor does it consider expansion of the existing facility or Project area. The Draft HCP Amendment was published for public review in October 2018 and was subsequently revised based on the comments received. The revised HCP Amendment was presented and received a recommendation for approval (with minor revisions requested) from the ESRC in July 2019. Based on the revisions requested by the ESRC, the HCP Amendment was submitted for approval by the Board of Land and Natural Resources (BLNR); approval of the HCP Amendment would not occur until the Final SEIS has been accepted. Additional detail regarding the Draft HCP Amendment, including public review and the subsequent federal and state approval processes, is provided in Sections 5.0 and 7.0.

## **1.2 Project Purpose and Need**

The 2011 EIS provides a detailed statement of the purpose and need for the Project. Specifically, the need for the Project is based on the State of Hawai'i's Renewable Portfolio Standard (RPS; HRS Chapter 269-92), the Hawai'i Clean Energy Initiative (HCEI) and other similar regulations and initiatives. Collectively, these regulations and initiatives reflect the State's commitment to move away from petroleum-based energy generation and expand its portfolio of locally generated renewable energy projects, thus establishing an overwhelming need for renewable energy projects throughout the State. The purpose of the Project is to provide clean, renewable wind energy for Hawai'i.

The Project was constructed in 2012, and the purpose and need for the Project remain as described in the 2011 EIS. The detailed statements of purpose and need, as presented in Section 1.2 of the 2011 EIS are incorporated by reference.

## **1.3 Project Objectives**

As detailed in the 2011 EIS, given the statutory need for renewable energy projects in the State of Hawai'i and the purpose of providing renewable wind energy, several objectives were identified for the Project, pursuant to HAR § 11-200-17(e)(2).

The Project was constructed in 2012, and the objectives remain as described in the 2011 EIS. The detailed list of objectives, as presented in Section 1.3 of the 2011 EIS are incorporated by reference.

## 1.4 Scope of SEIS

The full range of Project-related impacts, both adverse and beneficial, were discussed in detail as part of the 2011 EIS. As previously described, the Project has been constructed and except for the need for an amendment to the HCP and ITP/ITL, there have been no substantial changes to the Project. The only Project-related impacts that are known to substantively differ from the information presented in the 2011 EIS relate to the Hawaiian hoary bat and the Hawaiian petrel. As such, the scope of analysis for the SEIS is specifically focused on the additional Project-related impacts and associated mitigation for these species. Issues beyond the anticipated Project-related impacts and mitigation associated with the increased take of the Hawaiian hoary bat and Hawaiian petrel (including those related to financial performance of the Project and terms of the PPA) are not addressed in this document.

For ease of use, the SEIS follows the same general organization and format as the 2011 EIS. Updated information is provided for individual sections of the document, as appropriate based on the details presented in the ~~Draft~~ HCP Amendment. For sections that do not require updated information relative to the additional impacts and mitigation for Hawaiian hoary bat and Hawaiian petrel, a statement is included to this effect (with information from the 2011 EIS incorporated by reference).

## **2.0 Description of Project and Alternatives**

The 2011 EIS presented a detailed description of the proposed action, involving construction and operation of a wind energy facility on the former Kawaioloa Plantation lands; it also addressed the range of alternative actions that were evaluated (including those that were eliminated from further consideration). The Project was subsequently constructed and has been in operation since 2012. As this document is an SEIS (which is intended to document the changes from the original EIS), it carries forward the Project as the action that is evaluated for potential environmental impacts from the 2011 EIS. Within the context of the requirements for HRS Chapter 343, the action has not changed substantively in terms of size, scope, intensity, type of use, location, or timing, such that the detailed Project description provided in the 2011 EIS is still applicable and is incorporated by reference. A summary, which includes minor modifications to the Project description, is provided below.

### **2.1 Existing Wind Farm Project**

#### ***2.1.1 Background and History***

In 2008, Kamehameha Schools conducted a master planning effort to develop a framework for sustainable management for all its land holdings on the north shore of O'ahu. The resulting plan identified a range of development concepts, including outdoor education, diversified agriculture, and renewable energy, all of which were developed with community input and reflect Kamehameha Schools' vision and mission. Seven catalyst projects were described in the Master Plan, one of which was a wind energy project on lands that were historically part of Kawaioloa Plantation (Kamehameha Schools 2008). Following presentation of the development concept in their Master Plan, Kamehameha Schools solicited proposals from wind farm developers in anticipation of a formal renewable energy project selection process by HECO. Subsequently, HECO issued a Request for Proposals (RFP) for Renewable Energy Projects for the Island of O'ahu (dated June 2008). In 2009, the project was selected by HECO to be one of several projects included in their renewable energy portfolio, which established the rights to negotiate a PPA. Following selection, Kawaioloa Wind acquired the rights to develop the project. Additional details regarding the background and history of the Project, including a discussion of site suitability, are provided in the 2011 EIS and are incorporated by reference.

#### ***2.1.2 Project Location***

The Project is located approximately 5 miles northeast of Hale'iwa town, on the north shore of the Island of O'ahu. The Project area is comprised almost entirely of Kawaioloa Plantation lands, which are owned by Kamehameha Schools. The onsite access roads traverse several small properties owned by other entities. Kamehameha Schools has grants of easement with these other landowners for long-term access through their properties for both Kamehameha Schools and its lessees and

tenants, including Kawaiiloa Wind. In addition, Kawaiiloa Wind has a separate access agreement with three of these landowners.

The Project facilities which are addressed in the HCP Amendment are located within tax map key (TMK) (1) 61007001, 62011001, and 61006001. Other TMKs that comprise unoccupied portions of the Project area, as well as areas traversed by the onsite access roads are listed and are shown in the 2011 EIS.

### ***2.1.3 Project Description***

As described in the 2011 EIS, the Project is an approximately 69-MW wind farm located on former Kawaiiloa Plantation lands owned by Kamehameha Schools. The Project includes various components which collectively function to generate and transmit electricity to HECO's existing grid. These components are listed below and are shown in Figure 2-1. A detailed description of the facilities, including the approximate footprint and area of disturbance associated with each component is provided in the 2011 EIS.

- Wind turbine generators (30 Siemens SWT-2.3 101 turbines)
- Electrical collector system (including underground and overhead electrical collector lines)
- Electrical substation
- Interconnection facilities (at each of two points of interconnection [POI])
- Communication equipment
- Operations and maintenance (O&M) building
- Meteorological monitoring equipment

The electricity generated by the wind turbines is carried by a series of underground and overhead electrical collector lines to the electrical substation, where the voltage is increased to sub-transmission (46-kilovolt [kV]) levels. Overhead 46-kV connector lines carry the electricity to interconnection facilities (at two separate POIs with the existing HECO 46-kV sub-transmission lines), where the wind-generated electricity is integrated into the existing HECO grid. A dedicated communication link between the wind farm site and the HECO grid is provided via microwave communication equipment located at each of the interconnection facilities.<sup>10</sup> Other appurtenant facilities include an O&M building, which houses the wind farm management system, and meteorological equipment for monitoring the wind resources.

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<sup>10</sup> The 2011 EIS described possible communication equipment at two locations near Mt. Ka'ala. It was subsequently determined that this equipment was not needed, and thus it was not installed.



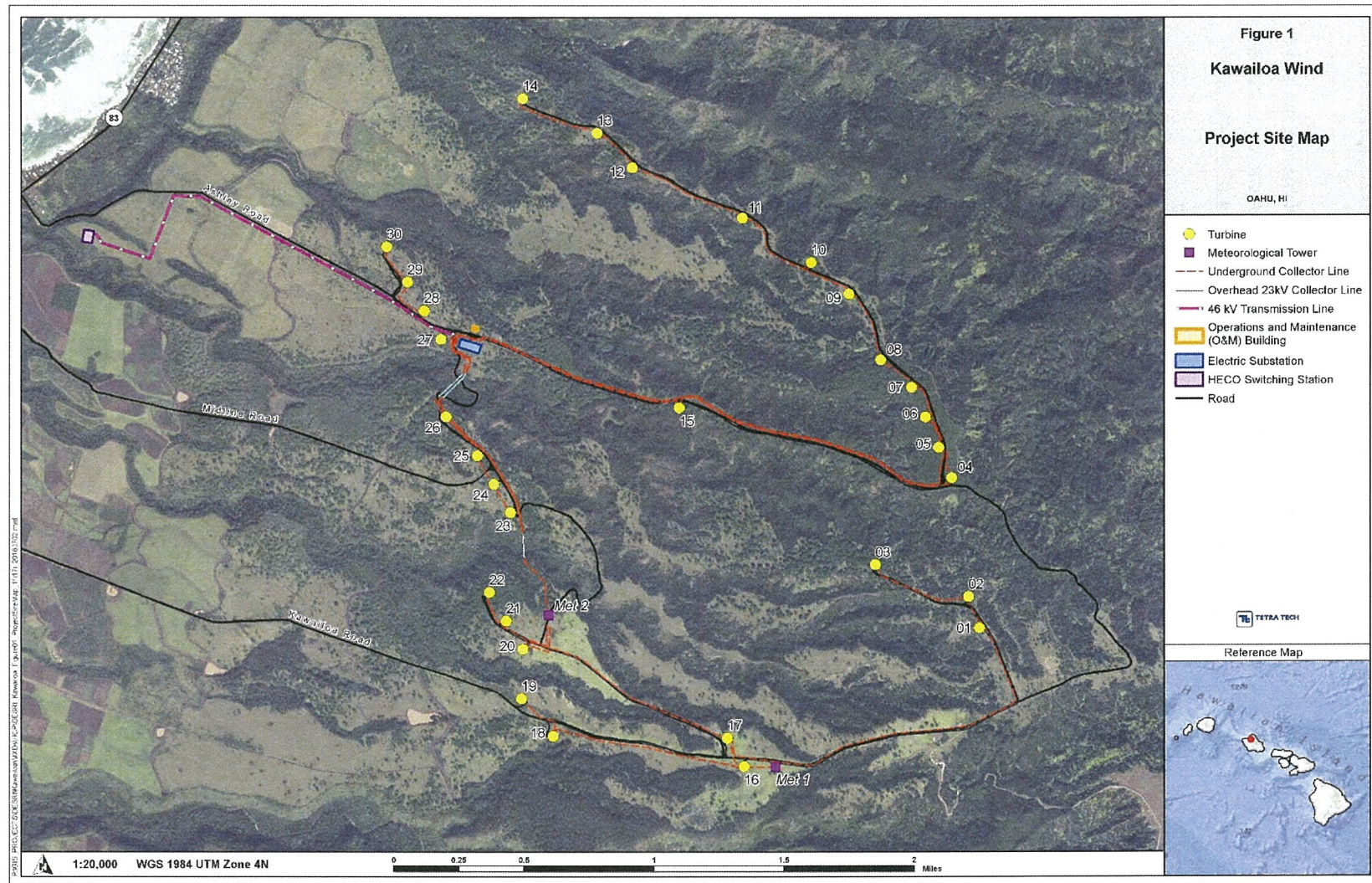


Figure 2-1. Project Site Layout



Consistent with the schedule provided in the 2011 EIS, construction of the Project was completed in 2012.<sup>11</sup> Construction activities, including implementation of best management practices (BMPs) and other avoidance, minimization and mitigation measures, were conducted as anticipated. In general, the Project facilities were installed as designed, with no substantial deviations from the description provided in the 2011 EIS, with the exception of the minor modifications listed below. No changes in the Project facilities are proposed as part of the HCP Amendment.

- Turbine 15 was originally sited just south of Turbine 16, near the southern boundary of the Project area (see Figure 4 in the 2011 EIS). Prior to construction, this turbine was re-sited to a central portion of the Project area (along Ashley Road, see Figure 2-1) to avoid encroachment into an existing easement.
- An optional battery energy storage system was identified as a potential mechanism to partially store, regulate and stabilize the energy output from the Project. However, it was subsequently determined that this equipment was not needed for grid integration purposes and thus, it was not installed.
- The Project was designed to include possible communication equipment in two locations near Mt. Ka'ala to facilitate interconnection with HECO's electrical grid; however, it was subsequently determined that this equipment was not needed and thus, it was not installed.

#### ***2.1.4 Operational Protocol***

As specified in the approved HCP, Kawaiiloa Wind committed to implementing LWSC from the start of Project operations to reduce risk to Hawaiian hoary bats. This operational protocol involves restricting turbine operation by feathering the turbine blades during periods of low wind speed (i.e., below 5.0 meters per second [m/s]) between sunset and sunrise from March to November, as pre-construction data showed relatively higher bat activity during these periods. There have been incremental extensions to the LWSC period as an adaptive management response to the occurrence of bat fatalities outside the initial LWSC period. This avoidance and minimization measure does not involve modification of any facilities or other aspects of the Project description presented in the 2011 EIS. Additional information regarding avoidance and minimization measures, including LWSC, is provided in Section 3.5.4. Alternative operational protocols that were considered through the HCP Amendment process are referenced in Section 2.2.2, with further detail provided in the Draft HCP Amendment.

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<sup>11</sup> Commercial operation began on December 28, 2012 and the wind farm has been operating on a continual basis since that date. The Project is expected to be in operation for a total of 20 years (through 2032). At the end of the operational period, decommissioning and site restoration will be implemented, in accordance with the description provided in the 2011 EIS.

## 2.2 Alternatives

### 2.2.1 Project Alternatives

Based on the Project objectives, a range of alternatives to construction and operation of the Project were identified and considered through the Project planning and site layout process. The 2011 EIS presents the framework that was used for identification and consideration of alternatives, including those alternatives that were considered in detail as well as those eliminated from further consideration. The alternatives evaluated in the 2011 EIS include an alternative layout for the communication equipment near Mt. Ka'ala, as well as the No Action alternative. The alternatives that were considered during the planning process but eliminated from further consideration (as they did not meet the Project objectives or were otherwise not considered to be feasible) include: (1) different turbine locations on the Kamehameha School's property, (2) different turbine models and sizes, (3) decreased generating capacity, (4) increased generating capacity, (5) wind farm development elsewhere on O'ahu, (6) delayed implementation of the Project, (7) alternate energy storage technologies, and (8) different sources of renewable energy. A detailed discussion of these alternatives is provided in Section 2.2.3.1 through 2.2.3.8 of the 2011 EIS.

Because the Project was constructed generally as described in the 2011 EIS, the original discussion of Project alternatives in the 2011 EIS is still applicable; this information is incorporated by reference. However, as previously noted, the communication equipment near Mt. Ka'ala was subsequently determined to not be needed, and thus was not constructed; as such, the alternative layout for the communication equipment is no longer relevant and therefore, is not further addressed in this SEIS. As the Project is fully operational and is contributing to Hawai'i's portfolio of locally generated renewable energy projects as mandated by the State's RPS, HCEI and other relevant regulations and initiatives, consistent with the Project purpose and need, no additional Project alternatives are being considered in this SEIS. Alternatives relating to different protocols for Project operations, which were identified and evaluated through the HCP amendment process, are discussed below.

### 2.2.2 Alternative Operational Protocols Considered in HCP Amendment

Specific to the estimated increase in Hawaiian hoary bat take, several alternative approaches were identified and considered through the HCP Amendment process. Specific approaches that were considered include modifications to the Project's operational protocols, including (1) full nighttime curtailment, and (2) curtailment with cut-in speeds of 5.5 m/s or above. These alternatives, as well as a "no HCP Amendment" (no action) alternative, are discussed below. No petrel-specific alternatives were identified, because avoidance and minimization measures already implemented for Newell's shearwater (and other birds) are also applicable to the Hawaiian petrel (and no other minimization measures specific to wind farms are known for these species); these measures are described in Section 3.5.4.1, with further detail provided in Section 5.3 of the approved HCP.

### 2.2.2.1 Full Nighttime Curtailment

This alternative would consist of feathering turbine blades year-round from one hour before sunset to one hour after sunrise at all Project turbines (full nighttime turbine shutdown) to avoid future Hawaiian hoary bat take and further reduce collision risk for the Hawaiian petrel and Newell's shearwater. The approved HCP, which identifies existing avoidance and minimization measures, mitigation measures, and monitoring commitments for the Covered Species, would remain in effect. ~~However, Under this alternative,~~ the HCP would still need to be amended to increase the level of authorized Hawaiian hoary bat take to address take in exceedance of the current permit. An HCP amendment would also be required to add the Hawaiian petrel as a Covered Species because nighttime curtailment is not expected to eliminate all risk to this species.

This alternative was not carried forward for further consideration because full nighttime curtailment would reduce power generation such that Kawaihoa Wind would not be able to meet the contractual obligations under the Project's PPA with HECO. Specifically, this alternative would reduce annual energy production by approximately 45 percent, resulting in an annual power generation loss on the order of 61,000 MW hours per year. Revenue losses under full nighttime curtailment would render the Project commercially unviable, forcing Kawaihoa Wind to cease operation. As the largest wind energy generating facility in Hawai'i, this would eliminate a significant contribution to the State's RPS and would not meet the purpose and need. In addition to reducing the availability of clean, renewable energy, ceasing operation would also preclude other benefits including those related to Project employment and lease and tax revenues.

### 2.2.2.2 Curtailment with Cut-in Speeds of 5.5 Meters Per Second or Above

This alternative would consist of implementing LWSC with an increased cut-in speed of 5.5 m/s or greater, and is based on the belief that any increase in cut-in speed above 5.0 m/s would result in significant additional reduction in bat collision risk. As bat fatalities have been observed at the Project in all months, it is assumed that curtailment at higher cut-in speeds would be implemented year-round. This alternative was not considered further for two reasons: (1) the benefits of cut-in speeds above 5.0 m/s are uncertain, and (2) the nature of the wind regime at the Project is such that this alternative would result in unacceptable reductions to power generation.

Studies conducted on the mainland to evaluate the effectiveness of LWSC relative to minimizing impacts to bats have provided a range of results. Overall, increasing cut-in speeds between 1.5 and 3.0 m/s above the manufacturer's cut-in speed has been shown to yield reductions in bat fatalities, ranging from 10 to 92 percent, with at least a 50 percent reduction in bat fatalities when turbine cut-in speed was increased by 1.5 m/s above the manufacturer's cut-in speed (Arnett et al. 2013b). Significant reductions in bat fatality rates have been demonstrated when cut-in speeds are raised incrementally from 3.5 to 4.5 to 5.5 m/s (Good et al. 2012); however, the results of studies evaluating the additional benefits of raising cut-in speeds above 5.0 m/s are ambiguous. Additionally, some studies have shown that equally beneficial reductions in bat fatalities may be achieved by feathering blades or slowing rotor speed up to the turbine manufacturer's cut-in speed (low-speed idling) without LWSC (Baerwald et al. 2009; Young et al. 2011, 2012; Good et al. 2017).

While there may be additional benefits to bats associated with progressively higher levels of LWSC, the effectiveness of LWSC is dependent on project-specific characteristics such as wind regime, bat species at risk, surrounding land uses, and other factors (Arnett et al. 2013a).

Arnett et al. (2009, 2010) demonstrated that bat fatalities were reduced by an average of 82 percent (95 percent confidence interval [CI]: 52 to 93 percent) in 2008, and by 72 percent (95 percent CI: 44 to 86 percent) when the cut-in speed was increased to 5.0 m/s and turbine blades were feathered at lower wind speeds. In a synthesis of 10 studies, Arnett et al. (2013a) identified only one study that found increasing cut-in speeds above 5.0 m/s resulted in a statistically significant reduction in bat mortality over LWSC with cut-in speeds of 5.0 m/s. Although other studies from the mainland U.S. have suggested that increasing cut-in speeds to 6.0 m/s or 6.5 m/s may be more effective at reducing bat fatalities (e.g., Good et al. 2011, Hein et al. 2014), only Good et al. (2012) has shown a statistically significant reduction in bat fatalities between different LWSC cut-in speeds (bat fatalities were lower at a cut-in speed of 6.5 m/s than 5.0 m/s). Hein et al. (2014) at Pinnacle Wind (Vermont) and Arnett et al. (2011) at Casselman (Pennsylvania) found no statistically significant difference between 5.0 and 6.5 m/s cut-in speeds. Other studies of LWSC with higher cut-in speeds suffer from either no control treatment, or lack of sampling for comparison (Stantec 2015, Tidhar et al. 2013). Given the ambiguous results from other studies and the differences in life history characteristics between the resident Hawaiian hoary bat and migratory mainland hoary bats, the application of increased cut-in speeds beyond what is currently proposed may not be more effective in Hawaii. Additionally, as discussed in Section 3.5.4.1, the project has installed acoustic deterrents at all 30 turbines. As demonstrated at Pilot Hill, Illinois in 2018 (Lillian 2019), take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent more than LWSC alone (B. Morton/NRG, pers. comm., May 2019). There are no data to suggest that curtailment at higher windspeeds would have an appreciable benefit over the current minimization measures for the Project.

As described in the HCP Amendment, LWSC regimes are appropriate when determined on a Project-specific basis: considering the wind regime, PPA contractual obligation, financial considerations, and bat fatality patterns. Specifically, the wind regime at the Project is an important consideration driving the development of appropriate LWSC that both reduces bat collision risk while maintaining operation of a commercially viable project.

During a typical year, average hourly wind speeds between sunset and sunrise (when curtailment would be implemented) range from 4.6 to 5.9 m/s (with an average of 5.4 m/s). Moreover, during 8 months of the year, the proportion of sunset to sunrise hours with hourly wind speeds below 5.5 m/s ranges from 75 to 100 percent. That is, during the period when LWSC would be implemented, average wind speeds do not typically exceed 5.5 m/s. Therefore, implementing LWSC with a cut-in speed of 5.5 m/s or greater would result in proportionally greater periods of Project non-operation compared to wind energy facilities with regimes characterized by high wind speeds.

While the additional benefits to bats from raising cut-in speeds above 5.0 m/s are ambiguous, the negative impacts to energy generation are significant. Under this alternative, implementing LWSC

at the Project with a cut-in speed of 5.5 m/s would reduce annual energy production by approximately 2 percent, resulting in an annual power generation loss on the order of 2,500 MW hours per year. Generation losses and costs associated with implementing cut-in speeds of 6.0 or 6.5 m/s would be substantially greater. Even under the current LWSC regime of 5.0 m/s, Kawaiiloa Wind does not consistently meet minimum production requirements in individual years. Therefore, this alternative would increase the risk that Kawaiiloa Wind would not meet the requirements specified in its PPA with HECO, thereby jeopardizing continued operation of the Project. As described in Section 2.2.2.1, ceasing operation would eliminate a significant contribution to the State's RPS and reduce the availability of clean, renewable energy, as well as preclude other benefits including those related to Project employment and lease and tax revenues. For these reasons, this alternative was not carried forward for further consideration.

#### *2.2.2.3 No HCP Amendment*

Under this alternative, the Project would remain in place, but the approved HCP would not be amended, such that the increased Hawaiian hoary bat take and addition of Hawaiian petrel as a Covered Species would not be authorized. The approved HCP and existing take limits would remain in effect, and Project operations would continue as authorized under the existing ITP/ITL in order to meet the Project's minimum required power production. The avoidance and minimization measures set forth in the approved HCP would continue to be implemented. Any take that may occur beyond the currently approved levels would not be authorized. As it would require that Kawaiiloa Wind operate out of compliance with HRS Chapter 195D, this alternative was not carried forward.

### **3.0 Existing Environment, Potential Impacts, and Mitigation Measures**

The 2011 EIS and subsequent EA addressed the full range of environmental, cultural, and socioeconomic resources that could be affected by implementation of the wind farm and the associated HCP, respectively. The Project has been constructed and the extent of impacts to date are commensurate with those described in the 2011 EIS and subsequent EA, except that the impacts to the Hawaiian hoary bat have been greater than anticipated and the potential for impacts to the Hawaiian petrel were subsequently identified.

Those resource categories that are not affected by the increased take of the Hawaiian hoary bat or Hawaiian petrel are noted accordingly, and the discussion contained in the 2011 EIS and subsequent EA is incorporated by reference. Specific to the Hawaiian hoary bat and Hawaiian petrel, an updated discussion of the existing conditions, additional impacts, and additional avoidance, minimization, and mitigation measures is provided based on the information presented in the Draft HCP Amendment. The potential impacts associated with implementation of the HCP Amendment (e.g., compensatory mitigation for the Hawaiian hoary bat and Hawaiian petrel) are addressed across the range of environmental resources as part of Section 3.5.

#### **3.1 Climate**

The 2011 EIS provides a definition of climate, discusses the existing conditions, assesses the potential impacts on climate that could result from construction and operations of the Project (as well as the no action alternative). This discussion includes a description of the conditions associated with global climate change, and the expected benefits of the Project on the climate through displacement of fossil fuel consumption and thus reduction in greenhouse gas emissions. Climate-related impacts resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to climate are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

#### **3.2 Air Quality**

The 2011 EIS discusses the applicable federal and state air quality standards, describes the existing ambient air conditions, assesses the potential impacts to air quality that could result from construction and operations of the Project (as well as the no action alternative), and identifies relevant BMPs. Project-related impacts related to air quality are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to air quality are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

#### **3.3 Geology, Topography, and Soils**

The 2011 EIS provides a definition of these resources, discusses the existing conditions, assesses the potential impacts to geology, topography, and soils that could result from construction and

operations of the Project (as well as the no action alternative), and identifies relevant BMPs. Impacts to geology, topography, and soils resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to geology, topography and soils are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.4 Hydrology and Water Resources**

The 2011 EIS provides a definition of hydrology and water resources (including jurisdictional wetlands and waters of the U.S.), discusses the existing conditions, assesses the potential impacts relative to hydrology and water resources that could result from construction and operations of the Project (as well as the no action alternative), and identifies relevant BMPs. Impacts related to hydrology and water resources resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to hydrology and water resources are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.5 Biological Resources**

The 2011 EIS identifies the various biological resources within the Project area (including flora, fauna, and threatened and endangered species), describes the historical and existing conditions relative to these resources, presents the analysis of potential impacts that could result from implementation of the Project (as well as the no action alternative), and describes the measures to avoid, minimize and mitigate Project-related impacts to biological resources. As previously noted, an EA was subsequently prepared to further evaluate implementation of the HCP, and includes additional detail regarding the avoidance, minimization and mitigation measures for the Covered Species. Except as related to the Hawaiian hoary bat and Hawaiian petrel, which are further discussed below, biological resource impacts are consistent with the assessment provided in the 2011 EIS and EA, which are incorporated by reference.

Both the Hawaiian hoary bat and Hawaiian petrel are federally listed as endangered and are protected under the ESA, and are also listed as endangered by the State of Hawai'i and are protected under HRS Chapter 195D. Prior to construction of the Project, Kawaihoa Wind prepared an HCP and obtained an ITP/ITL authorizing incidental take of listed species, including the Hawaiian hoary bat. Hawaiian petrel was not included as a Covered Species in the HCP and ITP/ITL because it was not known to occur regularly on O'ahu and was not expected to transit the Project area; therefore, take was thought to be highly unlikely. Post-construction mortality monitoring data from the first five years of Project operation indicate that estimated take of the Hawaiian hoary bat has exceeded the level of take anticipated in the HCP and authorized in the ITP/ITL. Also, two petrel fatalities have been observed within the Project area. As such, impacts to these two species have been greater than anticipated and Kawaihoa Wind is pursuing an amendment to the HCP and ITP/ITL to increase authorized take levels for the Hawaiian hoary bat and to include the Hawaiian petrel as a Covered Species.

The HCP amendment process involves in-depth analysis of the estimated take of Hawaiian hoary bat and Hawaiian petrel over the remainder of the permit term, and development of appropriate minimization and mitigation measures to offset the impacts. The following resources were used to support the analysis and prepare the ~~Draft~~ HCP Amendment:

- Post-construction mortality monitoring data for the Project (Kawailoa Wind ~~Power, LLC~~ 2013, 2014, 2015; Tetra Tech 2016, 2017a);
- Evidence of Absence (EoA) fatality modeling tool (Dalthorp et al. 2017);
- Updated information on the distribution of Hawaiian hoary bats in the north Koʻolau Mountains and their behavior within the Project area (Gorresen et al. 2015);
- New research on the potential for operational measures to minimize bat collision risk, such as acoustic deterrents and LWSC (Arnett et al. 2011, Arnett et al. 2013a, Hein and Schirmacher 2013, Tidhar et al. 2013, Hein et al. 2014, Schirmacher et al. 2018);
- USFWS guidance for calculation of Hawaiian hoary bat indirect take (USFWS 2016a);
- ~~Endangered Species Recovery Committee (ESRC)~~ Hawaiian Hoary Bat Guidance Document (DLNR 2015);
- Historic observations and results of acoustic surveys for Hawaiian petrel on Oʻahu (Pyle and Pyle 2017, Conservation Metrics, Inc. ~~in prep~~ 2017, Young et al. ~~in prep~~ 2019); and
- Verbal and written guidance from USFWS and DOFAW regarding Hawaiian hoary bat take estimation, mitigation, adaptive management, and monitoring (provided after issuance of the DLNR Bat Guidance in 2015 and through July 2018).

This section presents current information regarding the Hawaiian hoary bat and Hawaiian petrel, including the species biology, distribution, threats and occurrence within the Project area. A discussion of the estimated take levels and population-level impacts is also provided, followed by a summary of the proposed avoidance, minimization and mitigation measures. The information presented is based on the analysis conducted as part of the HCP amendment process, as detailed in the ~~Draft~~ HCP Amendment.

### **3.5.1 Historical Conditions**

The 2011 EIS discusses the historical conditions within the Project area, including the vegetation that likely occurred in pre-Contact times, conversion to agricultural fields for cultivation of sugar cane in the late 1800s, and introduction of non-native species for windbreaks and other purposes. There are no substantive changes to this information; the discussion contained in the 2011 EIS is incorporated by reference.



### 3.5.2 Existing Conditions

#### 3.5.2.1 Flora

As described in the 2011 EIS and subsequent EA, the vegetation within the Project area is generally characterized as a mixture of aggressive weedy species that have proliferated since the abandonment of sugar cane agriculture. Remnants of native vegetation occur on the steep slopes of the gulches in the upper parts of the site. In general, the lack of native species is attributed to years of agricultural activities and invasion by non-native plant and animal species. No federally or state listed endangered, threatened, or candidate plant species are known to occur within the Project area, and no portion of the Project area has been designated as critical habitat. There are no substantive changes to the information provided in the 2011 EIS and subsequent EA.

#### 3.5.2.2 Fauna

The 2011 EIS and subsequent EA describe the fauna within the Project area, which include mammals, avifauna and invertebrates. As detailed in this discussion, with the exception of the endangered Hawaiian hoary bat, the mammalian species documented within the Project area are non-native feral species including feral pig (*Sus scrofa*), mongoose (*Herpestes aruopunctatus*), domestic dog (*Canis lupus familiaris*), rat (*Rattus* sp.) and cat (*Felis catus*). Avian species that have been detected within the Project area are predominantly introduced species. A limited number of native species were recorded prior to construction and during post-construction monitoring including the threatened Newell's shearwater (presumably detected during radar surveys), the black-crowned night heron (*Nycticorax nycticorax*), great frigate bird or 'iwa (*Fregata minor*), sooty tern (*Onychoprion fuscatus*), white-tailed tropicbird or koa'e'kea (*Phaethon lepturus*) and Hawaiian duck-mallard (*Anas* sp.). Native avian species that have been observed adjacent to the Project area include the endangered Hawaiian coot (*Fulica alai*) and endangered Hawaiian moorhen (*Gallinula chloropus sandvicensis*). As noted throughout this document, the Hawaiian petrel was not previously believed to regularly occur on O'ahu and thus was not expected to transit the vicinity of the Project; however, two fatalities have been observed in the Project area. No federally or state listed invertebrate species are known to occur within the Project site.

There are no substantive changes to this information and impacts related to fauna are commensurate with the assessment provided in the 2011 EIS and subsequent EA, except as related to the Hawaiian hoary bat and Hawaiian petrel, which are discussed in the following section.

#### 3.5.2.3 Threatened or Endangered Species

As documented in the 2011 EIS and subsequent EA, no federally or state listed endangered, threatened or candidate species are known to permanently reside within the wind farm site and no portion of the site has been designated as critical habitat for any listed species. However, several listed species have been detected either within or adjacent to the site; these include the threatened Newell's shearwater, endangered Hawaiian duck, endangered Hawaiian stilt, endangered Hawaiian coot, endangered Hawaiian moorhen, endangered Hawaiian short-eared owl, and endangered

Hawaiian hoary bat. Although not previously detected within the site, a seabird carcass (later identified as a Hawaiian petrel) was incidentally found onsite in 2017. A second Hawaiian petrel carcass was found onsite in August 2018.

An updated discussion is provided below for the Hawaiian hoary bat, based on new and relevant information regarding this species. This includes a description of the species' population, biology and distribution, as well as the current threats and potential occurrence at the Project area. A similar discussion has also been added for the Hawaiian petrel. The information provided in the 2011 EIS and EA relative to the Newell's shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen and Hawaiian short-eared owl is still applicable and is incorporated by reference.

### **Hawaiian Hoary Bat**

#### **Population, Biology, and Distribution**

The Hawaiian hoary bat is the only native land mammal present in the Hawaiian archipelago. It is a sub-species of the hoary bat, which occurs across much of North and South America. However, recent research indicates that Hawaiian hoary bats may consist of two distinct lineages because of multiple colonization events (Baird et al. 2015, Russell et al. 2015). Nevertheless, only one bat species is currently recognized in Hawai'i and is listed as endangered. Both males and females have a wingspan of approximately 1 foot (0.3 meter), although females are typically larger-bodied than males. Both sexes have a coat of brown and gray fur. Individual hairs are tipped or frosted with white (Mitchell et al. 2005).

Recent studies and ongoing research have shown that bats have an extensive distribution across the Hawaiian Islands (Bonaccorso et al. 2015, Gorresen et al. 2013, H.T. Harvey and Associates 2019, Starcevich et al. 2019) and breeding populations are known to occur on all of the main Hawaiian Islands except Ni'ihau and Kaho'olawe (Bonaccorso et al. 2015). Numerous research studies have been conducted on the Hawaiian hoary bat in the last decade. The bat has been detected broadly across the state, and on O'ahu specifically. Documented occurrences of the Hawaiian hoary bat from monitoring at wind farms, associated mitigation sites, and via other research show that the bat is more widespread and abundant than described in the 1998 USFWS Hawaiian hoary bat recovery plan (Auwahi Wind 2017, Kaheawa Wind Power, LLC 2017, Kaheawa Wind Power II, LLC 2017, Gorresen et al. 2013, Bonaccorso et al. 2015, H.T. Harvey and Associates 2019). The Hawaiian subspecies of the hoary bat has been recorded on Kaua'i, O'ahu, Moloka'i, Maui, Lāna'i, Hawai'i, and Kaho'olawe, but no historical population estimates exist for this subspecies. Modern population estimates have been wide-ranging, and

aAlthough recent studies and ongoing research have shown that bats have a wide distribution across the Hawaiian Islands, accurate population estimates are not currently available nor are feasible to ascertain at this point in time (DLNR 2015). For a reclusive, solitary, tree-roosting species like the Hawaiian hoary bat, the available monitoring methods do not provide population estimates. The most recent indication of population trends come from an occupancy study on Hawai'i Island from 2007-2011, which found the population to be "stable to increasing" (Bonaccorso et al. 2013). The islands of Kaua'i and Hawai'i are anticipated to support the largest

populations (Mitchell et al. 2005, USFWS 2017). The Hawaiian hoary bat is believed to occur primarily below an elevation of 4,000 feet (1,220 meters) but has been recorded between sea level and approximately 9,050 feet (2,760 meters) in elevation on Maui, with most records occurring at or below approximately 2,060 feet (628 meters) (USFWS 1998).

Hawaiian hoary bats roost in native and non-native vegetation from 3 to 29 feet (1 to 9 meters) above ground level. They have been observed roosting in 'ōhi'a (*Metrosideros polymorpha*), hala (*Pandanus tectorius*), coconut palms (*Cocos nucifera*), kukui (*Aleurites moluccana*), kiawe (*Prosopis pallida*), avocado (*Persea americana*), mango (*Mangifera indica*), shower trees (*Cassia javanica*), pūkiawe (*Leptecophylla tameiameia*), common ironwood (*Casuarina equisetifolia*), macadamia (*Macadamia* spp.), and fern clumps; they are also suspected to roost in eucalyptus (*Eucalyptus* spp.) and Sugi pine (*Cryptomeria japonica*) stands (USFWS 1998, Mitchell et al. 2005, Gorresen et al. 2013, Kawaiiloa Wind Power-2013). Hawaiian hoary bats have been known to use both native and non-native habitats for feeding and roosting (Gorresen et al. 2013, Mitchell et al. 2005). Bat activity has been generally detected in Hawai'i in essentially all habitats, including in clearings, along roads, along the edges of tree lines, in gulches, and at irrigation ponds; monitoring to date indicates that bats use these features for travelling and foraging. The species has been rarely observed using lava tubes, cracks in rocks, or man-made structures for roosting. While roosting during the day, Hawaiian hoary bats are solitary, although mothers and pups roost together (USFWS 1998).

~~Bonaccorso et al. (2015) studied foraging of the Hawaiian hoary bat on Hawai'i Island and defined the foraging range as the area traversed by an individual as it forages and moves between day roosts and nocturnal foraging areas. This research documented a maximum straight line distance between any two points in the foraging range of approximately 7 miles (11.3 kilometers). Bonaccorso et al. (2015) found moderately large Hawaiian hoary bat foraging ranges on Hawai'i Island in late spring, summer and fall with a mean of 570.1 ± 178.7 acres (230.7 ± 72.3 hectares). Foraging activity within this area was concentrated within small core use areas with a mean of 63.0 ± 17.1 acres (25.5 ± 6.9 hectares, or 11.1 percent of mean foraging range) that exhibited limited overlap among individual areas. Additional studies have demonstrated that Hawaiian hoary bats can range between habitats and elevations within a single night to target optimal local foraging opportunities (Gorresen et al. 2013, 2015), with bats spending 20 to 30 minutes hunting in a feeding range before moving on to another (Bonaccorso 2010).~~

It is suspected that breeding primarily occurs between April and August. Lactating females have been documented from June to August, indicating that this is the period when non-volant young are most likely to be present. To be conservative, however, USFWS and DOFAW consider young to be non-volant and dependent on the female from June 1 through September 15. Breeding has been documented on the islands of Hawai'i, Maui, Kaua'i, and O'ahu (Baldwin 1950; Kepler and Scott 1990; Menard 2001, Kawaiiloa Wind Power-2013, Tetra Tech 2018b), but likely also occurs on Moloka'i and Maui. It is not known whether bats observed on other islands breed locally or only visit these islands during non-breeding periods.

Seasonal changes in the abundance of Hawaiian hoary bat at different elevations indicate that altitudinal movements occur on Hawai'i Island. During the breeding period (April through August),

Hawaiian hoary bat occurrences increase in the lowlands and decrease at high elevation habitats. In the winter, bat occurrences increase in high elevation areas (above 5,000 feet or 1,525 meters) especially from January through March (Menard 2001; Bonaccorso 2010). It is not known if similar patterns of migration occur in the Project area or elsewhere on O'ahu, but seasonal migration patterns may play a factor in risk exposure.

Hawaiian hoary bats feed on a variety of native and non-native night-flying insects, including moths, beetles, crickets, mosquitoes and termites (Whitaker and Tomich 1983). They appear to prefer moths ranging between 0.6 and 0.89 inches (16 to 20 millimeters [mm]) in size (Bellwood and Fullard 1984; Fullard 2001). Koa moths (*Scotorythra paludicola*), which are endemic to the Hawaiian Islands and use koa (*Acacia koa*) as a host plant (Haines et al. 2009), are frequently targeted as a food source (Gorresen/USGS, pers. comm.). Prey is located using echolocation. Water features and edges of habitat (e.g., coastlines and forest/pasture boundaries) appear to be important foraging areas (Grindal et al. 1999, Francl et al. 2004, Brooks and Ford 2005, Morris 2008, Menzel et al. 2002). In addition, the species is attracted to insects that congregate near lights (USFWS 1998, Mitchell et al. 2005, Bellwood and Fullard 1984). Bats begin foraging either just before or after sunset depending on the time of year (USFWS 1998, Mitchell et al. 2005).

Increased bat activity is correlated to insect biomass (Gorresen et al. 2018), as well as edge, gulch, and riparian habitat (Jantzen 2012, Grindal et al. 1999, Lloyd et al. 2006, Law and Chidel 2002). Preferred foraging habitat for bats is dependent on insect abundance and availability, and insect abundance is related to net primary productivity (Whitaker et al. 2000, Gruner 2007). For many species of insectivorous bats that forage in relatively open habitats, bat activity has been shown to increase as the amount of open airspace above a stream channel increases, due to reduced interference from vegetative clutter on bat flight patterns (Ober and Hayes, 2008). Studies have shown that alterations to riparian vegetation likely influence bat foraging activity patterns; efforts to create diversity in shrub coverage and canopy coverage to increase open space above the stream channel facilitate foraging by bats (Ober and Hayes 2008).

The foraging range of the Hawaiian hoary bat is defined as the area traversed by an individual as it forages and moves between day roosts and nocturnal foraging areas. Bonaccorso et al. (2015) studied foraging of the Hawaiian hoary bat on Hawai'i Island and documented a foraging range of approximately 7 miles with a mean of 570.1 ± 178.7 acres. Foraging activity within this area was concentrated within small core use areas with a median of 20.3 acres (DLNR 2015, interquartile range of 16 to 58 acres) that exhibited limited overlap among individual areas.<sup>12</sup> Additional studies

<sup>12</sup> Another recent study identified potential core use areas of approximately 3,000 acres (H.T. Harvey and Associates 2019); however, this information was not incorporated into the HCP Amendment as it is understood that the final report has not been released or peer-reviewed, and the results are subject to change based on this process. No methodology was reported and kernel density estimates are highly sensitive to discrepancies in methodology. Furthermore, the study is based on a very limited dataset of five bats over five nights. Extrapolating from a 3,000-acre core use area suggests an unreasonably small population, resulting in an O'ahu population of fewer bats than have been observed as fatalities; bats continue to be detected on O'ahu, such that an estimated population based on a 3,000-acre core use area would not be accurate. Finally, the reported flight speeds are 2-4 times those reported in studies of Hawaiian hoary bats on Hawai'i Island, as well as those of mainland hoary bats (De La Cueva Salcedo et al. 1995, Jacobs 1996).

have demonstrated that Hawaiian hoary bats can move between habitats and elevations within a single night to target optimal local foraging opportunities (Gorresen et al. 2013, 2015), with bats spending 20 to 30 minutes hunting in a feeding range before moving on to another (Bonaccorso 2010).

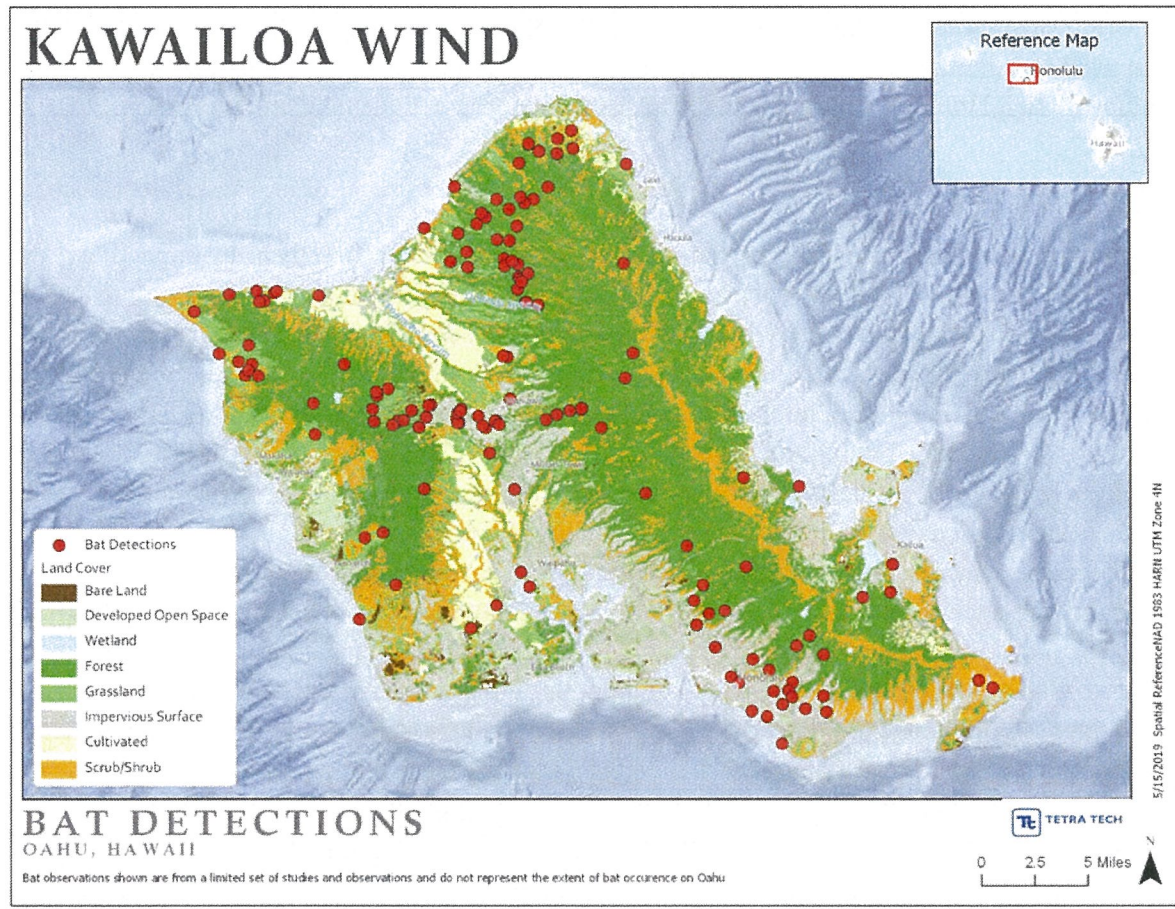
#### Current Threats

Possible threats to the Hawaiian hoary bat include pesticides (either directly or by impacting prey species), fire, predation, alteration of prey availability due to the introduction of non-native insects, habitat loss, and roost disturbance (USFWS 1998). Bats are also known to collide with structures, such as barbed wire fences, wind turbines, and communication towers. Management of the Hawaiian hoary bat is limited by a lack of information on key roosting and foraging areas, food habits, seasonal movements, and reliable population estimates (USFWS 1998). Based on existing information, it is not known whether the availability of roost trees is a limiting factor because the Hawaiian hoary bat roosts in a variety of native and non-native trees, many of which are abundant and some considered invasive (such as kiawe and eucalyptus). However, loss of roosting and foraging habitat is a significant long-term threat to the Hawaiian hoary bat (USFWS 1998, Mitchell et al. 2005, DLNR 2015). The resident human population of Hawai'i has nearly doubled from the time the bat was listed in 1970 to 2017 (from 768,000 to 1.4 million; U.S. Census Bureau 2018), leading to increased residential development (Cassiday 2014) and associated habitat removal. The NOAA Coastal Change Program (2015) estimates 0.68 percent of forests on O'ahu were lost between 2005 and 2011. During the same period, there was a 2.65 percent increase in developed area and a 3.54 percent increase in impervious surface on O'ahu (NOAA Coastal Change Program 2015).

In their continental United States and Canada range, hoary bats are known to be more susceptible to collision with wind turbines than most other bat species (Erickson 2003; Johnson 2005). Most mortality has been detected during the fall migration period. Hoary bats in Hawai'i do not migrate in the traditional sense, although as indicated, some seasonal altitudinal movements occur. Currently, it is not known if Hawaiian hoary bats are equally susceptible to turbine collisions during their altitudinal migrations as hoary bats are during their migrations in the continental United States.

#### Species Occurrence on O'ahu

A variety of studies have documented Hawaiian hoary bat occurrences on O'ahu, as shown in Figure 3-1. The locations shown are compiled from available bat detections, captures, or observations, and are derived from two wind farms (Kawailoa Wind 2013, Kawailoa Wind 2014, Kawailoa Wind 2015, Tetra Tech 2016, Tetra Tech 2017a, Kahuku Wind Power 2012, Kahuku Wind Power 2013, Kahuku Wind Power 2014, Kahuku Wind Power 2015, Kahuku Wind Power 2016, Kahuku Wind Power 2017), associated mitigation research (Gorresen et al. 2018, Starcevich et al. 2018), other research results (Gorresen et al. 2015) and other types of observations (USFWS 1998). It is important to note that the absence of detections in an area does not necessarily mean an absence of bats (Gorresen et al. 2017). Nonetheless, in most of the locations where efforts have been made to detect the Hawaiian hoary bat, bats have been documented. The detections on O'ahu are predominantly associated with accessible areas; thus, as more efforts are made to detect bats, they will likely be documented in more locations across O'ahu.



**Figure 3-1. Documented Acoustic Bat Detections on O'ahu**

### Species Occurrence in the Project Area

The current understanding of Hawaiian hoary bat occurrence in the Project area is informed by data from ongoing monitoring for the Project, as well as relevant research in Hawai'i. Specifically, information used to determine bat occurrence and thereby inform the potential take analysis for the HCP Amendment includes:

- Acoustic monitoring within the Project area;
- Post-construction mortality monitoring within the Project area; and
- Results of a research study that investigated regional occupancy of Hawaiian hoary bats near the Project area (Gorresen et al. 2015); and
- Project investigation into behavioral and occupancy patterns within the Project area, including an analysis of potential correlations with habitat and weather patterns.

Prior to construction, Kawailoa Wind monitored bat activity from 2009 to 2011. Post-construction acoustic monitoring has occurred since November 2012, when commercial operations began. In general, the acoustic monitoring effort in the Project area was highest from 2012 to 2015, with a



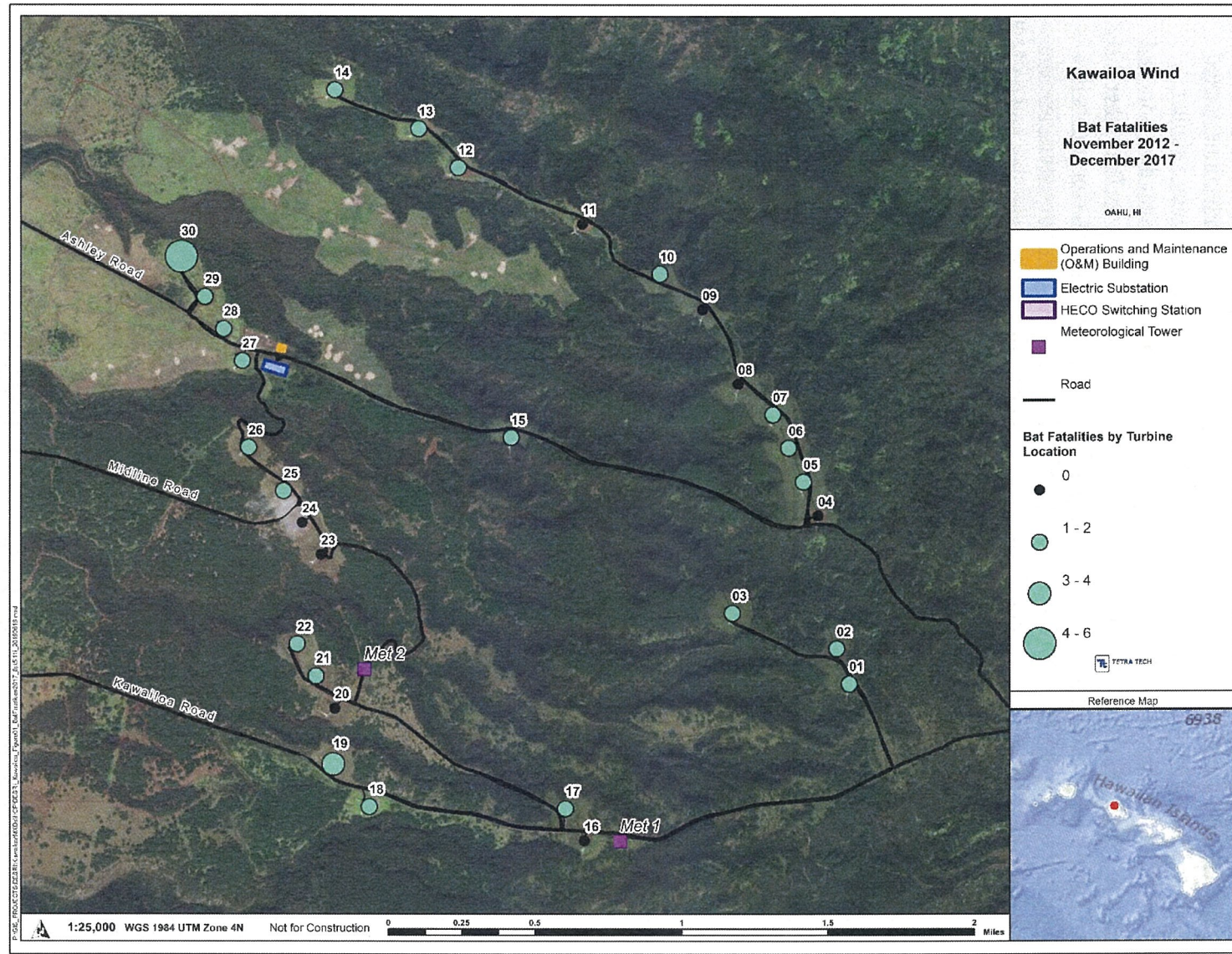
reduced level of monitoring after 2015. Due to differences in the sensitivity of the acoustic detectors and microphones used during the pre- and post-construction time periods, the data from the two periods cannot be directly compared. From December 2012 to December 2015, Wildlife Acoustic bat detectors (SM2BAT+) were deployed at ground level and nacelle height for each turbine within the Project area (totaling 30 detectors at ground level, 30 detectors at nacelle height and 12 additional detectors near gulches). The proportion of nights with bat detections peaked from April through October for both ground and nacelle height detectors, showing a similar seasonal trend as the bat activity data collected from 2009 to 2011. Nacelle height detectors had approximately 50 percent fewer detector-nights than the ground detectors. From December 2012 to November 2015, Hawaiian hoary bats were detected on 4,584 of 54,010 detector-nights (8.5 percent of detector-nights). Detectors recorded bats on 11.1 percent of detector-nights near the ground at the Project turbines, on 3.8 percent of detector-nights near turbine nacelles, and on 14.3 percent of detector-nights adjacent or in gulches near turbines (Tetra Tech 2016).

The behavioral and occupancy patterns of Hawaiian hoary bat fatalities and activity in the Project area were investigated utilizing data collected in 2013. This investigation looked at geographic distribution of acoustic detections and fatalities using a variety of turbine groupings (from 3 to 15 turbines). Additional factors considered include: elevation, slope, aspect, direction and distance to gulches, direction and distance to forest edges, mean and maximum wind speeds, wind direction, temperature, barometric pressure, moon illumination, humidity, presence or absence of rain, and time of night. However, the results were largely inconclusive, and were unable to assist in modeling collision risk to the Hawaiian hoary bat at the Project. Several general trends were observed in 2014:

- Acoustic detections were not correlated with bat fatalities;
- Temperature was positively correlated with acoustic detections; and
- Wind speed was negatively correlated with acoustic detections.

The model with the greatest explanatory power to correlate environmental variables with acoustic detections at nacelle height included: wind speed, wind direction, temperature, humidity, pressure, moon illumination, but explained only 24 percent of the variance in the data. The follow-up analysis concluded that, based on one proposed risk model, acoustic detections at nacelle height in 2013 were greater between 7 and 8 p.m. However, calls were recorded in all hours of the night, the model did not account for the changing time from sunset, and fatalities were not correlated with increases in acoustic detections.

Other factors associated with observed bat fatalities are reviewed on an ongoing basis, and findings are summarized in annual reports (Kawailoa Wind 2014). These factors include the distance and direction that fatalities are detected from turbines, wind speed, wind direction, rotor RPM, moon phase, weather patterns, and other potentially relevant factors. The number of observed fatalities per turbine is shown in Figure 3-2. One of the primary challenges in analysis of such factors is the inability of the Project to know the exact timing of a fatality. The timing of the fatality is typically estimated to within seven days, meaning a large number of prior conditions must be evaluated, which makes correlation with any factor or factors difficult.



**Figure 3-2. Documented Fatalities by Turbine at the Project**



Having identified no significant findings during the years of intensive acoustic monitoring at the Project, in 2016 Kawaiiloa Wind reduced the acoustic monitoring effort at the Project to four stationary ground-based units distributed throughout the Project area (Turbines 1, 10, 21, and 25). Results of acoustic monitoring since the intensive post-construction monitoring period have shown elevated activity levels in the dry season (roughly April through October) compared to the remainder of the year, which is relatively similar to previous years (Tetra Tech 2017a). In Fiscal Years 2017 and 2018 (based on State of Hawai'i Fiscal Year periods also used for project reporting), Hawaiian hoary bats were detected at the four detectors on 12.6 and 19.4 percent of detector-nights, respectively. Spatially, the majority of bat activity occurred at Turbine 25 compared to the other three locations (Tetra Tech 2018b).

In a proactive effort to further understand patterns of bat activity at the Project, Kawaiiloa Wind provided site access to USGS in 2013-2014 to conduct thermal imagery surveys of bat behavior at Project turbines (Gorresen et al. 2015). Gorresen et al. (2015) simultaneously studied bat behavior at turbines within the Project area while also studying the landscape distribution of Hawaiian hoary bats in the north Ko'olau Mountains of O'ahu. Bats frequently foraged in the airspace near turbines during the 1-year study but appeared to be less likely to closely approach turbines than their mainland conspecifics. Results from 6 months of thermal videography conducted in this study identified several factors that correlate with higher rates of bat occurrence. These factors were nights with little rain, warmer temperatures, moderate wind speeds, low humidity, and low but rising barometric pressures (indicative of fair weather and improved foraging conditions). Gorresen et al. (2015) noted that video monitoring also demonstrated that the presence of bats near turbines was strongly correlated with insect presence; however, this correlation is likely due to the factors listed above increasing the suitability of weather conditions for insects.

A detailed discussion of other these monitoring and research efforts related to bat occurrence in areas near the Project is provided in the Draft HCP Amendment.

## **Hawaiian Petrel**

### **Population, Biology, and Distribution**

The endemic Hawaiian petrel is one of the larger species in the *Pterodroma* genus that formerly nested in large numbers on all the main Hawaiian Islands, except Ni'ihau. Currently, Hawaiian petrels are known to nest at high elevations on Maui, Kaua'i, Hawai'i, and Lāna'i. Small breeding colonies may also occur on Moloka'i and Kaho'olawe (Pyle and Pyle 2017). A recent study by Young et al. (in prep) documented that Hawaiian petrels occur on O'ahu; however, surveys to date have not provided evidence that breeding colonies are present on O'ahu (Pyle and Pyle 2017; USFWS 2017; Young et al. in prep 2019). Data suggest populations on Kaua'i, Maui Nui, and Hawai'i may have genetic and morphologic distinctions (Welch et al. 2012, Judge et al. 2014).

Hawaiian petrel populations have declined significantly in Hawai'i since the 1990s (Day et al. 2003; Duffy 2010; Raine et al. 2017). Recent population estimates for the species vary depending on methodology and years sampled. Estimates based on pelagic observations between 1980 and 1994 estimated 19,000 birds (3,750 to 4,500 breeding pairs) occurred throughout the Hawaiian Islands

(Spear et al. 1995). Joyce (2013) estimated the total population of Hawaiian petrels to be roughly 52,000 individuals, including juveniles and subadults, using at-sea sightings. More recently, Pyle and Pyle (2017) estimated about 6,000 breeding pairs based on observations at colony sites. It is difficult to estimate the breeding population for this species given the steep terrain of breeding areas and the nocturnal nature of the species.

Much of the life of a petrel is spent at sea, and birds rarely return to land outside of the breeding season. During the non-breeding season, Hawaiian petrels are found far offshore, primarily in equatorial waters of the eastern tropical Pacific. The Hawaiian petrel has been observed from 42 degrees north to 5 degrees north and from 148 degrees west to 158 degrees west (King 1967, 1970, Pitman 1982). The Maui Nui Seabird Recovery Project (MNSBRP) reports locations of petrels from Alaska to Peru, encompassing much of the central Pacific (MNSBRP 2018).

Adult Hawaiian petrels return to their natal colony to breed each year between March and April. They return to the same nesting site over many years (Cruz and Cruz 1990; Podolsky and Kress 1992). Breeding season trips can last up to 21 days (Simons 1985). Nesting colonies are typically on steep slopes at high elevation, xeric habitats or wet, dense forests. Nests may be in burrows, crevices, or cracks in lava tubes in both sparsely vegetated areas and areas with dense vegetation (e.g., uluhe fern [*Dicranopteris linearis*]). In a breeding colony on Maui, nests occur in more densely vegetated areas of shrub cover (Simons and Hodges 1998).

Both adults are active throughout the breeding season. One egg is laid by the female, which is incubated alternately by both parents for approximately 55 days. The egg is not replaced if it is lost to predation. When eggs hatch in July or August, both adults make nocturnal flights out to sea to bring food back to the nestlings. Hawaiian petrels feed their young mostly at night and most movements take place during crepuscular periods. On Kaua'i, Hawaiian petrels traveled primarily inland in the evening, seaward in the morning, and in both directions during the night (Day and Cooper 1995). In October and November, the fledged young depart for the open ocean.

Several factors can influence the breeding activity of Hawaiian petrels. Adult Hawaiian petrels are long lived (up to 30 years) and do not breed until age 6. Although a petrel may not breed every year, they return to the colony to socialize (USFWS 1983; Mitchell et al. 2005). During their pre-breeding years, petrels may "wander" or "prospect," visiting several potential breeding sites (established colonies, former breeding sites, and uncolonized sites). Simons (1984) reports that about 30 percent of the active burrows at a large colony on Maui were occupied by pre-breeding birds. Factors such as availability of mates, food abundance, the presence of predators and conspecifics could all be important for deciding where to breed (Podolsky and Kress 1992).

#### Current Threats

A variety of threats have been documented for the Hawaiian petrel, but the primary limiting factors include habitat degradation at breeding colonies and disturbance or predation by introduced animals during the breeding season (USFWS 1983; Carlile et al. 2003; Mitchell et al. 2005; Duffy and Capece 2014, Raine et al. 2017). Introduced ungulates (e.g., feral goats, pigs, axis deer, and cattle) browse on native vegetation and groundcover within petrel colonies, and trample and collapse

burrows causing nest abandonment. The soil disturbance caused by ungulates also facilitates the introduction and spread of invasive plants which further reduces habitat suitability for petrels (Reeser and Harry 2005, Duffy 2010, VanZandt et al. 2014). Ungulates also create trails in the colony that increase predators' access to active burrows. Annual monitoring of nests at Haleakalā National Park has shown that predation by cats and mongooses causes more than 60 percent of all egg and chick mortality in some years (Simons 1998 as cited in Carlile et al. 2003). Rats also prey upon adult Hawaiian petrels, but to a lesser extent. Even an individual predator, such as a barn owl (*Tyto alba*) or small Indian mongoose (*Herpestes javanicus*), can be extremely destructive and decimate a population of colony-nesting seabirds (Hodges and Nagata 2001, Raine et al. 2017). Development of new fisheries and overfishing may indirectly harm seabird populations by eliminating predatory fish needed to drive petrel prey species closer to the surface (Ainley et al. 2014). Additionally, the effect of climate change and patterns of fisheries bycatch could negatively affect petrel populations (Raine et al. 2017).

Hawaiian petrels are also threatened by light pollution and can become disoriented and fallout (falling exhausted to the ground) or collide with structures because of light attraction (Telfer et al. 1987, Ainley et al. 1997, Cooper and Day 1998, Rodriguez et al. 2017). Juvenile birds are particularly vulnerable to light attraction, and grounded birds are vulnerable to mammalian predators or vehicle strikes.

In addition, petrels sometimes collide with power lines, fences, and other structures (Hodges 1994). Modeling for Kaua'i Island suggests that collisions with transmission lines impact a large proportion of the population, with an estimated 600 to 1,993 annual fatalities attributed to birds striking lines (USFWS 2016b).

Hawaiian petrels have also been killed due to collisions with wind turbines. In addition to the ~~single~~ two fatalities observed at the Project on O'ahu in 2017, eight Hawaiian petrels have been documented as wind facility-related fatalities on Maui since wind facility operations began in 2006 through the end of 2017 (Diane Sether/USFWS, pers. comm., April 2018).

#### Species Occurrence on O'ahu and in the Project Area

In summer and fall 2009, prior to construction of the Project, radar surveillance and audiovisual sampling was conducted over 10 nights at the Project area. The purpose of the surveys was to sample representative seabird passage rates for use in estimating the risk of seabird take resulting from collisions with turbines and meteorological towers (Cooper et al. 2011). Supplementary radar surveys were conducted in June 2011 for 16 nights to measure passage rates over the northeastern-most turbine string (Cooper and Sanzenbacher et al. 2011). Two new areas were sampled for 5 nights each to increase radar coverage of the Project area. Sites sampled in 2009 were also resampled for 3 nights each in 2011.

All surveys found an extremely low number of targets exhibiting flight speeds and flight patterns that fit the "shearwater-like" category. The mean movement rate across all nights and all sites for 2009 and 2011 was 0.66 shearwater-like targets/hour (Cooper and Sanzenbacher et al. 2011). None of the radar targets could be visually verified during these surveys; however, Cooper et al. (2011)

suggested that the individuals were more likely to have been Newell's shearwaters than Hawaiian petrels because of the timing of movements and because the available literature suggested that Newell's shearwaters rather than Hawaiian petrels occur on O'ahu.

Although no breeding colonies have been located on O'ahu, Hawaiian petrels have been documented. Since 1991, eleven downed Hawaiian petrels have been recorded on O'ahu, presumably by fallout from lighting (Pyle and Pyle 2017). In 2016, Young and VanderWerf (2016) assessed seabird presence at three sites on O'ahu – Mt. Ka'ala, Palikea, and Kalihi. No Hawaiian petrels were detected by acoustic sensors at these sites during the survey (Young and VanderWerf 2016). During the 2017 breeding season, eight acoustic sensors were deployed at 16 locations on O'ahu to survey for Hawaiian petrels and other listed seabirds. Hawaiian petrel calls were detected at one site on the windward slope of Mt. Ka'ala at 3,600 feet (1,100 meters) elevation, over 8 miles (13 kilometers) southwest of the Project. Calls were detected on seven nights in May and July of 2017 (Conservation Metrics, Inc., ~~in prep~~ 2017). Although the detections were a first record for O'ahu for several decades, it cannot be determined from the acoustic data alone whether the species was breeding/nesting or whether the recorded calls were from prospecting birds. However, two downed petrels found on O'ahu were observed to have brood patches (Conant 2019, Kawaiiloa Wind unpublished data). The Hawaiian petrel fatalities observed at the Project in July 2017 and August 2018 also indicates that ~~confirms~~ Hawaiian petrels occur more frequently on portions of the island than previously expected and may transit through the Project area.

### ***3.5.3 Potential Impacts and Mitigation Measures (Flora)***

The 2011 EIS and subsequent EA present the potential impacts associated with implementation of the Project (and the Project alternatives, including the no action alternative). Project-related impacts to vegetation include direct impacts associated with clearing and ground disturbance during construction, the potential for introduction and/or spread of invasive species, routine vegetation clearing within the search plots around each turbine and trampling of vegetation during monitoring. Impacts to vegetation resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS and EA.

### ***3.5.4 Potential Impacts and Mitigation Measures (Fauna)***

The 2011 EIS and subsequent EA include a complete analysis of the impacts to wildlife resulting from the Project (and the Project alternatives, including the no action alternative). This discussion addresses the risk of collision with wind farm facilities, the potential effect of electromagnetic fields (EMF) on wildlife, direct impacts associated with construction activities, and indirect impacts from habitat displacement for both non-listed and listed wildlife species. Impacts resulting from Project implementation are commensurate with the results of this analysis and are not further addressed in this SEIS, with the exception of those associated with the Hawaiian hoary bat and Hawaiian petrel.

### 3.5.4.1 Listed Species

As detailed in the 2011 EIS and subsequent EA, construction and operation of the wind farm creates the potential for listed species to collide with Project components, including the wind turbines. The HCP prepared by Kawaiiloa Wind for the Project addressed the potential impact of collision with Project components for seven listed species; the HCP was approved and the ITP/ITL were authorized by USFWS and DOFAW, respectively. The ITP/ITL authorized incidental take of the following species: Newell's shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian short-eared owl, and Hawaiian hoary bat.

As previously described, post-construction mortality monitoring data from the first five years of Project operations indicate that impacts to Hawaiian hoary bat have exceeded the levels anticipated in the HCP and currently authorized under the ITP/ITL. In addition, observed Hawaiian petrel take within the Project area and recent surveys documenting Hawaiian petrels on O'ahu indicate that incidental take authorization is needed for this species. Therefore, Kawaiiloa Wind is preparing an HCP Amendment in support of a request to amend the ITP/ITL to increase the authorized take level of the Hawaiian hoary bat and to include the Hawaiian petrel. The ~~Draft~~ HCP Amendment responds to the need for authorization of incidental take of listed species, and measures to minimize and mitigate these impacts, pursuant to the ESA and HRS Chapter 195D. Authorization of the ITP/ITL requires an HCP that supports the continued existence of and aids in the recovery of the listed species while allowing for incidental take as a result of the Project.

Based on the information presented in the ~~Draft~~ HCP Amendment, the following sections present an updated discussion of the potential impacts to the Hawaiian hoary bat and new information regarding the potential impacts to the Hawaiian petrel. Project-related impacts to the other federally and state listed species (including Newell's shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, and Hawaiian short-eared owl) have not substantially deviated from what was presented in the 2011 EIS and EA and are not addressed as part of the HCP amendment process. The discussion related to these species as presented in the 2011 EIS and EA is still relevant and is incorporated by reference.

#### **Hawaiian Hoary Bat**

As detailed in the 2011 EIS and subsequent EA, Hawaiian hoary bats are known to use both native and non-native habitats for feeding and roosting. The vegetated areas within the Project area consist mostly of former agricultural land, alien grassland and forest. The forest habitat is fairly homogenous and comprised of non-native species, including stands of albizia, ironwood and eucalyptus trees; these trees may provide roosting habitat for bats. Bat activity has been detected in essentially all habitats, including in clearings, along roads, along the edges of treelines, in gulches, and at irrigation ponds; monitoring results indicate that bats use these features for travelling and foraging. Based on pre-and post-construction acoustic surveys, the Hawaiian hoary bat occurs year-round within the Project area, with higher activity recorded from April to October. Bats are also known to occur in very low numbers at the nearby Kahuku Wind Power facility (SWCA 2010) and have been documented across the slopes of northern Ko'olau Mountains (Gorresen et al. 2015).

Results from post-construction mortality monitoring efforts at multiple wind farm facilities in Hawai'i have demonstrated that Hawaiian hoary bats are susceptible to collisions with wind turbines. The potential for bats to collide with meteorological towers, communication equipment, overhead cables, utility poles, and other associated structures is considered to be negligible because these features are immobile and are expected to be readily detectable by the bats through echolocation. No bat fatalities have been observed as part of monitoring conducted under the meteorological towers. Direct and indirect impacts to Hawaiian hoary bats are also not expected as a result of Project-related habitat disturbance, because habitat availability has not measurably decreased as a result of the Project and vegetation clearing has and continues to be performed only during those times of year when Hawaiian hoary bats are not expected to be breeding (thus avoiding the potential for harm to non-volant juvenile bats).

As part of the HCP amendment process, post-construction mortality monitoring data for the Project (from the start of Project operations in 2012 through the present) have been used to calculate conservative estimates of the total bat take anticipated to result from collisions with the wind turbines over the remaining years of the ITP/ITL term. The results of this effort are summarized below. A detailed discussion of the specific take calculations, including the associated inputs and assumptions, is provided in the Draft HCP Amendment.

#### Estimated Project-Related Take

As of December 31, 2017, 32 bat fatalities have been observed during systematic monitoring at the Project (direct take); there have also been two incidentally-detected fatalities. Using the EoA software to calculate adjusted take (thus accounting for unobserved direct take), it can be asserted with 80 percent certainty that no more than 62 bats have been taken as of December 31, 2017.<sup>13</sup> Indirect take was estimated using current agency guidance (USFWS 2016a) and data from the Project. Based on an estimated direct take of 62 bats, indirect take as of December 31, 2017 is estimated at 7 adult equivalents. Thus, the estimated total take through December 31, 2017 is 69 bats. Based on the approved HCP and ITP/ITL, the currently authorized take limit for the Project is 60 bats.

When evaluating projected future take, Kawailoa Wind assumes that technological advances will provide viable and practicable measures to minimize impacts to bats in addition to the operational measures that are currently used, such as LWSC. Considerable progress has been made over the years toward a bat deterrent device becoming commercially available, as results from field trials for acoustic bat deterrents<sup>14</sup> have been promising. In 2006, field trials for bat deterrents at ponds in the

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<sup>13</sup> An 80 percent credibility level for the take projection is required by USFWS and DOWAW to assess compliance with an ITP/ITL; this provides a conservative estimate, erring in favor of the Covered Species.

<sup>14</sup> Acoustic bat deterrent devices are designed to emit an ultrasonic acoustic field in the same range as bats' natural calling frequencies, which interferes with their ability to receive and interpret their own echolocation calls. The result is a disorienting airspace that is difficult to navigate, and thus discourages bats from entering the area (NRG 2018). The acoustic field from the deterrent devices extends to just beyond the turbine blades; bats are excluded from only the rotor swept area and may continue to use the surrounding airspace for normal activities, including foraging and transit. As such, the bat deterrent devices do not significantly disrupt or impair normal behavior patterns, but rather are designed to reduce the likelihood of harm to bats through exclusion from the rotor swept areas. The effect on other wildlife, such as birds, has also been considered in field testing and there is no evidence that birds can hear or are repelled by ultrasound, such that effects on

Fernow Experimental Forest in West Virginia revealed a 90 percent reduction in activity at all ponds (Szewczak and Arnett 2008). Acoustic deterrents were tested on wind turbines on the mainland in 2009 and 2010, resulting in as much as 64 percent fewer fatalities compared to when wind turbines operated without deterrents (Arnett et al. 2013a). Multiple companies are continuing to develop and test various types of deterrents on the mainland.

NRG Systems Inc. (NRG) makes acoustic deterrents that are being tested in broad-scale field trials and studies at commercial wind facilities on the mainland. In these studies, hoary bat fatalities were reduced by up to 78 percent compared to control turbines (Weaver et al. 2018). Initial research shows that ultraviolet deterrents may be promising, as well as acoustic types, as field tests on Hawai'i Island showed an 88 percent reduction in mean bat activity (Hein and Schirmacher 2013). Additional testing of acoustic deterrents on the mainland continues to improve effectiveness and/or range of the deterrents (B. Morton/NRG, pers. comm., 2018). A recent NRG Systems webinar (2018) suggested that the effectiveness of NRG acoustic deterrents could presently range from 20 to 100 percent at present, with higher effectiveness shown for mainland hoary bats than other mainland bat species (NRG 2018). As demonstrated at Pilot Hill, Illinois in 2018 (Lillian 2019), take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent more than LWSC alone (B. Morton/NRG, pers. comm., May 2019). Additional testing of the NRG acoustic deterrents continues to improve their effectiveness and range (B. Morton/NRG, pers. comm., 2018). Additional broad-scale field trials at commercial wind facilities on the mainland are underway, which should provide valuable insights into their effectiveness and potential implementation strategies. The potential effectiveness of deterrent technology to supplement or replace reductions in take achieved through LWSC is unknown but is assumed to be an important minimization tool in the near future.

As described in the HCP Amendment, implementation of deterrent technology has been included as part of the baseline minimization strategy, with acoustic bat deterrents from NRG installed in May and June 2019 installation to occur when the technology is commercially available and shown to be at least as effective as LWSC (assumed to be in 2022). However, because there is uncertainty as to the effectiveness of deterrents at reducing bat take, conservative estimates of the variation in effectiveness have been incorporated into the take estimation it is assumed that take will be reduced as a result of deterrents only for Tier 5. Specifically, the following two scenarios were modeled based on assumed effectiveness or availability of deterrents at reducing take:

- Tier 5: Modeling of projected take at the Tier 5 level assumed minimization measures will realize a 50 percent reduction in the current level of take; and
- Tier 6: Modeling of projected take at the Tier 6 level (the total requested take authorization) assumed minimization measures will realize a 25 zero-percent reduction in the current level of take. This tier is designed to be conservative in order to provide assurance that the total requested take will not be exceeded.

other wildlife are not anticipated (NRG 2019). Given the rapid attenuation of the acoustic field, coupled with the fact that deterrent devices utilize ultrasonic technology (which is outside of the range of human hearing) and do not emit any light, effects on nearby residences or humans are also not anticipated.

Based on the modeling results for these scenarios, the total take request for the Project as part of the HCP Amendment is for an additional ~~160~~<sup>205</sup> bats (for a total of ~~220~~<sup>265</sup> bats, including the current authorization of 60 bats). The take estimate by tier is summarized in Table 3-1. For each tier listed, the total take represents the cumulative take attributed to the identified tier as well as all previous tiers. For example, estimated total take of 115 bats in Tier 4 includes the 60 bats authorized under the approved HCP and an additional 55 bats requested as part of the HCP Amendment for Tier 4. The values of estimated take allotted to each tier is based on USFWS recommendations for tiered take at wind facilities (USFWS 2018).

The assumptions used in the modeling provide reasonable assurance that the take estimate at the end of the permit term will be lower than the conservative projected estimate. A detailed discussion of the modeling, including the calculations of direct and indirect take, as well as the applicable parameters and assumptions is provided in the ~~Draft~~ HCP Amendment.

**Table 3-13-1. Estimated Take and Total Take Request for Each Tier**

Tier	Take Per Tier	Total Take <sup>2</sup>	Percent of Additional Requested Take	Justification <sup>1</sup>
1-3 (existing)	N/A	60	N/A	Existing authorization based on approved HCP
4 (proposed)	55	115	<del>34</del> <sup>27</sup>	Based on the mitigation offset of the Helemano Wilderness Area (see Section 3.5)
5 (proposed)	85	200	<del>53</del> <sup>44</sup>	Based on a 50% take reduction in years 2020 <del>2</del> – 2032 due to deterrents
6 (proposed)	<del>206</del> <sup>5</sup>	<del>220</del> <sup>265</sup>	<del>133</del> <sup>2</sup>	<del>Unaltered take estimate; no</del> Based on a 25% take reduction in years 2022 – 2032 due to deterrents <sup>3</sup>
<p>1. Kawaiiloa Wind assumes a bat deterrent will be commercially available, and bat deterrents installed in 2019<del>by 2022</del>, will achieve with a 50 percent reduction in the current rate of bat take achieved for Tier 5; or a 25 percent reduction in the current rate of bat take achieved for Tier 6 is based on the assumption that deterrents are either not available or they are ineffective.</p> <p>2. Total take for each tier is cumulative (i.e., it accounts for the previous tiers).</p> <p>3. Tier 6 is based on the conservative assumption that there will be no measurable effect of minimization measures on bat take in order to provide certainty that the total requested take will not be exceeded.</p>				

#### Approach for Estimating the Potential for Project Impacts

To estimate the potential impact of a given project's take, it is necessary to understand basic population parameters (e.g., population size, growth rate). Given that these parameters have not been previously estimated for the Hawaiian hoary bat, Kawaiiloa Wind performed population modeling exercises to evaluate potential Project-related impacts to the bat on O'ahu. Specifically, a population model was used to estimate potential population growth rates and a range of population sizes using the best available information and clearly identified assumptions. The following subsections describe these parameters in more detail. The results of the modeling exercise were compared to estimated take rates to evaluate the risk of Project take to bats at the population level.



as well as to evaluate the risk of cumulative impacts (see Section 4.1.1.1). This analysis also meets state requirements under HRS Chapter 195D to evaluate impacts on an island level.

The population modeling exercise is intended only to provide context for a risk analysis and is not meant to provide a precise estimate of growth rate or population size. Despite the use of conservative estimates of density, occupancy, and annual survival, the exact numbers should be treated with caution, as the estimates may vary if the input parameters or assumptions are altered.

### **Estimating Population Growth Rate**

Growth rate is the change in population over time and is the sum of the reproductive rate minus the mortality rate. A growth rate ( $\lambda$ ) equaling 1.0 describes a stable population, a growth rate greater than 1.0 describes a growing population, and a growth rate less than 1.0 describes a declining population. The reproductive rate, mortality rate, and growth rate for the Hawaiian hoary bat can be derived or estimated from the available literature, proxies, or modeled estimates.

The reproductive rate of a species plays an important role in determining what impact the removal of individuals (i.e., mortality) has on its population. A species with a high reproductive rate is able to replace individuals quickly and recover from loss. The number of juvenile Hawaiian hoary bats surviving to adulthood per year is 27 percent of the population ( $P$ ); this calculation comes from Hawaiian hoary bat life history information in the available literature (refer to the top three rows of Table 3-2), supplemented with relevant information from mainland hoary bats.

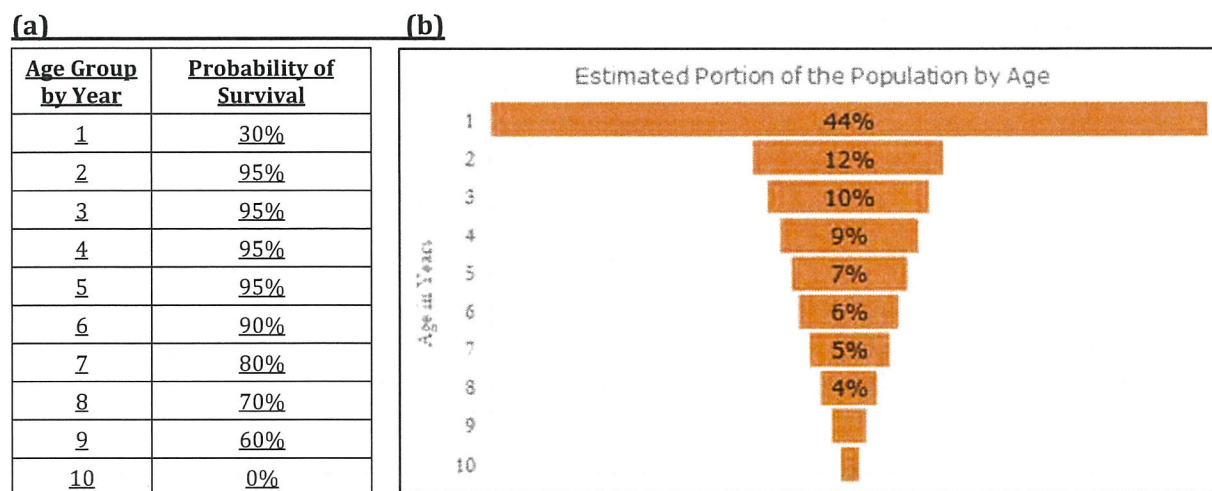
$$P * 0.5 * 1.8 * 0.3 = P * 0.27 = \text{number of juvenile bats surviving to adulthood annually}$$

**Table 3-2. Best Available Information on Life History Parameters Used to Estimate Growth Rate of the Hawaiian Hoary Bat**

<b><u>Life History Trait</u></b>	<b><u>Value</u></b>	<b><u>Citation</u></b>
Percent of female population	50%	Pinzari and Bonaccorso 2018b
Number of offspring per female	1.8 offspring	USFWS 1998
Proportion of juveniles surviving to adulthood	30%	USFWS and DOFAW 2016
Age at maturity	1 year	Kuntz and Fenton 2005
Maximum age of recapture	5 years	Bonaccorso 2010
Estimated lifespan	10 years	DLNR 2015, Kuntz and Fenton 2005
Estimated lifespan (mainland hoary bats)	6-7 years	Tuttle 1995

All species have natural sources of mortality to be considered when assessing impacts to the population. A high reproductive rate, as identified above, would lead to exponential growth if not constrained by an external force such as competition for food, water, shelter, and space; or threats to survival such as predation, disease, or other sources of mortality. The annual mortality rate can be estimated through the use of demographic modelling, which estimates the annual survivorship ( $1 - \text{mortality} = \text{survivorship}$ ). Based on the life history information from the available literature (refer to bottom four rows of Table 3-2), an average 5-year lifespan is assumed to be reasonable.

A matrix model (which uses matrix algebra to perform a large number of calculations of births and deaths by age class) was created that assumes an average adult age of 5 years with a maximum lifespan of 10 years (Figure 3-3a<sup>15</sup>). Based on these two parameters, a matrix population model is used to estimate the annual adult survivorship, as shown in Figure 3-3b. The matrix population model predicts an average annual adult mortality rate of 6 percent from causes other than permitted or requested take.



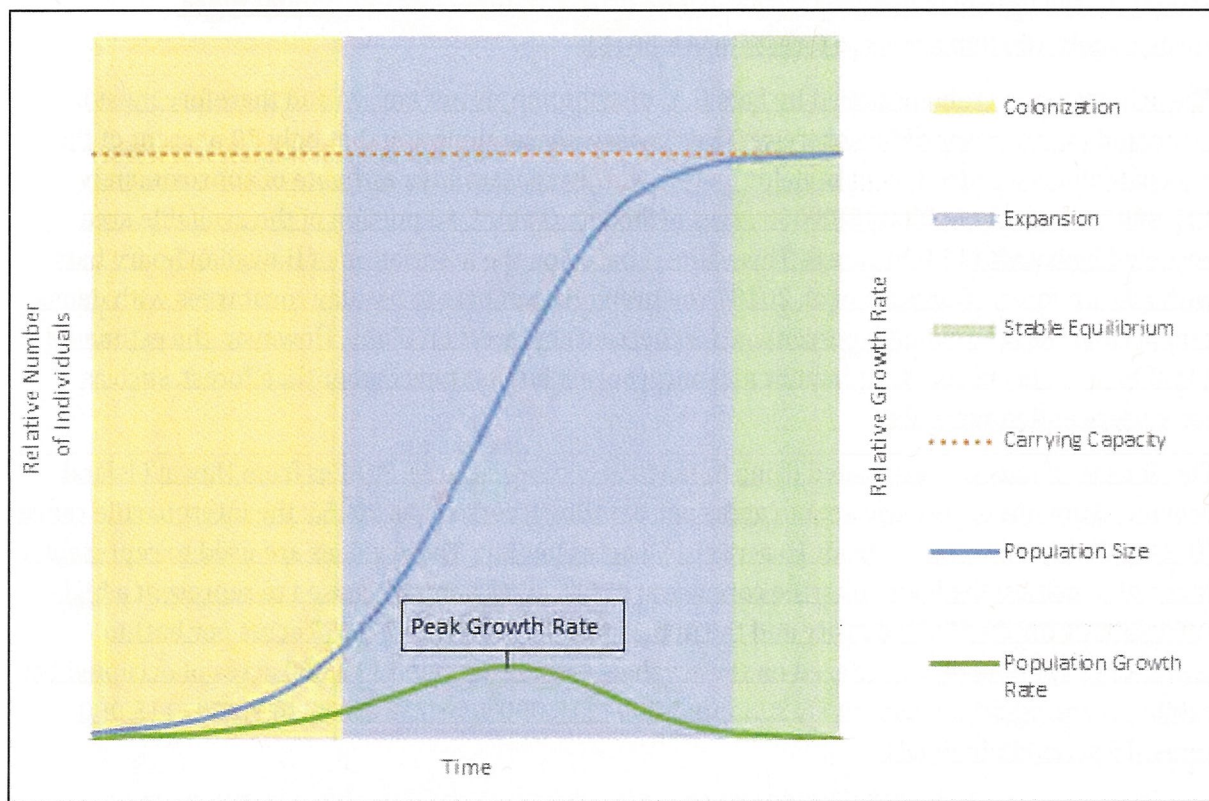
**Figure 3-3. (a) Hawaiian Hoary Bat Annual Survival Estimates by Age Group for the Matrix Population Model (b) and Estimated Portion of the Population by Age**

The reproductive rate and mortality rates estimated above are used to estimate the growth rate. Using an estimated reproductive rate of 0.27 and subtracting a natural mortality rate of 0.06 (as modeled above) results in an estimated population growth rate of 1.21 (27% growth - 6% loss to mortality = 21% growth). In other words, based on the life history provided by USFWS and DOFAW (2016) and other sources, and the annual survivorship estimated from the matrix population model, the population is capable of growing by 21% each year ( $\lambda = 1.21$ ) in the absence of external factors (e.g., artificial mortality).

Growth rate of a species frequently varies in response to external factors such as the density of individuals in the population. The density dependent exertion of a force that reduces the population growth rate is commonly referred to as "carrying capacity." A population at carrying capacity would be expected to have a static population size ( $\lambda = 1.0$ ), due to the depression of growth rate at high densities. Figure 3-3 shows a generalized model of population growth and illustrates that peak growth rates are likely achieved well below the population size that would be estimated at stable equilibrium when the growth rate is close to 1.0. The growth rate of 1.21 estimated here is above the high end for similar bat species (Frick et al. 2017). This value likely represents peak growth, because actual growth rates of 1.21 after accounting for external factors would be rare in a natural

<sup>15</sup> The values for annual survivorship are estimates based on an assumed maximum lifespan of 10 years and an average lifespan of 5 years and have not been empirically derived. To date, such information is not available in published literature.

environment. The persistence of the Hawaiian hoary bat from the time of colonization (approximately 1 million years ago) to present day, in combination with a high reproductive rate, is an indication that the population is in a stable equilibrium and may be at carrying capacity (Baird et al. 2017). The bat is adaptive, as it uses a variety of habitats and elevational grades, can fly long distances to utilize resources, and has no known predators (Bonaccorso et al. 2015, Gorresen et al. 2013 and 2018, Todd 2016, Speakman 1995). Further support comes from occupancy studies on Hawai'i Island that show a stable to increasing trend (Gorresen et al. 2013), consistent with a population at carrying capacity. Therefore, it is likely the actual growth rate is close to 1.0, but the capacity of the species for growth suggests that growth rates could be as high as 1.21 if there was a release of density-dependent forces. Such a release could occur through a decrease in population size or through an increase in a limiting environmental variable (e.g., prey availability).



**Figure 3-4. Generalized Theoretical Model of Population Growth Over Time**

#### **Estimating a Range of Likely Population Sizes**

The life history parameters of distribution and density are used as proxy metrics to provide an estimated bat population size range in the absence of metrics such as population indices or effective population sizes. Movement of bats among the Hawaiian Islands is anticipated to be rare (Baird et al. 2017); therefore, only the population on O'ahu is of interest for this exercise to assess Project-related impacts.



As discussed earlier, Hawaiian hoary bats use a variety of habitats (i.e., widely distributed) and at varying densities. To ensure that the range of population sizes is conservative, both the estimates of distribution and density are based on values that are at or below the low end of likely data ranges, resulting in lower population estimates than would be predicted by a median value. Two different methods are used to estimate the potential area available to be occupied by bats (i.e., distribution) on O'ahu, providing additional optionality in population sizes.

The Hawaiian hoary bat has been documented in many habitats and broadly across O'ahu (Gorresen et al. 2015, Starceвич et al. 2019, Bonaccorso et al. 2019). Approximately 23 percent of O'ahu is developed land or area occupied by human structures and impervious surfaces that are assumed to provide less suitable habitat. Thus, the remaining 77 percent of O'ahu (294,910 acres) consists of open water, forest, agriculture, or rangelands (see Figure 3-1), which provide suitable habitat for the Hawaiian hoary bat to differing degrees. Of these suitable habitat types, approximately 186,000 acres are forest (NOAA 2015).

The actual area of O'ahu occupied by bats (i.e., distribution) is not known and therefore must be estimated for purposes of this exercise. The conservative assumption that only 30 percent of the area of O'ahu is occupied by bats yields a downwardly conservative estimate of approximately 115,000 acres of bat habitat (383,000 acres of land on O'ahu \* 0.3 portion of the available area occupied by bats = 115,000 acres). This value is based on the association of Hawaiian hoary bats with mature forest (Gorresen et al. 2013), the preference of bats to use day roost trees with dense canopy, and the approximate percentage (48 percent) of forest on O'ahu. However, the estimated 115,000 acres of occupied bat habitat may incorporate habitat types other than forest, such as agriculture and rangelands.

The density of bats was estimated using the metric of core use area. Studies from Hawai'i Island provide estimates of core use area in acres per bat (Bonaccorso et al. 2015): the interquartile range (IQR) of the core use area is from 16 acres to 58 acres per bat. These values are used to represent a range of densities; the lower quartile core use area (16 acres per bat) is used to represent a high-end estimate for the O'ahu density and the upper quartile core use area (58 acres per bat) to represent a low-end density. Based on these values and the assumed 115,000 acres of occupied bat habitat, O'ahu could conservatively support 2,000 (115,000 acres/58 acres) to 7,200 (115,000 acres/16 acres) individuals.

An alternate method of calculating bat density uses occupancy data to estimate distribution. Occupancy is the proportion of an area occupied by a species, or fraction of landscape units where the species is present; occupancy rates can be used to estimate population trends (MacKenzie et al. 2019). Studies from O'ahu have reported occupancy above 50 percent (Gorresen et al. 2015). To make a conservative estimate of distribution, the developed lands are excluded from the area potentially being occupied by bats (23 percent of O'ahu). The remaining area, consisting of the undeveloped land (77 percent of O'ahu), is considered 50 percent occupied, yielding a downwardly conservative estimate of 147,500 acres of bat habitat (383,000 acres of land on O'ahu \* 0.77 portion of the available area occupied by bats \* 0.5 occupancy = 147,500 acres). When the same range of

densities are applied to this acreage it yields a minimum population ranging from 2,500 bats (147,500 acres/IQR of 58 acres) to 9,200 bats (147,500 acres/IQR of 16 acres) on O'ahu.

Taking the smallest and largest values from the two ranges produces a downwardly conservative range of population sizes between 2,000 and 9,200 bats on O'ahu. This exercise gives a sense of scale in which to interpret Project-related take, despite uncertainties in translating core use area and occupancy to a population size.

#### Population-Level Impacts

A comparison of the range of population sizes estimated above with the estimated Project take rates provides an assessment of the scale of potential Project-related impacts. The range of the population size is assessed relative to the take requested by the Project.

The average take rate for the amended take request represents an upwardly conservative maximum annual impact to the bat. The approved ITP/ITL for the Project authorized three bats per year (60 bats over 20 years). Based on predictions from post-construction mortality monitoring data and conservative interpretation of EoA, the maximum estimated average annual rate of total take for the amendment is 11 bats per year (220 bats over 20 years) over the life of the permit term; this rate incorporates the conservative assumption that minimization measures are minimally effective at reducing take. Additionally, the take estimate incorporates an 80 percent credible level, which means there is an 80 percent certainty that the actual number of fatalities is less than or equal to the reported number. An annual take value of 11 bats represents less than 1 percent of the lowest population estimate (2,000 bats) estimated above. A loss of 1 percent of the population per year would be unlikely to affect what appears to be a stable population, particularly given a capacity for growth of as much as 21 percent per year in the absence of external factors.

Although it is difficult to assess the effect that take of Hawaiian hoary bat resulting from the Project may have on the local population of this species, population modeling using the best available information suggests the population on O'ahu is robust relative to the low levels of take proposed by the Project. In addition to the low risk from Project-related impacts, mitigation will offset bat take and provide net environmental benefits. The mitigation proposed as part of the HCP Amendment would protect or create bat habitat in perpetuity, and based on a conservative mitigation acreage ratio, would fully offset the impact of the take. Additionally, an adaptive management program would be implemented whereby the take rate may be further reduced. As such, no population level impacts are expected for the Hawaiian hoary bat as a result of the Project. Additional detail regarding adaptive management and proposed mitigation is provided in subsequent sections.

The Hawaiian hoary bat was listed as endangered in 1970 and has persisted to present with no direct intervention to preserve or protect the species. The most recent population studies come from an occupancy study conducted on Hawai'i Island from 2007-2011, which show the population of Hawaiian hoary bats is "stable to increasing" (Gorresen et al. 2013). However, no population estimates were provided. The Recovery Plan for the Hawaiian Hoary Bat (USFWS 1998) states "since no accurate population estimates exist for this subspecies and because historical information

regarding its past distribution is scant, the decline of the bat has been largely inferred." Although overall numbers of Hawaiian hoary bats are believed to be low, they are thought to occur in the greatest numbers on the islands of Hawai'i and Kaua'i (Menard 2001). Until recently, bats found on O'ahu were thought to be migrant or vagrant (USFWS 1998), but bat monitoring data and research at Kawailoa Wind and in the northern Ko'olau Mountains has demonstrated that bats reside and breed on O'ahu, are more widespread, and occur in higher numbers than previously thought (see Section 3.5.2.3; Kawailoa Wind Power 2013, Gorresen et al. 2015). Several research projects are currently being conducted on O'ahu to better understand Hawaiian hoary bat movement and distribution. No studies to date have provided evidence that the population is in decline, and the bat population appears to be larger than once thought. Preliminary results from a bat occupancy study on O'ahu is showing bat activity at acoustic monitoring locations across O'ahu (Erica Adameczyk/WEST, pers. comm., July 2018). Species recovery goals at the federal level are currently focused on the islands of Hawai'i, Maui and Kaua'i, as recommended by the Recovery Plan for the Hawaiian Hoary Bat (USFWS 1998). USFWS is conducting a 5-year review and may have updated population information for O'ahu after this review is completed.

The approved ITP/ITL authorized take of 60 bats over 20 years, or 3 bats per year. Based on predictions from post-construction mortality monitoring data for the Project and very conservative statistical tools, the maximum estimated average annual rate of total take is 13.25 bats per year (265 bats/20 years) over the permit term. The rate of 13.25 bats taken per year represents the maximum projected take under the conservative assumption that minimization measures are ineffective at reducing take. Considering the avoidance and minimization measures committed to by Kawailoa Wind, which are further discussed in the following section, the total take rate may be as low as 5.75 bats per year (i.e., if take does not exceed the Tier 4 take request [115 bats/20 years]). It is anticipated that the mitigation proposed as part of the HCP Amendment will protect and restore bat habitat (as detailed below) and, based on a conservative mitigation acreage ratio, will fully offset the impact of the taking. Additionally, the take estimate incorporates an 80 percent credible level, which means there is an 80 percent certainty that the actual number of fatalities is *less than or equal to* the reported number. Furthermore, Kawailoa Wind has developed an adaptive management program whereby exceedance of specific take limits and take rate thresholds will trigger additional minimization measures. Although it is difficult to assess the effect that Hawaiian hoary bat take resulting from the Project may have on the local population of this species, it is anticipated that the potential impacts would be offset by mitigation. Therefore, no population level impacts are expected for the Hawaiian hoary bat as a result of the Project. Additional detail regarding adaptive management and proposed mitigation is provided in subsequent sections.

#### Avoidance and Minimization Measures

As detailed in the 2011 EIS and the subsequent EA, several measures to avoid and minimize risk to Hawaiian hoary bats and other listed species were incorporated into the design of the Project. These measures include the use of monopole steel tubular towers and turbine rotors with a significantly slower rotational speed (compared to older designs), placement of electrical lines underground where practicable, marking of guy wires and overhead lines, minimizing nighttime

construction, and seasonal restrictions on clearing trees greater than 15 feet in height (between ~~June~~ June 1 to ~~August~~ September 15, {when non-volant Hawaiian hoary bats juveniles may ~~occur~~ be present). In addition, LWSC was implemented from the start of commercial operations to minimize risk to Hawaiian hoary bat. Based on the best available science at the time, the LWSC protocol involved raising the cut-in speed of the project's wind turbines to 5.0 m/s from March through November, which is when bat activity was consistently documented, for the duration of the night (from sunset to sunrise).

Over the course of Project operations to date, Kawaiiloa Wind has evaluated and incorporated options to further reduce the risk to Hawaiian hoary bats. This includes multiple adaptive management efforts such as modification of the LWSC protocol, innovative approaches to post-construction mortality monitoring, and support for development of the latest technologies that could reduce risk to bats. In response to the occurrence of bat fatalities outside the initial LWSC period, implementation of LWSC was extended to December 15 in 2012 and the starting date was subsequently moved up to February 10 and then February 6 in 2013 and 2015, respectively. After a bat fatality in late December 2016, implementation of LWSC was further extended to December 31 in 2017. Kawaiiloa Wind also initiated the use of trained dogs in July 2013 and continues to use canine search teams to increase searcher efficiency and reduce uncertainty in the amount of bat take documented as part of the post-construction mortality monitoring program. In addition, research and engineering development of an ultrasonic bat deterrent was funded as an adaptive management effort to promote options for reducing bat fatalities (Kawaiiloa Wind Power, LLC 2014). Kawaiiloa Wind also implemented the most extensive acoustic monitoring system of any wind farm in Hawai'i, with more than 70 acoustic detectors deployed on the ground, in gulches, and on nacelles (Kawaiiloa Wind 2014, Tetra Tech 2016). Additionally, Kawaiiloa Wind has participated in thermal and acoustic studies to elucidate factors that correlate with Hawaiian hoary bat activity (Kawaiiloa Wind 2014; Gorresen et al. 2015).

In addition to the avoidance and minimization measures described above, Kawaiiloa Wind has investigated other potential measures that could further reduce bat take, including additional increases in LWSC. One of the factors limiting the Project's flexibility in increasing the cut-in speed above 5.0 m/s (the original baseline LWSC strategy) is the wind regime at the Project. This means that even a small adjustment in the LWSC regime can result in significant power loss, jeopardizing the ability of Kawaiiloa Wind to meet its commitments under its PPA with HECO. Equally as important, and as described in Section 2.2.2.2, the literature suggests that LWSC at cut-in speeds above 5.0 m/s results in diminishing returns in terms of decreases in bat take. Hein et al. (2014) at Pinnacle Wind (Vermont) and Arnett et al. (2011) at Casselman (Pennsylvania) found no statistically significant difference between 5.0 and 6.5 m/s cut-in speeds. Only Good et al. (2012) has shown a statistically significant reduction in bat fatalities between different LWSC cut-in speeds at Fowler Ridge (Indiana). Other studies of LWSC with higher cut-in speeds suffer from either no control treatment, or lack of sampling for comparison (Stantec 2015, Tidhar et. al 2013). Furthermore, given the differences in life history characteristics between the Hawaiian hoary bat and migratory mainland hoary bat, the application of increased cut-in speeds beyond what is currently proposed may not be more effective at decreasing take of Hawaiian hoary bat.

In particular, as detailed in the Draft HCP Amendment, to facilitate the identification of further operational minimization measure options, a detailed wind speed/power loss analysis was conducted to evaluate various LWSC scenarios that incorporate different cut-in speeds and implementation periods. The results of this study determined that the Project is restricted in its ability to support higher LWSC (i.e., increasing the cut in speed above the current 5.0 m/s) due to wind variability at the site and the commitments required in the Project's PPA with HECO. As detailed in the HCP Amendment, the wind regime at the Project is consistently in the range of 5.0 m/s.

Based on the results of this analysis, Kawaiiloa Wind will implement the operational minimization measures listed below; these actions will be the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment. The operational minimization measures were presented to USFWS and DOFAW in May 2018, and both agencies were supportive of the measures.

1. Extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise.
2. Increase LWSC cut-in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the "down time" of the wind turbines and reduce the number of stop/start events per night by extending the rolling average time from 10 to 20 minutes. Hysteresis is a LWSC regime that offsets the "cut-out" and "cut-in" speeds, such that it takes a higher average wind speed (raised cut-in speed) for the turbines to return to operation after stopping due to LWSC.<sup>16</sup> All Project turbines individually monitor wind speed using turbine-mounted anemometers and are programmed to shut off when wind speeds are 5.0 m/s or lower and to start up again when wind speeds reach 5.2 m/s, thereby increasing the cut-in speed and extending the period during which collision risk for bats is minimized.
3. ~~Conduct an ultrasonic acoustic bat deterrent "proof of concept" test, in collaboration with NRG Systems. NRG Systems installed an ultrasonic acoustic bat deterrent system at turbine 30 (where the most bat fatalities [16 percent] have been detected as of December 31, 2017) to evaluate effectiveness of the deterrent specific to Hawaiian hoary bats. The deterrent was deployed in July 2018. Effectiveness at reducing bat activity levels will be evaluated using thermal imaging over a 60-day study period to document the bat approach paths and activity in relation to the rotor swept area. Data collected at the Project will supplement the results of NRG Systems' ongoing testing at wind farms on the continental United States. Results of NRG Systems' testing and those of other deterrent systems will be used to inform minimization measures at the Project.~~

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<sup>16</sup> Observations of bat behavior have identified risk factors to bats correlating with periods of low wind speed (Arnett et al. 2013b, Welling et al. 2018). Based on an experimental test of operational minimization treatments, Shirmacher et al. (2018) found that bats may be at risk of collision during operational transitions (i.e., during turbine start-up or shut-down). This risk was demonstrated by a significant increase in the probability of finding a fatality at turbines with increased wind turbine stops. Hysteresis is a method of reducing the number of start and stop events.



~~4.3. Kawaiiloa Wind will install. Install~~ bat deterrents at all 30 Project turbines in May and June 2019. For the purposes of take estimation, it is assumed the deterrents will be effective beginning in 2020, when bat deterrents become commercially available and are shown to be at least as effective as LWSC at reducing bat take. For the purposes of take estimation, Kawaiiloa Wind assumes deterrents will be installed by 2022.

On-going post-construction mortality monitoring will be a key component to assess the effectiveness of the baseline minimization approach (as well as the effectiveness of adaptive management measures, which would be triggered should the measures listed above not have the intended effect of reducing bat take). The data are also expected to provide insight to spatial and temporal patterns of bat fatalities, to help refine minimization measures. However, fatality sample sizes have been, and will likely continue to be, insufficient to draw statistically meaningful correlations between minimization actions and mortality levels. A summary of the post-construction mortality monitoring program and the adaptive management strategy is provided in subsequent sections, with further detail presented in the ~~Draft~~ HCP Amendment.

### Mitigation

In addition to the avoidance and minimization measures discussed above, and consistent with the biological goals of the approved HCP and ~~Draft~~ HCP Amendment, Kawaiiloa Wind has been and will continue implementing mitigation for impacts to the Hawaiian hoary bat based on the different tiers of take. Pursuant to the requirements of the HRS Chapter 195D and the ESA, the mitigation is designed to result in an overall net benefit to the species and fully offset the impacts of the taking.

Mitigation for the authorized take (Tiers 1-3) has already been implemented and is ongoing, in coordination with USFWS and DOWAW. The proposed mitigation for the additional requested take (Tiers 4 – 6) was developed as part of the HCP amendment process. Tier 4 mitigation is already in process; planning for the Tier 5 and Tier 6 mitigation will be initiated when 75 percent of the estimated take for the current tier has been reached (using the 80 percent upper credible limit), as listed in Table 3-32. Based on this approach, it is estimated that it would take more than 2 years for the Tier 4 limit to be reached after hitting the Tier 5 mitigation planning trigger; therefore, assuming timely review and approval of any required mitigation measure, the implementation of mitigation actions will begin by the time the total take estimate reaches the next tier threshold. Kawaiiloa Wind will also ensure adequate funding is available for the current tier of take that the Project is in and for the next tier of take before it is reached. Additional information regarding funding assurances is provided in the HCP Amendment.

**Table 3-32. Triggers for Planning for Future Tiers of Mitigation**

Mitigation Tier	Total Take Limit <sup>1</sup>	Trigger for Mitigation Planning	
		Description of Trigger	Cumulative Take Estimate <sup>1</sup>
Tier 4	115	<u>Tier 4 has already been triggered</u>	N/A <sup>2</sup>
Tier 5	200	75% of Tier 4 authorized take limit	86 bats
Tier 6	220	75% of Tier 5 authorized take limit	150 <del>23</del> bats
1. Take represents the cumulative take including prior tiers.			
2. Mitigation planning for Tier 4 was initiated as part of the HCP amendment process.			

The ongoing mitigation for Tiers 1-3 and the proposed mitigation for Tiers 4-6 is summarized in the following sections. The existing mitigation for Tiers 1-3 was included in the original HCP and is summarized below for reference purposes. The proposed mitigation for Tiers 4-6 was developed as part of the HCP amendment process and is responsive to the recovery goals identified in the Hawaiian Hoary Bat Recovery Plan (USFWS 1998), agency guidance described in the ESRC Bat Guidance (DLNR 2015), and conservation and management priorities identified by the agencies. Additional information regarding the guidance to date is provided in the Draft HCP Amendment.

***Existing Mitigation (per Approved HCP)***

***Tier 1 Mitigation***

The existing Tier 1 mitigation for the Hawaiian hoary bat involves wetland restoration/management measures, as described in the approved HCP. Specific components include acoustic monitoring for bats, removal of invasive species and creation of bat lanes to improve foraging, insect sampling, ungulate fencing and predator control. This mitigation has already been implemented and is being adaptively managed in coordination with USFWS and DLNR. The results of the Tier 1 mitigation are provided in the annual reports submitted to USFWS and DOFAW.<sup>17</sup>

***Tier 2 and Tier 3 Mitigation***

Tier 2 and Tier 3 mitigation for the Hawaiian hoary bat includes three ongoing research projects funded by Kawaiiloa Wind. These three current research projects address (1) modeling to quantify foraging habitat use and suitability, (2) genetic diversity and sex-specific food habits, and (3) distribution and seasonal occupancy on O'ahu. Additional detail is provided in the Draft HCP Amendment and Kawaiiloa Wind annual reports.

Based on these ongoing research projects, in combination with a previous occupancy power analysis study, there is an outstanding funding obligation for the Tier 2 and 3 mitigation. Based on USFWS and DOFAW guidance, there are no remaining research funding gaps for joint agency sub-committee approved projects (Glenn Metzler/DOFAW, pers. comm., August 2, 2017). To fulfill the remaining uncommitted funding obligation, Kawaiiloa Wind will contribute the remaining funds towards the purchase of the 3,716-acre Waimea Native Forest. The land will be acquired through a partnership with The Trust for Public Land (TPL) and DOFAW, as well as other funding partners. This mitigation aligns with current USFWS and DOFAW guidance which identifies land acquisition as an appropriate mitigation approach for the Hawaiian hoary bat (DLNR 2015).

***Proposed Tier 4 Mitigation (per HCP Amendment)***

In response to exceeding the permitted take of the approved HCP, Kawaiiloa Wind initiated planning and implementation of Tier 4 mitigation in coordination with USFWS and DOFAW. Tier 4 bat mitigation will consist of contributing a \$2,750,000 contribution toward acquisition and long-term protection of the Helemano Wilderness Area through a partnership with TPL, USFWS, DOFAW and

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<sup>17</sup> Annual reports are available on DLNR's website (<https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>).

other funding partners.<sup>18</sup> The Helemano Wilderness Area encompasses approximately 2,882 acres in central O'ahu, approximately 3 miles from the Project (Figure 3-1).<sup>19</sup> It includes significant tracts of native forest habitat within the documented range of the Hawaiian hoary bat that are at risk due to the encroachment of invasive plant and animal species, as well as development and other potential anthropogenic activities. It also includes non-forested fallow agricultural areas that are suitable for restoration. The mix of forested lands and fallow agricultural lands is anticipated to provide both foraging and roosting habitat for the Hawaiian hoary bat. A number of monitoring efforts have shown that there is bat activity surrounding the Helemano Wilderness Area, and the area itself is also likely occupied by hoary bats. Furthermore, it is likely that the contiguous tracts of mixed forest habitat in the Helemano Wilderness Area and current lack of development in this region supports movements of bats between Central O'ahu and the North Shore along the major forested parcels within the Ko'olau mountain range. The acquisition permanently protects these parcels for the Hawaiian hoary bat, as well as many other native species, and enhances the connectivity between other natural area reserves.

Following acquisition, DOFAW is responsible for long-term ownership and management of the Helemano Wilderness Area. As one of the conditions of ownership, DOFAW will develop and implement a long-term management strategy to protect and maintain existing habitat and restore and improve degraded habitat. Research will be incorporated into the overall management plan for the area that will focus on identifying optimal habitat or limiting factors for the Hawaiian hoary bat. The land deed will include the requirement that Helemano Wilderness Area HWA be managed in perpetuity for the protection of habitat and conservation of listed endangered species including the Hawaiian hoary bat, 20 species of listed plants, and other rare species. USFWS will be consulted during the development of the multi-resource management plan to ensure the forest management activities consider impacts to listed species.

DOFAW's management strategy has not been finalized at this time. Management activities are expected to vary among the parcels based on the objectives and management needs of each specific area but are expected to include activities such as control of feral ungulates, rodent and invasive species; erosion control; confinement of hiking and camping in designated locations; and reforestation with native and non-native hardwood tree species (Marigold Zoll/DOFAW, pers. comm., May 2018).

<sup>18</sup> Because of its commitment to the Helemano Wilderness Area acquisition as appropriate bat mitigation and knowing that other buyers were interested in these parcels for development, Kawaiiloa Wind provided a funding deposit to TPL in October 2018, prior to issuance of the ITP/ITL, to ensure that the land could be purchased for conservation in a timely manner. Should USFWS or DOFAW fail to grant an ITP or ITL to Kawaiiloa Wind for the HCP Amendment, Kawaiiloa Wind reserves the right to sell their paid interest in this mitigation. In the event that the amended take authorizations are not granted, Kawaiiloa Wind may seek other parties that are interested in purchasing the unused portion of its paid interest in the mitigation. Any such transfer of interest in the mitigation would be reviewed with the relevant parties and would not affect the protection status of the Helemano Wilderness Area.

<sup>19</sup> The Helemano Wilderness Area was originally 3,056 acres. However, while in negotiation for the HCP Amendment, a portion of TMK 6-4-004:001 was subdivided by the landowner, and as a result, the area is now 2,882 acres. This subdivision demonstrates that the threat of development is real and imminent for these parcels.

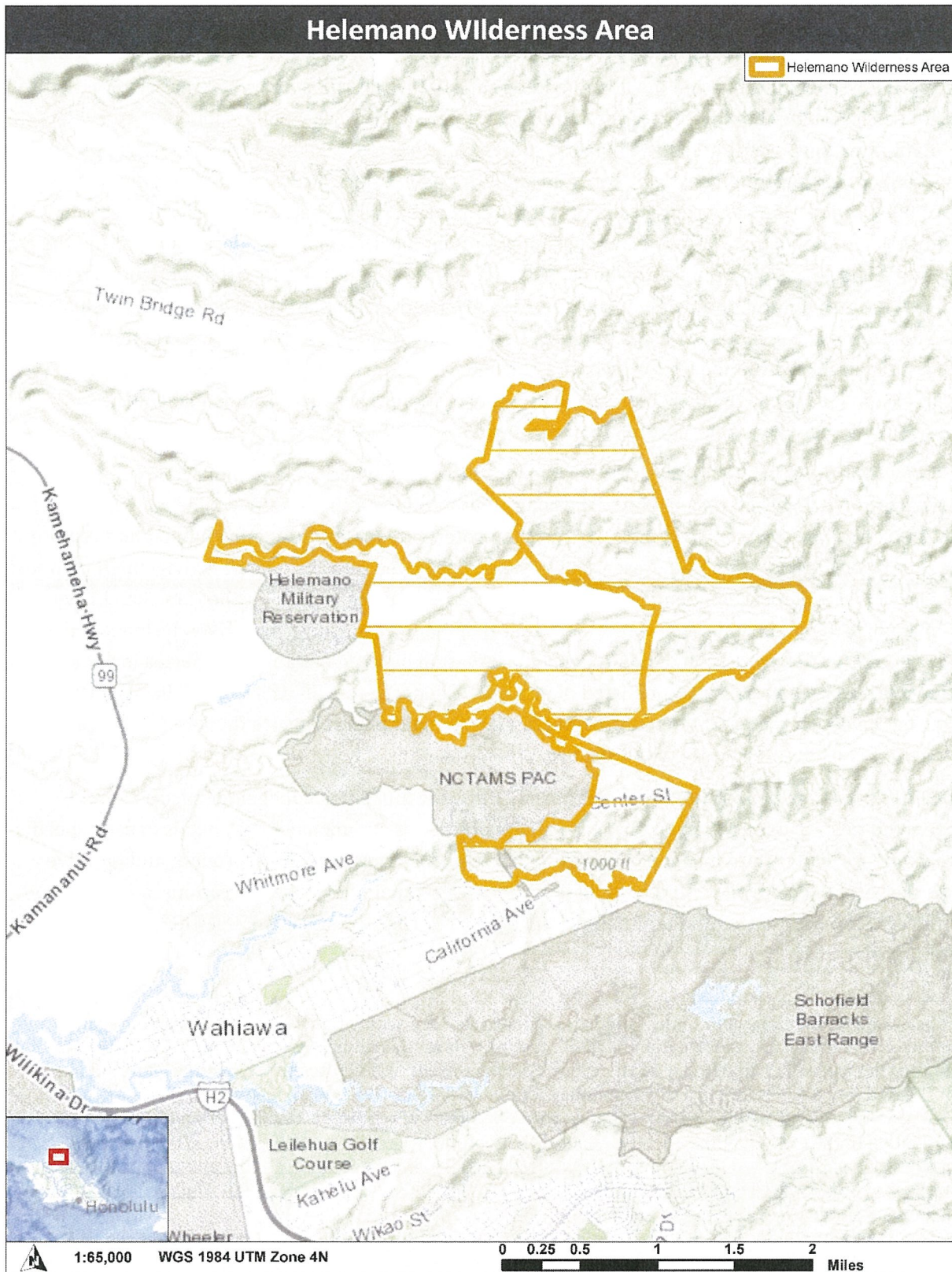


Figure 3-53-2. Location of the Helemano Wilderness Area (Tier 4 Mitigation)

This mitigation will fully offset the take for Tier 4 and will provide a net benefit to the Hawaiian hoary bat. Kawailoa Wind will derive the Tier 4 mitigation from only a portion of the Helemano Wilderness Area; however, the funding provided by Kawailoa Wind enables the acquisition and protection of the entire area. Conservation of the Helemano Wilderness Area will ensure protection of Hawaiian hoary bat habitat from future development and meets the USFWS and DLNR long-term conservation goals, including the enhancement and connectivity of important conservation areas. These actions will benefit bats beyond the term of the ITP/ITL by providing native forest roosting and foraging habitat in perpetuity, thereby providing a net benefit to the species. Protection of Helemano Wilderness Area also provides a unique opportunity for habitat management on a large scale to assess the effectiveness of various approaches in recovering bat populations.

The mitigation credit originally assessed for acquisition of the Helemano Wilderness Area was based on a funding amount of \$50,000 per bat, in accordance with DOFAW guidance at the time. Because of changes to USFWS and DOFAW guidance, updates were made to the HCP Amendment in 2018 to also demonstrate the biological value of the mitigation to the Hawaiian hoary bat by assessing mitigation credit on an acreage-per-bat basis. Based on the median core use area for the Hawaiian hoary bat (20.3 acres per bat [DLNR 2015]), a total of 1,116.5 acres would be required to offset the take of 55 bats (1,116.5 acres / 20.3 acres per bat = 55 bats). There are 1,614 acres of native and mixed forest land that may be used to calculate take offset; this equates to a mitigation credit of at least 55 bats. The details of the applicable acreage and funding are described in Appendix 19 of the HCP Amendment.

Additionally, preservation of 20.3 acres per bat as mitigation is relatively conservative based on a variety of parameters and as previously identified above. The bat habitat in the mitigation area will be protected in perpetuity, for multiple generations of bats. A minimum of two generations of bats would be expected to benefit from the protection of Helemano Wilderness Area over the remainder of the permit term. Therefore, the mitigation offset provided by Helemano Wilderness Area could range between 55 to 150 bats over the remaining life of the permit. The impact of productivity and future generations aid in benefit assessment of the mitigation. With the addition of future generations, there is a clear net benefit to the Hawaiian hoary bat from the protection of the Helemano Wilderness Area parcels as Tier 4 mitigation.

Acquisition of the Helemano Wilderness Area ensures protection of Hawaiian hoary bat habitat from future development, meeting USFWS and DLNR long-term conservation goals described in the ESRC Bat guidance (DLNR 2015), the Hawaiian hoary bat recovery plan (USFWS 1998), and the USFWS 5-year review (USFWS 2011). Protection of Helemano Wilderness Area also enhances the connectivity of important conservation areas. These actions benefit bats beyond the term of the ITP/ITL by providing native forest roosting and foraging habitat in perpetuity, thereby providing a net benefit to the species. Protection of this area also provides a unique opportunity to conduct habitat management on a large scale to measure the effectiveness of various approaches in recovering bat populations.



Based on the above discussion, the Tier 4 mitigation fully offsets the take of the 55 bats in Tier 4 and provides a net environmental benefit. Agency concurrence on the approach to determining the offset of Tier 4 mitigation, including the biological rationale, was provided in letters from USFWS and DOFAW (dated September 26, 2018 and September 21, 2018, respectively). In accordance with HRS 195D-21, the mitigation provides certainty that the ecosystems and habitat types that support the Hawaiian hoary bat will be maintained for the life of the plan. Additionally, the Project impacts will last only for the permit term, while the benefits of acquiring the Helemano Wilderness Area will be in perpetuity.

Measures of success for Tier 4 are derived from the protection of land that would otherwise be threatened with destruction or degradation. The benefit of the mitigation is realized upon completion of the acquisition, application of deed restrictions, and the transfer of parcel ownership to DOFAW. The mitigation will be deemed successful if (1) Kawailoa Wind provides funding of \$2,750,000 to TPL to be used towards the purchase of the Helemano Wilderness Area; (2) the transfer of the parcels includes a requirement that the Helemano Wilderness Area will be managed in perpetuity for the protection of habitat and conservation of listed endangered species including the Hawaiian hoary bat; and (3) TPL secures the ownership of the Helemano Wilderness Area, and transfers ownership to DOFAW or equivalent entity who will then have responsibility for management and oversight of the parcels by the time of ITP/ITL issuance.

Additional detail regarding the Tier 4 mitigation approach is contained in the Draft HCP Amendment.

***Proposed Tier 5 and Tier 6 Mitigation (per HCP Amendment)***

For Tier 5 and Tier 6 mitigation, Kawailoa Wind will identify and implement mitigation based on the options identified as priorities by USFWS and DOFAW. These options currently include the following, listed in order of priority (as identified by Kawailoa Wind):

- **Habitat Restoration/Land Management:** Conduct land management actions to restore degraded bat habitat
- **Habitat Protection and Preservation:** Protect and preserve existing habitat through acquisition, easement or other legal conservation instrument ~~Contribute funding to acquire property that will protect bat roosting and foraging habitat in perpetuity; or~~
- **Habitat Restoration/Land Management:** Conduct bat habitat management/restoration at Helemano Wilderness Area, Waimea Native Forest, or similar site.

Mitigation measures under Tiers 5 and 6 may occur much later in the permit term, or may never occur, if take remains within the authorized take limit for Tier 4. Therefore, while anticipated mitigation for Tiers 5 and 6 is described below, the most appropriate option will be selected in consultation with USFWS and DOFAW at the time mitigation planning is triggered. This approach allows Kawailoa Wind to describe the preferred mitigation based on current information for the purposes of the HCP Amendment, while leveraging information that will be learned from ongoing Hawaiian hoary bat research ~~and that~~ addresses some of the existing information gaps, best

available science, and current USFWS and DOFAW guidance. Adaptive management is identified as a strategy to address uncertainty due to current information and data gaps.

Within 6 months of reaching the trigger for Tier 5 or Tier 6 mitigation (should each tier be triggered; see Table 3-3), a detailed site-specific mitigation implementation plan will be submitted to USFWS and DOFAW for the applicable tier of mitigation. The plan will incorporate the best available science related to Hawaiian hoary bat habitat requirements and will be tailored to the site-specific management needs; it will address the plan area, site feasibility, mitigation actions, measures of success, monitoring, how the mitigation will offset take, and cost estimates. This is expected to provide sufficient time for comment and feedback necessary for such a plan to be approved by USFWS and DOFAW, given the anticipated 2-year lead time between triggering and exceeding the current tier take limit.

The following subsections summarize the approach and selection criteria that would be applied for each of the mitigation options identified for Tier 5 and Tier 6 (should they be triggered). Additional detail regarding the Tier 5 and 6 mitigation approach is provided in the Draft HCP Amendment.

#### Habitat Restoration/Land Management

The biological objective of this mitigation option is to (1) restore habitat that is considered low quality for the Hawaiian hoary bat to a condition that would promote survival and/or to (2) prevent the degradation of habitat that would otherwise decline thereby decreasing its suitability as bat habitat. The restoration/management of low-quality habitat has the potential to increase the carrying capacity of Hawaiian hoary bats on O'ahu. As discussed in Section 3.5.2.3, abundance of the Hawaiian hoary bat is associated with insect abundance (Gorresen et al. 2018). Habitat factors have been identified which are positively correlated with Hawaiian hoary bat utilization or occupancy. Invasive species pose a threat to forest regeneration. Bats have been identified to use water features and wetlands, edge habitats, and mature forests (Tuttle et al. 2006; Kawailoa Wind 2017; Jantzen 2012; Gorresen et al. 2013; Bonaccorso et al. 2015). Removal of threats and creation of suitable habitat is expected to provide benefits to the Hawaiian hoary bat. Throughout O'ahu, a wide variety of degraded habitats exist that could be restored to benefit the Hawaiian hoary bat. Should habitat restoration/management be selected for Tier 5 or Tier 6, Kawailoa Wind would conduct or fund appropriate bat habitat restoration/management from the options identified below (listed in order of priority as identified by Kawailoa Wind). To mitigate for 85 bats in Tier 5, Kawailoa Wind would target a 1,725-acre area for management activities; a 406-acre area would be targeted for Tier 6. The options are prioritized based on the level of information known about the potential mitigation parcels; however, the timing in which mitigation is triggered will impact the selection of mitigation options.

- Central Ko'olau Riparian Restoration: This area is located in central O'ahu within the upper portions of ahupua'a from Waiawa to Kahauiki in the parcels managed by the Ko'olau Mountain Watershed Partnership (KMWP). The area encompasses approximately 12,000 acres, from which specific restoration areas can be selected. Habitat types in the area transitions from upland dry-forest to mesic forest in the upland regions, to streams and

gulches. The forest structure is highly degraded and tends to be dominated by a monotypic stand of haole koa (*Leucaena leucocephala*) with guinea grass (*Megathyrsus maximus*) understory (JC Watson/KMWP, pers. comm., April 16, 2019). Impermeable forest habitats deter bat foraging at lower altitudes (Ober and Hayes 2008). Ten main streams with numerous tributaries occur within the area. The streams vary in size from intermittent streams to regular streams with flow in all months. The Hawaiian hoary bat has been documented to have low levels of acoustic activity within the management area (Starceovich et al. 2019, Bonaccorso et al. 2019); the low level of bat detections in this area indicates habitats of low suitability for bats. Management actions that could be implemented to improve the habitat quality and provide suitable foraging habitat for the Hawaiian hoary bat include (1) restore the existing closed canopy, monotypic non-native forest to a diverse native forest along riparian buffers; (2) plant ground cover, native shrubs and/or native trees to create open water ways and foraging habitat in riparian areas; and (3) implement monitoring to determine the effect on bats, insects and vegetation.

- Helemano Wilderness Area: Kawaioloa Wind would provide funds to DOFAW to restore and improve degraded or low value bat habitat within portions of Helemano Wilderness Area.<sup>20</sup> As previously noted, DOFAW is developing a long-term management strategy to restore and improve degraded or low-quality bat habitat within portions of the 2,882-acre area; relevant management activities could include: fencing portions of the parcel; control of feral ungulates, rodents, and invasive plant species; control of erosion throughout plantings and other methods; and reforestation with native and non-invasive hardwood tree species. This funding would complement the Project's Tier 4 mitigation which assumed credit for acquiring only a portion of the Helemano Wilderness Area (1,116 acres of suitable bat habitat). If mitigation were to occur at Helemano Wilderness Area, it would be distinct from credit provided for Tier 4 mitigation and contingent on agency approval.
- Waimea Native Forest: As previously described, Kawaioloa Wind is contributing funds towards the purchase of the 3,716-acre Waimea Native Forest as part of the Tier 3 mitigation. Once acquisition is complete, DOFAW will develop a long-term management strategy to restore and improve habitat at the Waimea Native Forest. Under this option, Kawaioloa Wind would provide funds to DOFAW to restore or prevent degradation of habitat to benefit the Hawaiian hoary bat within the Waimea Native Forest. Management measures could include: fencing portions of the parcel; control of invasive species as feral ungulates, plants, and other species; and planting native trees and plants.
- Alternative Parcel: If the above-listed options are not feasible, Kawaioloa Wind would work with DOFAW and USFWS to identify an alternative parcel on O'ahu to conduct or fund bat habitat management/restoration as part of Tier 5 and/or Tier 6 mitigation. Management actions implemented at an alternative parcel would likely include activities similar to those proposed for the Central Ko'olau Riparian Restoration, Helemano Wilderness Area and

<sup>20</sup> Kawaioloa Wind could mitigate for one tier, and/or a portion of both tiers but the full mitigation for both tiers would not be appropriate for the remaining lands in Helemano Wilderness Area.



Waimea Native Forest. Should this option be chosen, Kawailoa Wind would work with DOFAW and USFWS to develop a site-specific mitigation implementation plan to restore habitat for the benefit of the Hawaiian hoary bat.

As previously indicated, the protection and management of a minimum of 20.3 acres would offset the take of one bat adjusted based on the suitability of the habitat and generation of bats over the permit term. Implementing habitat restoration or land management at the sites described above would be anticipated to restore habitat to a condition beneficial to bats as determined by the best scientific literature and/or agency guidance. The proposed restoration actions within a 1,725-acre area for Tier 5 (85 bats \* 20.3 acres per bat) and 406-acre area for Tier 6 (20 bats \* 20.3 acres per bat) would improve roosting and foraging habitat for bats by increasing forested areas for roosting and increasing edge habitats for foraging. Furthermore, the management proposed at the sites would focus on restoring native habitats to provide net environmental benefits. The mitigation actions would increase the Hawaiian hoary bat habitat on O'ahu, thereby increasing the carrying capacity of the island and creating new core use areas which can be occupied by additional bats. This would provide a net benefit to the species and would be anticipated to fully offset take within Tiers 5 and 6.

Measures of success for the habitat restoration mitigation option are derived from proxy measurements of population, such as habitat equivalency, as the current tools for monitoring the abundance of the Hawaiian hoary bat are limited. Acoustic monitoring is the most common tool to document occurrence of bats; however, acoustic monitoring can only record calls which indicate a local presence but does not provide a measure of abundance (counts of individuals) or population changes. Therefore, while measures of bat activity such as acoustic monitoring are useful tools, assessment of habitat is the most appropriate measure for success criteria for mitigation offset through habitat equivalency. As such, the measures of success are drawn from a combination of available scientific literature and agency guidance, with these limitations in mind. The site-specific mitigation implementation plan would include one or more success measures, such as verification of proper mitigation implementation, habitat improvement over baseline conditions (e.g., canopy cover, invasive vegetative species presence, or other measures), increased insect biomass, abundance, or diversity, and increased bat activity documented through acoustic monitoring.<sup>21</sup> The specific measures of success for Tiers 5 and 6, based on the current understanding of the Hawaiian hoary bat are described in the HCP Amendment.

Monitoring would be conducted to assess compliance with success criteria and to gain valuable insight into the response of the Hawaiian hoary bat to management actions. Baseline monitoring would be conducted prior to implementation of management actions to determine the relative abundance, seasonality, and expected statistical power. Following the implementation of restoration/land management mitigation activities, effectiveness monitoring would be conducted

<sup>21</sup> Acoustic monitoring for bat activity has limitations and habitat alterations may improve the suitability for bats but correlate with a decrease in acoustic activity such as larger prey items, or a transition from foraging to roosting habitat. The site-specific mitigation implementation plan would detail the means which acoustic monitoring is incorporated.

in restored or managed habitats. Monitoring of restored/managed habitats would be specified in the site-specific mitigation implementation plan and may include (but is not limited to): acoustic monitoring; insect monitoring; measures of canopy cover; monitoring for invasive species; and other monitoring/reporting to confirm mitigation actions were appropriately implemented. The specific monitoring for Tiers 5 and 6, based on the current understanding of the Hawaiian hoary bat and the specific measures of success are described in the HCP Amendment.

At the time that Tier 5 or Tier 6 mitigation is triggered, and habitat restoration/management is the selected mitigation option, Kawailoa Wind will consider current agency guidance and new information available on Hawaiian hoary bat life history requirements and ecology. This approach will allow Kawailoa Wind to leverage available information derived from (1) ongoing Hawaiian hoary bat research projects (anticipated to be completed by 2020 or sooner) which address some of the existing information gaps and are expected to identify management actions that will improve the survival and/or productivity of the Hawaiian hoary bat, and (2) subsequent studies that may be available at the time. Adaptive management will be incorporated into the development and implementation of the site-specific mitigation implementation plan, based on the availability of new information and to ensure that mitigation activities are working as intended and offsetting the impact of the take, based on the results of monitoring. Additional detail regarding adaptive management, is provided in Section 7.6.4 of the HCP Amendment.

#### *Habitat Protection and Preservation*

The biological objective of this mitigation option is to protect and preserve, in perpetuity, bat roosting and/ or foraging habitat that would otherwise be threatened with degradation or development. Should habitat protection/preservation be selected for Tier 5 or Tier 6, Kawailoa Wind would continue to coordinate with TPL, USFWS, DOWAW, and others to identify key parcels that would benefit the Hawaiian hoary bat. Land would be protected and preserved through acquisition, easement, or other legal conservation instrument. For this mitigation option, the following selection criteria would be used to identify a suitable mitigation parcel:

- The mitigation parcel is on the Island of O'ahu.
- A minimum of 20.3 acres would be used to offset one Hawaiian hoary bat (based on the median bat core use area identified from data by Bonaccorso et al. 2015).
- ~~The mitigation parcel includes land acquisition/protection or protection plus management actions (rather than protection alone).~~
- The mitigation parcel faces a threat such as development or other threats that are not consistent with suitable or high value bat habitat (e.g., level of protection, intact versus degraded habitat, etc.). Parcels that are at risk of development, deforestation, or other degradation would have a higher priority than those not at risk.
- Larger parcels are typically preferable to smaller parcels. However, the location of a smaller parcel (e.g., adjacent to another larger area that supports bats or is being restored to support bats) could make it more attractive as a mitigation site.

- The mitigation parcel would be protected in perpetuity (i.e., fee simple, conservation easement, or other arrangement agreed upon by Kawaiiloa Wind and the agencies). Proposed ~~management practices~~ protections and restrictions are consistent with bat roosting and/or foraging habitat.
- Recent evidence of bat activity has been identified at the mitigation parcel or neighboring parcels that indicates bat use of the mitigation parcel, in conjunction with suitable habitat on the mitigation parcel.

A minimum of 1,725 acres would be protected and preserved for Tier 5 and ~~4061,319~~ acres would be protected and preserved for Tier 6. These values are based on the 20.3-acre median core bat use area as an appropriate approximation of bat density, justifying a take offset of 85 and ~~2065~~ bats for Tier 5 and Tier 6, respectively (~~85 or 20 bats \* 20.3 acres per bat~~). ~~The actual size of the mitigation parcel would depend on habitat suitability, characteristics of the land, and the other selection criteria identified above.~~ This mitigation would protect and preserve current bat roosting and/or foraging habitat to ensure that areas that are already providing habitat for bats will continue to do so in perpetuity. It would extend beyond the term of the ITP/ITL, for multiple generations of bats, thus providing a net benefit for the species. By protecting existing habitat that would inevitably no longer support the Hawaiian hoary bat, the mitigation is expected to support an increase in bats over the expected future baseline.

The benefit of land protection/preservation for Hawaiian hoary bats would be realized at the time of acquisition or protection. Therefore, the Tier 5 or Tier 6 mitigation would be deemed successful if (1) Kawaiiloa Wind secures protection of a parcel, through fee simple, conservation easement or other legal instrument; (2) the transfer of the parcel includes a requirement that the parcel would be managed in perpetuity for the protection of habitat and conservation of the Hawaiian hoary bat; and (3) a designee is assigned to oversee the management of the mitigation parcel.

For the Tiers 5 and 6 protection/preservation mitigation option, adaptive management may occur if, in coordination with Kawaiiloa Wind, the USFWS and DOWFAW determine that new information is obtained that informs the mitigation parcel selection criteria, and new information suggests that a proposed protection/preservation parcel will not achieve the intended biological goals and objectives. Should one of these scenarios occur, Kawaiiloa Wind will work with USFWS and DOWFAW to refine the mitigation outlined above.

#### *Habitat Restoration/Land Management*

~~The biological objective of this mitigation option is to 1) restore habitat that is considered low value for the Hawaiian hoary bat to a condition that would promote survival and/or to 2) prevent the degradation of habitat that would otherwise decline thereby decreasing its suitability as bat habitat. Should habitat restoration/management be selected for Tier 5 or Tier 6, Kawaiiloa Wind would conduct or fund appropriate bat habitat restoration/management from the options identified below (listed in order of priority as identified by Kawaiiloa Wind). The prioritization is intended to build on the Tier 3 and Tier 4 mitigation and considers the level of information known about the potential mitigation parcels; however, the timing in which mitigation is triggered will impact the selection. These management actions are distinct from the protection offered by preservation~~

under Tier 3 and Tier 4 by improving the suitability of existing low value lands within the parcel and preventing degradation by invasive species or other factors.

- Helemano Wilderness Area: Kawaiiloa Wind would provide funds to DOFAW to restore and improve degraded or low value bat habitat within portions of Helemano Wilderness Area. Funding of management activities would be for a minimum of 1,725 acres for Tier 5 and a minimum of 1,319 acres for Tier 6.<sup>22</sup> As previously noted, DOFAW is planning to develop a long term management strategy for this area; relevant management activities could include: fencing portions of the parcel; control of feral ungulates, rodents, and invasive plant species; control of erosion throughout plantings and other methods; and reforestation with native and non-invasive hardwood tree species.
- Waimea Native Forest: Kawaiiloa Wind would provide funds to DOFAW to restore or prevent degradation of habitat to benefit the Hawaiian hoary bat within the Waimea Native Forest. Funding of management activities would be for a minimum of 1,725 acres for Tier 5 and a minimum of 1,319 acres for Tier 6. DOFAW would develop a long-term management strategy for the Waimea Native Forest; management measures could include: fencing portions of the parcel; control of invasive species as feral ungulates, plants, and other species; and planting native trees and plants.
- Alternative Parcel: If the above listed options are not feasible, Kawaiiloa Wind would work with DOFAW and USFWS to identify an alternative parcel on O'ahu to conduct or fund bat habitat management/restoration as part of Tier 5 and/or Tier 6 mitigation. Management actions implemented at an alternative parcel would likely include activities similar to those proposed for Helemano Wilderness Area and Waimea Native Forest. Should this option be chosen, Kawaiiloa Wind would work with DOFAW and USFWS to develop a site-specific mitigation implementation plan to restore habitat for the benefit of the Hawaiian hoary bat.

Habitat restoration or land management at Helemano Wilderness Area or Waimea Native Forest (or another similar site) would restore habitat to a condition beneficial to bats as determined by the best scientific literature and/or agency guidance. The mitigation would improve roosting and foraging habitat for bats by increasing forested areas for roosting and increasing edge habitats for foraging. Furthermore, the management activities would restore native habitats, providing additional environmental benefits. By addressing bat habitat needs, the mitigation would increase the carrying capacity and create new core use areas which could be occupied by additional bats, thus providing a net benefit to the species.

## **Hawaiian Petrel**

### **Estimated Project-Related Take**

Seabird mortality due to collisions with human-made objects, such as power lines and wind turbines, has been documented in the Hawaiian Islands (Telfer et al. 1987; Hodges 1994; Cooper and Day 1998; Podolsky et al. 1998; USFWS 2016b). In addition to the two fatalities observed at the

<sup>22</sup> Kawaiiloa Wind could mitigate for one tier, and/or a portion of both tiers but the full mitigation for both tiers would not be appropriate for the remaining lands in HWA.

Project, other Hawaiian petrel fatalities that have been detected at wind energy facilities in Hawai'i as of December 31, 2018 include seven fatalities at Kaheawa Wind Farm on Maui (Kaheawa Wind Power, LLC 2017, SWCA 2017) and one fatality at Auwahi Wind Farm, also on Maui (Tetra Tech 2017b). No Hawaiian petrel fatalities have been observed at the Kahuku Wind Farm, which is the only other operating facility on O'ahu. No fatalities of Newell's shearwater have been detected at wind energy facilities in Hawai'i.

The collision avoidance rate is a critical component in assessing a given species' risk of collision (Chamberlain et al. 2006). Seabird and waterfowl species have been documented detecting and avoiding turbines and other human-made structures (e.g., transmission lines) in low-light conditions (Winkelman 1995; Dirksen et al. 1998; Desholm and Kahlert 2005; Desholm et al. 2006; Tetra Tech 2008); however, recent monitoring of powerline collisions in key areas indicates that this remains one of several threats to the species, particularly at cross-island powerlines (Ainley et al. 2001, USFWS 2016b). Petrels are adept at flying through forests to and from their nests during low-light and variable weather conditions and may exhibit strong avoidance behaviors when approaching wind turbine generators or other structures. Petrels have been observed exhibiting avoidance behaviors at communication towers on Lāna'i (Tetra Tech 2008) by adjusting flight directions away from the tower or by approaching the tower and turning away from the structure to avoid it. It is reasonable to assume that petrels have the behavioral and physical capabilities to avoid turbines, and therefore are likely to exhibit a high collision avoidance rate. However, at least one downed petrel observed is likely to have collided with a communication tower on Lāna'i (A. Siddiqi/DOFAW, pers. comm., September 2018).

Potential sources of direct mortality of petrels at the Project include collisions with wind turbine generators, meteorological towers, and overhead generator-tie lines. The HCP Amendment includes data analysis from the start of Project operation through December 31, 2017. On July 21, 2017, a single Hawaiian petrel carcass, confirmed through genetic analysis, was observed incidentally (not during standardized searches).<sup>23</sup> The results of the standardized post-construction mortality monitoring performed through 2017 were analyzed using the multiple years analysis module in the EoA tool to calculate a conservative estimate of total direct petrel take anticipated over the remaining years of the ITP/ITL term. Although the petrel fatality was detected outside of the search plot, it was included as a detected fatality for the purposes of take prediction to provide a conservative estimate.

Using past monitoring data within the EoA software to estimate the direct take estimated to occur over the permit term, it can be asserted with 80 percent certainty that no more than 19 petrels are expected to be taken. Indirect take was estimated using current agency guidance (USFWS 2016a) and data from the Project. Based on a projected annual take rate of 0.95 (19 birds over the 20-year permit terms), indirect take is estimated at 5 chicks over the remainder of the permit term.

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<sup>23</sup> A second Hawaiian petrel carcass was found onsite in August 2018; also observed incidentally (outside of the search plot and not during standardized searches). Based on the timeframe of the data analysis for the HCP Amendment, this petrel was not included in the projections of take.

### Population-Level Impacts

The total population of Hawaiian petrels is estimated between 19,000 and 52,000 individuals (Spear et al. 1995, Joyce 2013). The take authorization request for the Project is 19 adults and 5 chicks. This level of take is between 0.126 percent and 0.046 percent of the total estimated population and should not have a population-level effect on Hawaiian petrels because stable populations can absorb low levels (i.e., less than 1 percent of current population) of additive mortality. ~~Conclusive evidence of a breeding colony on O'ahu has not been found, and if breeding colonies are present on Mt. Ka'ala or elsewhere, there is no evidence to indicate they are genetically distinct from colonies on all other islands.~~ The proposed mitigation, which is further discussed below, will further minimize the potential for population-level effects as a result of Project operations.

### Avoidance and Minimization Measures

The avoidance and minimization measures previously implemented for the Newell's shearwater also minimize risk to the Hawaiian petrel. These measures are based on USFWS guidance for wind energy projects and are described in detail in Section 5.3 of the approved HCP; specific measures and include: site selection away from known colonies, the selection of monopole towers, the use of red, flashing, and synchronized FAA lighting on a subset of turbines, minimizing nighttime activity, minimizing and shielding on-site lighting at buildings and the use of motion sensor to limit activity; implementation of a Wildlife Education and Observation Program (WEOP) to reduce vehicle collision risk; the use of buried collector lines where possible, and following Avian Power Line Interaction Committee (APLIC) guidelines for overhead collection lines. These measures reflect the current agency guidance for avoidance and minimization of impacts to Hawaiian seabird species; no additional minimization measures specific to wind farms are known for these species.

### Mitigation

The USFWS 5-year review for Hawaiian petrels provided guidance to identify appropriate mitigation measures anticipated to benefit the petrel including: (1) efforts to reduce fallout from light attraction and disorientation, (2) protection of known breeding colonies, and (3) development of efficient predator control methods. The 5-year review also recommended expanding knowledge of the species' population trend and distribution (USFWS 2017).

Although mitigation for a species is typically preferred to occur on the same island as the Project-related impacts, this is not the most effective approach for the Hawaiian petrel. The USFWS and DOFAW worked with their seabird biologists to develop a targeted recovery strategy that focuses on managing the core colonies on the islands of Kaua'i, Maui, and Hawai'i. Restoration on O'ahu was not included in the Hawaiian petrel recovery priorities developed by USFWS and DOFAW because (1) breeding colonies have not been located, if they are present on O'ahu, and (2) the insurmountable threats of fallout potential due to extreme light effects from heavy urbanization suggests few, if any, juveniles would survive. An additional concern is that locating any breeding populations (if any exist) would take considerable effort and time. These considerations make conservation efforts on O'ahu impractical, given the scope of the HCP Amendment. Therefore,

Kawailoa Wind has determined, in coordination with USFWS and DOFAW that the Hawaiian petrel mitigation for the Hawaiian petrel will consist of funding predator control and burrow monitoring for known Hawaiian petrel breeding colonies within the Hono O Nā Pali NAR, located in the northwest portion of Kaua'i.

The Hono O Nā Pali NAR is a 3,579-acre managed reserve that contains rare plants, endemic stream invertebrates, and nesting forest birds and seabirds. Hanakāpi'ai and Hanakoa are two of six sites that are managed by DOFAW and the Kaua'i Endangered Seabird Recovery Project (KESRP) as part of the Hono O Nā Pali NAR Seabird Mitigation Project. A summary of each colony's past monitoring efforts, as well as the efforts to be funded in 2020 is provided in Table 3-4.

**Table 3-4. Projections of Hawaiian Petrel Burrow Monitoring and Number of Chicks Fledged**

Hawaiian Petrel Breeding Colony	Hanakāpī'ai	Hanakoa	Total
<b>Projected Number of Breeding Burrows in 2020</b>			
Total Number of Known Burrows in 2017	177 <sup>1</sup>	89 <sup>2</sup>	266
Percent Confirmed Breeding in 2017	79.2% <sup>1</sup>	87.6% <sup>2</sup>	n/a
Projected Number of New Burrows since 2017 (assumes 20% increase from 2017)	35	18	53
Projected Number of Known Burrows in 2020	212	107	319
Projected Number of Confirmed Breeding Burrows in 2020	168	94	262
<b>Estimated Increase in Chicks Fledged as a Result of Predator Control</b>			
Baseline Reproductive Success (i.e., before predator control)	51.4% <sup>1</sup>	59.0% <sup>2</sup>	n/a
Reproductive Success With Predator Control in 2017	84.1% <sup>1</sup>	76.1% <sup>2</sup>	n/a
Baseline Number of Chicks Fledged Without Predator Control Using 2020 Confirmed Breeding Burrow Numbers	86	55	141
Projected Number of Chicks Fledged With Predator Control Using 2020 Confirmed Breeding Burrow Numbers	141	71	213
<b>Estimated Increase in Number of Chicks Fledged Over Baseline</b>	<b>55</b>	<b>16</b>	<b>71</b>
<b>TOTAL CHICKS</b>	<b>71</b>		
<b>TOTAL ADULTS</b> <b>(assumes 30% of chicks survive to adulthood)</b>	<b>21.3</b>		
1. Raine et al. 2018a			
2. Raine et al. 2018b			

The Hanakāpi'ai site encompasses 138 acres of mid- to high-elevation terrain and is located in the center of the Hono o Nā Pali NAR. The presence of a very large Hawaiian petrel colony was initially confirmed at Hanakāpi'ai in 2014. KESRP began monitoring in 2015 and subsequently, DOFAW predator control began at Hanakāpi'ai in June 2016. A more comprehensive seabird monitoring and predator control program was initiated in 2017 by DOFAW and KESRP.



The Hanakoa site encompasses 58 acres and is located in the western portion of the Hono o Nā Pali NAR, adjacent to and southwest of Hanakāpī'ai. In 2016, KESRP confirmed the existence of a large colony of Hawaiian petrels, as well as a breeding population of Newell's shearwaters in this location. Predator control was initiated in September 2016; a more comprehensive seabird monitoring and predator control program was initiated in 2017 by DOFAW and KESRP (Raine et al. 2018b).

Funding for the predator control and burrow monitoring efforts at these two sites runs out at the end of 2019. Therefore, Kawaihoa Wind will fund predator control to be conducted by DOFAW (or a similar entity approved by USFWS and DOFAW) and burrow monitoring to be conducted by KESRP (or a similar entity approved by USFWS and DOFAW) at Hanakāpī'ai and Hanakoa in 2020. Based on costs provided by KESRP and DOFAW, the total mitigation funding will be approximately \$392,800. Specific activities to be implemented include:

- Monitoring activity of nesting seabirds with cameras, song meters, and on the ground surveys.
- Monitoring predator activity with cameras, traps, and on the ground surveys.
- Implementing focused removal of predators surrounding nest sites. Rodents would be controlled using automatic resetting traps (A-24, Goodnature, NZ). Cat trapping would consist of cage traps and Conibears. Pigs would be removed using a combination of targeted trapping and firearms. Non-native barn owls would be removed in areas with high seabird activity by targeted shooting and trapping.
- Responding to outbreaks of seabird depredation with increased predator trapping across the entire NAR and at major predator ingress points into the NAR.

It is expected that more Hawaiian petrel burrows will be monitored in 2020 compared to 2017 because new burrows are detected each year of monitoring, and there are many unidentified procellarid burrows, many of which are likely to be Hawaiian petrel burrows but have not yet been confirmed. For the purposes of calculating take offset, an estimate of a 20 percent increase in Hawaiian petrel burrows is assumed for Hanakāpī'ai and Hanakoa in 2020 compared to 2017. This value represents a conservative approximation based on the rate of new burrow detection in 2017 (i.e., new burrows made up 32 percent and 50 percent of all known burrows at Hanakāpī'ai and Hanakoa, respectively, in 2017; Raine et al. 2018a, Raine et al. 2018b). The selected value is also conservative because definitive identification of previously unidentified procellarid burrows is expected to contribute to the number of "new" burrows. A total of 132 unidentified procellarid burrows were present in 2017 (79 at Hanakāpī'ai and 53 burrows at Hanakoa; Raine et al. 2018a, Raine et al. 2018b).

Assuming that there are 20 percent more Hawaiian petrel burrows monitored in 2020 compared to 2017, it is expected there would be 35 new burrows at Hanakāpī'ai (for a total of 212 monitored burrows) and 18 new burrows at Hanakoa (for a total of 107). Based on the proportion of burrows that were confirmed breeding in 2017 at Hanakāpī'ai (79.2 percent) and Hanakoa (87.6 percent), it is expected there would be 168 and 94 confirmed breeding burrows in 2020. Assuming that reproductive success of burrows confirmed to breed in 2017 is representative of 2020, at least 141

and 71 chicks are expected to fledge from Hanakāpī'ai and Hanakoa with an implemented predator control program. Thus, as shown in Table 3-4, predator control is anticipated to result in an increase of 71 chicks fledged between both sites (55 chicks [141-86] for Hanakāpī'ai and 16 chicks [71-55] for Hanakoa). If it is assumed that 30 percent of petrel fledglings survive to adulthood (Kaheawa Wind Power, LLC 2006), Kawaiiloa Wind's mitigation in 2020 would produce 21.3 additional Hawaiian petrel adults (equivalent to 19 adults and 8 chicks).

Thus, bBased on previous monitoring data and expected increases to the numbers of burrows monitored as well as increases to predator control efforts, Kawaiiloa Wind's mitigation is expected to offset the 19 adult petrels and five chicks that are estimated to be taken during the remainder of the permit term ~~(see Section 6.3.4 and Appendix 16)~~. Although predator control efforts are aimed at increasing reproductive success because most predation at the colonies affects chicks, predator control also has the potential to have a positive impact on adult survival because adult petrels are sometimes preyed upon (Hodges and Nagata 2001). The effectiveness of predator control at the two colonies has been demonstrated by monitoring data which shows that reproductive success has increased at both colonies since predator control efforts were fully implemented. The combined experience of KESRP and NARS have been proven and vetted within the seabird and conservation community. The mitigation for the Hawaiian petrel is expected to fully offset the anticipated take and provide a net conservation benefit by producing more petrels than are authorized to be taken by the Project, contributing to recovery of the species.

The Hawaiian petrel mitigation will be considered successful if funding for predator control and burrow monitoring at the Hanakāpī'ai and Hanakoa colonies are provided to DOFAW within 6 months of issuance of ITP/ITL; and burrow monitoring efforts indicate that the predator control program results in one more fledgling than required to compensate for the requested take. Fledglings accrued will be the net increase in fledglings in 2020 (or for the year Kawaiiloa Wind provides mitigation funds) based on the number of confirmed breeding burrows, over the estimated baseline reproductive success under unmanaged conditions (51.4 percent for Hanakāpī'ai and 59.0 percent for Hanakoa; Table 3-4). The estimated reproductive success for Hawaiian petrels at the sites in 2020 (or for the year Kawaiiloa Wind provides mitigation funds) will be based on burrow monitoring being conducted by KESRP (or a similar entity). External conditions may influence reproductive success at the colony. To account for uncertainty in external conditions that influence breeding success (food availability, climate conditions, or others), Kawaiiloa Wind will assess a minimum percent of reproductive success if reproductive rates are below the 2017 reproductive success numbers as identified in adaptive management. Should reproductive success at Hanakāpī'ai and Hanakoa not fully offset the take of 19 adults and 5 chicks, Kawaiiloa Wind will initiate consultation with USFWS and DOFAW to implement additional mitigation commensurate with the remaining need for offset. Kawaiiloa Wind will provide designated mitigation funds to the USFWS's National Fish and Wildlife Foundation (NFWF) account to offset the remaining birds.

Additional detail regarding the mitigation approach for the Hawaiian petrel mitigation is provided in the ~~Draft~~ HCP Amendment.

### **Monitoring and Reporting**

Kawailoa Wind conducts monitoring for downed wildlife based on the post-construction mortality monitoring protocol and associated adaptive management provisions defined in the approved HCP. The purpose of these efforts is to monitor direct take of wildlife species to ensure compliance with the ITP/ITL and the provisions and take limitations in the HCP.

As detailed in the approved HCP and further described in the ~~Draft~~ HCP Amendment, the protocol includes an initial 3-year intensive monitoring period, followed by alternating periods of scaled-back systematic monitoring, punctuated by a year of intensive monitoring every 5 years (e.g., years 6, 11, and 16). The initial 3 years of intensive post-construction monitoring was completed in November 2015, and the long-term monitoring approach has since been implemented. The long-term monitoring involves searches at each turbine twice per week, including roads and graded pads occurring within a 115-foot radius of the turbine. The turbine plots are primarily searched by a canine search team (trained dogs accompanied by their handlers). When conditions limit the use of dogs (e.g., weather, injury, availability of canine search team, etc.), search plots may be surveyed by Project staff. All search plots are mowed on a regular basis. If staff only are used to conduct searches for more than three consecutive searches, vegetation management will occur more frequently (as needed based on the vegetation growth for the season) than with dog-assisted searches because dogs use odor clues rather than vision to locate fatalities. Carcass removal (CARE) trials and searcher efficiency (SEEF) trials are conducted on a regular basis to obtain data that are used to estimate actual take levels for the Project.

As specified in the approved HCP, Kawailoa Wind has and will continue to prepare written reports describing results from monitoring efforts to demonstrate HCP compliance and identify any proposed adaptive management strategies.<sup>24</sup> In addition, at a minimum, Kawailoa Wind has and will continue to meet with USFWS and DLNR semi-annually throughout the permit term to discuss the monitoring results in the context of compliance with authorized take limits.

### **Adaptive Management**

Adaptive management, as identified in the revised 2016 Habitat Conservation Planning and Incidental Take Permit Processing Handbook, is a key strategy for addressing uncertainty associated with an HCP's conservation program (USFWS and NMFS 2016). Kawailoa Wind has developed an adaptive management strategy to account for uncertainty in the amount of take of the Covered Species expected over the remainder of the permit term and the effectiveness of minimization measures (e.g., LWSC). The adaptive management strategy focuses more specifically on the Hawaiian hoary bat because the potential for take of this species is highest. Kawailoa Wind regularly monitors impacts to the Hawaiian hoary bat, and also stays current with any new science or technology that may further minimize the risk to bats. Kawailoa Wind meets with USFWS and DOFAW on an annual basis to review ITP/ITL compliance and evaluates the take trajectory annually, in consultation with USFWS and DOFAW. Kawailoa Wind also submits to USFWS and DOFAW a summary of adjusted take

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<sup>24</sup> The annual reports are available on DLNR's website (<https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>).

after each fatality. Kawailoa Wind has established “within-tier” triggers to minimize the chances of the Project bat take reaching the next tier, such that planning for mitigation will occur in parallel with implementation of additional adaptive management. The adaptive management strategy is intended to allow the Project to remain in the lowest tier possible. The adaptive management strategy is designed to indicate if take is occurring at a rate greater than expected and is projected to exceed permitted take before the end of the permit term but has not yet exceeded the permitted amount.

As part of the adaptive management strategy, Kawailoa Wind has identified additional minimization measures that ~~could~~ will be implemented, if necessary, in the future to minimize take of the Hawaiian hoary bat should the current measures prove to not have the anticipated effect. Kawailoa Wind will evaluate take quarterly and will implement additional minimization measures based on specific triggers related to estimated take rates; the triggers would occur when 75 percent of the estimated take for the current tier has been reached (using the 80 percent upper credible limit) and projected take is on a trajectory to exceed the authorized take limit before the end of the permit term. If additional minimization an adaptive management trigger is reached, Kawailoa Wind will work to implement adaptive management measures within 3 months. Kawailoa Wind will first seek to improve the effectiveness of the installed deterrent technology for the Hawaiian hoary bat in consultation with deterrent manufacturer(s) and bat experts. If the installed deterrent technology proves to be ineffective after adjustments are made and the adaptive management trigger is again reached, Kawailoa Wind will pilot (or install if commercially available) new deterrent technology. In consultation with and approval by USFWS and DOFAW, should an adaptive management measure other than improvements to bat deterrent technology be determined to be the best available science in reducing risk to bats at the time of triggering adaptive management. Kawailoa Wind has the option to implement that measure instead.

Kawailoa Wind anticipates that minimization measures for bats will likely evolve over the remainder of the permit term and will coordinate with USFWS and DOFAW regarding any new best available science at annual meetings. If, at the time adaptive management is triggered, deterrent technology is unavailable or is not the best option or additional adaptive management is warranted, Kawailoa will consider the following actions: one or more measures including turbine operational adjustments (e.g., increases in hysteresis), installation of additional bat deterrents, alteration of site conditions (e.g., changes in landscape features, structures and/or lighting), or other technologies as available. The selection of measures to implement will be based on the best available science, results from current Hawaiian hoary bat research (the results of ongoing research are expected to be reported starting in 2020), new technological advances, and Project-specific mortality monitoring data. Kawailoa Wind will review these options at the time additional minimization measures are triggered and choose the option best suited to minimize impacts to bats.

A detailed discussion of the adaptive management triggers and minimization measures is provided in the Draft HCP Amendment.

### *3.5.4.2 Impacts of HCP Implementation*

As detailed throughout this document, HCP implementation involves avoidance, minimization and mitigation measures, with adaptive management as needed, and a long-term post-construction monitoring plan. The potential impacts associated with implementation of the approved HCP were evaluated in the 2011 EA. In particular, this evaluation addressed the avoidance, minimization and mitigation measures related to the Newell's shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian short-eared owl, and Hawaiian hoary bat, as well as the post-construction monitoring plan. The impacts of the actions conducted to date have not substantially deviated from what was described in the 2011 EA; this information is incorporated by reference.

New actions that are proposed in the HCP Amendment (beyond what was included in the approved HCP) relate to the additional avoidance, minimization and mitigation for the Hawaiian hoary bat, as well as mitigation for the Hawaiian petrel. As such, the assessment of potential impacts associated with implementation of the HCP Amendment is focused on these specific activities. The following subsections briefly identify the existing conditions and describe the potential effects of implementing the avoidance, minimization and mitigation actions in the HCP Amendment on various resources that comprise the human and natural environment. Resource categories that were considered in this analysis are consistent with those addressed in the 2011 EIS and subsequent EA. For resources that implementation of the HCP Amendment would not be expected to have any potential for impacts to occur, further evaluation was not conducted; these include climate, transportation and traffic, hazardous materials, visual resources, socioeconomic characteristics, natural hazards, public safety, public infrastructure and services.

#### **Air Quality**

Air quality across Hawai'i is consistently some of the best in the nation, with criteria pollutant levels well below state and federal ambient air quality standards (DOH 2016). Similar to the Project area, the existing air quality at the mitigation sites for the Hawaiian hoary bat and Hawaiian Petrel is considered to be relatively good because of low levels of development in the surrounding areas, and exposure to consistently strong winds which help to disperse any emissions.

#### **Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment**

The avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment (e.g., increased LWSC, bat deterrent "proof of concept" test, and ~~eventual~~ installation of bat deterrents at all turbines) would not result in any emissions and are not expected to affect the air quality surrounding the area.

#### **Mitigation for Hawaiian Hoary Bat under HCP Amendment**

Contribution of funding for the acquisition of Helemano Wilderness Area for Tier 4 mitigation or other similar lands for Tier 5 and/or 6 mitigation (should this option be selected) would not result in any ground disturbance, emission of pollutants, or other activities that could affect air quality.

If habitat restoration activities are funded as part of Tier 5 and/or Tier 6 bat mitigation, the associated activities (e.g., installation of fencing, out-planting of ground cover, shrubs or small

trees) would involve some degree of ground disturbance as well as operation of vehicles and equipment, which could result in emissions of fugitive dust and air quality pollutants associated with fossil-fuel fired internal combustion engines. However, any such emissions are expected to be temporary and minor in nature, and no air quality impacts are expected to occur over the long-term.

Mitigation for Hawaiian Petrel under HCP Amendment

Activities that would occur as part of the funding for predator control and burrow monitoring within the Hanakāpī'ai and Haʻnākoa Hawaiian petrel colonies would involve little to no ground disturbance or use of vehicles or large equipment. As such, air quality impacts are expected to be negligible, if any.

**Geology, Topography and Soils**

Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment

The avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment would only involve work on the existing turbines and surrounding turbine pads, with no ground disturbance within the Project area. As such, these activities are not expected to affect geology, topography or soils.

Mitigation for Hawaiian Hoary Bat under HCP Amendment

The Helemano Wilderness Area is situated on the western side of the Koʻolau Mountain Range along the northeastern edge of the Schofield Plateau, which formed when lava flows from the Koʻolau Volcano reached the slopes of the Waianae Volcano (Macdonald et al. 1983). No unique or unusual geologic resources or conditions are known to occur. The topography is sloping and varied. Soils in this region include Helemano silty clay, Wahiawa silty clay, Paʻaloa silty clay, and Leilehua silty clay, as well as Rough mountainous land (NRCS 2017). Located further south, the Central Koʻolau Riparian Restoration area is also on the western side of the Koʻolau Mountain Range, and formed during the main shield-building stage of the Koʻolau Volcano. Erosional forces have resulted in a series of valleys with steep walls and depositional sediments on the valley floors. Soils in this area are dominated by Helemano silty clay, Kaena stony clay, Manana silty clay loam, Kawaihapai stony clay loam, as well as Rough mountainous land (NRCS 2017).

Contribution of funding for the acquisition of Helemano Wilderness Area for Tier 4 mitigation (or other similar lands for Tier 5 and/or 6 mitigation, should this option be selected) would not involve any ground disturbance. As such, implementation of this mitigation would not affect geology, soils or topography.

Habitat restoration activities that would be funded at the Central Koʻolau Riparian Restoration Area, Helemano Wilderness Area {and/or another similar site} as part of Tier 5 and/or Tier 6 bat mitigation would involve localized excavation for measures such as installation of fence posts and out-planting of ground cover, shrubs and/or small trees. Habitat restoration activities are not expected to require any large-scale excavation, filling or levelling. Standard erosion control measures would be implemented, as appropriate. As such, the proposed mitigation activities are not expected to substantially affect geology, topography or soils.

Mitigation for Hawaiian Petrel under HCP Amendment

The Hanakāpī'ai and Hanakoa Hawaiian petrel colonies are located within the Hono O Nā Pali NAR, near the northwestern coast of Kaua'i. This portion of the island has heavily eroded since the primary shield-building volcanic activity formed the island, resulting in steep ridges and deep valleys (SOEST 2013). Soils in this area are predominantly classified as Rock outcrop and Rough mountainous land (NRCS 2017).

Activities that would occur as part of the funding for predator control and burrow monitoring within the Hanakāpī'ai and Hanakoa Hawaiian petrel colonies would involve little to no ground disturbance and therefore, are not expected to impact geology, topography or soils.

**Hydrology and Water Resources**

Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment

The avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment would only involve work on the existing turbines and surrounding turbine pads. As such, these measures would have no effect on any water resources within the Project area.

Mitigation for Hawaiian Hoary Bat under HCP Amendment

The Helemano Wilderness Area spans two watersheds: Paukauila and Kiikii (Parham et al. 2008). Streams within the Paukauila watershed portion of Helemano Wilderness Area include Helemano Stream, which is a perennial stream. Streams within the Kiikii watershed portion include Poamoho Stream and Kaukonahua Stream. According to the National Wetland Inventory (NWI) dataset, there are no wetland features located within the Helemano Wilderness Area (USFWS 2018). Specific to groundwater, the Helemano Wilderness Area is part of the Wahiawa aquifer; this aquifer contains high-level groundwater and has a sustainable yield of 23 million gallons per day (CWRM 2008).

The Central Ko'olau Restoration Area spans multiple watersheds, including Moanalua, Hālawa, 'Aiea, Kaluauo, and Waiawa (Parham et al. 2008). A total of ten main streams, with numerous tributaries occur in within the area; these streams have flows ranging from intermittent to perennial. No wetland features are known to be located within this area (USFWS 2018). The Central Ko'olau Restoration Area is part of the Moanalua, Waimalu and Waipahu-Waiawa aquifers, which have sustainable yields of 16, 45, and 104 million gallons per day, respectively (CWRM 2008).

No ground-based activities would be associated with contribution of funding for the acquisition of Helemano Wilderness Area as part of the Tier 4 mitigation (or other similar lands for Tier 5 and/or 6 mitigation, should this option be selected). As such, these mitigation activities would not affect hydrology or water resources.

Habitat restoration activities that would be funded at Central Ko'olau Restoration Area, Helemano Wilderness Area ~~(and/or another similar site)~~ as part of Tier 5 and/or Tier 6 bat mitigation would involve localized and small-scale ground disturbance for activities such as fence installation and out-planting of ground cover, shrubs and/or small trees. No work would be conducted within ~~or~~ near the streams, nor would any of the activities affect groundwater. Standard erosion control measures would be implemented as needed to minimize the potential for water quality impacts



from erosion and sedimentation; additional protective measures would be implemented for any habitat restoration activities that would occur near a stream. As such, no direct or indirect impacts to any water resources are anticipated.

Mitigation for Hawaiian Petrel under HCP Amendment

The Hanakāpi'ai and Hanakoa Hawaiian petrel colonies are located within the Hanakāpi'ai watershed, which is relatively small and steep in its upper reaches. It includes Hanakāpi'ai Stream, which is a perennial feature with multiple tributaries (Parham et al. 2008). Based on the NWI dataset, no wetland features are known to occur in these areas (USFWS 2018). Groundwater in this region is part of the Napali aquifer. This aquifer contains basal groundwater with a discontinuous confining layer and has a sustainable yield of 17 million gallons per day (CWRM 2008).

Activities that would occur in association with the funding of predator control and burrow monitoring within the Hanakāpi'ai and Hanakoa Hawaiian petrel colonies would involve little to no ground disturbance and would not occur within or near Hanakāpi'ai Stream or its tributaries. As such, no impacts to water resources are anticipated.

**Biological Resources**

Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment

As described in the 2011 EA, the downed wildlife searches conducted as part of the post-construction mortality monitoring involve routine vegetation clearing within the designated search plots. Monitoring is ongoing, and impacts are commensurate with the description provided in the 2011 EA. The additional avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment would only involve work on the existing turbines and surrounding turbine pads. As such, these measures are not expected to adversely affect any vegetation or wildlife. Overall, implementation of the measures is intended to provide a benefit by reducing the current risk of collision with the wind turbines for Hawaiian hoary bats and other avian species.

Mitigation for Hawaiian Hoary Bat under HCP Amendment

A range of habitats occur within the Helemano Wilderness Area; the majority of the site is comprised of mature native and mixed forest, with other areas dominated by non-forested, fallow agricultural areas that are planned for managed reforestation. Native species that are likely to occur within the forest habitat, many of which are listed as endangered or threatened, include nānū (*Gardenia mannii*), lo'ulu (*Pritchardia* sp.), uhiuhi (*Mezoneuron kavaiensis*), kauila (*Colubrina oppositifolia*), *Bonamia menziesii*, ha'iwale (*Cyrtandra dentate*), *Chamaesyce rockii*, haha (*Cyanea* sp.), ānini (*Eurya sandwicensis*), hulumoa (*Exocarpos gaudichaudii*), *Hesperomannia arborescens*, koki'o (*Hibiscus kokio*), 'ohe (*Joinvillea ascendens*), koki'o (*Psychotria hexandra* var *oahuensis*), *Huperzia nutans*, *Phyllostegia hirsute*, kōpiko (*Psychotria hexandra*), kaul (*Pteralyxia macrocarpa*), 'ohe (*Polyscias gymnocarpa*), and nuku 'i'iwi (*Strongylodon ruber*) (DOFAW and TPL 2016). As previously described, this habitat is within the documented range of the Hawaiian hoary bat; the species has been documented in adjacent areas and is likely to be present within the Helemano Wilderness Area as well. Other native wildlife that are expected to occur include the O'ahu 'amakihi (*Chlorodrepanis flava*), pueo, and tree snail species (*Achatinella* spp.). No portion of the Helemano

Wilderness Area has been designated as critical habitat, although critical habitat for O'ahu 'elepaio occurs immediately adjacent to the site.

Habitats within the Central Ko'olau Riparian Restoration Area range from upland dry forest to mesic forest in the upland regions, to streams and gulches. The forest structure is highly degraded and tends to be dominated by a monotypic stand of haole koa (*Leucaena leucocephala*) with guinea grass (*Megathyrsus maximus*) understory (JC Watson/KMWP, pers. comm., April 16, 2019). Impermeable forest habitats deter bat foraging at lower altitudes (Ober and Hayes 2008). Based on acoustic monitoring that has been conducted at 'Ewa Forest, Radar Hill Road, Fort Shafter, and Tripler Medical Center, the Hawaiian hoary bat has been documented to have low levels of activity within this area (Starcevich et al. 2019, Bonaccorso et al. 2019); the low level of bat detections in this area indicates low habitat suitability for bats. Designated critical habitat for O'ahu 'elepaio, which spans the length of the Ko'olau Mountain Range, extends into the upper edges of the restoration area (USFWS 2019).

Overall, acquisition and long-term management of the Helemano Wilderness Area is expected to provide a significant benefit to biological resources through the long-term protection and improvement of habitat for both native plant and wildlife species, including the Hawaiian hoary bat and a variety of listed plants. Following acquisition, the lands would be transferred to DOFAW for long-term management, including control of invasive species and reforestation. The Tier 4 mitigation involves contribution of funding for a portion of the acquisition of Helemano Wilderness Area; funding for acquisition of other similar lands could also occur for Tier 5 and/or 6 mitigation, should this option be selected. This mitigation would not include any management activities or other on the ground work. As such, implementation of the mitigation would not directly affect any biological resources, but indirectly would provide a significant benefit by enabling acquisition and long-term protection of the entire Helemano Wilderness Area.

Funding of habitat restoration activities ~~at~~within the Central Ko'olau Riparian Restoration Area, Helemano Wilderness Area, {and/or another similar site} for the purposes of Tier 5 and/or Tier 6 bat mitigation would allow for activities such as installation of fencing and other ungulate and rodent control methods, removal of invasive plant species, and out-planting of native and non-invasive plant species. These activities would result in localized and small-scale ground disturbance and some degree of disturbance to existing habitat. Short-term impacts to wildlife could occur due to habitat disturbance and noise from equipment. However, it is expected that these activities would be focused in ~~the previously disturbed areas~~portions of Helemano Wilderness Area, with minimal disturbance of ~~the native forest habitat~~. Standard BMPs to avoid and minimize impacts to vegetation and wildlife would be implemented, including measures to minimize the extent and duration of disturbance, and prevent introduction or spread of invasive species. In addition, as previously noted, USFWS and DOFAW would be consulted during the development of the management plan to ensure the ~~forest management~~habitat restoration activities consider impacts to listed species. Overall, the mitigation would provide a long-term benefit to both vegetation and wildlife species throughout ~~Helemano Wilderness Area~~the mitigation area. In particular, the

measures would be designed to provide a benefit to the Hawaiian hoary bat, as detailed in the Draft HCP Amendment.

*Mitigation for Hawaiian Petrel under HCP Amendment*

The Hono o Nā Pali NAR includes lowland mesic, lowland wet, and montane wet habitat communities. These habitats support more than 200 native plant species and 30 native wildlife species, many of which are considered rare. The NAR also includes critical habitat for more than 60 plant species and a range of ecosystems (NARS-DOFAW 2011; DLNR 2018). The Hanakāpi'ai site and Honokoa sites are generally characterized as montane wet habitat, which includes 'ōhi'a and other native plant species such as lapalapa (*Cheirodendron platyphyllum* subsp. *kauaiense*), 'ōlapa (*Cheirodendron trigynum*), kāwa'u (*Ilex anomala*), kōlea (*Myrsine* spp.), 'ohe (*Tetraplasandra* spp.), kanawao (*Broussaisia arguta*), pūkiawe (*Leptecophylla tameiameia*), na'ena'e (*Dubautia* spp.), koli'i (*Trematolobelia kauaiensis*), ōhelo kau lā'au (*Vaccinium calycinum*), ālani (*Melicope clusiifolia*), and mokihana (*Melicope anisata*) (DOFAW 2011). These areas also provide important habitat for many native wildlife species. In addition to several species of seabirds (including the endangered Newell's shearwater and Hawaiian petrel), other wildlife that occurs in this area include a variety of native forest birds, waterbird species, raptors, invertebrate species and aquatic biota, many of which are federally and state listed. Invasive species that pose a significant threat to the native resources within the NAR include feral ungulates (especially pigs and goats), feral cats and rats, and a variety of non-native weed species (NARS-DOFAW 2011).

Mitigation for the Hawaiian petrel would involve funding for ongoing predator control and burrow monitoring within the Hanakāpi'ai and Hanakoa colonies. Activities associated with the mitigation would result in little to no ground disturbance or other impacts to sensitive habitat within the NAR. Rather, the mitigation would allow for continuation of the current predator control and burrow monitoring efforts, which to date, have substantially increased Hawaiian petrel reproductive success within the two colonies. As such, the Hawaiian petrel mitigation is expected to provide a long-term benefit, as further detailed Draft HCP Amendment.

**Historic, Archaeological and Cultural Resources**

*Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment*

The avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment will only involve work on the existing turbines and surrounding turbine pads. As such, these measures would have no effect on historic, archaeological or cultural resources within the Project area beyond those described in the 2011 EIS and EA.

*Mitigation for Hawaiian Hoary Bat under HCP Amendment*

No archaeological resources have been documented within Helemano Wilderness Area, as a systematic investigation has not been conducted. Historic properties within this area may include various trails and ditch tunnels, as identified by the Office of Hawaiian Affairs (OHA) Kipuka database (OHA 2018). Similarly, a systematic investigation has not been conducted with the Central Ko'olau Riparian Restoration Area; however, historic properties identified by the OHA Kipuka database include a variety of pre-Contact features (such as terraces, walls, firepits, house

foundations, trails and heiau), particularly within the ahupuaa of Moanalua and Halawa (OHA 2018). It is anticipated that traditional and cultural practices in this both areas would be consistent with those in other forested areas on O'ahu, and could include hunting, gathering of forest resources, and other similar activities.

Contribution of funding for the acquisition of Helemano Wilderness Area for Tier 4 mitigation (or other similar lands for Tier 5 and/or 6 mitigation, should this option be selected) would not involve any ground-disturbance or other physical activities. As such, implementation of this mitigation is not expected to directly affect historic, archaeological or cultural properties.

Habitat restoration activities that would be funded at Central Ko'olau Riparian Restoration Area, Helemano Wilderness Area, (and/or another similar site) as part of Tier 5 and/or Tier 6 bat mitigation are expected to involve localized ground-disturbance for measures such as installation of fence posts and out-planting of small shrubs and trees. Depending on the specific activities that are planned, an archaeological review would be conducted as appropriate. Any historic, cultural, and archeological resources that are identified would be avoided to the extent possible and precautionary measures related to the inadvertent discovery of cultural remains would be conducted. ~~Therefore,~~ With implementation of these measures, the mitigation activities ~~are~~ is not expected to adversely affect archeological or cultural resources, should they occur. Over the long-term, the mitigation would contribute to preservation of native species within this region, which could be expected to have a positive impact on traditional and cultural resources.

*Mitigation for Hawaiian Petrel under HCP Amendment*

Previous archaeological studies within the Nā Pali Coast State Park described an extensive pre-contact population and agricultural use within Nā Pali region from as early as A.D. 1000-1300. Archaeological sites that were identified in the coastal areas include house sites, irrigated agricultural systems, heiau, burials and trails (Tomonari-Tuggle 1989). Inland areas, including the Hanakāpi'ai and Hanakoa sites have not been systematically surveyed and no sites have been documented, although terracing and other similar features have been noted (~~NARS-DOFAW~~ 2011). The entire Nā Pali District is listed on the state and national registers of historic places (Carpenter et al. 2010). Traditional and cultural practices throughout the valleys in the Nā Pali region involved extensive cultivation of taro and other crops (e.g., bananas, sugar cane and sweet potato) and plants for uses such as bark cloth and oil for light. Coastal areas and streams were used to gather marine and freshwater resources. Some of these activities, as well as use of the trails within and between the valleys, are ongoing (Maly 2003, ~~NARS-DOFAW~~ 2011).

Activities that would occur in association with the funding for predator control and burrow monitoring within the Hanakāpi'ai and Hanakoa Hawaiian petrel colonies would involve activities such as installation of monitoring cameras, ground surveys, and placement of traps for feral ungulates, and would require little to no ground disturbance. As such, no impacts to archaeological resources are expected. By contributing to the preservation of native species within this region, it is expected that the mitigation could have a positive impact on traditional and cultural resources.

## **Noise**

### *Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment*

The avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment would be limited to work on the existing turbines and surrounding turbine pads. The increased LWSC measures would not generate any noise beyond current levels. Similarly, the bat deterrent devices utilize ultrasonic technology and would not produce any audible noise. As such, these activities are not expected to result in increased noise levels.

### *Mitigation for Hawaiian Hoary Bat under HCP Amendment*

The Helemano Wilderness Area is located in an expansive natural area characterized by densely vegetated forest, with limited human activity. Ambient noise levels are associated with environmental sounds such as wind, rain, and animals (particularly birds), and are typically low. Some degree of noise is associated with surrounding urban development, including Wahiawa town and nearby roadways. The Central Ko'olau Riparian Restoration Area is also characterized by an extensive forested area with limited human activity. Similar to the Helemano Wilderness Area, the ambient noise levels in this restoration area are predominantly associated with environmental sounds, with limited exposure to noise from recreational users and nearby urban development (e.g., nearby residential neighborhoods and roadways, including Interstate H-3).

No ground-based activities would be associated with contribution of funding for the acquisition of Helemano Wilderness Area as part of the Tier 4 mitigation (or other similar lands for Tier 5 and/or 6 mitigation, should this option be selected). As such, these mitigation activities would not affect noise levels.

Habitat restoration activities that would be funded at Central Ko'olau Riparian Restoration Area, Helemano Wilderness Area, {and/or another similar site} as part of Tier 5 and/or Tier 6 bat mitigation would involve activities such as installation of fencing and other ungulate and rodent control methods, removal of invasive plant species, and out-planting of native and non-invasive plant species. These activities would likely involve the use of motorized equipment and vehicles, which would generate intermittent noise. However, noise resulting from the proposed mitigation is expected to be minor and short-term in duration, with no long-term impacts to noise.

### *Mitigation for Hawaiian Petrel under HCP Amendment*

Given the isolated location and natural setting of the Hono o Nā Pali NAR, noise levels in this region are relatively low. Ambient noise levels are generally associated with environmental sounds such as wind, rain, and animals; human-derived noise is generally limited to recreational users.

Mitigation for the Hawaiian petrel would involve funding for ongoing predator control and burrow monitoring within the Hanakāpi'ai and Hanakoa portions of the Hono o Nā Pali NAR, with activities such as installation of monitoring cameras, conducting ground surveys, and placement of traps for feral ungulates. These activities are not expected to involve the use of motorized equipment or vehicles. Noise generated as part of the predator control and burrow monitoring efforts is expected to be minor and short-term, similar in nature to current research and monitoring activities within the NAR.

## **Land Use**

### **Avoidance and Minimization Measures for Hawaiian Hoary Bat under HCP Amendment**

The avoidance and minimization measures proposed for the Hawaiian hoary bat under the HCP Amendment would be limited to work on the existing turbines and surrounding turbine pads, with no changes in the current land use within the Project area. As such, no land use impacts are expected to occur.

### **Mitigation for Hawaiian Hoary Bat under HCP Amendment**

The Helemano Wilderness Area is located within the state Agricultural and Conservation Districts. It includes both undisturbed natural habitat, as well as lands that were historically and/or currently used for agricultural purposes. This area is also used for recreation; the Poamoho Trail traverses through and provides access to the summit of the Ko'olau Mountains. The Central Ko'olau Riparian Restoration Area is located within the state Conservation District. This area is predominantly natural habitat and supports a range of recreational activities, such as hiking, hunting and camping; designated recreational areas include Kamananui Valley Road, Kulana'ahane Trail, Waimano Access Trail, Waimano Trail, and Keaiwa Heiau State Recreation Area.

Over the long-term, acquisition and long-term management of the Helemano Wilderness Area is expected to preserve and protect important natural habitat including significant tracts of native forest. This would require discontinuation of any remaining agricultural operations within the acquisition area. However, there is ample agricultural land available in the surrounding areas, such that agricultural productivity is not expected to be significantly affected in this region. Proposed management activities by DOFAW are expected to include habitat restoration and forestry activities, which are compatible uses within the state Conservation and Agricultural Districts. Public access and recreational use would also continue. As such, ~~neither~~ contribution of funding for the acquisition of Helemano Wilderness Area as part of the Tier 4 mitigation, is not expected to adversely affect existing land use.

Similarly, ~~not~~ funding of habitat restoration activities within the Central Ko'olau Riparian Restoration Area, Helemano Wilderness Area, and/or another similar site as part of Tier 5 and/or Tier 6 bat mitigation would be for activities such as installation of fencing and other ungulate and rodent control methods, removal of invasive plant species, and out-planting of native and non-invasive plant species. These activities would result in localized disturbance, including noise associated with vehicles and equipment. However, it is expected that these activities would generally occur in areas that result in minimal disturbance to recreational activities and would be short-term in nature. Over the long-term, the habitat restoration activities would benefit the natural environment, thus supporting the underlying purpose of the state Conservation District. As such, the Tier 5 and/or 6 bat mitigation is not expected to adversely affect existing land use.

### **Mitigation for Hawaiian Petrel under HCP Amendment**

The Hono o Nā Pali NAR was designated in 1983 and expanded in 2009 to preserve native natural communities. Management of the NAR is provided by DOFAW (DOFAW 2018). The NAR is located within the protective subzone of the State Conservation District. Public access is allowed for

recreational and cultural uses. Current uses include hiking, bird watching, hunting, as well as research and educational purposes.

Mitigation for the Hawaiian petrel would involve funding for ongoing predator control and burrow monitoring within the Hanakāpi'ai and Honokoa portions of the Hono o Nā Pali NAR. Activities associated with the mitigation would be consistent with the overall goal of preserving native resources within the NAR, and would result in no impacts to existing land use or public access.

### **3.6 Historic, Archaeological, and Cultural Resources**

The 2011 EIS discusses the existing conditions, assesses the potential impacts relative to historic, archaeological, and cultural resources that could result from construction and operations and maintenance of the Project (as well as the no action alternative), and presents associated mitigation measures. Impacts to historic, archaeological, and cultural resources resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS.

Although neither the Hawaiian hoary bat or Hawaiian petrel were identified as cultural resources in the Cultural Impact Assessment that was previously conducted for the Project, it is understood that some individuals and families may identify the Hawaiian hoary bat as an 'aumākua (family or personal gods, deified ancestors who might assume the form of a bat). Such spiritual beliefs and values are personal and immeasurable; therefore, these effects to cultural resources cannot be quantified. However, minimization and mitigation measures proposed under the HCP amendment would be expected to result in long-term beneficial impacts to Hawaiian hoary bats on the island of O'ahu.

### **3.7 Visual Resources**

The 2011 EIS provides a definition of visual resources, discusses the existing conditions, assesses the potential impacts relative to visual resources that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative), and identifies the measures taken to minimize visual impacts to the extent possible. Impacts to visual resources resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to visual resources are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.8 Noise**

The 2011 EIS provides a definition of noise as a resource, discusses the existing conditions, and assesses the potential noise-related impacts that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative). Project-related impact related to noise are commensurate with the assessment provided in the 2011 EIS. No change in potential noise-related impacts are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.



### **3.9 Land Use**

The 2011 EIS provides a definition of land use as a resource, summarizes the relevant land use regulations, discusses the existing conditions, and assesses the potential impacts relative to land use that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative). Impacts to land use resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to land use are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.10 Transportation and Traffic**

The 2011 EIS discusses the existing transportation infrastructure and traffic conditions (as related to O'ahu's harbors, roadways and airports), assesses the potential impacts relative to transportation and traffic that could result from construction and operations of the wind farm (as well as the no action alternative), and presents associated mitigation measures. Impacts to transportation and traffic resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to transportation or traffic are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.11 Military Operations**

The 2011 EIS discusses the existing conditions related to the Tactical Flight Training Area and other military operations in the vicinity of the wind farm, assesses the potential impacts to military operations that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative), and presents associated mitigation measures. Impacts to military operations resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to military operations are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.12 Hazardous Materials**

The 2011 EIS provides a definition of hazardous materials, discusses the existing conditions, assesses the potential impacts relative to hazardous materials that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative), and identifies relevant BMPs. Impacts related to hazardous materials resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts related to hazardous materials are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.13 Socioeconomic Characteristics**

The 2011 EIS provides a definition of socioeconomic characteristics, discusses the existing conditions, and assesses the potential impacts that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative). Impacts related to socioeconomic characteristics resulting from Project implementation are commensurate with the

assessment provided in the 2011 EIS. No change in potential impacts related to socioeconomic characteristics are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.14 Natural Hazards**

The 2011 EIS provides a definition of natural hazards (including hurricanes and tropical storms, tsunamis, volcanic eruptions, earthquakes, flooding and wildfire), discusses the existing conditions, and assesses the potential impacts relative to natural hazards that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative). Impacts related to natural hazards resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts related to natural hazards are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.15 Public Safety**

The 2011 EIS addresses public safety concerns associated with the wind farm, discusses the existing conditions, and assesses the potential impacts relative to public safety that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative). Impacts to public safety resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to public safety are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

### **3.16 Public Infrastructure and Services**

The 2011 EIS provides a definition of public infrastructure and services (including energy, solid waste, waste and wastewater, and telecommunication services), discusses the existing conditions, and assesses the potential impacts relative to natural hazards that could result from construction and operations and maintenance of the wind farm (as well as the no action alternative). Project-related impacts to public infrastructure and services are commensurate with the assessment provided in the 2011 EIS. No change in potential impacts to public infrastructure and services are anticipated as a result of the increased take of the Hawaiian hoary bat and Hawaiian petrel.

## 4.0 Other HRS Chapter 343 Topics

### 4.1 Secondary and Cumulative Impacts

HAR § 11-200-17(I) requires consideration of the direct and indirect effects of a proposed action as well as its induced and secondary effects.<sup>25</sup> The 2011 EIS addressed these topics and concluded that the Project would not cause significant secondary effects relative to conditions associated with the local economy, land use and development, or nearby military training and operations. The associated impacts resulting from Project implementation are commensurate with the assessment provided in the 2011 EIS; the discussion contained in the 2011 EIS is incorporated by reference.

Assessment of cumulative impacts considered other actions that occurred in the recent past, present and reasonably foreseeable future within the vicinity of the Project and involve impacts to resources also affected by the Project. Cumulative impacts can result from otherwise insignificant but incremental effects of individual actions, when considered together. The analysis of potential cumulative impacts in the 2011 EIS focused on climate change, military operations and listed species. There are no substantive changes to the discussion of cumulative impacts on climate change or military operations; the discussion contained in the 2011 EIS is incorporated by reference. A detailed discussion of cumulative impacts on the Hawaiian hoary bat and Hawaiian petrel, based on the analysis conducted for the HCP Amendment process, is provided below.

#### 4.1.1 Listed Species

Take of the Hawaiian hoary bat and Hawaiian petrel has been authorized or requested through HCPs for a variety of projects on O'ahu, Maui, Hawai'i Island, Kaua'i, and Lāna'i (Table 4-1). In accordance with the ESA and HRS Chapter 195D, HCPs are required to minimize and mitigate the effects of the incidental take to the maximum extent practicable. In addition to the above requirements, the State of Hawai'i requires that all HCPs and the actions authorized under the plan should be designed to result in an overall net benefit to the Covered Species.

In addition to the take that has already been authorized, and the anticipated HCP amendments, the proposed Na Pua Makani Wind Project on O'ahu and pending requests for ITLs by Pakini Nui Wind Farm and Lalamilo Wind Farm also have the potential to result in incidental take of, and contribute to cumulative impacts to, the Covered Species (Table 4-1). Furthermore, it is anticipated that due to the State's RPS objectives, which require "a renewable portfolio standard of... one hundred percent of net electricity sales by December 31, 2045" (HRS Chapter 269-92), wind energy development in Hawai'i will continue in the future. However, it is expected that if the HCPs or HCP amendments for any or all the potential projects are approved, the impacts and mitigation measures will resemble

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<sup>25</sup> Secondary effects are those effects which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effect may include growth inducing effects and other effect related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems.

those discussed for the Project, where the mitigation measures are expected to offset the anticipated take and provide a net benefit to the species.

At a broader scale, Kawailoa Wind represents one of many development projects that can be expected to occur on the islands of O‘ahu, Maui, Kaua‘i, and Hawai‘i Island. These islands have experienced increasing human population growth and real estate development, and those will likely continue to increase in the future. This growth may further contribute to some of the causes of decline of the Covered Species, such as mammal predation, light disorientation, pesticide use, and loss of nesting or roosting habitats. Kawailoa Wind’s HCP Amendment includes minimization measures for the Hawaiian hoary bat that are expected to result in take levels substantially less than the maximum take amount requested for authorization. Additionally, the adaptive management program provides specific actions to be taken should Tier 5 assumptions (regarding the effectiveness of baseline minimization measures) be invalid. Moreover, through mitigation, projects like Kawailoa Wind are implementing measures to offset take and provide a net benefit to the affected species. In general, it is assumed that future development projects will be conducted in compliance with all applicable local, state, and federal environmental regulations. Updated cumulative effects analysis for the Hawaiian hoary bat and Hawaiian petrel are provided below.

**Table 4-1-1. Current and Pending Take Authorizations for the Hawaiian Hoary Bat and Hawaiian Petrel**

<b>Name</b>	<b>Permit Duration</b>	<b>Location</b>	<b>Total Take Currently Authorized<sup>1</sup></b>	<b>Total Take Pending Approval<sup>2</sup></b>
Tower Kaua‘i Lagoons Land, LLC	12/09/2016 – 11/09/2042	Lihue, Kaua‘i	Hawaiian petrel (1)	N/A
Kaua‘i Island Utility Cooperative (Short-Term) <sup>3</sup>	Permit renewal for an indefinite period	Kaua‘i (island-wide)		Hawaiian petrel (2 per year)
Kahuku Wind Farm	06/07/2010–06/06/2030	Kahuku, O‘ahu	Hawaiian petrel (12) Hawaiian hoary bat (32)	N/A
Kawailoa Wind Farm	12/08/2011–12/07/2031	Hale‘iwa, O‘ahu	Hawaiian hoary bat (60)	Hawaiian petrel (24) <sup>4</sup> Hawaiian hoary bat (220 <del>65</del> )
Na Pua Makani Wind Project	9/7/2018–9/6/2039	Kahuku, O‘ahu	Hawaiian hoary bat (51)	N/A
U.S. Army Kahuku Training Area Single Wind Turbine	05/05/2010–05/09/2030	Kahuku, O‘ahu	Hawaiian hoary bat (2 adults, 2 pups)	N/A
Auwahi Wind Farm	02/24/2012–02/23/2037	Ulupalakua, Maui	Hawaiian petrel (87) Hawaiian hoary bat (21)	Hawaiian hoary bat (140)
Kaheawa Wind Power I (KWP I)	04/30/2012 <sup>5</sup> –01/29/2026	Kaheawa, Maui	Hawaiian petrel (38) Hawaiian hoary bat (50)	N/A
Kaheawa Wind Power II (KWP II)	1/03/2012–1/02/2032	Kaheawa, Maui	Hawaiian petrel (43) Hawaiian hoary bat (11)	Hawaiian hoary bat (38)

Name	Permit Duration	Location	Total Take Currently Authorized <sup>1</sup>	Total Take Pending Approval <sup>2</sup>
Lalamilo Wind Farm Repowering Project	No permit	Lalamilo, Hawai'i		Hawaiian petrels (3) Hawaiian hoary bat (6)
Pakini Nui Wind Farm	No permit	Ka Lae (South Point), Hawai'i		Hawaiian petrels (3) Hawaiian hoary bat (26)
Pelekane Bay Watershed Restoration Project <sup>5</sup>	02/05/2010-02/04/2030	Pelekane Bay, Hawai'i	Hawaiian hoary bat (16)	N/A
<p>1. Other species may also have incidental take authorizations not reported here. Only the Hawaiian hoary bat and Hawaiian petrel are included in this table.</p> <p>2. The total take pending approval includes previously authorized take.</p> <p>3. Identified in USFWS 2018.</p> <p>4. 24 individuals includes 19 adults and 5 chicks.</p> <p>5. Original permit issued in 2006 and amended in 2012.</p> <p>6. Take authorized under ESA Section 7 Biological Opinion.</p>				

#### 4.1.1.1 Hawaiian Hoary Bat

Multiple factors contribute to cumulative effects on the Hawaiian hoary bat. Actions on O'ahu and statewide that contribute to cumulative impacts include development and land use changes resulting in habitat loss and disturbance, prey alteration, pesticide use, fire, and collisions with structures (such as power lines and wind turbines).

Throughout the state, and specifically on O'ahu, development and other land use changes have resulted in the loss of bat roosting and foraging habitat through the conversion of forest to agriculture and other uses (USFWS 1998, USFWS 2011). Residential and commercial developments, farming, road construction, pesticide use, and wildfire have occurred in the recent past and are expected to occur in the future and have the potential to result in further habitat loss or alteration either directly or through the introduction or spread of invasive species, although data suggest the annual change is small (NOAA 2018). Other direct impacts to bats associated with these actions may occur through collisions with structures, such as barbed wire fences, and communications towers, or disturbance at roost sites. These actions may also indirectly affect bats through the displacement of or competition for prey resources (USFWS 2011). Few direct impacts to Hawaiian hoary bats have been quantified outside of wind turbine collisions, which is the only source of mortality that is regularly monitored. Fatality rates from wind turbines are the only monitored source of mortality data at this time. The effect of these other actions on Hawaiian hoary bats on O'ahu, and other Hawaiian Islands, has not been quantified, making it difficult to estimate their respective contributions to direct and indirect impacts. One such impact source is collision with or snagging on barbed wire, with the statewide estimate ranging between 0.0-0.8 Hawaiian hoary bats killed per 62 miles of barbed wire (Zimpfer and Bonaccorso 2010); rates on O'ahu are expected to be similar. Observed fatalities are uncommon because most fences are not checked regularly, and bats caught on these fences may quickly be taken by predators or scavengers. Based on the low estimates of mortality related to bat impalement on barbed-wire fences, the impact of the HCP Amendment in combination with this impact is not expected to result in significant cumulative

impacts to the species on O'ahu, or statewide. Other anthropogenic sources of take potentially include: timber harvesting, drowning, pesticides, predation or competition from introduced species, and climate change. The scale of the impacts from the identified activities is not monitored, but it is thought to be minimal (Diane Sether/ USFWS pers. comm. April 2019).

The mobility of the bat is such that all individuals on a given island likely belong to the same population; therefore, the assessment of population-level impacts caused by the Project should consider other projects on O'ahu. As previously discussed, Project-related impacts are not anticipated to affect populations on other islands such that this analysis is limited to the Hawaiian hoary bat population on O'ahu. Authorized take at wind facilities also contribute to cumulative impacts. In addition to the Hawaiian hoary bat take authorized under the approved Project HCP, the only other authorized take of the Hawaiian hoary bat has been authorized on O'ahu is for the Kahuku Wind Farm and Na Pua Makani Wind Project, as well as for a single wind turbine at the U.S. Army Kahuku Training Area (Table 4-1). Authorized take has also been approved for three wind projects on Maui, two of which are seeking amendments to increase the amount of authorized Hawaiian hoary bat take and has been requested for two wind projects and one restoration project on Hawai'i Island (Table 4-1). Incidental take associated with the Project's HCP Amendment would contribute to these impacts. The two wind farm projects have authorized take levels of 32 bats and 51 bats over 20-year permit terms, respectively (Kahuku Wind Power 2011, Tetra Tech 2016). Given the remaining permit terms and current take estimates, the take for all existing wind farm projects on O'ahu is estimated at 15 bats per year; an analysis of this impact is provided below.

The likelihood of additional development must also be considered in the impacts to species. HECO issued a request for proposals seeking to develop an additional 485,000 MW hours annually, of renewable energy on O'ahu (HECO 2018). In addition, Palehua Wind has filed a PPA with HECO but has not received an ITP or ITL (Froese 2018). Without approved take permits, it cannot be assumed that this project will operate at night and pose a risk to bats, and therefore cannot be included in the analysis. The HCEI (HRS Chapter 196-10.5) and RPS (HRS Chapter 269-92) specify that the State of Hawai'i will establish a renewable portfolio standard of 100 percent of net electricity sales from renewable sources by 2045. Therefore, new wind projects may be proposed in the future, but the timing, approval, construction, and operation of such projects is uncertain and is therefore not incorporated into the analysis of cumulative impacts.

### **Impacts to the Hawaiian Hoary Bat on O'ahu**

#### *Evaluating Risk Given Estimated Population Sizes and Capacity For Growth*

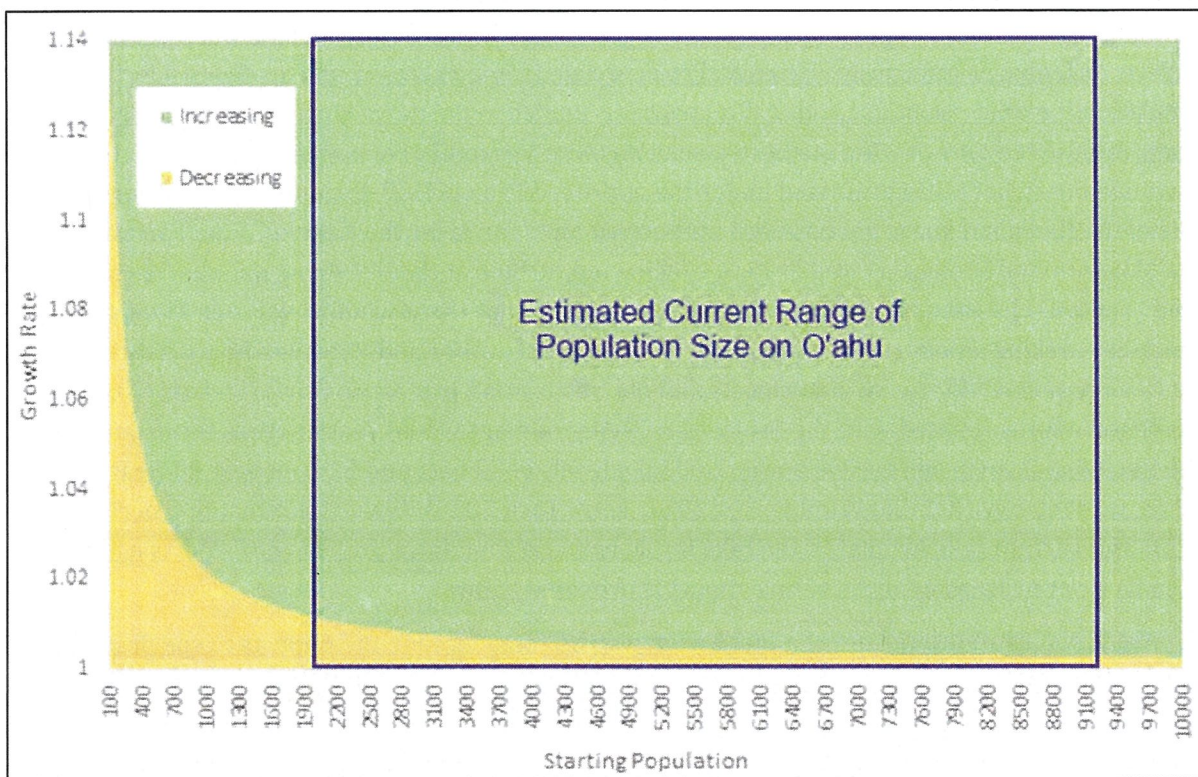
A range of model scenarios were evaluated to determine under what conditions the population would be at risk. The range of population sizes estimated for the bat give a reasonable range from which a conservative range of starting populations  $\tau_0$ ) from 100 to 10,000 were modeled. The population was modeled for 10 years ( ) to approximate the impact of the remaining permit term. The population after 10 years is described by the following equation, which takes into account a generalized population growth formula  $\tau_0 * T$  and an approximation of the loss of 15 bats annually ( $0.0619 * T^3 + 0.0267 * T^2 + 17.807 * T - 4.6922$ ). This equation describes 15 bats



lost each year (i.e. after each reproductive cycle, corresponding to the estimate of total take at all O'ahu wind projects):

$$Population_T = (P_{T_0} * T) - 0.0619 * T^3 + 0.0267 * T^2 + 17.807 * T - 4.6922$$

The possible growth rates as estimated from the model ranged from 1.00 to 1.14 (Figure 4-1).



Note: The area shown in green indicates all scenarios for which there would be an increase in population; the area shown in yellow indicates all scenarios for which there would be a decrease in population over 10 years. The shaded blue box captures those scenarios with starting populations that fall within the previously estimated range of population sizes (2,000 – 9,200).

**Figure 4-1. Estimates of Population Trend After 10 Years from Generalized Growth Rate Estimate**

From Figure 4-1, the risk to bats can be assessed relative to likely starting population sizes and growth rates. A growth rate of 1.03 or higher will lead to an increasing population in all scenarios except those scenarios with starting populations less than 600. The downwardly conservative range of population sizes modeled (see Section 3.5.4.1) suggests that a reasonable minimum population size is 2,000 bats, which would have an increasing population with a growth rate as small as 1.01. The cumulative impacts from all existing and permitted wind farms on O'ahu (15 bats per year) are estimated at less than 1 percent of the population per year (0.75%; assuming the lower end of the range of population sizes). Therefore, even if growth rates are as low as 1.01 and decreased by an additional 0.0075 per year due to all authorized and requested take on O'ahu, the actual growth rate would be 1.0025 and the population would remain stable to increasing with a starting population as small as 2,000 (Figure 4-1). Thus, the population would be sustained even given the added mortality from the direct and indirect take from all existing and permitted wind farms.



*Future Minimization*

The take rates outlined for Hawaiian hoary bats are likely to decline as the risk factors associated with Hawaiian hoary bat fatalities become better understood and minimization measures for wind farms are improved. Several companies are working to develop effective ultrasonic and ultraviolet deterrents to reduce the risk of bat fatalities at wind farms. Kawailoa Wind installed acoustic bat deterrents at all Project turbines. The installation of bat deterrents at other wind farms in Hawai'i is anticipated in the future and would further reduce the risk of cumulative impacts to the bat.

*Impacts of Mitigation*

Mitigation associated with the HCP and the HCP Amendment will provide a benefit to the bat to offset negative impacts. Kawailoa Wind's land-based mitigation at 'Uko'a Pond for Tier 1 continues to be successfully implemented and should continue to provide a benefit to the Hawaiian hoary bat (Tetra Tech 2017a). In addition, ongoing biological research being conducted for mitigation under Tiers 2 and 3 will contribute to filling in knowledge gaps that will lead to effective on-the-ground management activities for the species. Additional mitigation for all Project-related take associated with the HCP Amendment will be implemented on O'ahu (as described in Section 3.5.4.1) and will further contribute to the species' recovery. The mitigation increases the chances of survival and the likelihood of recovery by providing a net benefit to the bat. Additionally, the mitigation would also benefit species not covered by the HCP so as to provide a net environmental benefit and would not threaten or jeopardize the existence of any other native species.

**Statewide Impacts to the Hawaiian Hoary Bat**

The activities that directly impact bats on O'ahu, as discussed above, also occur statewide. The direct impacts from other authorized or proposed actions that could result in take of this species include: (1) authorized take approved for three existing wind projects on Maui (KWP II and Auwahi Wind are seeking HCP amendments to increase the amount of authorized Hawaiian hoary bat take), and (2) requested take for two existing wind projects and one restoration project on Hawai'i Island (refer to Table 4-1). Take authorization for these wind farms is contingent upon approved mitigation, which is expected to offset these projects' take.

In addition to mitigation offsets, conservation lands across the state protect habitats that are likely to be used by Hawaiian hoary bats. Approximately 160,000 acres of conservation lands occur on O'ahu with over 2 million acres of conservation lands statewide. In addition to the 186,000 acres of forest on O'ahu, an estimated 1.5 million acres of forest habitat occur across the state. These lands would be expected to provide available habitat that would enable the Hawaiian hoary bat to continue to survive and reproduce despite any anthropogenic losses.

Additionally, the Hawaiian hoary bat has been documented on Kaua'i, Moloka'i and Lāna'i. These three islands have no wind energy projects, and their bat populations would not be expected to be impacted by any of the existing wind projects. The existence of the species on these islands is a further assurance of the persistence of the Hawaiian hoary bat across its range.

Movement of bats among islands is thought to be rare (USGS, pers. comm., 2015); therefore, the Project would be expected to contribute to impacts to the O'ahu population, which has not been

previously identified as a conservation priority for the recovery of the species (USFWS 1998, 2011). The primary criterion for delisting the Hawaiian hoary bat is documentation of well distributed, naturally reproducing, and stable breeding populations on the Hawai'i, Kaua'i, and Maui islands, which are thought to be the most substantial populations within the state (USFWS 1998, Bonaccorso 2010). On O'ahu, where Hawaiian hoary bat movements have been studied in the northern Ko'olau Mountains and in the vicinity of the Project, the species had an overall occupancy rate of 55 percent over 23 sites (Gorresen et al. 2015). Preliminary results from recently deployed acoustic detections on O'ahu recorded bat activity nearly island-wide (Erica Adameczyk/WEST, pers. comm., July 2018); however, WEST unpublished data, 2018) the size of the population on O'ahu is not known at this time.

There are uncertainties in evaluating if the Kawaioloa Wind Hawaiian hoary bat take request under the HCP Amendment, in combination with other past and anticipated future actions, will result in a significant cumulative effect to the species. Efforts at estimating the population, population trends, and population viability of the Hawaiian hoary bat have been constrained due to the incomplete understanding of the life history of the species. Key components of a population model typically include the natural lifespan, reproductive rate, annual survivorship (juvenile and adult, accounts for all sources of mortality), starting population, and carrying capacity. The lifespan of the Hawaiian hoary bat has been estimated to be 10 years (DLNR 2015), but records of bat lifespan are scarce. The Hawaiian hoary bat is assumed to be reproductively active after the first year, and each female is thought to produce two offspring per year (USFWS 1998). The USFWS and DOWAW use the little brown bat juvenile survivorship of 30 percent surviving to adulthood, as a proxy for Hawaiian hoary bat juvenile survival (USFWS 2016a). The adult annual rate of survivorship is unknown. The total population of Hawaiian hoary bats is not known, nor is the carrying capacity. On O'ahu, the Hawaiian hoary bat continues to be found in locations not previously recorded (Erica Adameczyk/WEST, pers. comm., July 2018), and studies have shown that they are able to use a wide variety of habitats (Gorresen et al. 2013, Bonaccorso et al. 2015) suggesting a large starting population may be appropriate. Given the existing data gaps, any population model developed would be subject to multiple inferences and could imply a broad range of population trends depending on what model parameters were selected. Without further research on the Hawaiian hoary bat it would be uncertain if such a model would be representative of current and future population trends specific to O'ahu or the state population.

It is known that on Hawai'i Island the population of Hawaiian hoary bats was found to be stable to increasing (Bonaccorso et al. 2015) while the Pakini Nui Wind Farm and the Lalamilo Wind Farm were operating. This suggests that the impacts of these wind energy projects and the older generation wind projects which preceded them do not have a significant impact on the population of bats on Hawai'i Island. It is possible that a non-significant impact is also occurring to the O'ahu population which currently has two operating wind facilities. The available knowledge on the Hawaiian hoary bat and the persistence of the species from the time of listing suggests the portion of the population occurring on O'ahu is likely to be robust to low levels of impacts.

Regardless of these knowledge gaps, a Approved and pending authorized levels of bat take would be expected to be fully mitigated offset by USFWS and DOWAW approved mitigation, with the exception of the U.S. Army Kahuku Training Area and Pelekane Bay Watershed Restoration Project, for which

mitigation is a recommendation under the USFWS's ESA Section 7 Biological Opinion. Most of the approved and pending HCPs include a combination of habitat restoration and research, preservation, habitat restoration/management, and research including the mitigation for the Project HCP Amendment (see Section 7.6 for Project-specific Hawaiian hoary bat mitigation). Habitat preservation is typically accomplished through land acquisition (protection through various legal instruments) which provides protection from continued habitat loss due to development. The protection of existing habitat allows for continued use of roosting, foraging, and breeding habitat. Habitat restoration is intended to create or improve the existing quality of bat foraging and roosting habitat, or prevent the degradation of habitat, which has been identified as a major factor contributing to the inferred decline of the species (USFWS 1998). Restoration actions incorporated into the approved and pending HCPs and HCP amendments include actions taken to ensure or promote mature forest growth such as installation of ungulate fencing, and/or the removal of non-native ungulates, removal of and invasive plant species, and/or planting of native trees and shrubs. Over time, these actions are anticipated to create protected high-quality native roosting and foraging habitat, benefiting bats beyond the ITP/ITL term, and thereby resulting in a net benefit to the species. Additionally, the research component of the mitigation is critical to filling information gaps and was identified by the USFWS as a priority recovery action in the Hawaiian hoary bat recovery plan (USFWS 1998). Research projects approved by USFWS and DOFAW are proposed in approved HCPs will target key questions designed to gain an understanding of basic life history parameters and develop effective mitigation measures for the species (DLNR 2015), which will ultimately guide future management and recovery efforts.

Based on the best scientific data currently available, the Project is unlikely to cause significant adverse impacts to the species' population on O'ahu or statewide, or to the recovery potential of the species. The provisions of the HCP Amendment, including avoidance and minimization measures, mitigation, and adaptive management program identify how bat take will not jeopardize the survival and recovery of the species. The mitigation increases the chances of survival and the likelihood of recovery for the listed species by providing a net benefit to the species. In summary:

- The process of estimating take for the HCP Amendment using EoA and post-construction mortality monitoring data provides a high degree of certainty that actual take will be less than predicted take.
- Population modelling results indicate that reasonable scenarios of population size and growth rates are sufficient to sustain stable to increasing bat populations on O'ahu after accounting for cumulative impacts.
- No published or reported information is available to suggest that either the O'ahu or statewide population is decreasing.
- The discovery of a thriving population on O'ahu represents an expansion of the known range of the species. Additionally, there are many locations across the state where no impacts are occurring, providing assurances that the species will continue to persist statewide.
- Current and pending actions of HCPs are expected to fully mitigate for their take and provide a net benefit as required by Hawai'i law.

Therefore, it is anticipated that cumulatively, there would not be a significant negative impact on the species.

#### 4.1.1.2 *Hawaiian Petrel*

Multiple factors contribute to the cumulative effects on the Hawaiian petrel including predation by introduced species, ingestion of plastics, crushing of burrows by feral ungulates such as goats, loss of suitable habitat from invasive plant species, disorientation caused by unshielded lighting, collisions with power lines and other structures, and possibly climate change. In addition to these factors, take for the Hawaiian petrel is currently authorized under an ESA Section 10 ITP, HRS Chapter 195D ITL, or ESA Section 7 incidental take statements for five projects in Hawai'i, and is pending for an additional three projects (see Table 4-1). Two additional HCPs that include the Hawaiian petrel as a Covered Species are in preparation (Kaua'i Island Utility Cooperative Long-Term and Kaua'i Seabird Habitat Conservation Program); however, the associated take requests are not publicly available at the time of this writing. Under the ESA, HCPs are required to avoid, minimize, and mitigate to the maximum extent practicable the remaining effects of incidental take.

Although take of Hawaiian petrels authorized under the Kawailoa Wind ITP/ITL amendment would contribute to the cumulative effects to this species, operation of the Project poses a very low risk to Hawaiian petrels. Petrel occurrence at the Project is considered rare and individuals that may occasionally transit the Project area are considered an unusual occurrence. The mitigation for the requested take of 19 adults and 5 chicks for this Project, described in Section 3.5.4.17-3, will contribute to funding Hawaiian petrel management at known breeding colonies and thereby offset the impacts from the requested take. Thus, no significant adverse impact to the population of Hawaiian petrels across the state are anticipated from this Project.

Hawaiian petrel take for many of the projects listed in Table 4-1 has been lower than estimated. At KWP I, seven petrel fatalities have been observed. One petrel fatality has been observed at the Auwahi Wind Farm, and no petrel fatalities have been recorded at the KWP II or Kahuku wind farms. Each of these projects has successfully implemented associated mitigation measures to provide a net benefit to the species (Kaheawa Wind Power, LLC 2017; Kaheawa Wind Power II, LLC 2017; Kahuku Wind Power, LLC 2017; Tetra Tech 2017b).

The most recent breeding population estimate for Hawaiian petrels is estimated to be about 6,000 breeding pairs based on observations at colony sites (Pyle and Pyle 2017). ~~Surveys to date have not provided evidence that breeding colonies are present on O'ahu (Pyle and Pyle 2017; USFWS 2017; Young et al. in prep).~~ Although the total population trend is declining, the overall impacts from the Project would be unlikely to impact the population, and the net effects including mitigation should provide a benefit to the species.

## 4.2 Short-Term Uses versus Long-Term Productivity

HAR § 11-200-17(J) requires a description of the relationship between local short-term uses by humans of the environment and the maintenance and enhancement of long-term productivity. This description should include a discussion on the extent to which a proposed action involves tradeoffs

among short-term and long-term gains and losses, as well as whether future options are foreclosed, whether the range of beneficial uses of the environment are narrowed, and whether the proposed action poses long-term risks to health and safety.

The relationship between short-term uses and long-term productivity relative to the Project was addressed in the 2011 EIS, including a discussion of renewable energy generation, compatibility with agricultural uses, and maintenance of open space. There are no substantive changes to this information; the discussion contained in the 2011 EIS is incorporated by reference.

#### **4.3 Irreversible and Irretrievable Commitment of Resources**

HAR § 11-200-17(K) requires a description of the extent to which a proposed action makes use of non-renewable resources or irreversibly curtails the range of potential uses of the environment. Irreversible and irretrievable commitment of resources associated with the Project, particularly with respect to the use of non-renewable resources, was addressed in the 2011 EIS. There are no substantive changes to this information; the discussion contained in the 2011 EIS is incorporated by reference.

#### **4.4 Unavoidable Impacts and Rationale for Proceeding**

HAR § 11-200-17(L) requires a description of probable adverse effects which cannot be avoided and the rationale for proceeding with the proposed action. Unavoidable impacts are those effects remaining after adjusting for mitigation measures that minimize, rectify, or reduce impacts of the proposed actions.

As discussed in the 2011 EIS, Kawaiiloa Wind committed to avoiding or mitigating adverse effects to the extent practical. A detailed list of the mitigation measures originally identified for the Project are provided in the 2011 EIS; these have been and continue to be implemented as part of ongoing Project operations, as appropriate. Specific to the increased impact to Hawaiian hoary bat and Hawaiian petrel, Kawaiiloa Wind has developed and proposes to implement additional avoidance, minimization and mitigation measures; implementation of these measures is expected to provide a net environmental benefit. These measures are summarized in Section 3.5.4, with further detail provided in the Draft HCP Amendment.

There are no substantive changes to the rationale for proceeding based on the increased impact to the Hawaiian hoary bat and Hawaiian petrel. The Project continues to be an important source of renewable energy for O'ahu and is contributing to achieving the state's clean energy goals. By decreasing the consumption of fossil fuels, the Project is also helping to reduce greenhouse gas emissions and other forms of pollution. Although the Project is resulting in greater impacts to the Hawaiian hoary bat and Hawaiian petrel than originally anticipated and concerns regarding the increased take have been expressed (as further discussed in Section 7), the HCP Amendment incorporates specific measures that would be implemented to avoid, minimize and mitigate those impacts, and ultimately is expected to provide a net environmental benefit to the species. When considered in combination with the Project impacts identified in the 2011 EIS and subsequent EA,

the effects of implementing the HCP Amendment are not anticipated to result in any new significant environmental impacts.

#### **4.5 Unresolved Issues**

HAR § 11-200-17(N) requires a summary of unresolved issues and a discussion of how such issues would be resolved before commencement of a proposed action or what overriding reasons there are for proceeding without resolution of the issues. As detailed in the 2011 EIS, there were no significant issues related to the design and implementation of the Project that remained unresolved at the time the EIS was published. Site constraints and other Project-related concerns were broadly addressed through an iterative planning and siting process, as well as focused stakeholder consultation. In particular, potential conflicts with nearby military operations were addressed through a working group with the relevant stakeholders. The 2011 EIS also noted that permits and approvals needed to be obtained prior to Project implementation, but that no significant outstanding issues were known. As previously described, the permits and approvals were successfully obtained and the Project was constructed in 2012. Because Project operations have resulted in greater impacts to the Hawaiian hoary bat and Hawaiian petrel than previously anticipated, Kawaiiloa Wind is seeking an amendment to the HCP and ITP/ITL to increase the authorized take levels for the Hawaiian hoary bat and to add the Hawaiian Petrel as a Covered Species, as well as to implement additional minimization and mitigation measures to address the increased take of the Hawaiian hoary bat and Hawaiian petrel. Updated information associated with the HCP Amendment is presented as part of this ~~Draft~~ SEIS; DOFAW acceptance of the SEIS will need to occur prior to approval of the HCP Amendment. Upon approval of the HCP Amendment, it is anticipated that USFWS and DOFAW would authorize the increased take levels under the ITP and/ITL, respectively.

## 5.0 Consistency with Existing Land Use Plans, Policies, and Controls

As described in the original EIS, there are a variety of federal, state and county regulations and policies that are applicable to the Project.

### 5.1 Federal Regulations

The 2011 EIS identified the federal regulations relevant to the Project and presented information regarding the status of compliance with each regulation. An updated discussion of compliance with the ~~Endangered Species Act (ESA)~~, National Environmental Policy Act (NEPA) and the Migratory Bird Treaty Act are provided in the following sections. The discussion in the 2011 EIS relative to the Clean Air Act, Clean Water Act, and Federal Aviation Regulations does not require revision with regards to the proposed HCP Amendment and is incorporated by reference.

#### 5.1.1 *Endangered Species Act*

The purpose of the ESA (16 United States Code [U.S.C.] §§ 1531-1544), as amended, is to conserve threatened and endangered plant and animal species and their habitats, specifically those areas that have been designated as "critical habitat." The ESA defines an endangered species as one that is "in danger of extinction throughout all or a significant portion of its range" and a threatened species as one that "is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Critical habitat includes areas containing essential habitat features, regardless of whether those areas are currently occupied by the listed species.

Under Section 7 of the ESA, federal agencies must consult with the USFWS and/or National Marine Fisheries Service (NMFS), depending on the species under review, to ensure that their actions are not likely to jeopardize the continued existence of endangered and threatened species or destroy or adversely modify critical habitat for endangered and threatened species. Section 9 of the ESA prohibits take of any threatened or endangered species without a permit, unless otherwise authorized.<sup>26</sup> Section 10(a)(1)(B) of the ESA allows private applicants to obtain an ITP that authorizes impacts to listed species that are incidental to lawful activities and would otherwise be prohibited under Section 9(a)(1)(B). To obtain a permit, the applicant must develop an HCP that analyzes the potential impacts to the listed species and details the measures that would be implemented to mitigate those impacts. Guidance for preparation and required components of an HCP are provided in the revised 2016 Habitat Conservation Planning Handbook (USFWS and NMFS

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<sup>26</sup> "Take" under the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct." "Harass," according to the definition of take in the ESA, means "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Harm" means "an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (50 CFR 17.3).

2016). As issuance of an ITP by the USFWS or NMFS constitutes a federal action subject to Section 7 of the ESA, the agency is also required to conduct a Section 7 consultation to determine whether the Project would jeopardize a listed species or adversely modify its critical habitat.

In compliance with Section 10 of the ESA, Kawaiiloa Wind prepared an HCP and was issued an ITP from the USFWS for the Project on December 8, 2011. The original ITP and associated HCP provides authorization for incidental take of the following listed species over the 20-year permit term: Newell's shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian short-eared owl, and Hawaiian hoary bat.

As detailed throughout this document, Hawaiian hoary bat take has been higher than anticipated since the start of Project operations, such that Kawaiiloa Wind is seeking an amendment to the HCP and an increase in the amount of Hawaiian hoary bat take authorized under the ITP. Kawaiiloa Wind is also requesting authorization for incidental take of the Hawaiian petrel (which was not originally covered in the HCP), given two observed fatalities at the Project and recent surveys documenting Hawaiian petrel occurrence on O'ahu. The Draft HCP Amendment, which was prepared to address both the federal and state requirements (pursuant to the ESA and HRS Chapter 195D, respectively), was published for public review as part of the federal process in the Federal Register on April 26, 2019. Issuance of an ITP by the USFWS is a Federal action, and therefore is subject to compliance with NEPA. Compliance with NEPA is discussed further in Section 5.1.6.

### **5.1.2 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC 703-712) prohibits take of migratory birds; a list of birds protected under MBTA implementing regulations is provided at 50 CFR § 10.13. Unless permitted by regulations, under the MBTA it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product. The USFWS does not currently have a comprehensive program under the MBTA to permit the take of migratory birds by otherwise lawful activities. On December 22, 2017, the Department of the Interior Office of the Solicitor issued a memorandum opinion concluding that the MBTA does not prohibit incidental take of migratory birds.

The bird species addressed in the HCP Amendment are also protected under the MBTA. To avoid and minimize impacts to migratory birds, the Draft HCP Amendment incorporates design and operational features based on application of the USFWS Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines (issued May 13, 2003). These guidelines contain materials to assist in evaluating possible wind power sites, wind turbine design and location, and pre- and post-construction research to identify and/or assess potential impacts to wildlife. Specific measures that have been adopted by the applicant to avoid and minimize the potential for adverse impacts to migratory birds are detailed in Section 5.3 of the approved HCP. The HCP also specifies that any migratory bird collisions or other impacts that occur with implementation of covered activities will be documented and reported to the USFWS.



### **5.1.3 Clean Air Act**

There are no substantive changes in the status of compliance with the Clean Air Act. The discussion contained in the 2011 EIS is incorporated by reference.

### **5.1.4 Clean Water Act**

There are no substantive changes in the status of compliance with the Clean Water Act. The discussion contained in the 2011 EIS is incorporated by reference.

### **5.1.5 Federal Aviation Regulations**

There are no substantive changes in the status of compliance with Federal Aviation Regulations. The discussion contained in the 2011 EIS is incorporated by reference.

### **5.1.6 National Environmental Policy Act**

NEPA establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals (42 U.S.C. 4321 et seq.). NEPA requires federal agencies to incorporate environmental considerations in their planning and decision-making process through a systematic interdisciplinary approach. Specifically, all federal agencies are to prepare detailed statements that assess the environmental impact of and alternatives to federal actions that could significantly affect the environment. Pursuant to NEPA and its implementing regulations (40 CFR Part 1500 through 1508), these statements are required to describe the existing environmental conditions, the proposed action and reasonable alternatives, potential environmental impacts of the proposed action, and measures to minimize environmental impacts.

Issuance of an ITP is a federal action subject to compliance with the procedural requirements of NEPA and its implementing regulations. In October 2011, the USFWS completed an Environmental Assessment (EA) that addressed the anticipated environmental effects of issuing an ITP to Kawaihoa Wind. The EA concluded that the proposed action would not significantly affect the quality of the environment, and a Finding of No Significant Impact (FONSI) was signed by the USFWS on December 8, 2011.

Based on Kawaihoa Wind's request for an amendment to the HCP and ITL, USFWS is responsible for additional NEPA compliance. As three other wind energy projects are simultaneously requesting Section 10 authorization, USFWS is preparing a Programmatic EIS (PEIS) to address the potential environmental impacts that would result from permit issuance for all four projects. In addition to Kawaihoa Wind, the PEIS is also considering impacts associated with approval of a new HCP for the Pakini Nui Wind Farm (located on Hawai'i Island), and amendments to existing HCPs for the Kaheawa Wind Power II Project and the Auwahi Wind Power project (both located on Maui). All four wind energy facilities are already constructed and in operation. The USFWS issued a Notice of Intent to prepare a PEIS on June 1, 2018. Public comments were received during a 30-day scoping

period and public scoping meetings were held on Hawai'i Island, Maui and O'ahu. The Draft PEIS was published for public review in the Federal Register on April 26, 2019. Public comments were received during a 45-day public comment period and public meetings were held on Hawai'i Island, Maui and O'ahu. The Final PEIS was published in the Federal Register on August 2, 2019.

## **5.2 State of Hawai'i**

The 2011 EIS identified the state regulations relevant to the Project and discussed the status of compliance with each regulation. An updated discussion of compliance with the Hawai'i State Endangered Species Act (HRS Chapter 195D), Hawai'i Environmental Impact Review Law (HRS Chapter 343), and Hawai'i State Planning Act (HRS Chapter 226) are provided in the following sections. The discussion provided in the original EIS relative to the Hawai'i State Energy Resources HRS Chapter 196, Hawai'i State Environmental Policy (HRS Chapter 344), State Land Use Law (HRS Chapter 205), State Conservation District Law (HRS Chapter 183), Hawai'i Coastal Zone Management Act (HRS Chapter 205A), and State Historic Preservation Functional Plan does not require revision with regard to the proposed HCP Amendment and is incorporated by reference.

### ***5.2.1 Hawai'i State Energy Resources (HRS Chapter 196)***

In 2008, the State of Hawai'i signed an MOU with the U.S. DOE that established the HCEI. A subsequent agreement (the Energy Agreement) signed in October 2008 between the State and the Hawaiian Electric companies specified that the parties would work together to help Hawaiian Electric companies achieve as much as 40 percent renewable energy by 2030. In April 2010, the HCEI Program was added to State law, as HRS Chapter 196. While additional initiatives have developed since 2011, including amendment of the Renewable Portfolio Standards (HRS Chapter 269-92) in 2015 to mandate 100 percent renewable energy in the electricity sector by 2045, and 2017 legislation expanding strategies and mechanisms to reduce greenhouse gas emissions statewide in alignment with the principles and goals adopted in the Paris agreement, there are no substantive changes in the status of compliance with the intent of the HCEI, as codified in the Hawai'i State Energy Resources HRS Chapter 196. The discussion contained in the 2011 EIS is incorporated by reference.

### ***5.2.2 Hawai'i State Planning Act (HRS Chapter 226)***

There are no substantive changes in the status of compliance with the Hawai'i State Plan (HRS Chapter 226). However, the State Office of Planning has recently been requesting that environmental review documents include a discussion of compliance with all three components of the Hawai'i State Plan, as presented in Table 5-1.

Table 5-15-1. Consistency with the Hawai'i State Plan

Components of Hawai'i State Plan	Applicability to the Project
<b>PART I. OBJECTIVES AND POLICIES</b>	
Population	This theme is not applicable to the Project.
Economy--in general	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(a)(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited. As discussed in the 2011 EIS, socioeconomic effects of the Project include construction employment and business activity; lease revenue for use of the Project area; revenues for the State in the form of excise taxes and property taxes; substantial fuel cost savings to HECO (which potentially translate into ratepayer savings); ongoing employment of operations and maintenance staff; and ongoing expenditures for materials and outside services.</p>
Economy--agriculture	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(a)(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being. As described in the 2011 EIS, the Project is located almost entirely on unirrigated, fallow fields that were previously used for sugar cane cultivation but have not recently been used for agricultural purposes; the facilities were sited to avoid areas that are still used for cultivation. Although the areas within the permanent footprint of the Project facilities are not available for agricultural purposes, the Project allows Kamehameha Schools to maintain the existing agricultural uses of the Kawaihoa property, consistent with their North Shore Master Plan and Strategic Agricultural Plan.</p>
Economy—visitor industry	This theme is not applicable to the Project.
Economy—federal expenditures	This theme is not applicable to the Project.
Economy--potential growth and innovative activities	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(b)(1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawai'i's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors.</p> <p>(b)(8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, underground resources, and solid waste.</p> <p>As detailed in the 2011 EIS, the Project involves construction and operation of a wind energy facility to provide renewable energy to the island of O'ahu.</p>
Economy--information industry	This theme is not applicable to the Project.

Components of Hawai'i State Plan	Applicability to the Project
Physical environment-- land-based, shoreline, and marine resources	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.</p> <p>(b)(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.</p> <p>(b)(8) Pursue compatible relationships among activities, facilities, and natural resources.</p> <p>As detailed in the 2011 EIS, the Project is located in areas that were extensively disturbed as part of previous agricultural operations, with vegetation largely comprised of weedy species. The Project involves take of several endangered species, including the Hawaiian hoary bat, Hawaiian petrel, Newell's shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, and Hawaiian short-eared owl. As detailed in the approved HCP and Draft HCP Amendment, compensatory mitigation has been and will continue to be implemented to fully offset the take and provide a net benefit to these species.</p>
Physical environment-- scenic, natural beauty, and historic resources	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(a)(1) Promote the preservation and restoration of significant natural and historic resources.</p> <p>(a)(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.</p> <p>Historic sites recorded as part of the archaeological investigation of the Project area include military (World War II) and plantation era features, which have been avoided to the extent possible; in addition, archaeological monitoring was conducted during construction. With respect to visual resources, Project planning and siting was conducted in a manner so as to best integrate the wind turbines with the natural characteristics of the site to minimize visual impacts to the extent possible.</p>
Physical environment-- land, air, and water quality	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(a)(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.</p> <p>(b)(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.</p> <p>As detailed in the 2011 EIS, Project implementation involves construction-related impacts (noise, dust, and erosion), but these are short-term and have been minimized through implementation of BMPs. Over the long-term, the Project would provide a benefit associated with reduction of greenhouse gases.</p>
Facility systems-- solid and liquid wastes; water; transportation; telecommunications	<p>These themes are not applicable to the Project.</p>

Components of Hawai'i State Plan	Applicability to the Project
Facility systems--energy	<p>The Project is in compliance with this theme, particularly the following objectives and policies:</p> <p>(a)(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation.</p> <p>(a)(3) Greater diversification of energy generation in the face of threats to Hawai'i's energy supplies and systems.</p> <p>(a)(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use.</p> <p>The Project is a wind energy facility that provides renewable energy to the island of O'ahu. Generation and integration of wind energy into the electric grid decreases fossil fuel consumption, thereby reducing greenhouse gas emissions.</p>
Socio-cultural advancement (housing, health, education, social services, leisure, individual rights and personal well-being, culture, public safety, and government)	These themes are not applicable to the Project.
<b>PART II. FUNCTIONAL PLANS<sup>1</sup></b>	
Agriculture	The Hawai'i Department of Agriculture Strategic Plan identifies the mission of maintain the agricultural sector of Hawai'i's economy, with specific goals related to increasing markets and product value, and increasing production value. The Project is consistent with these goals, as it allows Kamehameha Schools to maintain the existing agricultural uses of the Kawaioloa property, in accordance with their North Shore Master Plan and Strategic Agricultural Plan.
Conservation Lands	The 2011 EIS identified the possibility of communication facilities in Conservation District lands on Mt. Ka'ala; however, it was subsequently determined that these facilities were not needed, and they were not constructed. This functional plan is not applicable to the Project.
Education	This functional plan is not applicable to the Project.
Employment	This functional plan is not applicable to the Project.
Energy	The purpose of the Project is to provide clean, renewable wind energy for the island of O'ahu. The Project directly contributes to the Hawai'i Clean Energy Initiative, which includes a goal of achieving 100 percent clean energy by 2045.
Health	This functional plan is not applicable to the Project.
Higher Education	This functional plan is not applicable to the Project.
Historic Preservation	As detailed in the 2011 EIS, an archaeological inventory survey was completed for the Project. Historic sites that were recorded include military (World War II) and plantation era features, which have been avoided to the extent possible; in addition, archaeological monitoring was conducted during construction.
Housing	This functional plan is not applicable to the Project.

<b>Components of Hawai'i State Plan</b>	<b>Applicability to the Project</b>
Human Services	This functional plan is not applicable to the Project.
Recreation	This functional plan is not applicable to the Project.
Tourism	This functional plan is not applicable to the Project.
Transportation	This functional plan is not applicable to the Project.
<b>PART III. PRIORITY GUIDELINES</b>	
Economic Development	<p>The Project is in compliance with economic priority guidelines, including:</p> <p>(f)(1) Encourage the development, demonstration, and commercialization of renewable energy sources</p> <p>As detailed in the 2011 EIS, the Project is a wind energy facility that provides renewable energy to the island of O'ahu.</p>
Population Growth and Land Resources	This priority guideline is not applicable to the Project.
Crime and Criminal Justice	This priority guideline is not applicable to the Project.
Affordable Housing	This priority guideline is not applicable to the Project.
Quality Education	This priority guideline is not applicable to the Project.
Sustainability	<p>The Project is in compliance with the sustainability priority guidelines and principles, particularly the following:</p> <p>(1) Encouraging balanced economic, social, community, and environmental priorities.</p> <p>(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State.</p> <p>As detailed in the 2011 EIS, the Project provides a source of renewable energy for the island of O'ahu, directly contributing to the state and county renewable energy goals, as well as providing an economic benefit. Adverse impacts, including those associated with take of endangered species, will be avoided and mitigated to the extent practicable. The overall intent of the Project is to balance the adverse impacts with the need for clean, renewable energy to sustain future generations.</p>
Climate Change Adaptation	By generating renewable energy, the Project contributes to reduced greenhouse gas emissions, thereby providing a benefit relative to climate change. However, the Project does not involve climate change adaptation, relative to this priority guideline.
<p>1. The list of functional plans is based on the inventory and status provided in <i>The Hawai'i State Plan Update: Phase 1, Final Report</i> (State Office of Planning, 2018).</p>	

### **5.2.3 Hawai'i Environmental Impact Review Law (HRS Chapter 343)**

HRS Chapter 343 is designed to “establish a system of environmental review which will ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations.” The regulations identify nine specific activities that trigger the need for compliance with HRS Chapter 343. The Project originally included communication facilities on Mt. Ka'ala, which would involve two activities that are triggers for compliance with HRS Chapter 343: (1) use of State lands and (2) use of land classified as conservation district. DBEDT

was identified as the approving agency for the 2011 EIS based on their responsibility for preparation of a permit plan for a renewable energy facility under HRS Chapter 201N. An EIS was prepared for the Project; the Final EIS was published by OEQC in the *Environmental Notice* on July 8, 2011 and was accepted by DBEDT on July 20, 2011. Subsequently, an EA was prepared to evaluate the potential impacts associated with implementation of the Project's HCP; DOFAW issued a FONSI, which was published by OEQC in the *Environmental Notice* on October 8, 2011 (see Appendix A).

The Project was constructed in 2012, and Kawaiiloa Wind is not proposing any changes to the Project that would affect the size, scope, location, intensity, use or timing of the action. However, because the impacts to the Hawaiian hoary bat are greater than anticipated in the 2011 EIS and potential impacts to the Hawaiian petrel have subsequently been identified, DOFAW determined that an SEIS is warranted per HAR § 11-200-27, which provides that an SEIS shall be warranted where, among other things, "*the intensity of environmental impacts will be increased*" or "*where new circumstances or evidence have brought to light different or likely increased environmental impacts not previously dealt with.*" Given their request for an SEIS, DOFAW coordinated with DBEDT as the approving agency for the 2011 EIS. In coordination with DBEDT, it was determined that DOFAW would serve as the approving agency for the SEIS (see Appendix B). On July 8, 2018, DOFAW published their determination that an SEIS is required simultaneously with an SEISPN for the Project (see Appendix C). Publication of the SEISPN initiated a 30-day public scoping period. In compliance with the requirement of HAR § 11-200-29 and 11-200-22, ~~this~~ the Draft SEIS was published in the OEQC *Environmental Notice* on May 8, 2019; the 45-day public comment period extendeds through June 24, 2019. The SEIS was revised based on updates made to the HCP Amendment as well as comments received during the Draft SEIS public comment period (see Section 7 for additional detail regarding the comments received); the Final SEIS was submitted to OEQC for publication in the September 23, 2019 edition of the *Environmental Notice* and to DOFAW for acceptance. Moving forward, the HCP Amendment will be revised based on the comments received through the Draft HCP Amendment review process. Those revisions, as well as comments received on this Draft SEIS, will be incorporated into a Final SEIS, as appropriate. Approval of the HCP Amendment and ITL would not occur until the Final SEIS has been accepted by DOFAW.

#### **5.2.4 Hawai'i State Environmental Policy (HRS Chapter 344)**

There are no substantive changes in the status of compliance with the Hawai'i State Environmental Policy (HRS Chapter 344). The discussion contained in the 2011 EIS is incorporated by reference.

#### **5.2.5 Renewable Energy Facility Siting Process (HRS Chapter 201N)**

HRS Chapter 201N, which was enacted by Act 207 in 2008, authorized DBEDT to prepare a permit plan for proposed renewable energy facilities. The purpose of the permit plan was to identify all applicable State and County permits required for approval of the facility and facilitate timely review of those permits. Pursuant to HRS Chapter 201N-8, a permit plan application requires compliance with HRS Chapter 343, with DBEDT as the approving agency for the EIS. DBEDT assisted Kawaiiloa

Wind with development of a permit plan for the Project, and the 2011 EIS was accepted by DBEDT. HRS Chapter 201N was subsequently repealed in 2016, and therefore is no longer applicable to the Project.

#### ***5.2.6 Hawai'i State Land Use Law (HRS Chapter 205)***

There are no substantive changes in the status of compliance with the State Land Use Law (HRS Chapter 205). The discussion contained in the 2011 EIS is incorporated by reference.

#### ***5.2.7 Conservation District (HRS Chapter 183C)***

The 2011 EIS identified the possibility of communication facilities which would be located on Mt. Ka'ala, within the Conservation District. However, it was subsequently determined that these facilities were not needed. No portion of the Project is within the Conservation District; therefore, HRS Chapter 183C is not applicable to the Project.

#### ***5.2.8 Coastal Zone Management (HRS Chapter 205A)***

There are no substantive changes in the status of compliance with the Hawai'i Coastal Zone Management Program (HRS Chapter 205A). The discussion contained in the 2011 EIS is incorporated by reference.

#### ***5.2.9 HRS Chapter 6E and National Historic Preservation Act***

There are no substantive changes in the status of compliance with the State Historic Preservation Program (HRS Chapter 6E) or with the National Historic Preservation Act. The discussion contained in the 2011 EIS is incorporated by reference.

#### ***5.2.10 State Endangered Species Act (HRS Chapter 195D)***

Any species of aquatic life, wildlife, or land plant that has been determined to be a threatened or endangered species pursuant to the ESA is also considered to be threatened or endangered under the state law, and subject to the conditions of HRS Chapter 195D-4. In addition, any indigenous species may be determined by DLNR to be threatened or endangered based on factors specified in HRS Chapter 195D-4(b). An ITL may be obtained from DOFAW to allow take of a threatened or endangered species provided that (1) take impacts are minimized and mitigated; (2) the mitigation plan increases the likelihood that the species will survive and recover; (3) the project provides net environmental benefits; and (4) the take is not likely to cause the loss of genetic representation of an affected population of any endangered, threatened, proposed, or candidate plant species.

In compliance with HRS Chapter 195D, Kawaiiloa Wind prepared an HCP and was issued an ITL from DOFAW for the Project on January 6, 2012. The ITL and associated HCP authorize incidental take of the following listed species over the 20-year permit term: Newell's shearwater, Hawaiian



duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian short-eared owl, and Hawaiian hoary bat.

However, Hawaiian hoary bat take has been higher than anticipated since the start of Project operations in November 2012. Fatality estimates indicate that the Project has exceeded the currently authorized bat take limit, even with the implementation of additional avoidance and minimization measures. Therefore, in 2015, Kawailoa Wind initiated consultation with DOFAW regarding an amendment to the HCP and an increase in the amount of Hawaiian hoary bat take authorized under the ITL. Kawailoa Wind is also requesting authorization for incidental take of the Hawaiian petrel; this species was not originally covered in the HCP and ITL (as it was not known to occur regularly on O‘ahu), but two fatalities have been incidentally observed within the Project area and recent surveys have documented Hawaiian petrel occurrence on O‘ahu. The incidental take coverage requested by Kawailoa Wind is for an additional ~~160~~<sup>205</sup> Hawaiian hoary bats (for a total of ~~220~~<sup>265</sup> bats) and 19 Hawaiian petrel adults and 5 chicks over the 20-year permit term. The Draft HCP Amendment was published in the OEQC *Environmental Notice* on October 23, 2018 for a 60-day public review period. The Draft HCP was presented to the ESRC on October 25, 2019. In addition, DOFAW held a public hearing on the Draft HCP Amendment on November 29, 2018. To accommodate a required site visit by the ESRC, which was conducted on February 7, 2019, DOFAW extended the public comment period by 60 days (through February 22, 2019). Based on comments received through this process, revisions were subsequently made to the HCP Amendment. The revised HCP Amendment was presented to the ESRC for their consideration on July 25, 2019; the ESRC voted to recommend approval of the HCP Amendment (with minor revisions requested) to BLNR. Based on the minor revisions requested by the ESRC, the HCP Amendment was subsequently revised and submitted to BLNR for approval. Approval of the HCP Amendment would not occur until the Final SEIS has been accepted.

Table 5-2 lists the specific HCP approval and ITL issuance criteria as specified by HRS Chapter 195D and provides a brief summary of the extent to which each requirements or criterion has been met for the Project.

**Table 5-25-2. HCP Approval and ITL Issuance Criteria**

Requirement/Criteria	Discussion of Compliance
<b>HCP Approval Criteria (HRS Chapters 195D-21(b)(1) and (c))</b>	
(b)(1)(A) The HCP will further the purposes of HRS Chapter 195D by protecting, maintaining, restoring, or enhancing identified ecosystems, natural communities, or habitat types upon which endangered, threatened, proposed, or candidate species depend within the area covered by the HCP	Mitigation consisting of habitat restoration and research is successfully being implemented to offset take authorized under the approved HCP. The Draft HCP Amendment details additional mitigation for the Hawaiian hoary bat (Tiers 4-6) as well as proposed mitigation for the Hawaiian petrel. As detailed in Section 7 of the <del>Draft</del> HCP Amendment, this mitigation will fully offset the additional take and will provide a net <u>environmental</u> benefit <del>to the Hawaiian hoary bat.</del>

<b>Requirement/Criteria</b>	<b>Discussion of Compliance</b>
(b)(1)(B) The HCP will increase the likelihood of recovery of the endangered or threatened species that are the focus of the HCP	Impacts of incidental take will be minimized to the maximum extent practicable and mitigated such that the incidental take will be fully offset. The proposed mitigation actions are supported as critical to the recovery of the Hawaiian hoary bat and the Hawaiian petrel by the available literature. Collectively, the mitigation actions are expected to result in an overall <del>significant net</del> <u>environmental</u> benefit <del>to both species</del> . Mitigation measures established for the Hawaiian petrel are detailed in Section 7 of the HCP Amendment.
(c)(1) Implementation of the HCP is not likely to jeopardize the continued existence of any endangered, threatened, proposed, or candidate species identified in the plan area	Implementation of the HCP Amendment is not likely to jeopardize the continued existence of any endangered, threatened, proposed, or candidate species identified in the plan area. Furthermore, the HCP Amendment will provide a net conservation benefit to both the Hawaiian hoary bat and the Hawaiian petrel.
(c)(2) Implementation of the HCP is not likely to cause any native species not endangered or threatened at the time of plan submission to become threatened or endangered	Implementation of the HCP Amendment is not likely to cause any native species that are not listed at the time of submission to become threatened or endangered. The majority of species that occur within the Project area are non-native and common throughout Hawai'i. Implementation of the HCP Amendment does not involve any actions that are expected to impact native species to the degree such that they would become threatened or endangered.
<b>ITL Issuance Criteria (HRS Chapter 195D-4(g))</b>	
The take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity	The purpose of the activity is to <del>construct and operate</del> <u>continue operation</u> of a wind farm; take of Hawaiian petrels and Hawaiian hoary bats are incidental to this activity.
(1) The applicant shall minimize and mitigate the impacts of the take to the maximum extent practicable	A variety of measures to avoid and minimize impacts to the Hawaiian petrel and Hawaiian hoary bat have been and continue to be implemented under the approved HCP. These include <u>installation of bat deterrents and</u> operational measures involving LWSC. The current, voluntary LWSC regime (which is proposed to be carried forward under the HCP Amendment) is based on a detailed analysis of the best available information and calculation of a cut-in speed that is the maximum extent practicable. Additional detail on the avoidance and minimization measures for the Hawaiian hoary bat is provided in Section 6B.0 of the HCP Amendment. Minimization measures for the Hawaiian petrel are detailed in Section 5.3 of the approved HCP. Mitigation measures for both species that will result in a net conservation benefit can be found in Section 7 <u>of the HCP Amendment</u> .
(2) The applicant shall guarantee that adequate funding for the HCP will be provided	Kawailoa Wind will provide funding and funding assurances for the required conservation (monitoring, minimization, and mitigation) measures in full, as discussed in Section 8.4 and Appendix 18 of the HCP Amendment. Take will not be authorized for the pending tier until funding assurances for the pending tier are in place.

<b>Requirement/Criteria</b>	<b>Discussion of Compliance</b>
(3) The applicant shall post a bond, letter of credit, or provide other similar financial tools or provide other means approved by the Board, adequate to ensure monitoring of the species by the State and to ensure the applicant takes all actions necessary to minimize and mitigate the impacts of the take	Funding assurances will be in the form of a bond, letter of credit, or similar instrument naming the DLNR as a beneficiary. The letter of credit or similar financial instrument will be in place within 6 months of issuance of the ITP and ITL. Additional detail on the funding assurances is provided in Section 8.4 and Appendix 18 of the <del>Draft</del> HCP Amendment.
(4) The HCP shall increase the likelihood that the species will survive and recover	Impacts of incidental take will be minimized and mitigated to the maximum extent practicable, such that a net conservation benefit will be provided to the Hawaiian hoary bat and Hawaiian petrel. The proposed mitigation actions are supported as critical to the recovery of these species by the available literature. Collectively, the mitigation actions will lead to increases in current populations, resulting in an overall significant net benefit to both species. Mitigation measures established for the Hawaiian petrel are detailed in Section 7.3.2, and for the Hawaiian hoary bat in Sections 7.6.2, 7.6.3, and 7.6.4 of the HCP Amendment.
(5) The plan takes into consideration the full range of the species on the island so that cumulative impacts associated with the take can be adequately assessed	Section 6 of the HCP Amendment describes impacts to the Hawaiian hoary bat and Hawaiian petrel at the Project-level as well as island-wide, with cumulative impacts discussed in Section 6.4. Based on population estimates using the best available science, the cumulative impact for current, and proposed wind energy development is not expected to have a significant impact on O'ahu's Hawaiian petrels or Hawaiian hoary bats.
(6) The measures required under 195D-21(b) shall be met and DLNR has received any other assurances that may be required so that the HCP may be implemented	The HCP Amendment includes the specific content requirements for an HCP, as listed in HRS Chapter 195D-21(b)(2). To date, no other assurances have been identified by DLNR.
(7) The activity does not involve the use of submerged lands, mining or blasting	The Project does not involve any of the listed activities.
(8) The cumulative impact of the activity provides net environmental benefits	As described in Section 6.4, implementation of the HCP and the HCP Amendment will not result in negative cumulative impacts to Covered Species and will provide a net environmental benefit. The additional mitigation for the Hawaiian hoary bat under the amendment would protect, manage, and enhance habitat that is suitable for foraging and roosting. The mitigation for Hawaiian petrels will fully offset the take and will provide a net benefit. Section 7.3.2 <u>of the HCP Amendment</u> specifically evaluates the Hawaiian petrel take offset and net benefit, Section 7.6.3.3 examines the Tier 4 take offset and net benefit for the Hawaiian hoary bat, and Section 7.6.4.1 details the Tier 5 and 6 take, take offset, and net benefit.
(9) The take is not likely to cause the loss of genetic representation of an affected population of any endangered, threatened, proposed, or candidate plant species	Implementation of the proposed actions presented in the HCP Amendment would not cause the loss of genetic representation of any listed plant species.

### **5.2.11 Mt. Ka'ala Natural Area Reserve Management Plan**

The 2011 EIS identified the possibility of communication facilities which would be located on Mt. Ka'ala. However, it was subsequently determined that these facilities were not needed. No portion of the Project is located within the Mt. Ka'ala Natural Area Reserve; therefore, the Project is not required to comply with the Mt. Ka'ala Natural Area Reserve Management Plan.

## **5.3 County Plans and Policies**

The 2011 EIS identified the county plans and policies relevant to the Project and discussed the status of compliance with each regulation. The discussion provided in the original EIS relative to the City and County of Honolulu General Plan,<sup>27</sup> North Shore Sustainable Communities Plan, and the zoning requirements pursuant to the City & County of Honolulu Land Use Ordinance is still applicable and is incorporated by reference.

## **5.4 Kamehameha Schools North Shore Master Plan**

As described in the 2011 EIS, Kamehameha Schools conducted a master planning effort in 2008 to develop a framework for sustainable management for all its land holdings on the north shore of O'ahu. The resulting plan identified a range of development concepts, including outdoor education, diversified agriculture, and renewable energy, all of which were developed with community input and reflect the vision and mission of Kamehameha Schools. Seven catalyst projects were described in the Master Plan, one of which was a wind energy project on the previous Kawaihoa Plantation lands (Kamehameha Schools 2008). There are no substantive changes in the status of compliance with the Kamehameha Schools North Shore Master Plan. The discussion contained in the 2011 EIS is incorporated by reference.

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<sup>27</sup> Proposed revisions to the General Plan were transmitted to the City Council on April 2018. While modifications to the policies have been proposed, they are minor and do not affect Project compliance.

## 6.0 Required Permits

The permits and approvals required for the Project are listed in Table 6-1. The permits and approvals shown in bold typeface are those that are associated with the increased take of the Hawaiian hoary bat and addition of Hawaiian petrel as a Covered Species. The remaining permits and approvals are those that were obtained prior to construction and remain in effect as applicable for Project operation.

**Table 6-16-1. Permits and Approvals Required for the Kawaiiloa Wind Farm Project**

Permit/Approval	Authorizing Agency/Entity	Status
<b>FEDERAL</b>		
<b>Incidental Take Permit (Endangered Species Act, Section 10(a)(1)(B)) and Habitat Conservation Plan</b>	USFWS	<b>HCP approved, and ITP issued on December 8, 2011; HCP amendment in progress</b>
<b>National Environmental Policy Act (NEPA) Compliance</b>	USFWS	<b>FONSI issued by USFWS in October 2011; Programmatic EIS (for issuance of amended ITP) in progress</b>
Federal Aviation and Administration (FAA) Determination of No Hazard to Air Navigation	FAA	Determination obtained prior to construction
Federal Communications Commission (FCC) License	FCC	License obtained prior to construction
<b>STATE OF HAWAII</b>		
<b>Incidental Take License (HRS Chapter 195D) and Habitat Conservation Plan</b>	DOFAW	<b>HCP approved, and ITL issued on January 6, 2012; amendment to HCP in progress</b>
<b>State of Hawai'i Chapter 343 Compliance</b>	<b>DBEDT (2011 EIS), DOFAW (SEIS)<sup>1</sup></b>	<b>EIS accepted by DBEDT in July 2011 and EA subsequently accepted by DOFAW in September 2011; SEIS in progress</b>
Request for Use of State Lands	DLNR, Land Management Division	Approval not needed as communication facilities on Mt. Ka'ala were not constructed
Conservation District Use Permit	DLNR Office of Conservation and Coastal Lands	Permit not needed as communication facilities on Mt. Ka'ala were not constructed
Forest Reserve System Special Use Permit	DOFAW	Permit not needed as communication facilities on Mt. Ka'ala were not constructed
Noise Permit	Hawai'i Department of Health (HODH)	Obtained prior to construction
Coastal Zone Management Act (CZMA) Federal Consistency Determination	DBEDT, Office of Planning	Federal consistency determination determined to not be required
State Historic Preservation Division (SHPD) Notification and Review	DLNR State Historic Preservation Division (SHPD)	Concurrence obtained prior to construction

<b>Permit/Approval</b>	<b>Authorizing Agency/Entity</b>	<b>Status</b>
Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads	Hawai'i Department of Transportation (HDOT) Highways Division	Permit obtained prior to construction
National Pollutant Discharge Elimination System (NPDES) Construction Permit	HDOH Clean Water Branch	Permit obtained prior to construction
Power Purchase Agreement (PPA)	HECO, PUC	Agreement executed prior to construction
<b>CITY AND COUNTY OF HONOLULU</b>		
Conditional Use Permit (minor)	City & County of Honolulu Department of Planning and Permitting (DPP)	Permit obtained prior to construction
Conditional Use Permit (minor) for a Joint Development Agreement	DPP	Permit obtained prior to construction
Grading/Grubbing/Stockpiling/Building and Other Construction Permits	DPP	Permits obtained prior to construction
Permit for Movement of Oversize and/or Overweight Vehicles and Loads	City & County of Honolulu Dept. of Transportation Services (DTS)	Permit obtained prior to construction
<b>OTHER</b>		
Approval for Use of Mt. Ka'ala Access Road	Mt. Ka'ala Joint Use Coordinating Committee	Permit not needed as communication facilities on Mt. Ka'ala were not constructed
<p>1. DBEDT was the approving agency for the 2011 EIS. Given their request for an SEIS, DOFAW coordinated with DBEDT with respect to their responsibility as the approving agency. In coordination with DBEDT, it was determined that DOFAW would serve as the approving agency for the SEIS.</p> <p>2. It is currently anticipated that the proposed mitigation for the Hawaiian hoary bat and Hawaiian petrel would not require any permits based on the scope of the proposed activities. This conclusion would be confirmed prior to implementation of mitigation.</p>		

## 7.0 Consultation and Distribution

As described in the 2011 EIS, Kamehameha Schools conducted a broad community outreach and communication effort as part of their master planning process. This process used a community dialogue structure and provided interested stakeholders and members of the general public with multiple opportunities to learn about the plan. The master plan and the catalyst projects described as part of the plan were developed based on input and feedback obtained through the community outreach process. As one of seven catalyst projects identified in the Master Plan, development of a wind project in the Kawaiioa region received broad exposure and was well supported in nearly every one of the more than 30 community meetings convened during the master planning process.

More detailed coordination and consultation with resource agencies, the community and the general public began in 2009, when the Project was first proposed by Kawaiioa Wind. A detailed list of the consulted parties, as well as the consultation efforts conducted throughout the environmental review process are presented in the 2011 EIS (and copies of public comments provided in the 2011 EIS Appendices E and F) and the subsequent EA; this information is incorporated by reference. Following is a discussion of consultation that has been conducted subsequent to the 2011 EIS and EA, specifically in support of the HCP Amendment and this SEIS process.

### 7.1 Consultation

Specific to the increase in estimated take of the Hawaiian hoary bat and the addition of Hawaiian petrel as a Covered Species, Kawaiioa Wind initiated consultation with USFWS and DOFAW in 2015, with ongoing consultation conducted since that time. Consultation efforts have included multiple meetings with the ESRC and other opportunities for public input. A summary of the key consultation activities is provided in Table 7-1.

**Table 7-1. Summary of Consultation Conducted for HCP Amendment and SEIS Process**

Date	Parties Involved	Summary of Consultation Activity
November 2015	USFWS, DOFAW	Meeting to discuss Kawaiioa Wind's intent to pursue an amendment of HCP and ITP/ITL
December 29, 2015	USFWS, DOFAW	Kawaiioa Wind provided initial Draft HCP Amendment to USFWS and DOFAW
February 1, 2016	USFWS	USFWS provided comments on initial Draft HCP Amendment
August 9, 2016	USFWS	Meeting with USFWS to discuss the HCP Amendment
October 11, 2016	USFWS	USFWS provided additional comments on initial Draft HCP Amendment
December 8, 2016	Trust for Public Lands, DLNR, ESRC	Presentation to ESRC with Trust for Public Lands and DLNR regarding proposed acquisition of Helemano Wilderness Area as Tier 4 mitigation

<b>Date</b>	<b>Parties Involved</b>	<b>Summary of Consultation Activity</b>
January 30, 2017	USFWS	USFWS provided a signed letter of support to Kawaihoa Wind regarding Helemano Wilderness Area as mitigation
June 26, 2017	DOFAW	DOFAW provided a signed letter of support to Kawaihoa Wind regarding Helemano Wilderness Area as mitigation
October 30, 2017	USFWS and DOFAW	Kawaihoa Wind provided second Draft HCP Amendment to USFWS and DOFAW
January 25, 2018	DOFAW	DOFAW provided comments on second Draft HCP Amendment
January 29, 2018	USFWS Regional Office	USFWS Regional Office provided comments on second draft HCP Amendment
March 27, 2018	USFWS and DOFAW	Meeting with USFWS and DOFAW to discuss the HCP Amendment
May 1, 2018	USFWS and DOFAW	Presentation to USFWS and DOFAW on HCP Amendment
July 8, 2018	DOFAW, OEQC, public	DOFAW published SEIS Preparation Notice (SEISPN) in OEQC's <i>Environmental Notice</i> , initiating 30-day public scoping period
July 13, 2018	USFWS and DOFAW	Kawaihoa Wind provided third Draft HCP Amendment to USFWS and DOFAW
August 7, 2018	USFWS	USFWS provided comments on third Draft HCP Amendment
August 10, 2018	USFWS	Meeting with USFWS to discuss critical issues on HCP Amendment
August 15, 2018	USFWS and DOFAW	Kawaihoa Wind provided fourth Draft HCP Amendment to USFWS and DOFAW
August 16, 2018	DOFAW	DOFAW provided comments on fourth Draft HCP Amendment
August 29, 2018	DOFAW	Meeting with DOFAW to discuss comments on the HCP Amendment
September 1, 2018	USFWS	Kawaihoa Wind provided fifth Draft HCP Amendment to USFWS
September 14, 2018	KESRP	KESRP provided a letter of support with summary of the need for funding for predator control and burrow monitoring at Hanakāpi'ai and Hanakoa breeding colonies
September 21, 2018	DOFAW	DOFAW provides a second signed letter of support to Kawaihoa Wind regarding Helemano Wilderness Area as mitigation
September 26, 2018	USFWS	USFWS provides a second signed letter of support to Kawaihoa Wind regarding Helemano Wilderness Area as mitigation
September 28, 2018	USFWS and DOFAW	Kawaihoa Wind provided sixth Draft HCP Amendment to USFWS and DOFAW
October 23, 2018	DOFAW, OEQC, public	DOFAW published Draft HCP Amendment in OEQC's <i>Environmental Notice</i> , initiating 60-day public comment period
October 23, 2018	OEQC	Meeting with OEQC to discuss requirements for SEIS
October 25, 2018	USFWS, DOFAW, ESRC	Presentation of Draft HCP Amendment to ESRC
November 29, 2018	DOFAW	DOFAW held public hearing for Draft HCP Amendment
November 20, 2018	USFWS Regional Office	USFWS Regional Office provided comments on sixth draft HCP Amendment



Date	Parties Involved	Summary of Consultation Activity
December 23, 2018	DOFAW, OEQC, public	DOFAW re-published Draft HCP Amendment in OEQC's <i>Environmental Notice</i> , extending public comment period for an additional 60 days
February 7, 2019	DOFAW, ESRC and the public	Site visit by ESRC (open to members of the public)
March 20-21, 2019	Community members and elected officials	One-on-one meetings with north shore neighborhood board representatives and elected officials
<u>May 31, 2019</u>	<u>USFWS, DOFAW</u>	<u>Kawailoa Wind provided seventh Draft HCP Amendment to USFWS and DOFAW</u>
<u>June 25, 2019</u>	<u>USFWS, DOFAW, ESRC</u>	<u>Kawailoa Wind provided the Final HCP Amendment to USFWS and to DOFAW for presentation to the ESRC</u>
<u>July 25, 2019</u>	<u>DOFAW, ESRC</u>	<u>Presentation of revised HCP Amendment to ESRC; ESRC provided a recommendation for approval (with minor revisions requested)</u>

## 7.2 SEISPN Distribution

The SEISPN was published in OEQC's *Environmental Notice* on July 8, 2018 for a 30-day public review period, which began on the date of publication and ended on August 7, 2018. Notice of the EISPN publication was distributed to the parties listed in Table 7-2.

Table 7-2. SEISPN Distribution List

Federal Agencies	Organizations, Individuals and Consulted Parties
U.S. Geological Survey, Pacific Islands Water Science Center	Kamehameha Schools
U.S. Fish and Wildlife Service	Sierra Club of Hawai'i, O'ahu Group
National Marine Fisheries Service	Sierra Club, Maui Group
National Parks Service	Hi'ipaka LLC (Waimea Valley)
National Resources Conservation Service	Hawai'i Audubon Society
U.S. Army Corps of Engineers	Keep the North Shore Country
Department of the Navy	Aha Moku O Kaupo Representative
Federal Aviation Administration	The Nature Conservancy
Federal Transit Administration	Hawai'i Wildlife Center
Federal Highways Administration	Good Shepherd Foundation
U.S. Coast Guard	Maui Tomorrow Foundation
Environmental Protection Agency	NRG-Hawai'i
<b>State Agencies</b>	NRG-West Region
Department of Agriculture	Kalehua Lu'uwai
Department of Accounting and General Services (DAGS)	Brandon Gurat
DAGS Archives Division	Keahi Bustamente
DBEDT	Doug McLeod
DBEDT Research Division Library	Paul Hanada

<b>Federal Agencies</b>	<b>Organizations, Individuals and Consulted Parties</b>
DBEDT Strategic Industries Division	James Ryan
DBEDT Office of Planning	Sally Kaye
Hawai'i Emergency Management Agency	Doug McLeod
Department of Education	Shawn Slocum
Office of Hawaiian Affairs	Paul Thurston
Hawai'i State Energy Office	B P Bishop Trust Estate
<b>City &amp; County of Honolulu</b>	Louis K III & Lesley H K Agard Trust
Department of Planning and Permitting	Michael & Patrice Wright
<b>Elected Officials</b>	Luann Casey & Gary Gunder
U.S. Senator Brian Schatz	City and County of Honolulu
U.S. Senator Mazie Hirono	B P Bishop Trust Estate
U.S. Representative Tulsi Gabbard	Gordon Saker
State Senator Gil Riviere	Steve & Lillian Watanabe
State Senator Russell E. Ruderman	<b>News Media</b>
State Representative Chris Todd	Honolulu Star Advertiser
State Representative Sean Quinlan	Hawai'i Tribune Herald
State Representative Lei R. Learmont	West Hawai'i Today
Mayor Kirk Caldwell	The Garden Island
Councilmember Ernest Y. Martin	Maui News
Chairperson, North Shore Neighborhood Board	Moloka'i Dispatch
<b>Libraries</b>	Honolulu Civil Beat
Hawai'i State Library, Hawai'i Documents Center	
Kaimuki Regional Library	

### **7.3 Comments Received on SEISPN**

Upon publication of the SEISPN in the *Environmental Notice*, a 30-day public comment was held (from July 8, 2018 to August 7, 2018). A total of 45 comment letters were received in response to the SEISPN. A list of the parties that submitted comments, and a brief summary of those comments is provided in Table 7-3. Copies of the comment letters and the response provided to each are provided in Appendix D.

Table 7-3. Summary of Comments Received on SEISPN

Agency or Individual	Date of Comment	Summary of Comments Provided
State of Hawai'i Department of Accounting and General Services	Letter dated July 24, 2018	Project is not expected to have an impact on DAGS' facilities. Requests coordination if there is a change in these conditions.
City & County of Honolulu Department of Planning and Permitting	Letter dated July 27, 2018	No comments at this time.
No'eau Machado	Undated letter	<ul style="list-style-type: none"> <li>• Notes concern with estimated increase in take of Hawaiian hoary bat and addition of Hawaiian petrel take, especially from members of the Hawaiian community</li> <li>• Emphasizes endangered status and decline of Hawaiian hoary bat and Hawaiian petrel populations</li> <li>• Expresses support for sustainable energy sources, but stresses that such projects are still development that drives habitat loss</li> <li>• Requests information regarding initial take calculations, as well as reasons why Hawaiian hoary bat take must be adjusted and Hawaiian petrel were not initially included in HCP</li> <li>• Requests information regarding avoidance and minimization measures, as well as reasons why additional measures are not already in place</li> <li>• States that current authorized take amounts should be provided to community members and policy/decision makers for context</li> </ul>
State of Hawai'i Office of Planning	Letter dated August 13, 2018	No comments at this time.

## 7.4 Draft SEIS Distribution

The Draft SEIS was submitted to OEQC for publication in the May 8, 2019 edition of the *Environmental Notice*. Publication of the Draft SEIS marks the beginning of a 45-day public review period, which ends on June 24, 2019. The parties listed in Table 7-4 were either provided a copy of the Draft SEIS or a notice of availability letter containing information on how to access a copy of the Draft SEIS, as well as instructions on how to submit comments on the Draft SEIS. In addition, a limited number of hard-copy documents were provided to libraries.

Table 7-4. Draft SEIS Distribution List

<b>Federal Agencies</b>	<b>Organizations, Individuals and Consulted Parties</b>
U.S. Geological Survey	Kamehameha Schools
U.S. Fish and Wildlife Service	Sierra Club of Hawai'i, O'ahu Group
National Marine Fisheries Service	Sierra Club of Hawai'i, Maui Group
National Parks Service	Hi'ipaka LLC (Waimea Valley)
National Resources Conservation Service	Hawai'i Audubon Society
U.S. Army Corps of Engineers	Keep the North Shore Country
Department of the Navy	Sunset Beach Community Association and Pupukea Seniors
Federal Aviation Administration	North Shore Chamber of Commerce
Federal Transit Administration	Aha Moku O Kaupo Representative
Federal Highways Administration	The Nature Conservancy
U.S. Coast Guard	Hawai'i Wildlife Center
Environmental Protection Agency	Good Shepherd Foundation
<b>State Agencies</b>	Maui Tomorrow Foundation
Department of Agriculture	NRG-Hawai'i
Department of Accounting and General Services (DAGS)	NRG-West Region
DAGS Archives Division	No'eau Machado
Dept. of Business, Economic Dev. and Tourism (DBEDT)	Kalehua Lu'uwai
DBEDT Research Division Library	Brandon Gurat
DBEDT Strategic Industries Division	Keahi Bustamente
DBEDT Office of Planning	Doug McLeod
Hawai'i Emergency Management Agency	Paul Hanada
Department of Education	James Ryan
Hawai'i State Energy Office	Sally Kaye
Department of Hawaiian Homelands	Doug McLeod
Department of Health, Environmental Health Administration	Shawn Slocum
Department of Land and Natural Resources	Paul Thurston
State Historic Preservation Division	B P Bishop Trust Estate
Department of Transportation	Louis K III & Lesley H K Agard Trust
University of Hawai'i Water Resources Research Center	Michael & Patrice Wright
University of Hawai'i Environmental Center	Luann Casey & Gary Gunder
Office of Hawaiian Affairs	City and County of Honolulu
<b>City &amp; County of Honolulu</b>	B P Bishop Trust Estate
Board of Water Supply	Gordon Saker
Department of Design and Construction	Steve & Lillian Watanabe
Department of Environmental Services	<b>Libraries</b>
Department of Facilities Maintenance	Hawai'i State Library, Hawai'i Documents Center
Honolulu Fire Department	Kaimuki Regional Library
Department of Community Services	Kahuku Public and School Library
Department of Planning and Permitting	Waialua Public Library

Department of Parks and Recreation	University of Hawai'i (UH) Thomas H. Hamilton Library
Honolulu Police Department	UH Hilo, Edwin H. Mo'okini Library
Department of Transportation Services	UH Maui College Library
<b>Elected Officials</b>	Kaua'i Community College Library
U.S. Senator Brian Schatz	Legislative Reference Bureau Library
U.S. Senator Mazie Hirono	<b>News Media</b>
U.S. Representative Tulsi Gabbard	Honolulu Star Advertiser
State Senator Gil Riviere	Hawai'i Tribune Herald
State Representative Nicole E. Lowen	West Hawai'i Today
State Representative Tina Wildberger	The Garden Island
State Senator Glenn Wakai	Maui News
State Senator Brian T. Taniguchi	Molokai Dispatch
State Senator Mike Gabbard	Honolulu Civil Beat
State Senator Russell E. Ruderman	The North Shore News
State Representative Sean Quinlan	
State Representative Amy Perruso	
Mayor Kirk Caldwell	
Councilmember Heidi Tsuneyoshi	
North Shore Neighborhood Board, Chair	

## **7.5 Comments Received on Draft SEIS**

Upon publication of the Draft SEIS in the *Environmental Notice*, a 45-day public comment was held (from May 8 through June 24, 2019). A total of 16 comment letters were received in response to the Draft SEIS. A list of the parties that submitted comments, and a brief summary of those comments is provided in Table 7-5. Copies of the comment letters and the response provided to each are provided in Appendix E.

**Table 7-5. Summary of Comments Received on Draft SEIS**

<b><u>Agency or Individual</u></b>	<b><u>Date of Comment</u></b>	<b><u>Summary of Comments Provided</u></b>
<u>Michael Dezellem</u>	<u>Email dated May 15, 2018</u>	<u>Voices opposition to the HCP Amendment because it is detrimental to the Hawaiian hoary bat and Hawaiian petrel</u>
<u>City &amp; County of Honolulu Dept. of Facility Maintenance</u>	<u>Letter dated May 16, 2019</u>	<u>No comment</u>
<u>City &amp; County of Honolulu Dept. of Parks and Recreation</u>	<u>Letter dated May 17, 2019</u>	<u>Encourages DLNR to require Kawailoa Wind to reduce take of all threatened and endangered species</u>
<u>City &amp; County of Honolulu Dept. of Design and Construction</u>	<u>Letter dated May 22, 2019</u>	<u>No comment</u>
<u>Honolulu Fire Department</u>	<u>Letter dated May 23, 2019</u>	<ol style="list-style-type: none"> <li><u>1. Specifies requirements for proximity of fire department access roads to facility</u></li> <li><u>2. Lists requirements for a water supply approved by the county capable of supplying the required flow for fire protection</u></li> <li><u>3. Specifies requirements for width and vertical clearance of fire apparatus access road</u></li> <li><u>4. Requests submittal of civil drawings to Fire Department for review and approval</u></li> </ol>

<b>Agency or Individual</b>	<b>Date of Comment</b>	<b>Summary of Comments Provided</b>
<u>City &amp; County of Honolulu Dept. of Planning and Permitting</u>	<u>Letter dated May 24, 2019</u>	<u>No comment</u>
<u>Hawai'i Audubon Society</u>	<u>Letter dated June 18, 2019</u>	<ol style="list-style-type: none"> <li>1. Expresses support for the proposed avoidance, minimization and mitigation strategies, but states that the strategies must prove to be more effective; states that additional mitigation should be required if monitoring shows that Tier 4 – 6 mitigation is not effective; requests that the increase in take be minimal and reassessed regularly through the remaining life of the Project</li> <li>2. Requests further observation and research be conducted for the Hawaiian petrel on O'ahu</li> <li>3. States opposition to increasing the take levels but acknowledges the opportunity to learn more about the species; requests safer operational protocols be implemented and continuously monitored for effectiveness, mitigation habitat be subject to monitoring, and evaluation and adjustments to operations based on findings of neutral third-party monitor (with findings reported to DLNR and public)</li> </ol>
<u>State of Hawai'i Dept. of Land and Natural Resources Engineering Division</u>	<u>Letter dated June 19, 2019</u>	<u>Provides information regarding the National Flood Insurance Program (NFIP) and flood hazard zones</u>
<u>State of Hawai'i Dept. of Land and Natural Resources DOFAW</u>	<u>Letter dated June 13, 2019</u>	<u>States that DOFAW is the approving agency</u>
<u>State of Hawai'i Dept. of Land and Natural Resources Land Division</u>	<u>Letter dated June 13, 2019</u>	<u>No comment</u>
<u>Department of the Army, U.S. Army Garrison, Hawai'i Directorate of Public Works</u>	<u>Letter dated June 21, 2019</u>	<ol style="list-style-type: none"> <li>1. Expresses concerns that the increase in take authorization may restrict the Army's training flexibility on O'ahu; requests that DOFAW work with the Army to maintain training flexibility should the increase in take be granted</li> <li>2. Expresses support for the proposed mitigation</li> </ol>
<u>Sally Kaye</u>	<u>Letter dated June 21, 2019</u>	<ol style="list-style-type: none"> <li>1. States that the applicant fails to provide data or factual support for the claim that full night-time curtailment will hurt applicant financially</li> <li>2. States that the applicant fails to provide data or factual support for a claim that it would be hurt financially if it adopted LWSC of 5.5 meters per second or above</li> <li>3. States that the rejection of measures to benefit the Hawaiian petrel on O'ahu is not adequately supported</li> <li>4. States that the applicant is threatening to "sell" its paid interest in the acquisition of Helemano Wilderness Area if amendment is not approved, but fails to discuss the impact and risks of such a sale on taxpayer funding that also contributed to the purchase; states that the Tier 5 and 6 mitigation is too vague</li> <li>5. Applicant avoids meaningful discussion of applicant's take numbers when aggregated with those of other wind power plant operations across the state</li> </ol>

<b>Agency or Individual</b>	<b>Date of Comment</b>	<b>Summary of Comments Provided</b>
<u>Senator Gil Riviere</u>	<u>Letter dated June 24, 2019</u>	<ol style="list-style-type: none"> <li>1. <u>Questions why Kawailoa Wind was allowed to continue nighttime operations and was not immediately curtailed when permitted take levels were exceeded; inquires about remedy for non-permitted take that has occurred if amendment is not granted</u></li> <li>2. <u>Questions why bat deterrence is not considered take</u></li> <li>3. <u>Requests more information regarding the comparison of effectiveness of deterrents to LWSC, and how this will be measured and compared</u></li> <li>4. <u>Requests more information regarding the side effects or unintended consequences of deterrents on animals and nearby residents</u></li> <li>5. <u>Requests more information regarding the financial impact of the various levels of curtailment and how much revenue is needed to maintain operations</u></li> <li>6. <u>Asks if HECO has ever threatened Kawailoa Wind for failure to meet contractual obligations in the PPA, and about potential sanctions against Kawailoa Wind and remedies for HECO</u></li> <li>7. <u>Requests information about the current Hawaiian hoary bat population on O'ahu and if there are studies demonstrating that it is rising or stable</u></li> <li>8. <u>Asks about the effectiveness of mitigation for Tiers 1-3 and improved viability of the Hawaiian hoary bat</u></li> <li>9. <u>Requests clarification regarding the seasonal restrictions on tree clearing for avoidance and minimization of impacts on Hawaiian hoary bat</u></li> <li>10. <u>Questions how it will be determined that Tier 4 mitigation has replaced more bats than have been killed</u></li> <li>11. <u>Requests more information regarding the cumulative impacts to Hawaiian hoary bats on O'ahu</u></li> <li>12. <u>Asks whether the search radius and frequency of searches are subject to modification as part of adaptive management and whether they should be considered in the amendment</u></li> <li>13. <u>Asks how mitigation for Hawaiian petrel on Kaua'i will satisfy the need to protect the species on O'ahu</u></li> </ol>
<u>Center for Biological Diversity</u>	<u>Letter dated June 24, 2019</u>	<ol style="list-style-type: none"> <li>1. <u>Requests more information relative to median core use area; activity rates; details regarding observed species' take at all wind projects; limitations of acoustic monitoring; economic analysis of increased curtailment; effectiveness of Tiers 1-3 mitigation; clear requirements and triggers for Tiers 4-6 mitigation; effectiveness of deterrents; and detailed comparison of alternatives</u></li> <li>2. <u>States that Kawailoa Wind should implement nighttime shut down and low wind speed curtailment at a minimum cut-in speed of 6.9 m/s, and that deterrent technology should not be considered as part of the baseline minimization strategy; Also states that avoidance and minimization measures for Hawaiian petrel are inadequate</u></li> <li>3. <u>Requests population viability analyses for Hawaiian hoary bat and Hawaiian petrel on O'ahu, as well as cumulative population viability analyses that include all operational and anticipated wind projects in Hawai'i</u></li> <li>4. <u>States that use of tiers is not appropriate and should not be used</u></li> <li>5. <u>States that mitigation should be consistent with USFWS policy on compensatory mitigation; states criteria for measuring success of mitigation should demonstrate that take has been offset; states that mitigation should occur on the same island where take occurs</u></li> </ol>

<b>Agency or Individual</b>	<b>Date of Comment</b>	<b>Summary of Comments Provided</b>
<u>City &amp; County of Honolulu Department of Community Services</u>	<u>Letter dated June 24, 2019</u>	<u>States that Project will have no adverse impact on any Department of Community Services' activities or projects in the surrounding neighborhood</u>
<u>State of Hawai'i Office of Planning</u>	<u>Letter dated June 27, 2019</u>	<ol style="list-style-type: none"> <li><u>1. State that Office of Planning does not have any comments on the Draft SEIS and acknowledges that 2011 EIS adequately addressed the plans, policies and initiatives within Office of Planning's jurisdiction</u></li> <li><u>2. Encourages balanced consideration for State goals relative to renewable energy generation and species conservation</u></li> </ol>

## 7.6 Final SEIS Distribution

The Final SEIS was submitted to OEQC for publication in the September 23, 2019 edition of the *Environmental Notice*. The parties listed in Table 7-6 were provided a notice of availability letter containing information on how to access a copy of the Final SEIS. In addition, a limited number of hard-copy documents were provided to libraries.

**Table 7-6. Final SEIS Distribution List**

<b>Federal Agencies</b>	<b>Organizations, Individuals and Consulted Parties</b>
<u>U.S. Geological Survey</u>	<u>Kamehameha Schools</u>
<u>U.S. Fish and Wildlife Service</u>	<u>Sierra Club of Hawai'i, O'ahu Group</u>
<u>National Marine Fisheries Service</u>	<u>Sierra Club of Hawai'i, Maui Group</u>
<u>National Parks Service</u>	<u>Hi'ipaka LLC (Waimea Valley)</u>
<u>National Resources Conservation Service</u>	<u>Hawai'i Audubon Society</u>
<u>U.S. Army Corps of Engineers</u>	<u>Keep the North Shore Country</u>
<u>Department of the Navy</u>	<u>Sunset Beach Community Association and Pupukea Seniors</u>
<u>U.S. Army Garrison, Hawai'i Directorate of Public Works</u>	<u>North Shore Chamber of Commerce</u>
<u>Federal Aviation Administration</u>	<u>Aha Moku O Kaupo Representative</u>
<u>Federal Transit Administration</u>	<u>The Nature Conservancy</u>
<u>Federal Highways Administration</u>	<u>Hawai'i Wildlife Center</u>
<u>U.S. Coast Guard</u>	<u>Good Shepherd Foundation</u>
<u>Environmental Protection Agency</u>	<u>Maui Tomorrow Foundation</u>
<b>State Agencies</b>	<u>NRG-Hawai'i</u>
<u>Department of Agriculture</u>	<u>NRG-West Region</u>
<u>Department of Accounting and General Services (DAGS)</u>	<u>No'eau Machado</u>
<u>DAGS Archives Division</u>	<u>Kalehua Lu'uwai</u>
<u>Dept. of Business, Economic Dev. and Tourism (DBEDT)</u>	<u>Brandon Gurat</u>
<u>DBEDT Research Division Library</u>	<u>Keahi Bustamente</u>
<u>DBEDT Strategic Industries Division</u>	<u>Doug McLeod</u>
<u>DBEDT Office of Planning</u>	<u>Paul Hanada</u>
<u>Hawai'i Emergency Management Agency</u>	<u>James Ryan</u>
<u>Department of Education</u>	<u>Sally Kaye</u>
<u>Hawai'i State Energy Office</u>	<u>Doug McLeod</u>



## Final Supplemental Environmental Impact Statement

<u>Department of Hawaiian Homelands</u>	<u>Shawn Slocum</u>
<u>Department of Health, Environmental Health Administration</u>	<u>Paul Thurston</u>
<u>Department of Land and Natural Resources</u>	<u>B P Bishop Trust Estate</u>
<u>State Historic Preservation Division</u>	<u>Louis K III &amp; Lesley H K Agard Trust</u>
<u>Department of Transportation</u>	<u>Michael &amp; Patrice Wright</u>
<u>University of Hawai'i Water Resources Research Center</u>	<u>Luann Casey &amp; Gary Gunder</u>
<u>University of Hawai'i Environmental Center</u>	<u>City and County of Honolulu</u>
<u>Office of Hawaiian Affairs</u>	<u>B P Bishop Trust Estate</u>
<b><u>City &amp; County of Honolulu</u></b>	<u>Gordon Saker</u>
<u>Board of Water Supply</u>	<u>Steve &amp; Lillian Watanabe</u>
<u>Department of Design and Construction</u>	<u>Center for Biological Diversity</u>
<u>Department of Environmental Services</u>	<u>Mike Dezelle</u>
<u>Department of Facilities Maintenance</u>	<b><u>Libraries</u></b>
<u>Honolulu Fire Department</u>	<u>Hawai'i State Library, Hawai'i Documents Center</u>
<u>Department of Community Services</u>	<u>Kaimuki Regional Library</u>
<u>Department of Planning and Permitting</u>	<u>Kahuku Public and School Library</u>
<u>Department of Parks and Recreation</u>	<u>Waialua Public Library</u>
<u>Honolulu Police Department</u>	<u>University of Hawai'i (UH) Thomas H. Hamilton Library</u>
<u>Department of Transportation Services</u>	<u>UH Hilo, Edwin H. Mo'okini Library</u>
<b><u>Elected Officials</u></b>	<u>UH Maui College Library</u>
<u>U.S. Senator Brian Schatz</u>	<u>Kaua'i Community College Library</u>
<u>U.S. Senator Mazie Hirono</u>	<u>Legislative Reference Bureau Library</u>
<u>U.S. Representative Tulsi Gabbard</u>	<b><u>News Media</u></b>
<u>State Senator Gil Riviere</u>	<u>Honolulu Star Advertiser</u>
<u>State Representative Nicole E. Lowen</u>	<u>Hawai'i Tribune Herald</u>
<u>State Representative Tina Wildberger</u>	<u>West Hawai'i Today</u>
<u>State Senator Glenn Wakai</u>	<u>The Garden Island</u>
<u>State Senator Brian T. Taniguchi</u>	<u>Maui News</u>
<u>State Senator Mike Gabbard</u>	<u>Molokai Dispatch</u>
<u>State Senator Russell E. Ruderman</u>	<u>Honolulu Civil Beat</u>
<u>State Representative Sean Quinlan</u>	<u>The North Shore News</u>
<u>State Representative Amy Perruso</u>	
<u>Mayor Kirk Caldwell</u>	
<u>Councilmember Heidi Tsuneyoshi</u>	
<u>North Shore Neighborhood Board, Chair</u>	

## 8.0 List of Preparers

A detailed list of the people responsible for the original EIS analysis and documentation is provided in Section 8 of the 2011 EIS; this list is incorporated by reference. Additional people involved in the preparation of this Draft SEIS and their respective roles are listed in Table 8-1.

**Table 8-18-1. List of Preparers for Draft SEIS**

<b>Name</b>	<b>Primary Responsibility</b>
Lisa Kettley, Tetra Tech	Senior planner
Karen Brimacombe, Tetra Tech	Project planner
Tiffany Agostini, Tetra Tech	Biological resources (HCP amendment)
Matt Stelmach, Tetra Tech	Biological resources (HCP amendment)
Alicia Oller, Tetra Tech	Biological resources (HCP amendment)
Kristina Dick, Tetra Tech	GIS data management and mapping
Rusty Childers, Tetra Tech	Technical editing
Linnea Fossum, Tetra Tech	Senior review
Brita Woeck, Kawaioloa Wind	Environmental compliance manager
Adam Young, Kawaioloa Wind	Asset manager

## 9.0 References

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## **Appendix A. 2011 EIS and 2011 EA Acceptance and Publication Documentation**

# THE ENVIRONMENTAL NOTICE

*A semi-monthly periodic bulletin published by the Office of Environmental Quality Control pursuant to  
Section 343-3,  
Hawai'i Revised Statutes*

July 8, 2011

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The *Environmental Notice* informs the public of environmental assessments and other documents that are available for review and comment per HRS 343-3 and is issued on the 8<sup>th</sup> and 23<sup>rd</sup> of each month on the Office of Environmental Quality Control's website. If you would like to be notified when it is issued, send us your email address and we'll put you on our mailing list.



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Hawai'i: 974-4000 ext. 64185



## Proposing/Determination

**Agency:** Hawai'i Community Development Authority, State of Hawai'i, 461 Cooke Street, Honolulu, Hawai'i 96813. Contact: Tesha Malama, (808) 692-7245  
**Consultant:** Belt Collins Hawai'i Ltd., 2153 North King Street, Suite 200, Honolulu, Hawai'i 96819. Contact: Glen Koyama, (808) 521-5361  
**Status:** Finding of No Significant Impact (FONSI)

The proposed action calls for the installation of a utility duct-line along lower Fort Barrette Road and Enterprise Avenue from Kapolei Parkway to Midway Road. The new duct-line is to provide a separate utility system from the existing Navy system of the former Naval Air Station-Barbers Point to serve the non-Navy occupants in Kalaeloa. A connecting duct-line will also be installed along Saratoga Avenue from an existing electrical substation to the new duct-line along Enterprise Avenue.

The proposed duct-line will have a total length of approximately 8,400 feet and a typical section that measures 1-1/2 feet by 3 feet. It will include several encased PVC conduits to separately hold electrical cables, telephone lines, and cable TV lines. With the provision of power along Enterprise Avenue, the proposed action will also include the installation of street lighting fixtures.

The proposed duct-line will be installed predominantly under the road pavement at a depth of approximately five feet (along lower Fort Barrette Road, the duct-line will be in shoulder area). To assure no interference or disruption of existing utility services, the specific location of the duct-line within the project rights-of-way will be coordinated with the U.S. Navy and utility companies having current facilities within the affected ROWs. A traffic control plan will be implemented to accommodate through traffic during project construction. The long-term operations of the underground duct-line will not result in any significant adverse impact on the environment.

The source of funding for the project will be State of Hawai'i monies through the Hawai'i Community Development Authority. Construction is anticipated to begin in mid 2011 and be completed by the end of 2012.

## 6. Kawailoa Wind Farm Final EIS

**Island:** O'ahu  
**District:** Waialua  
**TMK:** *Wind farm:* 61005001, 61006001, 61007001, 62011001  
*Traversed by existing onsite access roads:* 61005003, 61005007, 61005014, 61005015, 61005016, 61005019, 61005020, 61005021, 61005022, 61008025, 62002001, 62002002, 62002025, 62009001  
*Communication sites:* 67003024  
**Permits:** *Wind farm:* Endangered Species Act (ESA) Section 10 Incidental Take Permit; Federal Aviation Administration (FAA) Determination of No Hazard to Air Navigation; Federal Communications Commission (FCC) License; State Endangered Species Incidental Take License; Noise Permit; Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads; Conditional Use Permit (Minor)  
*Communication site:* Conservation District Use Permit; Request for Use of State Lands; Forest Reserve System Special Use Permit  
**Applicant:** Kawailoa Wind, LLC, 810 Richards Street, Suite 650, Honolulu, Hawai'i 96813. Contact: Wren Wescoatt, (808) 695-3300  
**Approving Agency:** State of Hawai'i, Department of Business, Economic Development and Tourism (DBEDT), P.O. Box 2359, Honolulu, Hawai'i 96804. Contact: Ms. Malama Minn, (808) 587-9000  
**Consultant:** CH2M HILL, Inc., 1132 Bishop Street, Suite 1100, Honolulu, Hawai'i 96813. Contact: Paul Luersen; Phone: (808) 943-1133  
**Status:** Accepted by the Approving Agency



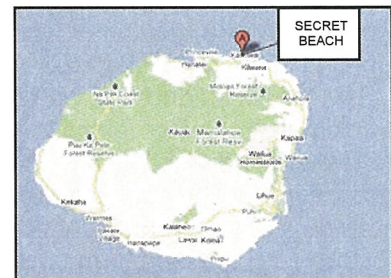


The Proposed Action is to construct and operate a 70-megawatt wind farm on Kamehameha Schools' Kawaioloa Plantation lands. In addition to wind turbine generators and appurtenant facilities at the wind farm site, the project would require installation of communication equipment on existing structures at existing communication sites on Mt. Ka'ala. The Final EIS evaluates the ecological, aesthetic, historic, cultural, military training, economic, social, and health effects that could result from the Proposed Action and its alternatives. This evaluation indicates that the adverse impacts would be relatively small in comparison to the benefits provided by the generation of additional renewable energy for O'ahu consumers. To the extent possible, the Proposed Action has been developed so as to avoid or minimize potential adverse impacts; in those cases where impacts cannot be avoided or minimized, mitigation measures have been identified. The Proposed Action has the potential for incidental take of six federally and/or State listed threatened or endangered species. The cumulative effects of other existing and proposed wind farms on O'ahu's North Shore were considered in the analysis of potential take. The proposed mitigation is expected to more than offset the anticipated take and provide a net benefit to the listed species.

## KAUA'I NOTICES (HRS 343)

### 7. Secret Beach Properties Final EA (FONSI)

**Island:** Kaua'i  
**District:** Hanalei  
**TMK:** (4) 5-2-005:036  
**Permits:** Conservation District Use Permit, Special Management Area Minor Permit, and Shoreline Setback Determination  
**Applicant:** Secret Beach Properties, LLC, P.O. Box 781, Kilauea, Hawai'i 96754. Contact: Michele and Justin Hughes, (808) 639-0904  
**Approving Agency:** Department of Land and Natural Resources, Office of Conservation and Coastal Lands, Kalanimoku Building, 1151 Punchbowl Street, Honolulu, Hawai'i 96813. Contact: Mr. Samuel Lemmo, (808) 587-0377  
**Consultant:** SSFM International, Inc., 501 Sumner Street, Suite 620, Honolulu, Hawai'i 96817. Contact: Ms. Robyn Loudermilk, (808) 531-1308  
**Status:** Finding of No Significant Impact (FONSI)



Secret Beach Properties, LLC will obtain a number of after-the-fact permits for approximately two (2) miles of trails and associated improvements across the width of the 23.803 acres property as well as two mauka-makai trails from the top of the coastal bluff to the shoreline area. These trails are required to access and maintain the property.

Additionally, Secret Beach Properties, LLC will seek approval for the removal of unwanted vegetation, including trees, subject to plans to be submitted to and approved by the Department of Land and Natural Resources Office of Conservation and Coastal Lands.

Lastly, Secret Beach Properties, LLC will also seek approval for the installation of a mauka boundary fence should illegal activities continue to occur on the property. These improvements are required for access and management of these lands.

Maintenance activities associated with the proposed action may directly result in short term impacts related to air and noise quality. Construction activities associated with the mauka boundary fence may also result in short term impacts to air and noise quality. However, these impacts will be localized and not affect surrounding properties. Air and noise quality will be mitigated through the use of appropriate best management practices.

Secondary impacts are not expected due to the size and location of the proposed action.

Cumulative impacts of the proposed action are neutral to positive. The existing improvements will remain in place and continue to be compatible with the natural characteristics of the Property. Proposed



**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM**

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804  
Web site: [www.hawaii.gov/dbedt](http://www.hawaii.gov/dbedt)

Telephone: (808) 586-2355  
Fax: (808) 586-2377

**COPY**

NEIL ABERCROMBIE  
GOVERNOR

RICHARD C. LIM  
DIRECTOR

MARY ALICE EVANS  
DEPUTY DIRECTOR

2011:0720091659

July 20, 2011

Mr. Wren Wescoatt  
Development Manager  
First Wind, LLC  
810 Richards Street, Suite 650  
Honolulu, Hawai'i 96813

Subject: Acceptance of Kawailoa Wind Farm Project Final Environmental Impact Statement

Dear Mr. Wescoatt:

On behalf of the Hawai'i Department of Business, Economic Development & Tourism (DBEDT), I hereby accept the Final Environmental Impact Statement (FEIS) for the Kawailoa Wind Farm Project, as satisfactory fulfillment of the requirements of Chapter 343, Hawai'i Revised Statutes. The environmental, economic, and social impacts which will likely occur should this project be built are adequately described in the Statement. The analysis, together with the comments made by reviewers, provides useful information to decision-makers and the public.

Acceptance of the Statement is an affirmation of the adequacy of said Statement under the applicable laws. DBEDT finds that the mitigation measures proposed in the FEIS will minimize the potential negative impacts of the project.

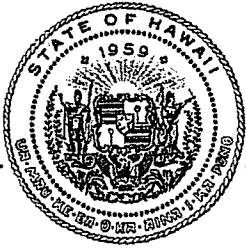
In implementing this project, I hereby direct First Wind, LLC and/or its agent(s) to perform these or comparable mitigation measures at the discretion of the permitting agencies. The mitigation measures identified in the FEIS are described in the attached document.

Sincerely,

Richard C. Lim

Attachment

cc: Office of Environmental Quality Control  
Mr. Paul Luerson, CH2M Hill



## DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

NEIL ABERCROMBIE  
GOVERNOR

RICHARD C. LIM  
DIRECTOR

MARY ALICE EVANS  
DEPUTY DIRECTOR

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813  
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Telephone: (808) 586-2355  
Fax: (808) 586-2377

July 20, 2011

Mr. Gary Hooser, Director  
Office of Environmental Quality Control  
State of Hawaii Department of Health  
235 South Beretania Street, Suite 702  
Honolulu, Hawai'i 96813

Dear Mr. Hooser:

Subject: ACCEPTANCE REPORT  
Chapter 343, Hawaii Revised Statutes  
Final Environmental Impact Statement

Project: Kawailoa Wind Farm Project

Applicant: First Wind, LLC (dba Kawailoa Wind, LLC)

Agent: CH2MHill

Location: Wind Farm: Kawailoa Plantation, North Shore, Island of O'ahu  
Communication Site: Mt. Ka'ala, Waianae, Island of O'ahu

TMK: Wind farm: 61005001, 61006001, 61007001, 62011001  
Traversed by existing onsite access roads: 61005003, 61005007, 61005014, 61005015,  
61005016, 61005019, 61005020, 61005021, 61005022, 61008025, 62002001,  
62002002, 62002025, 62009001  
Communication site: 67003024

### A. BACKGROUND

The Proposed Action is to construct and operate a 70-megawatt wind farm on Kamehameha Schools' Kawailoa Plantation lands. In addition to wind turbine generators and appurtenant facilities at the wind farm site, the project will require installation of communication equipment on existing structures at existing communication sites on Mt. Ka'ala. The Final EIS discloses and evaluates the ecological, aesthetic, historic, cultural, military training, economic, social, and health effects that could result from the Proposed Action and its alternatives. This evaluation indicates that the adverse impacts will be relatively small in comparison to the benefits provided by the generation of additional renewable energy for Oahu consumers. To the extent possible, the Proposed Action has been developed so as to avoid or minimize potential adverse impacts; in those cases where impacts cannot be avoided or minimized, mitigation measures have been



identified. The Proposed Action has the potential for incidental take of six Federally and/or State listed threatened or endangered species. The cumulative effects of other existing and proposed wind farms on O'ahu's North Shore were considered in the analysis of potential take. The proposed mitigation is expected to more than offset the anticipated take and provide a net benefit to the listed species.

B. PROCEDURE

1. An EIS Preparation Notice (EISPN) for this project was published in the September 23, 2010, issue of The Environmental Notice.
2. The 30-day consultation period for this project expired on October 30, 2010. During this period, 7 letters were received which offered comments. The substantive comment letters as well as the responses to them are included in the Final EIS.
3. The Draft EIS for this project was published in the February 23, 2011, issue of The Environmental Notice.
4. The 45-day review period for this project expired on April 9, 2011. The Applicant responded to 27 comment letters. These letters and the responses are included in the Final EIS.
5. The Final EIS for this project was published in the July 9, 2011 issue of The Environmental Notice.

C. AGENCY & PUBLIC CONSULTATION

Over an 18-month period beginning in 2007, Kamehameha Schools (landowner) conducted a broad community outreach and communication effort as part of their master planning process. This process used a community dialogue structure and provided interested stakeholders and members of the general public with multiple opportunities to learn about the Plan. The structure was based on a variety of meeting formats, including small-group stakeholder meetings (6 to 12 stakeholders), community liaison meetings (with recognized community leaders), large-group public meetings, neighborhood board presentations, and briefings with elected officials. They consulted with more than 30 small and large community groups that included *kūpuna* (elders), local farmers, business owners, community associations, schools and churches. The Master Plan and the catalyst project described therein were developed based on input and feedback obtained through the community outreach process. The Plan received significant community support by virtue of the transparent methodology used in its development and its responsive integration of community values into an overall framework of regional sustainability. As one of the seven catalyst projects identified in the Master Plan, development of a wind project in the Kawaihoa region has received broad exposure and was well supported in nearly every one of the more than 30 community meetings convened during the master planning process.

Subsequent to purchasing the rights to the project, Kawailoa Wind began consultations with a variety of agencies, public entities and community members. The purpose of the consultations was to provide information about the status of the project and request input on project development. The list of parties consulted to date is presented below.

Agencies and Other Parties Consulted To Date

Agency/Entity	Contact Name	Date of Consultation
US Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office	Mr. James Kwon	June 2009
	Mr. Aaron Nadig Ms. Megan Laut	October 4, 2010 October 13, 2010 January 20, 2011 March 4, 2011 April 20, 2011 June 7, 2011
State of Hawai'i Department of Land and Natural Resources, Office of Coastal and Conservation Lands	Ms. Tiger Mills, Planner	June 24, 2010
	Mr. Sam Lemmo, Administrator	July 15, 2010
State of Hawai'i, DLNR, Division of Forestry and Wildlife (DOFAW)	Ms. Lauren Goodmiller	July 2010
	Ms. Sandee Hufana	August 12, 2010 October 4, 2010 January 20, 2011 March 4, 2011 April 20, 2011 June 7, 2011
State of Hawai'i Department of Business and Economic Development and Tourism	Ms. Malama Minn Mr. Cameron Black	January 21, 2010 August 16, 2010 September 9, 2010 March 29, 2011
	Mr. Josh Strickler	September 14, 2010
Outdoor Circle	Mr. Robert Leinau	September 13, 2010 February 8, 2011
Sierra Club	Robert Harris, Executive Director	April 14, 2011
Endangered Species Recovery Committee (ESRC)	ESRC members	September 23, 2010 December 6, 2010 December 7, 2010
North Shore Neighborhood Board	Mr. Mike Lyons, Chair	February 23, 2010 October 26, 2010 February 22, 2011
Office of Deputy Assistant Secretary of the Army	Mr. Howard Killian, Hawai'i Environmental and Sustainability Coordinator	July 29, 2010 October 22, 2010
Aviation Operations Planning Board	Mr. Howard Killian, Hawai'i Environmental and Sustainability Coordinator	October 27, 2010

Mr. Gary Hooser

July 20, 2011

Page 4

Agencies and Other Parties Consulted To Date

Agency/Entity	Contact Name	Date of Consultation
Regional Mission Compatibility Review Team (RMCRT)	Mr. Howard Killian Representatives of affected DoD services (including the Army, Marine Corps, Navy and Air Force)	November 10, 2010 December 15, 2010 January 24, 2011 March 4, 2011 April 15, 2011 June 2, 2011
U.S. Army Garrison, PACOM and Hawai'i Army National Guard	COL Douglas Mulbury	October 1, 2010 October 15, 2010 October 29, 2010
North Shore Chamber of Commerce	Ms. Antya Miller	November 16, 2010
Waimea Valley (Hi'ipaka LLC)	Ms. Gail Ann Chew, Executive Director	January 5, 2011 April 8, 2011 May 18, 2011
State of Hawai'i Department of Transportation	Mr. George Abcede Mr. Scott Naleimale	January 24, 2011
City and County of Honolulu, Department of Planning and Permitting (DPP)	Mr. Jamie Peirson	January 25, 2011 June 9, 2011
State of Hawai'i Land Use Commission	Mr. Dan Davidson Mr. Scott Derrickson	January 31, 2011
State of Hawai'i Department of Health, Office of Environmental Quality Control (OEQC)	Mr. Gary Hooser	March 22, 2011
	Mr. Leslie Segundo Mr. Herman Tuiolosega	January 31, 2011
	Ms. Kathy Kealoha	August 13, 2010
State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) Office of Planning	Ms. Mary Lou Kobayashi Ms. Mary Alice Evans Ms. Ruby Edwards Mr. Shichao Lii	February 7, 2011
	Mr. Jesse Souki Ms. Mary Alice Evans	March 22, 2011
State of Hawai'i Department of Agriculture	Mr. Russell Kokubun	April 5, 2011
Office of Hawaiian Affairs	Ms. Esther Kia'aina, Chief Advocate	April 29, 2011
Friends of Waialua	Ms. Kathleen Pahinui, Chair	February 9, 2011
Office of U.S. Senator Daniel Inouye	Mr. Alan Yamamoto, Aide	February 15, 2011
Kōkua Hawai'i Foundation	Ms. Natalie McKinney, Director of Program Development	May 1, 2011
Kamehameha Schools (Community Open House, attended by many members of North Shore community)	Mr. Kalani Fronda, Land Manager	February 12, 2011
Sunset Beach Community Association and Pūpūkea Seniors	Ms. Jeanne Martinson	April 19, 2011

Accepting Agency, the Department of Business, Economic Development and Tourism (DBEDT), has determined that this document is in compliance with the filing requirements in accordance with Chapter 200 of Title 11, Administrative Rules, Environmental Impact Statement Rules and with Chapter 343, Hawaii Revised Statutes.

D. EIS CONTENT

The Final EIS consists of two volumes, the Final Environmental Impact Statement and Appendices. These documents contain, as required:

1. Summary sheet (Summary of Proposed Project & an Executive Summary)
2. Table of contents
3. Statement of purpose and need for action
4. Project description
5. Discussion of known alternatives to the proposed action
6. Description of the environmental setting
7. A statement of the proposed action's relationship to the land use plans, policies, and controls for the affected area(s)
8. A statement of probable impact on the environment
9. Relationship between local short-term uses and enhancement of long-term productivity
10. Disclosure of all irreversible and irretrievable commitments of resources
11. Addresses all probable unavoidable adverse environmental effects
12. Description of mitigation measures to minimize impacts
13. A summary of unresolved issues
14. List of organizations and individuals consulted in preparation of the Environmental Impact Statement
15. Reproduction of all substantive comments and responses made during the consultation process
16. A list of organizations and individuals commenting on the Draft EIS
17. Reproductions of all substantive comments and responses made during the EIS review period

Accepting Agency, DBEDT, has determined that the content requirements of the EIS, as specified in Section 11-200-17 of the EIS Rules, have been met.

E. RESPONSES TO COMMENTS

The Applicant has responded to all significant comments made during the review period of the Draft EIS. These comments and responses are included in the Final EIS. DBEDT has determined



that this EIS has fulfilled the public review requirement in accordance with Chapter 200 of Title 11, Hawaii Administrative Rules, Department of Health, Environmental Impact Statement Rules.

F. UNRESOLVED ISSUES

In general, there are no significant issues related to the design and implementation of the Kawailoa wind farm project that remain unresolved. Site constraints and other project-related concerns have been broadly addressed through an iterative planning and siting process, as well as focused stakeholder consultations.

- Military Operations

In particular, potential conflicts with military operations are being addressed through the Regional Mission Compatibility Review Team (RMCRT), a working group comprised of affected Department of Defense (DoD) services, First Wind, and Kamehameha Schools. Discussions by RMCRT have resulted in modifications to the project layout, including the relocation of wind turbines away from the training areas and the undergrounding of proposed electrical lines to avoid and minimize potential impacts to flight and ground training. Other specific mitigation measures are being developed through ongoing coordination with the RMCRT. Permits and approvals must still be obtained from various agencies and it is possible issues may arise during the processing of applications. However, ongoing consultations with agencies and stakeholders as well as the technical evaluations of potential impacts have not identified issues that cannot be resolved.

- Habitat Conservation Plan

The Applicant is preparing a Habitat Conservation Plan and an application for an Incidental Take Permit and Incidental Take License from the U.S. Fish and Wildlife Service (USFWS) and the State Department of Land and Natural Resources-Division of Forestry and Wildlife (DOFAW), respectively. The applicant has been in on-going consultation with the aforementioned agencies prior to the publication of the EIS Preparation Notice. The USFWS and DOFAW will ultimately determine what specific mitigation measures will be required of the applicant; therefore, for the purpose of this EIS, the applicant has provided for several robust alternatives in order to mitigate the taking of threatened and endangered species that would each satisfy the requirements of Chapter 343, Hawaii Revised Statutes and Chapter 200 of Title 11 of the Administrative Rules.

G. PERMITS REQUIRED

Federal

- Incidental Take Permit (Endangered Species Act, Section 10(a)(1)(B))
- Federal Aviation Administration (FAA) Determination of No Hazard to Air Navigation
- Federal Communications Commission (FCC) License
- National Environmental Policy Act (NEPA) Compliance

**State**

- Endangered Species Incidental Take License and Habitat Conservation Plan
- Request for Use of State Lands
- Conservation District Use Permit
- Forest Reserve System Special Use Permit (possible)
- Noise Permit (possible)
- Coastal Zone Management Act (CZMA) Federal Consistency Determination
- State Historic Preservation Division (SHPD) Notification and Review
- Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads
- National Pollutant Discharge Elimination System (NPDES) Construction Permit
- Power Purchase Agreement (PPA)

**City and County of Honolulu**

- Conditional Use Permit (minor)
- Conditional Use Permit (minor) for a Joint Development Agreement
- Grading/Grubbing/Stockpiling/Building and Other Construction Permits
- Permit for Movement of Oversize and/or Overweight Vehicles and Loads

**Other**

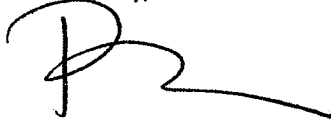
- Approval for Use of Mt. Ka'ala Access Road

H. **DETERMINATION**

DBEDT has determined this Final EIS to be acceptable under the procedures and requirements established in Chapter 343, Hawaii Revised Statutes. A report on the mitigation measures associated with this project is attached for your reference.

Should you have questions, please contact Malama Minn at 808-587-9000 or the Renewable Energy Branch at 808-587-3991.

Sincerely,

A handwritten signature in black ink, appearing to be 'R. Lim', with a long horizontal flourish extending to the right.

Richard C. Lim

Attachment -

**MITIGATION MEASURES**  
**KAWAIILOA WIND FARM PROJECT**  
**FINAL ENVIRONMENTAL IMPACT STATEMENT**  
**Attachment to Agency's Acceptance Letter**

The permitting agencies are advised to pay attention to mitigation measures identified in the Final Environmental Impact Statement (FEIS). The Kawaiiloa Wind Farm Project FEIS identified the following mitigation measures for disclosure and compliance purposes. The project consists of two project sites, both of which are addressed in the FEIS: (1) Mt. Ka'ala Communication Site; and, (2) Wind Farm Site.

Due to the minimal impacts anticipated at the Mt. Ka'ala Communication Site, [the mitigation measures described herein apply only to the Wind Farm Site unless expressly identified as a Communication Site mitigation measure]. If mitigation measures for the Communication Site are not expressly described in a section, it is because no mitigation under that section is being proposed at the Communication Site. In the instances where mitigation is warranted at the Communication Site, the section will clearly indicate which site the mitigation measures pertain to.

**CLIMATE AND AIR QUALITY**

Construction will be conducted in compliance with HAR Title 11 Chapter 60.1 (Air Pollution Control), which specifies that the best practical operation or treatment be implemented such that there is not discharge of visible fugitive dust beyond the property lot line. To comply with these requirements and to minimize any other adverse affects of air quality, the following BMPs would be implemented during construction:

- Maintain all construction equipment in proper tune according to manufacturer's specifications.
- Fuel all off-road and portable diesel powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, with motor vehicle diesel fuel.
- Maximize to the extent feasible the use of diesel construction equipment meeting the latest certification standard for off-road heavy-duty diesel engines.
- Minimize the extent of disturbed area where possible.
- Use water trucks or sprinkler systems (with no chemical additives) in sufficient quantities to minimize the amount of airborne dust leaving the site.
- Cover or continuously wet dirt stockpile areas (water with no chemical additives) containing more than 100 cubic yards (76.5 cubic meters) of material.
- Implement permanent dust control measures identified in the project landscape plans as soon as possible following completion of any soil disturbing activities.
- Stabilize all disturbed soil areas not subject to re-vegetation, paving, or development, using approved chemical soil binders, jute netting, or other methods.
- Lay building pads and foundations as soon as possible after grading unless seeding or soil binders are used.

- Limit vehicle speed for all construction vehicles moving on any unpaved surface at the construction site to 15 mph or less.
- Cover all trucks hauling dirt, sand, soil, or other loose materials.

## **GEOLOGY, TOPOGRAPHY AND SOILS**

Construction of the project will require grading for both temporary and permanent project features. During the operations and maintenance phase of the project, grading is expected to be limited to replacement of the underground collector lines and/or maintenance of the onsite access roads. These events are expected to occur infrequently.

To the extent possible, the earthwork will be designed to minimize cut and fill, and to avoid impacts to the major topographic features (including the gullies and streams); some components of the project may result in localized topographic changes and increased potential for erosion. The BMPs outlined below will be implemented to avoid and minimize erosion associated with ground disturbing activities:

- Sequence construction activities to minimize the exposure time of cleared areas.
- Minimize the extent of disturbed areas, where possible.
- To avoid fugitive dust emissions, cover soil stockpile areas containing more than 100 cubic yards of material, or keep continuously wet.
- Stabilize all disturbed soil that is not subject to re-vegetation, paving, or development, using approved chemical soil binders, jute netting, or other methods.
- Lay building pads and foundations as soon as possible after grading, unless seeding or soil binders are used.
- Cover all trucks hauling dirt, sand, soil, or other loose materials.
- Install erosion and sediment control measures (for example, silt fences) before initiating earth moving activities, and properly maintain throughout the construction period.
- Minimize the extent of clearing and grubbing to only what is necessary for grading, site access, and equipment operation.
- Properly implement all stormwater runoff and erosion control BMPs, as specified in the Construction Stormwater Permit to be obtained from HDOH.
- During dry periods, inspect BMP features once weekly and repair as necessary. Inspect and repair features as needed within 24 hours after a rainfall event of 0.5 inches or greater in a 24-hour period. During periods of prolonged rainfall, inspect daily would occur.
- Maintain records for all inspections and repairs, on site.
- Apply permanent soil stabilization (that is, graveling or re-planting of vegetation) as soon as practical after final grading.

## **HYDROLOGY AND WATER RESOURCES**

### Ground water

No direct interaction with groundwater is anticipated. However, construction and operation activities will require the use of some hazardous materials, which if handled inappropriately, could affect groundwater quality. However, appropriate management practices, including preparation and

implementation of a Spill Prevention, Countermeasure, and Control (SPCC) Plan, will be in place throughout construction and operation to avoid and minimize impacts associated with these materials, as described in detail in Section 3.11 of the FEIS. With implementation of these measures, no impacts to groundwater quality are expected.

#### Surface water

The project footprint has been designed to avoid potentially jurisdictional features to the maximum extent possible; these features include Loko Ea, Laniākea, Kawailoa, Ka'alaea, and the unnamed tributary to Waimea River. The only locations where potentially jurisdictional features occur within the footprint are those areas where they intersect with the existing onsite roads. In general, the waterways are culverted under the roads, and road improvements will be conducted so as to avoid impacts to these features. The only unculverted road crossing within the project footprint is along Laniākea Stream, an intermittent waterway, where it washes over Cane Haul Road. Work that will be conducted in this area will be limited to repair and maintenance of the road surface; no work will be conducted outside the existing footprint of the road.

Although construction is not expected to directly impact any potentially jurisdictional features, ground disturbing activities during construction have the potential to increase the amount of sediment and other pollutants in stormwater runoff, which could adversely affect the water quality in the onsite waterways, as well as downstream receiving waters. Of all of the components of the project, the access roads are expected to have the greatest potential to contribute sediment (and associated pollutants) to stormwater runoff, primarily because dirt roadways function as both a source area and transport mechanism. The project has been designed to use the existing access roads to the extent possible, thereby minimizing construction of new roadways. To reduce the potential for sediment and pollutant delivery from both the existing and new roadways to be used for the project, gravel will be applied to the road surfaces and rock-lined swales would be installed along the edge of the roadways. Large rock (typically Surge-B) will be used to line each swale, helping to slow the flow and allowing sediment to settle out. Swales would generally be located in areas where conveyance of stormwater is focused, with dimensions based on anticipated flow volume. Each swale would also include "level spreaders," which will allow a portion of the runoff to flow from the swale and disperse onto an adjacent vegetated field (or other relatively flat area). The swales will be installed and maintained during construction and throughout the life of the project, such that impacts to water quality are expected to be minimal; given the large network of existing, unimproved dirt roads on the site, it is likely these features would decrease sediment delivery on a per-unit area basis below existing levels.

In addition to the roadway swales, other general best management practices (BMPs) will be implemented as part of construction to avoid and minimize impacts, as described in Section 3.3.2.1 of the FEIS. These BMPs include sequencing of activities to minimize the exposure time of cleared and excavated areas; in addition, to the extent possible, excavation for the turbines will be timed to avoid the wet winter months. Specific measures to avoid and minimize the input of pollutants to water features are listed in the table below. In addition, a Notice of General Permit Coverage for construction-related stormwater runoff will be obtained, pursuant to National Pollutant Discharge Elimination System (NPDES) regulations. With implementation of these measures, impacts to surface water quality are expected to be insignificant.

Potential Pollutants from Construction Activities and Proposed Avoidance and Minimization Measures

Pollutant	Source/Activity	Control Measure (BMP)
Vegetation/Rock	Excavation, grubbing, grading, stockpiling	Install silt fencing; temporary soil stabilization
Soil/Sediment	Excavation, grading, stockpiling, watering for dust control	Install silt fencing; protection of stockpiles; natural vegetation; sand bags; temporary soil stabilization; geotextile mats (internal access road slopes); avoid excess dust control watering
Oil and Gas	Construction equipment, vehicles	Regular vehicle and equipment inspection; prohibition of onsite fuel storage; drip pan for onsite tanker fueling; spill kits
Construction Waste	Construction debris, select fill, paint, chemicals, etc.	Protection of stockpiles; onsite dumpsters; periodic waste removal & disposal; compaction & swales (for rock fill); containment pallets (for chemicals)
Concrete Wash Water	Pouring of turbine foundations	Containment in wash water pits; install silt fences
Equipment & Vehicle Wash Water	Construction equipment	Containment berms around equipment washing area; offsite vehicle washing
Sanitary Waste	Portable toilets or septic tank	Sanitary/septic waste management

Note: BMPs are adopted from and defined in the City and County of Honolulu's *Best Management Practices Manual for Construction Sites in Honolulu* (May 1999).

## BIOLOGICAL RESOURCES

### Flora (Wind Farm Site)

Direct impacts to flora will occur primarily as a result of clearing and ground disturbance during the construction phase. However, the wind farm facilities will generally be constructed in areas that have been extensively disturbed as part of previous agricultural operations, with existing vegetation largely comprised of weedy species. No Federally or State listed endangered, threatened, or candidate plant species, nor species considered rare throughout the Hawaiian Islands, have been identified within the wind farm site, and no portion of the site has been designated as critical habitat for any listed plant species.

A few native species, notably *koa*, occur along the ridge tops and some trees may have to be removed as areas are cleared during construction. Removal of native trees would be kept to the minimum necessary to ensure safe conditions and satisfy construction requirements. To compensate for the loss of native trees because of construction, Kawaihoa Wind Power has come to an agreement with the landowner (Kamehameha Schools) that at least an equal or greater number of native trees that are removed would be replanted in surrounding portions of the property. In addition to replacement of native trees, all temporarily disturbed areas would be revegetated immediately following construction using a hydroseed mixture of annual rye (*Lolium multiflorum*) or other suitable groundcover species to stabilize soil and prevent erosion.

Invasive plants, such as Java plum, strawberry guava, swamp mahogany, and albizia, are widespread within the wind farm site. In order to minimize the potential for introducing new invasive species to the project site, the following measures will be implemented:

- All construction equipment, materials and vehicles arriving from outside of the island of O'ahu will be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful non-native species before transportation to the project site; import of materials that are known or likely to contain seeds or propagules of invasive species will be prohibited.
- All cleaning and inspection activities will be properly documented.
- Offsite sources of re-vegetation materials (such as seed mixes, gravel, and mulches) will be certified as weed-free or inspected before transport to the project area.
- All areas that are hydroseeded will be monitored for six months after hydroseeding to identify invasive plants that establish from seeds inadvertently introduced as part of the seed mix; all invasive plants identified within the hydroseeded areas will be removed.
- At the end of the construction period, areas impacted by construction of the project will be surveyed to confirm that no problematic and/or invasive species had been introduced and become established. Appropriate remedial actions will be undertaken to facilitate containment or eradication of the target species as soon as reasonably possible.

#### Flora (Communication Site)

Similar to the wind farm site, neither of the Mt. Ka'ala communication sites support any protected species, although both sites are fringed by stands of nearly pure native forest. The communication equipment will be installed on existing structures at both of the sites, and no ground disturbance will occur. A limited amount of vegetation trimming may be required during installation, as well as during ongoing maintenance, to provide adequate line-of-sight between the antennae. A helicopter will be used to transport the antennae to the repeater station to minimize the need for vegetation trimming along the access trail. All vegetation trimming activities will be directly coordinated with DOFAW staff to minimize the potential for impacts to native species. To minimize the potential for introduction of new invasive species, control measures will be implemented, as described above. With implementation of these measures, installation of the communication equipment would not be expected to significantly affect botanical resources on Mt. Ka'ala.

#### Fauna (Wind Farm Site)

Construction and operation of the Kawaihoa wind farm project will create the potential for Federally and State-listed bird and bat species to collide with project components, including the wind turbines, meteorological towers, and cranes used for construction of the turbines. In compliance with Section 10 of the ESA and HRS §195D-4(g), Kawaihoa Wind is preparing a Habitat Conservation Plan (HCP) and application for an Incidental Take Permit (ITP) and Incidental Take License (ITL) from the USFWS and DOFAW, respectively, for the Kawaihoa wind farm project. The purpose of an HCP is to ensure that measures to minimize and mitigate the adverse effects of the proposed activity for any listed species covered under the plan are adequate. The resulting permits allow "take" of those species,

provided that the “take” is incidental to otherwise lawful activities.<sup>1</sup> The HCP will cover the seven species described in Section 3.5.2.3 of the FEIS: Newell’s shearwater, Hawaiian duck, Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian short-eared owl, and Hawaiian hoary bat (collectively referred to as the “covered species”).

Because complete avoidance of risk to the covered species is impossible under the Proposed Action, several measures to avoid and minimize the risk to these and other wildlife species, and to minimize impact on the human environment, have been incorporated into the project. These measures include, but are not necessarily limited to, the following:

- Monopole steel tubular turbine towers will be used rather than lattice towers. Tubular towers are considerably more visible than lattice towers and should reduce collision risk.
- Unguyed meteorological towers will be used for the project site instead of guyed permanent meteorological towers.
- Guy wires on temporary meteorological towers will be marked with high visibility bird diverters made of spiraled polyvinyl chloride (PVC) and twin 12-inch white poly vinyl marking tape to improve the visibility of the wires.
- The rotors selected for use will have a significantly slower rotational speed (range of 6 to 18.7 rpm, depending on the turbine chosen) compared to older designs (28.5 to 34 rpm); this increases the visibility of turbine blades during operation and decreases collision risk.
- All new electrical collector lines will be placed underground to the extent practicable to minimize the risk of collision with new wires; overhead collector lines will be fitted with marker balls to increase visibility. All overhead collector lines will be spaced according to Avian Power Line Interaction Committee (APLIC) guidelines to prevent possible electrocution of native species. Species most at risk are those likely to perch on power poles or lines (APLIC, 2006); the only species identified to be at risk at the Kawaiiloa wind farm site is the Hawaiian short-eared owl. Using the barn owl as a surrogate species, the horizontal spacing will be more than 20 inches (51 centimeters) to accommodate the wrist-to-wrist distance of the owl. If a vertical arrangement is chosen, a vertical spacing of more than 15 inches (38 centimeters, head-to-foot length) will be used (APLIC, 2006). Any jumper wires will be insulated.
- Overhead collection lines will be parallel to treelines whenever possible.
- Drainage will be improved, as needed to eliminate the accumulation of standing water after periods of heavy rain to minimize potential of attracting waterbirds to the site.
- Where feasible, night-time construction activities will be minimized to avoid the use of lighting that could attract seabirds and possibly bats.

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<sup>1</sup> “Take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species listed as endangered or threatened, or to attempt to engage in any such conduct (50 CFR 17.3). “Harm” has been defined by USFWS to mean an act which actually kills or injures wildlife, and may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). “Harass” has been defined to mean an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR 17.3).



- A minimal amount of onsite lighting will be used at buildings and shielded fixtures will be used only on infrequent occasions when workers are at the site at night. Onsite lighting will be fitted with motion-sensors, automatic shut-off timers or similar devices to limit lighting to periods when personnel are actively working.
- Clearing of trees above 15 feet in height for construction will not be conducted between July 1 to August 15, which is the period when non-volent Hawaiian hoary bats juveniles may occur in the project area.
- Low wind speed curtailment will be implemented to reduce the risk of bat take: Recent studies on the mainland indicate that most bat fatalities occur at relatively low wind speeds, and consequently the risk of fatalities may be significantly reduced by curtailing operations on nights when winds are light and variable. Research suggests this may best be accomplished by increasing the cut-in speed of wind turbines from their normal levels (usually 3.5 or 4 m/s, depending on the model) to 5 m/s. Two years of research conducted by Arnett et al. (2009, 2010) found that bat fatalities were reduced by an average of 82 percent (95% CI: 52 to 93 percent) in 2008 and by 72 percent (95% CI: 44 to 86 percent) in 2009 when cut-in speed was increased to 5 m/s. Therefore, based on best available science, low wind speed curtailment will be implemented at night by raising the cut-in speed of the project's wind turbines to 5 m/s. The times of the year when curtailment is implemented (that is, year-round or seasonal) will be established based on bat detection data on site, seasonal distributions of observed fatalities on site, and best available science, with concurrence from USFWS and DLNR. Based on data collected to date, the curtailment would initially occur during the months of March through November, which is when bat activity has been consistently documented, for the duration of the night (from sunset to sunrise). Curtailment will also be extended if fatalities are found outside the initial proposed curtailment period with concurrence from USFWS and DLNR. Curtailment may also be reduced or shifted with the concurrence of DOFAW and USFWS if site-specific data demonstrate a lack of bat activity during certain periods, or if experimental trials are conducted that demonstrate that curtailment is not reducing collision risk at the project during the entire curtailment period.
- A speed limit of 15 mph will be observed while driving onsite, to minimize collision with covered species, in the event they are found to be injured or using habitat onsite.
- Vegetation clearing will be suspended within 300 feet (91 meters) of any area where distraction displays, vocalizations, or other indications of nesting by adult Hawaiian short-eared owls are seen or heard, and resumed when it is apparent that the young have fledged or other confirmation that nesting is no longer occurring.

Additional mitigation measures that Kawailoa Wind will be required to carry out will be detailed in the Final HCP and will be monitored and enforced according to USFWS and DOFAW rules and regulations. As previously stated, the applicant has presented several proposed scenarios to mitigate take and provide a net benefit to listed species in the FEIS. The appropriate agencies will make a final determination as to which mitigation measures, or combination thereof, are required of Kawailoa Wind. Detailed mitigation proposals for each listed species are described in Section 3.5.4.1 of the FEIS.

### Fauna (Communication Site)

The proposed antennas are static features attached to existing Hawaiian Telcom structures, therefore no ground disturbance is anticipated. Therefore, installation of the equipment is not expected to create a significant collision hazard to any non-listed or covered avian species, if they should happen to transit the tower location. Similarly, no impacts to mammalian species are anticipated.

A limited amount of tree trimming may be required during installation and ongoing maintenance, to provide adequate line-of-sight between the antennas. As previously described, a helicopter will be used to transport the antennae to the repeater station to minimize the need for vegetation trimming along the access trail. In addition, all vegetation trimming activities will be directly coordinated with DOFAW staff to minimize the potential for impacts to native vegetation. Because native vegetation at the site could potentially support native mollusc species (including at least one Federally and State listed species), additional mollusc surveys will be conducted before any vegetation trimming at either site, also in coordination with DOFAW staff. The vegetation will be trimmed by hand, and the cut materials would be placed near the trimmed plant, to allow any molluscs to move back onto the plant.

In addition to direct impacts associated with vegetation trimming, native invertebrate species may also be indirectly affected by introduction of non-native species, particularly non-native invasive ant species (DOFAW, 2011). To minimize the potential for introduction of non-native invasive ant species at either of the Hawaiian Telcom sites, baseline surveys of ant fauna will be conducted before and following installation of the antennas, in coordination with DOFAW staff. In addition, all materials and vehicles will be inspected for the presence of ants before transport to the site. With implementation of these measures, impacts to native invertebrate species will most likely be insignificant.

### **HISTORIC, ARCHEOLOGICAL, AND CULTURAL RESOURCES**

A comprehensive Cultural Impact Analysis as well as an Archeological Inventory Survey have been completed and are included in the FEIS as appendices. The following is a list of cultural and environmental mitigation and community outreach that has been conducted on other First Wind projects; similar mitigation and outreach is ongoing or is planned for the Kawaihoa wind farm project:

- **Monitoring and Inadvertent Discoveries:** Archaeological monitoring will be conducted during construction to help ensure that any inadvertently discovered resources will receive immediate attention and protection, while their ultimate disposition is determined by DLNR-State Historic Preservation Division (SHPD). In compliance with HAR 13§13-279, a monitoring plan will be prepared and submitted to SHPD for review and approval prior to construction.
- **Community Consultation:** Throughout project development, First Wind meets with community members and organizations to share information and seek input about the project. For the Kahuku project, the community asked for the project to be sited in a way to minimize project-related sound in Kahuku town; the project was adjusted accordingly. Similarly, residents in Mokolē'ia were concerned about a planned communications tower in their neighborhood, so an alternate location for the antennas was found on an existing facility at Mt. Ka'ala. In both cases, community feedback helped to improve the final project. First Wind also seeks input from

residents about community priorities and local efforts which the project can help support. For the Kahuku project, residents identified education, flood mitigation and agriculture as the most important priorities for their local community. In response, First Wind is working with schools, community associations and local ranchers to contribute to these priorities over the life of the Kahuku project. For the Kawaiiloa project, a wide range of community members has been engaged to share information and seek input on the project; the community will continue to be consulted as the project design and construction progresses.

- **Support for Native Hawaiian Organizations:** Since beginning operations in Hawai'i, First Wind has been a strong supporter of Native Hawaiian organizations and cultural events, including 'Aha Punana Leo, Maui Cultural Lands, Hawaiian Homestead Associations on Moloka'i, Na Pua No'eau, Waimea Valley Music Festival, Waimea Valley Makahiki Festival, and the Council for Native Hawaiian Advancement's annual convention. For the Kawaiiloa project, First Wind intends to form a long-term partnership with Waimea Valley to support their efforts to promote Hawaiian culture and environmental awareness.
- **Continued Access for Traditional Activities:** In parallel with the wind farm project, Kamehameha Schools is planning to expand its access opportunities to allow for safe, legal and controlled access to and around the *mauka* portions of the Kawaiiloa property for hiking, hunting, gathering and cultural practices. As part of this effort, First Wind is coordinating with Kamehameha Schools to facilitate safe access in and around the wind farm site.
- **Continued Agricultural Use of Land:** Implementation of the proposed wind farm project will allow Kamehameha Schools to maintain the existing agricultural uses of the Kawaiiloa property, which is consistent with their North Shore Master Plan and Strategic Agricultural Plan. The turbines will be located on unirrigated land on the *mauka* sections of the Kawaiiloa property, which is currently being fenced for pasture by Kamehameha Schools. Lease revenues generated by the project can be used by Kamehameha Schools to improve the irrigation system and other infrastructure that directly benefits local farmers on the *makai* sections of the property. Not unlike the traditional concept of an *ahupua'a*, this arrangement will provide for productive, sustainable use of the land while not depleting resources.
- **Conservation of Native Species:** For each wind farm project, First Wind develops a habitat conservation plan to address endangered native wildlife species that may be impacted as a result of the project. Similar efforts are also made to conserve native plant species. For the Kaheawa Wind project on Maui, First Wind worked with community groups and others to plant native plants in areas that were cleared during construction; since 2006, First Wind staff and volunteers have replanted thousands of seedlings of native plants, including *pukiawe*, *a'ali'i* and *'ohia lehua*. Similarly, for the Kawaiiloa project, First Wind is working with Kamehameha Schools to identify native trees that should be avoided (for example, koa and sandalwood); any native trees that are removed will be replanted on a one-to-one basis.

## VISUAL RESOURCES

Characteristics of the proposed wind farm site, including the topography and vegetative cover, naturally limit views of the site, particularly those of the upper elevations. The turbines have been sited within previously disturbed fields that are vegetated with overgrown, weedy species, resulting in minimal disturbance of native vegetation and canopy coverage within the gulches. The turbines will all be of a single type and size, placed in an orderly fashion (that is, in a series of tightly grouped, straight lines), and rotating in the same direction. A shade of white paint will be used for all of the components, and the turbines would be marked with a minimal amount of turbine lighting (as required to meet FAA requirements). The result of these measures will be a series of uniform turbines with a consistent and balanced appearance, integrated into the natural environment in a sensitive manner.

## **NOISE**

Construction noise levels are expected to exceed the State's maximum permissible property line noise levels and, as such, a permit will be obtained from the Hawaii Department of Health (HDOH) to allow the operation of vehicles, cranes, construction equipment, and power tools. This permit will place restrictions on the time of day when construction activities may emit noise in excess of the maximum permissible sound levels, but will not restrict the amount of noise that can be generated. The HDOH may also require the incorporation of noise mitigation into the construction plan and/or community meetings to discuss construction noise with the neighboring residents and business owners. BMPs will be implemented to mitigate construction noise, as needed. These will include the use of noise barriers, mufflers on diesel and gasoline engines, using properly tuned and balanced machines, and time of day usage limits for select construction activities.

During operation, the predicted wind turbine sounds are not expected to exceed the HDOH maximum permissible noise limit in the areas to the west of the project site that are zoned for agriculture. However, sounds from the wind turbines are expected to exceed the HDOH nighttime maximum permissible noise limit where the project borders preservation land (that is, to the north, east, and south). Because these areas are not easily accessible and are not inhabited, it is unlikely that there would be noise complaints from these areas. In addition, ambient noise measured along the preservation land boundaries to the north and south of the site indicate that average ambient noise levels are close to or exceed 45 dBA. However, to comply with the Community Noise Rule, the need for a variance will be coordinated with HDOH.

## **LAND USE**

To minimize the potential impact of the proposed project on agricultural uses, the project components were sited to avoid areas that are currently being cultivated, which generally include the irrigated fields at the lower elevations of the Kawaihoa plantation (that is, portions of TMKs 61005001 and 62009001). The existing onsite roads that will be used to access the wind farm site traverse these active agricultural fields, but use of the roads (including the proposed road improvements) are not expected to adversely affect these operations.

## **TRANSPORTATION & TRAFFIC**

Impacts to transportation and traffic conditions will only occur during the construction phase of the project. The major components of the wind farm, such as the blades, towers, and nacelles, will be

transported by sea and offloaded at Kalaeloa Harbor. Temporary storage of these components will require the use of vacant areas at Kalaeloa Harbor for a minimal amount of time to conduct inspections of the equipment and to prepare them for transport to the Kawaihoa Site.

- To minimize disruption to harbor operations, all activities related to the shipment, unloading, storage and transport of these components will be coordinated directly with the DOT Harbors Division Oahu District Office and/or engineering maintenance section.

Potential impacts associated with oversized equipment transport include traffic delays and delays in emergency services caused by periods where traffic flow must be stopped to allow oversized trailers to navigate turns. To mitigate these impacts, the following measures will be implemented, unless otherwise directed by the Honolulu Police Department, the State Department of Transportation, and/or the City & County of Honolulu:

- All tower and blade components will have a minimum of four police escorts per load, unless otherwise instructed by the Honolulu Police Department. Police escorts will direct traffic at intersections along each proposed route where necessary to allow oversized trailers to navigate turns.
- Police escorts and/or flagmen will provide traffic direction at the entrance to the wind farm site during construction.
- Hours of transport will be restricted to periods of the day when vehicular traffic is typically light, as follows:
  - Monday through Saturday from 9:00 p.m. to 5:00 a.m.; loaded equipment must be off of the roadways between the hours of 5:00 a.m. and 9:00 p.m.
  - No oversized loads will be transported on Sundays or holidays.

During operation, the amount of vehicular traffic associated with the proposed facilities will be minimal and the proposed project is not anticipated to noticeably increase traffic volumes on Kamehameha Highway or roadways in the area over the long-term. Operation of the wind farm will not impact access for other users who use or transit through Kamehameha School's Kawaihoa properties.

## **MILITARY OPERATIONS**

To address concerns of the wind farm's impacts on military training and to explore alternatives that could resolve those concerns while still allowing for a wind farm development at Kawaihoa, the Department of Defense (DoD) services formed a working group composed of the affected DoD services, First Wind, and the site's landowner, Kamehameha Schools. The working group has met on five occasions (November 10, 2010, December 15, 2010, January 24, 2011, March 4, 2011, and June 2, 2011) to discuss potential impacts, alternative solutions and mitigation measures.

At the January 24 meeting, the group's name was changed to the Regional Mission Compatibility Review Team (RMCRT) to reflect recent Federal legislation (Section 358 of the 2011 National Defense Authorization Act). The DoD is developing an interim policy to enable a central clearinghouse, the Energy Siting Clearinghouse, in the Office of the Secretary of Defense, to evaluate whether proposed

renewable energy projects would interfere with mission capabilities across the DoD. Final determination of the project's impacts will be made by the DoD Renewable Energy Clearinghouse in accordance with Section 358.

Based on these discussions, potential conflicts and associated mitigation measures that were identified by the RMCRT are as follows (based on the notes from the March 4, 2011 meeting of the RMCRT):

- **Alert Area-311:** The proposed Kawaiiloa wind farm would impact Alert Area-311. The proximity of the turbines poses a high safety risk to helicopters operating in the low level training area. The proximity of the turbines would also require the closure of one of only four authorized nap of the earth (NOE) training routes on O'ahu. To mitigate for impacts to the Alert Area-311, Kawaiiloa Wind removed the 4 turbines that were closest to the yellow flight line. The 25th Combat Aviation Brigade (CAB) will create a new flight route for day, night, and night vision device (NVD) NOE flight training.
- **NVD Entry Control Point:** The proposed turbines will bound the NVD Entry Control Point C12 on both the east and west sides. To mitigate this impact, the 25th CAB will move or discontinue use of the NVD Control Point.
- **Landing Zones:** Pu'u Kapu is a high density LZ used for air assault, sling loading and helicopter landing zone operations. The turbines will be located approximately 5,900 feet (1,800 meters) from this landing zone (LZ) and would increase risk to flight operations in and around the LZ. To mitigate for impacts to the Pu'u Kapu LZ, Kamehameha Schools has agreed to identify a new area for training.
- **Copter NDB 152:** Wind turbines will overlap with the Copter NDB 152 instrument approach to Wheeler Army Airfield, which is used primarily for recovery to the airfield from the Tactical Flight Training Area (TFTA) and Kahuku Training Area. The FAA determination indicated that the turbines in the NDB 152 area would not pose a hazard to air navigation. While the FAA did not identify a significant impact, if other stakeholders identify this as a potential concern, the RMCRT can identify an appropriate solution in future meetings.
- **Turbine Marking or Lighting:** Not all turbines in the TFTA are marked. Unmarked turbines pose a flight hazard for pilots during day, night, and NVD flight operations. To mitigate for these impacts, Kawaiiloa Wind has agreed to put FAA-compliant red strobes on each turbine in the TFTA and to implement NVD-compatible blade marking or lighting.
- **Overhead Electrical Lines:** Overhead electrical lines pose a flight hazard for pilots during day, night, and NVD flight operations. To mitigate for these impacts, overhead electrical lines have been removed from the TFTA.
- **Construction Activities:** The crane used to install the turbines could pose a safety risk to helicopters operating in the low-level training area, particularly when left in a fully-extended, upright position. To mitigate this potential impact, Kawaiiloa Wind will notify the affected DoD services of the anticipated plans for crane position and transit across the site.

In general, the RMCRT has determined that the proposed mitigation for each of these potential conflicts will reduce the impact to a less-than-significant level. For several of the topics discussed by the

RMCRIT, it was determined that impacts are not likely to occur; these include radar interference, electromagnetic interference and ground training. Radar interference was not identified as a concern by the FAA in their determination and information from the turbine manufacturer indicated that electromagnetic interference generated by the project would not be significant.

## **HAZARDOUS MATERIALS**

Kawailoa Wind will obtain a NPDES permit for construction activities. Incorporated in the National Pollutant Discharge Elimination System (NPDES) permit for the wind farm construction will be effluent limitations guidelines (ELGs) and new source performance standards (NSPS) to control the discharge of pollutants from the construction site.

Operation of the proposed project will require the use of a possible Battery Energy Storage System (BESS), an emergency back-up generator, electrical transformers, and the potential need for heavy equipment for maintenance and replacement activities. These activities will involve the use of hazardous materials, including oil, diesel fuel, propane, mineral oil, petroleum-based lubricants and/or solvents, and coolants, as well as the contents of the battery system.

Because the wind farm will have aboveground oil storage (mineral oil in electrical transformers), and smaller quantities of other oils and hazardous materials, the wind farm facility will be designed in accordance with good engineering practices including applicable industry standards and applicable Federal Regulations.

In addition, Kawailoa Wind, pursuant to EPA regulations, will prepare and implement a Spill Prevention, Countermeasure, and Control (SPCC) Plan for the facility to prevent oil spills from occurring, and to perform safe, efficient and timely response in the event of a spill or leak. The SPCC Plan will identify the following:

- Where hazardous materials and wastes are stored or located onsite
- Volume of each type of hazardous material stored or located onsite
- Spill prevention measures to be implemented, training requirements during routine operations
- Periodic training requirements for facility operations personnel, and records of training completed
- Appropriate spill response actions for each material or waste
- Locations of spill response kits onsite
- A procedure for ensuring that the spill response kits are adequately stocked at all times
- Procedures for making timely notifications to authorities.

The plan will identify and address storage, use, transportation, and disposal of each hazardous material anticipated to be used at the facility. It will establish inspection procedures, storage requirements, storage quantity limits, inventory control, nonhazardous product substitutes, and disposition of excess materials, and will include material safety data sheets of hazardous materials. The SPCC plan will also identify key Kawailoa Wind management, State and Federal regulatory contacts, and

appropriate spill reporting requirements. The plan will provide instructions for notification of local emergency response authorities (Fire and Police) and include emergency response plans.

Facility operations personnel will receive periodic training, to include the following:

- An introduction to pollution control laws
- Rules and regulations pertaining to the use and storage of petroleum products
- BMPs during routine operations and maintenance procedures in order to prevent spills
- Periodic inspection of spill control or containment equipment to ensure it is adequately maintained and functional
- Periodic inspection and maintenance of spill response kits
- Spill response and cleanup
- Spill notification and recordkeeping

Additionally, in the event of a spill, Kawaiiloa Wind will provide the manpower, equipment and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful to the environment. If waste management is required, Kawaiiloa Wind will hire licensed contractors to characterize, transport, and properly dispose of contaminated materials.

#### **PUBLIC SAFETY**

In general, the wind farm facilities are greater than 1 mile away from the nearest residence, and are not publicly accessible. As such, the unlikely event of a tower collapse, blade throw or stray voltage significantly impacting public safety is minimal.

During the construction phase of the project, ignition sources for accidental fires include errant sparks from a variety of vehicles, equipment and tools, and improperly discarded matches and cigarette butts. These are of limited intensity, and under most conditions are unlikely to spark a grass or other fire. Fire-fighting equipment would be maintained in work vehicles and staging areas of the project site and would be available if needed.

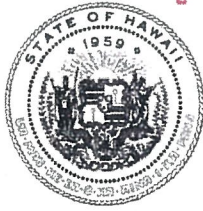
During operation of the project, as stated in Section 3.13.1.3 of the FEIS, petroleum-fueled mobile equipment (such as trucks and cranes), petroleum-based lubricants, and other flammable materials means will be present at the site. If a fire does occur, there is potential for equipment damage, but it is not expected to be significant. The towers supporting the turbines are of 3/4-inch plate steel, mounted on concrete foundations; the interconnecting electrical systems are below ground; and the operations and maintenance facilities will be constructed of noncombustible construction and exterior finishes. Damage from fire could occur to the onsite substation and could potentially disrupt the facility's provision of electricity to HECO, though it would not jeopardize HECO's ability to provide electricity services to its customers.

Basic onsite fire-fighting resources will include fire extinguishers in the maintenance facility, at the substation, and in all project vehicles, as well as shovels and backpack pumps in the maintenance facility and maintenance vehicles. During construction, firefighting resources will include the provision



of fire extinguishers in all construction vehicles and trailers. In addition, during some periods of construction, earthmoving equipment will be present onsite and able to assist in creating fire breaks. Lastly, water that is stored in water tanks during construction can also be used for firefighting.

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OCT 08 2011

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COMMISSION ON WATER RESOURCE MANAGEMENT

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KAHOOLAWE ISLAND RESERVE COMMISSION  
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DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
1151 PUNCHBOWL STREET, ROOM 325  
HONOLULU, HAWAII 96813

September 27, 2011

TO: Gary Hooser, Director  
Office of Environmental Quality Control

FROM: Paul Conry, Administrator  
Department of Land and Natural Resources

*Paul J. Conry*

SUBJECT: Request for Publication of Finding of No Significant Impact for the Proposed Activities Related to the Habitat Conservation Plan Associated with Kawailoa Wind Power, Oahu, Hawaii, in the October 8, 2011, Environmental Notice

The State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has reviewed the Final Environmental Assessment and comments received on the Draft Environmental Assessment during the 30-day public comment period which ended on September 6, 2011.

DOFAW has determined that this project will not have significant environmental impacts and has issued a Finding of No Significant Impact (FONSI). Please publish a notice of the FONSI in the October 8, 2011 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, one (1) copy of the document in PDF format on a CD, and one (1) hardcopy of the Final EA. Please contact Sandee Hufana, DOFAW Habitat Conservation Plan Coordinator, at (808) 587-4148 or by email at Sandee.K.Hufana@hawaii.gov, if you have any questions.

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## THE ENVIRONMENTAL NOTICE

*A semi-monthly periodic bulletin published by the Office of Environmental Quality Control pursuant to  
Section 343-3,  
Hawai'i Revised Statutes  
October 8, 2011*

<b>SUBMITTAL REQUIREMENTS FOR CHAPTER 343, HRS DOCUMENTS</b>	2
<b>HAWAI'I (HRS 343)</b>	
1. <a href="#">High Altitude Mountain Environment Training FEA</a>	2
<b>MAUI (HRS 343)</b>	
2. <a href="#">Fedele Residence Addition DEA</a>	3
<b>MOLOKA'I (HRS 343)</b>	
3. <a href="#">Kainalu Mesic Forest Restoration FEA</a>	3
<b>O'AHU (HRS 343)</b>	
4. <a href="#">Borsa Shoreline Setback Variance FEA</a>	4
5. <a href="#">Hale Kipa Residential Variance DEA/NEPA</a>	4
6. <a href="#">Kawailoa Wind Power Facility Habitat Conservation Plan FEA</a>	5
7. <a href="#">Haleiwa Commercial Redevelopment FEA</a>	5
<b>KAUA'I (HRS 343)</b>	
8. <a href="#">Stanley Single-Family Residence and After the Fact Culvert Crossing DEA</a>	6
9. <a href="#">Pipeline Replacement from Kilauea to Anini FEA</a>	7
10. <a href="#">Pipeline Replacement Along Kuamo'o and Wailua Roads, Ohana and Anolani Streets and Lehia Lane DEA</a>	7
<b>NEPA NOTICES</b>	
11. <a href="#">Navy Region Hawai'i Fiscal Year 2011 Demolition Plan</a>	8
<b>POLLUTION CONTROL PERMITS</b>	9
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<b>Glossary</b>	18

**Note:** If you get a message saying that the file is damaged when you click on the link, then the file is too big to open within your web browser. To view the file, download directly to your hard drive by going to File and select Save As in your web browser.

*The Environmental Notice* informs the public of environmental assessments and other documents that are available for review and comment per HRS 343-3 and is issued on the 8<sup>th</sup> and 23<sup>rd</sup> of each month on the Office of Environmental Quality Control's website. If you would like to be notified when it is issued, send us your email address and we'll put you on our mailing list.



Neil Abercrombie, Governor • Gary Hooser, Director • Office of Environmental Quality Control • 235 South Beretania Street,  
Suite 702 • Honolulu, HI 96813  
Tel: 586-4185 • Fax: 586-4186 • Email: [oeqc@doh.hawaii.gov](mailto:oeqc@doh.hawaii.gov) • Website:  
<http://Hawaii.gov/health/environmental/oeqc/index.html/>  
Toll Free: Kaua'i: 274-3141 ext. 64185 • Maui: 984-2400 ext. 64185 • Moloka'i/Lāna'i: 1-800-468-4644 ext. 64185  
Hawai'i: 974-4000 ext. 64185



The site comprises 4.26 acres abutting old Fort Weaver Road. The project involves the construction of three 2,450 square foot, eight-bed, ADA-compliant residential shelters that will replace existing facilities, a 4,000 square foot educational facility, and a 12,600 square foot services center consolidating programs, services and administration. This project will enhance services to clients, provide an integrative and collaborative environment for staff/volunteers, include a training center for staff/foster families, and significantly reduce overhead relating to leases and maintenance. Consolidation of services will create economies of scale for the organization.

This EA addresses the potential for anticipated environmental impacts and considers the alternatives to the proposed action with appropriate mitigation measures to address and minimize the potential for impacts. The Department of Community Services has preliminarily determined that the project will not have a significant environmental impact and is prepared to issue a Finding of No Significant Impact (FONSI) in accordance with NEPA and Chapter 343, HRS.

## **6. Kawaihoa Wind Power Facility Habitat Conservation Plan Final EA (FONSI)**

**Island:** O'ahu  
**District:** Waialua  
**TMK:** 6-1-005:001, 6-1-006:001, 6-1-007:001, 6-2-009:001, 6-2-011:001  
**Permits:** Incidental Take License and Habitat Conservation Plan (HCP)  
**Applicant:** First Wind; Kawaihoa Wind Power LLC, 810 Richards St., #650, Honolulu, HI 96813-4714.  
Contact: (808) 695-3300

### **Approving**

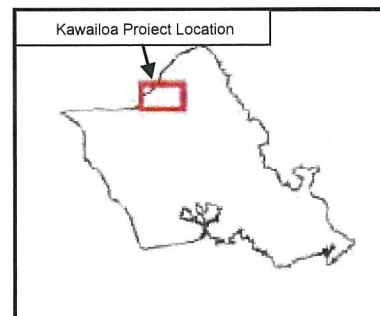
**Agency:** Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), 1151 Punchbowl Street, Room 325, Honolulu, HI 96815. Contact: (808) 587-0166

**Consultant:** SWCA Environmental Consultants, 201 Merchant Street Suite 2310, Honolulu, HI 96813.  
Contact: (808) 548-7922

**Status:** Finding of No Significant Impact (FONSI) determination

Kawaihoa Wind Power LLC (or the "Applicant") proposes to implement a HCP to mitigate impacts to threatened and endangered species from the construction and operation of a new 70-megawatt (MW), 30-turbine commercial wind energy generation facility at Kawaihoa in the northern portion of the Island of O'ahu, Hawai'i.

A FEA was developed for the activities proposed in the project's HCP. The HCP project will mitigate the take of six federally threatened and endangered species; the Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*), Hawaiian coot or alae ke'oke'o (*Fulica alai*), Hawaiian duck or koloa maoli (*Anas wyvilliana*), Hawaiian moorhen or alae ula (*Gallinula chloropus sandwicensis*), Newell's shearwater or ao (*Puffinus auricularis newelli*), and Hawaiian hoary bat or ope'ape'a (*Lasiurus cinereus semotus*); and one State listed endangered species, the Hawaiian short-eared owl or pueo (*Asio flammeus sandwichensis*). The mitigation actions include development and testing of cat self-resetting traps and efficiency testing and implementation at a Newell's shearwater colony on Kaua'i for seabird mitigation; predator control, fencing, and vegetation maintenance at Ulo'a Pond or other site for five years for water bird mitigation; a contribution of \$12,500 up to a maximum of \$25,000 for research and rehabilitation for pu'e'o mitigation; and restoration of wetland or forest habitat for bat mitigation. DOFAW has determined that implementation of the HCP will not have significant environmental impacts and has issued a Finding of No Significant Impact (FONSI) notice for the FEA.



## **7. Haleiwa Commercial Redevelopment Final EA (FONSI)**

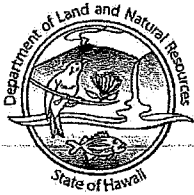
**Island:** O'ahu  
**District:** Waialua  
**TMK:** TMK (1) 6-6-004:013-19, 27, 28, and 32  
**Permits:** Zone Change, Haleiwa Special District, Consolidation and Subdivision of Parcels, Conditional Use Permit (CUP), and Joint Development Agreement (JDA)

## **Appendix B. Letter from the Department of Business, Economic Development, and Tourism**

DAVID V. ICE  
GOVERNOR OF HAWAII

RECEIVED

DEC 14 2016



STATE OF HAWAII  
DBEDT - DIRECTOR'S OFFICE



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA  
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT

ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

DEC 12 2016

**MEMORANDUM**

**TO:** LUIS P. SALAVERIA, DIRECTOR  
Department of Business, Economic Development, and Tourism

**FROM:** SUZANNE D. CASE, Chairperson *066 HLL*

**SUBJECT:** KAWAIILOA WIND POWER HABITAT CONSERVATION PLAN AND  
INCIDENTAL TAKE LICENSE, SUPPLEMENTAL ENVIRONMENTAL  
IMPACT STATEMENT DETERMINATION

The Kawaiiloa Wind Energy Facility holds an Incidental Take License (ITL-14) that was issued by the Board of Land and Natural Resources (BLNR) on January 6, 2012 under authority of HRS Chapter 195D. The Final Environmental Impact Statement (FEIS) supporting the issuance of that ITL was approved by the Department of Business, Economic Development, and Tourism (DBEDT) via a July 20, 2011 letter to the then ITL holder First Wind, LLC and a July 20, 2011 memo to the Office of Environmental Quality Control.

Kawaiiloa Wind Power, LLC is now requesting a major amendment to their ITL to increase the take level of the Hawaiian hoary bat. The facility will be preparing a Supplemental EIS (SEIS) to address potential impacts under HRS Chapter 343 associated with the amendment. Given the purpose of the Supplemental EIS, DLNR, with the approval of DBEDT, is proposing to assume the responsibility of Approving Agency for the SEIS.

Please respond with your approval or disapproval of this request. Should you need more information, she can be reach at (808) 587-4148 or email @ [Katherine.Cullison@hawaii.gov](mailto:Katherine.Cullison@hawaii.gov).

☒ APPROVED ☐ DISAPPROVED

*[Signature]*  
LUIS P. SALAVERIA, Director

*1/4/17*  
DATE

## **Appendix C. Supplemental EIS Determination**

DAVID Y. IGE  
GOVERNOR OF  
HAWAII



FILE COPY

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA  
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING

FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOHAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

JUL 08 2018

June 22, 2018

TO: Scott Glenn, Director  
Office of Environmental Quality Control

FROM: Suzanne D. Case, Chairperson *me*  
Department of Land and Natural Resources

SUBJECT: Request for Publication of DLNR's Determination that a Supplemental Environmental Impact Statement is Required Prior to Major Amendment to the Kawaihoa Wind Habitat Conservation Plan and Incidental Take License, O'ahu Island

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

18 JUN 26 13:19

RECEIVED

We respectfully request publication of the subject Determination in the next Environmental Notice. A completed Office of Environmental Quality Control Publication Form is included in this submittal which we are providing via email to [oeqc@doh.hawaii.gov](mailto:oeqc@doh.hawaii.gov).

Please contact Glenn Metzler, Protected Species Habitat Conservation Planning Associate at the Division of Forestry and Wildlife at [glenn.m.metzler@hawaii.gov](mailto:glenn.m.metzler@hawaii.gov) or 808-587-4149 with any questions.

cc: Brita Woeck, Kawaihoa Wind, LLC

Attachment: (1) Completed OEQC Publication form for Kawaihoa Wind SEIS Determination

18-699



## APPLICANT PUBLICATION FORM

Project Name:	Kawailoa Wind Project Supplemental EIS
Project Short Name:	Kawailoa Wind Project Supplemental EIS
HRS §343-5 Trigger(s):	Substantive changes in size, scope, location, intensity, use, or timing. Original trigger for EIS: use of State Lands; Conservation District Use Permit
Island(s):	O'ahu
Judicial District(s):	City and County of Honolulu
TMK(s):	(1) 6-1-005:001, (1) 6-1-006:001, (1) 6-1-007:001, (1) 6-2-011:001
Permit(s)/Approval(s):	State Incidental Take License
Approving Agency:	State of Hawai'i Department of Land and Natural Resources
Contact Name, Email, Telephone, Address	Glenn Metzler, Habitat Conservation Planning Associate <u>Glenn.M.Metzler@hawaii.gov</u> , (808) 587-4149 Department of Land and Natural Resources Division of Forestry and Wildlife 1151 Punchbowl Street, Room 325, Honolulu, HI 96813 Honolulu, HI 96813
Applicant:	Kawailoa Wind, LLC
Contact Name, Email, Telephone, Address	Brita Woeck, <u>bwoeck@dwwind.com</u> , (206) 949-5228, 61-488 Kamehameha Highway, Haleiwa, HI 96712
Consultant:	SWCA Environmental Consultants
Contact Name, Email, Telephone, Address	Amanda Childs, <u>achilds@swca.com</u> , (503) 224-0333, 1220 SW Morrison, Suite 700, Portland, OR 97205

**Status (select one)**
☐ DEA-AFNSI
**Submittal Requirements**

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

☐ FEA-FONSI

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

☐ FEA-EISPN

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

☐ Act 172-12 EISPN  
("Direct to EIS")

Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

☐ DEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

☐ FEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

☐ FEIS Acceptance  
Determination

The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.

- ☐ FEIS Statutory Acceptance      The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.
- ☒ Supplemental EIS Determination      The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
- ☐ Withdrawal      Identify the specific document(s) to withdraw and explain in the project summary section.
- ☐ Other      Contact the OEQC if your action is not one of the above items.

#### **Decision and Explanation**

The Hawai'i Department of Land and Natural Resources (DLNR) has determined that a Supplemental Environmental Impact Statement (EIS) is required to evaluate impacts from the Habitat Conservation Plan Amendment for the Kawailoa Wind Project. Kawailoa Wind, LLC operates a 69-megawatt wind energy generation facility near Hale'iwa on O'ahu, Hawai'i. The effects of the construction and operation of the project were initially analyzed and described in an environmental impact statement (EIS) approved by the Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) on July 20, 2011. Although no new construction or change in operations is planned, Kawailoa Wind is requesting an increase in the amount of authorized Hawaiian hoary bat take to cover the remaining years of the permit term, and requesting incidental take authorization for the Hawaiian petrel, a new covered species. Kawailoa Wind is preparing an HCP amendment to support their request. The determination of the need for a supplemental EIS was made because of the request for an increase in the amount of authorized Hawaiian hoary bat take which will have the potential for an increased intensity of impact, and because of the new request for authorized take for the Hawaiian petrel.

## **Appendix D. SEISPN Comments and Responses**

DAVID Y. IGE  
GOVERNOR



RODERICK K. BECKER  
COMPTROLLER

AUDREY HIDANO  
DEPUTY COMPTROLLER

**STATE OF HAWAII**  
**DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES**  
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)1491.8

JUL 24 2018

Received

JUL 31 2018

SWCA Portland

Ms. Amanda Childs  
SWCA Environmental Consultants  
1220 SW Morrison, Suite 700  
Portland, OR 97205

Dear Ms. Childs:

Subject: Kawaihoa Wind Environmental Impact Statement Preparation Notice (EISPN)  
Waialua, Oahu, Various TMKs

Thank you for the opportunity to provide comments on the subject project. The Supplemental Environmental Impact Statement is proposed to evaluate the impacts of issuing an amended Incidental Take License and Habitat Conservation Plan.

The State of Hawaii, Department of Accounting and General Services (DAGS) previously commented that it operates and maintains an existing communication facility, for use by the State and other government agencies only, at the summit of Mount Ka'ala. We understand that no new construction or change in operations is planned, therefore, we do not anticipate your project to have an impact on our facility. Should this change, we ask that you coordinate the planning and design of your project with DAGS to ensure no conflict develops.

If you have any questions, your staff may call Mr. David DePonte of the Public Works Division at 586-0492.

Sincerely,

A handwritten signature in black ink, appearing to read "Roderick K. Becker".

RODERICK K. BECKER  
Comptroller

c: Mr. Glenn Metzler - DLNR, DOFAW HCP Program

Kawailoa Wind, LLC

1166 Avenue of the Americas  
Ninth Floor  
New York, NY 10036  
(212) 478-0000  
FAX (212) 478-0100

April 29, 2019

Mr. Roderick K. Becker, Comptroller  
State of Hawaii, Department of Accounting and General Services  
P.O. Box 119  
Honolulu, HI 96810

**RE: Response to Comment Letter on the Supplemental Environmental Impact Statement  
Preparation Notice (SEISPN) for the Kawailoa Wind Project; Waialua District, Oahu**

Dear Mr. Becker:

Thank you for your comment letter dated July 24, 2018 in response to the Supplemental Environmental Impact Statement Preparation Notice (SEISPN) for the Kawailoa Wind Project. We appreciate your response and understand that you do not anticipate that the Project will impact your facility at the summit of Mt. Ka'ala. We will keep you informed regarding publication of the Draft Supplemental Environmental Impact Statement (SEIS), which will include a 45-day public review period.

If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [bwoeck@dwwind.com](mailto:bwoeck@dwwind.com).

Sincerely,

Kawailoa Wind, LLC



Bryan Martin

Authorized Signatory

cc: Glenn Metzler, Department of Land and Natural Resources Division of Forestry and Wildlife

DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7<sup>TH</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041  
DEPT. WEB SITE: [www.honolulu.gov](http://www.honolulu.gov) • CITY WEB SITE: [www.honolulu.gov](http://www.honolulu.gov)

KIRK CALDWELL  
MAYOR



Received  
JUL 31 2018  
SWCA Portland

KATHY K. SOKUGAWA  
ACTING DIRECTOR

TIMOTHY F. T. HIU  
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI  
DEPUTY DIRECTOR

July 27, 2018

2018/ELOG-1342(WA)

Ms. Amanda Childs  
SWCA Environmental Consultants  
1220 SW Morrison Street, Suite 700  
Portland, Oregon 97205

Dear Ms. Childs:

SUBJECT: Environmental Impact Statement Preparation Notice  
(EISPN)  
Kawailoa Wind Project - Incidental License and Habitat  
Conservation Plan  
62-350 Kawailoa Drive and  
61-488 Kamehameha Highway - Haleiwa  
Tax Map Keys 6-1-005: 001; 6-1-006: 001; 6-1-007: 001;  
and 6-2-001: 001

This is in response to your letter received July 9, 2018, regarding the EISPN for the above-mentioned Project. We have no comments at this time.

Should you have any further questions on this matter, please contact William Ammons, of our Urban Design Branch, at 768-8025 or [wammons@honolulu.gov](mailto:wammons@honolulu.gov).

Very truly yours,

*Kathy K. Sokugawa*  
for Kathy K. Sokugawa  
Acting Director

**Kawailoa Wind, LLC**

**1166 Avenue of the Americas  
Ninth Floor  
New York, NY 10036  
(212) 478-0000  
FAX (212) 478-0100**

April 29, 2019

Ms. Kathy Sokugawa, Acting Director  
City & County of Honolulu  
Department of Planning and Permitting  
650 South King Street, 7<sup>th</sup> Floor  
Honolulu, HI 96813

**RE: Response to Comment Letter on the Supplemental Environmental Impact Statement  
Preparation Notice (SEISPN) for the Kawailoa Wind Project; Waialua District, Oahu**

Dear Ms. Sokugawa:

Thank you for your comment letter dated July 27, 2018 in response to the Supplemental Environmental Impact Statement Preparation Notice (SEISPN) for the Kawailoa Wind Project. We appreciate your response and understand that you have no comments at this time. We will keep you informed regarding publication of the Draft Supplemental Environmental Impact Statement (SEIS), which will include a 45-day public review period.

If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [bwoeck@dwwind.com](mailto:bwoeck@dwwind.com).

Sincerely,

**Kawailoa Wind, LLC**



Bryan Martin

Authorized Signatory

cc: Glenn Metzler, Department of Land and Natural Resources Division of Forestry and Wildlife

**To:** Department of Land and Natural Resources, State of Hawaii  
Glenn Metzler, Habitat Conservation Planning Associate  
1151 Punchbowl St., Room 325, Honolulu, HI 96813

**From:** No'eau Machado

**Subject:** Review of "Request for Publication of the Environmental Impact Statement  
Preparation Notice (EISPN) for Kawaiiloa Wind Habitat Conservation Plan and  
Incidental Take License, O'ahu Island"  
Kawaiiloa Wind Project EISPN

Aloha,

My name is No'eau Machado. I am writing this review through the lens of an environmental planning student at UH Manoa, a life-long resident of O'ahu with a cultural and ancestral connection to this place, and as someone who cares for the native species of Hawai'i. I am also interested in this project and EISPN as an environmental science student with a passion and educational focus on sustainability in Hawai'i and sustainable energy projects such as Kawaiiloa Wind Farm.

As a student new to environmental planning and regulation, it is to my findings that this document meets the content requirement listed in HAR §11-200.

I believe there are members of the Hawaiian community, especially those with ties to the native and endangered species of the state, who would be concerned with an increase in the amount of authorized Hawaiian hoary bat and Hawaiian petrel take for this Kawaiiloa Wind project.

As I'm sure you are well aware, the Hawaiian hoary bat or *ōpe'ape'a* is listed as an endangered species under the Endangered Species Act of 1973 and is the only land mammal endemic to the state of Hawai'i. Fossil records indicate that the Hawaiian hoary bat was once found on the islands of Hawai'i, Moloka'i, Maui, O'ahu, and Kaua'i. However, over the course of the 19<sup>th</sup> century due primary to habitat loss caused by increased human population, this native species has seen its numbers be greatly reduced, especially on O'ahu. It is because of the dwindling population size of this endangered and unique native species that I am skeptical when I read about a proposed increase in the amount of authorized Hawaiian hoary bat take for this Kawaiiloa Wind project.



I was also skeptical when reading about a proposed take authorization for the Hawaiian petrel or 'ua'u as a new covered species for this project. Also listed as an endangered species, the Hawaiian petrel has endured a similar plight as the Hawaiian hoary bat. Many native species such as the hoary bat and petrel have seen massive habitat loss due to human development.

Although I am in favor of sustainable energy sources in the state of Hawai'i, they are also included in this system of human development that drives habitat loss for species that may be native and endangered.

With this proposed plan for increasing authorized take of two endangered native species, I am curious as to how the initial amount of authorized take for the Hawaiian hoary bat was calculated, and why that number needs to be adjusted? Were there possibly mistakes made upon initial calculations? I am also curious as to why it is being proposed for the Hawaiian petrel to be added now, and not at the beginning of this project in the initial EIS?

Although skeptical about the potential increase in the amount of authorized take for two endangered native species, I do believe the habitat conservation plan proposed for this project is a very good starting point. My primary concern with this plan could be the vague wording the first listed change/provision: "additional measures to avoid and minimize Hawaiian hoary bat take;". I would be interested to know what these measures would be and how they would be implemented? I'm sure there are already measures in place to avoid and minimize take for all species and was curious as to why these additional measures were not already in place upon the initial EIS for this project. I would also be interested to know what mitigation processes would be put into place to avoid and minimize Hawaiian petrel take, should they be added as a covered species under this project.

Regarding the request for an increase in the amount of authorized take for the Hawaiian hoary bat and addition of authorized take of the Hawaiian petrel, I believe it would be beneficial to give the current authorized take amount of the Hawaiian hoary bat to give community members and policy/decision makers context on the proposition of increasing this amount.

Mahalo,  
No'eau Machado

Kawailoa Wind, LLC

1166 Avenue of the Americas  
Ninth Floor  
New York, NY 10036  
(212) 478-0000  
FAX (212) 478-0100

April 29, 2019

Mr. No'eau Machado  
Via email: noeaumac@hawaii.edu

**RE: Response to Comment Letter on the Supplemental Environmental Impact Statement Preparation Notice (SEISPN) for the Kawailoa Wind Project; Waialua District, Oahu**

Dear Mr. Machado:

Thank you for your comment letter in response to the Supplemental Environmental Impact Statement Preparation Notice (SEISPN) for the Kawailoa Wind Project. We appreciate you taking the time to review the SEISPN and to submit your comments.

We share your concern for the continued welfare of the Hawaiian hoary bat and the Hawaiian petrel and are committed to reducing take of these species to the extent practicable. In response to your requests for further information, the Draft Supplemental Environmental Impact Statement (SEIS) will include the following information with additional detail provided in the Draft Habitat Conservation Plan (HCP) Amendment:

- A discussion of how the original take estimate for the Hawaiian hoary bat was calculated, and the reasons the take estimate needs to be adjusted;
- Identification of the current authorized take levels for the Hawaiian hoary bat and the requested increase in take levels;
- A discussion of the Hawaiian petrel and the reasons why take authorization is now being requested for this species (and the reasons it was not included in the original take authorization request); and
- Identification of the avoidance, minimization and mitigation measures for the Hawaiian hoary bat and Hawaiian petrel, and discussion of how these measures would be implemented.

Again, we appreciate your participation in the environmental review process. We will keep you informed regarding publication of the Draft SEIS, which will include a 45-day public review period.

If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [bwoeck@dwwind.com](mailto:bwoeck@dwwind.com).

Sincerely,

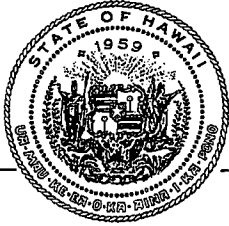
**Kawailoa Wind, LLC**

A handwritten signature in black ink, appearing to read "Bryan Martin", written in a cursive style.

Bryan Martin

Authorized Signatory

cc: Glenn Metzler, Department of Land and Natural Resources Division of Forestry and Wildlife



## OFFICE OF PLANNING STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804


Telephone: (808) 587-2846  
Fax: (808) 587-2824  
Web: <http://planning.hawaii.gov/>

DAVID Y. IGE  
GOVERNOR  
  
LEO R. ASUNCION  
DIRECTOR  
OFFICE OF PLANNING

DTS201808130911BE

August 13, 2018

To: Suzanne Case, Chairperson  
Department of Land and Natural Resources

From: Leo R. Asuncion, Director   
Office of Planning

Attention: Glenn Metzler  
Division of Forestry and Wildlife

Subject: Supplemental Environmental Impact Statement Preparation Notice for the  
Kawailoa Wind Project, Haleiwa, Waialua District, Oahu

Thank you for the opportunity to provide comments on this Supplemental Environmental Impact Statement Preparation Notice (SEISPN) for the Kawailoa Wind Project. Notification of the SEISPN was transmitted to our office via letter dated July 8, 2018.

It is our understanding that the applicant, Kawailoa Wind, LLC, is not proposing any substantive changes to the existing project or its operation including to its size, scope, or location. The applicant is requesting an increase in the amount of authorized Hawaiian hoary bat take to cover the remaining of the permit term, and requesting take authorization for the Hawaiian petrel as a new covered species. The State Department of Land and Natural Resources has determined that a Supplemental Environmental Impact Statement (SEIS) is warranted per Hawaii Administrative Rules § 11-200-27.

Based on the limited information provided in the SEISPN, the Office of Planning reserves comment until we are able to review the forthcoming SEIS. If you have any questions regarding this comment letter, please contact Joshua Hekeia of our office at (808) 587-2845.

c: Ms. Amanda Childs, SWCA Environmental Consultants

**Kawailoa Wind, LLC**

**1166 Avenue of the Americas  
Ninth Floor  
New York, NY 10036  
(212) 478-0000  
FAX (212) 478-0100**

April 29, 2019

Mr. Leo R. Asuncion, Director  
State of Hawaii, Office of Planning  
P.O. Box 2359  
Honolulu, HI 96804

**RE: Response to Comment Letter on the Supplemental Environmental Impact Statement  
Preparation Notice (SEISPN) for the Kawailoa Wind Project; Waialua District, Oahu**

Dear Mr. Asuncion:

Thank you for your comment letter dated August 13, 2018 in response to the Supplemental Environmental Impact Statement Preparation Notice (SEISPN) for the Kawailoa Wind Project. We appreciate your response and understand that you have no comments in response to the SEISPN. We will keep you informed regarding publication of the Draft Supplemental Environmental Impact Statement (SEIS), which will include a 45-day public review period.

If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [bwoeck@dwwind.com](mailto:bwoeck@dwwind.com).

Sincerely,

**Kawailoa Wind, LLC**



Bryan Martin

Authorized Signatory

cc: Glenn Metzler, Department of Land and Natural Resources Division of Forestry and Wildlife

## **Appendix E. Draft SEIS Comments and Responses**

Aloha,

Thank you for allowing me to submit comments in opposition to Kawailoa Wind's Amendment to Habitat Conservation Plan, Incidental Take (IT) License and IT Permit. Location: Waialua; TMK: (1) 6-1-006:001, 6-1-007:001 and 6-2-011:001

Kawailoa Wind's amendment to the HCP to increase the amount of Hawaiian hoary bats, and Hawaiian petrels runs counter to preserving Hawaii ecosystems. According to an October 1, 2015 DLNR Factsheet,<sup>1</sup> the Hawaiian hoary bat population estimate for all islands range from hundreds to a few thousands. The devastation of Hawaii's ecosystem has left the Hawaiian hoary bat, the only Hawaii land mammal, on the verge of extinction.

The Hawaiian Petrel number is "estimated at 20,000 with a breeding population between 4,500 and 5,000 pairs."<sup>2</sup> Although the Hawaiian Petrel is faring better than the Hawaiian hoary bat, that fact should not be taken for granted. Humans need to stop acting as though they are the center of the universe and realize that eliminating other species has a lasting impact on all humans.

Allowing Kawailoa Wind to amend their HCP will be detrimental to the Hawaiian hoary bat, the Hawaiian petrel, as well as other unforeseen influences on Hawaii's ecosystem. I ask that you to take a responsible stance and deny Kawailoa Wind's request.

Mahalo for considering my comments.

Michael Dezellem

---

<sup>1</sup> 'Ōpe'ape'a or Hawaiian Hoary Bat *Lasiurus cinereus semotus*, <https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-hawaiian-hoary-bat.pdf>

<sup>2</sup> 'Ua'u or Hawaiian Petrel *Pterodroma sandwichensis*, <https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Hawaiian-petrel.pdf>





September 3, 2019

Mr. Michael Dezellem  
Provided via email: mdezellem@yahoo.com

**RE: Response to Comment on the Kawailoa Wind Project; Waialua District, Oahu**

Dear Mr. Dezellem:

Thank you for your email dated May 15, 2019 regarding the Kawailoa Wind Project. We note that your email is regarding the amendment to the Habitat Conservation Plan (HCP), and that you did not provide comments on the Draft Supplemental Environmental Impact Statement (SEIS). We acknowledge your opposition to the HCP Amendment.

Kawailoa Wind is committed to avoiding and minimizing take of the Hawaiian hoary bat and Hawaiian petrel to the maximum extent practicable, while also providing clean, renewable energy for Hawaii. The HCP Amendment has been developed through consultation with the U.S. Fish and Wildlife Service (USFWS) and State of Hawaii Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW) based on the requirements of the federal Endangered Species Act and Hawaii Revised Statutes (HRS) Chapter 195D, respectively. It identifies both the steps that would be taken to minimize impacts, as well as mitigation that would be implemented to provide a net environmental benefit and increase the likelihood of recovery for the Hawaiian hoary bat and Hawaiian petrel. Pursuant to HRS Chapter 195D, the HCP Amendment requires approval from the Board of Land and Natural Resources (BLNR).

The purpose of the SEIS is to disclose the increased Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel as well as the additional measures that would be implemented to minimize and mitigate those impacts, within the context of the HRS Chapter 343 requirements. Based on the information presented in the HCP Amendment, a discussion of the increased impacts and the associated minimization and mitigation measures for these species is contained in Section 3.5.4.1 of the SEIS. As detailed in this section, implementation of minimization and mitigation measures would fully offset the increased take of the Hawaiian hoary bat and Hawaiian petrel and result in a net environmental benefit.

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Keith', written over a light blue horizontal line.

**Tetra Tech, Inc.**

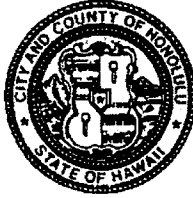
cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



DEPARTMENT OF FACILITY MAINTENANCE  
**CITY AND COUNTY OF HONOLULU**

1000 Ulu'ohia Street, Suite 215, Kapolei, Hawaii 96707  
Phone: (808) 768-3343 • Fax: (808) 768-3381  
Website: www.honolulu.gov

KIRK CALDWELL  
MAYOR



ROSS S. SASAMURA, P.E.  
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN  
DEPUTY DIRECTOR

IN REPLY REFER TO:  
DRM 19-261

May 16, 2019

Ms. Lisa Kettley  
Tetra Tech, Inc.  
737 Bishop Street, Suite 2340  
Honolulu, Hawaii 96813

Dear Ms. Kettley:

Subject: Availability of Draft Supplemental Environmental Impact  
Statement for the Kawaihoa Wind Farm

Thank you for the opportunity to review and comment on the subject project.

We have no comments at this time, as we do not have any facilities or easements on the subject property.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

  
Ross S. Sasamura, P.E.  
Director and Chief Engineer



September 3, 2019

Mr. Ross Sasamura, Director and Chief Engineer  
Department of Facility Maintenance  
City & County of Honolulu  
1000 Ulu'ohia Street, Suite 215  
Kapolei, Hawaii 96707

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Mr. Sasamura:

Thank you for your comment letter dated May 16, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We understand that you do not have any facilities or easements on the subject property and have no comments at this time. We appreciate your review and will keep you informed regarding publication of the Final SEIS.

A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Keith', written over a faint, larger signature.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

DEPARTMENT OF PARKS & RECREATION  
**CITY AND COUNTY OF HONOLULU**

1000 Ulukouia Street, Suite 309, Kapolei, Hawaii 96707  
Phone: (808) 768-3003 • Fax: (808) 768-3053  
Website: www.honolulu.gov

KIRK CALDWELL  
MAYOR



MICHELE K. NEKOTA  
DIRECTOR

JEANNE C. ISHIKAWA  
DEPUTY DIRECTOR

May 17, 2019

Mr. Glen Metzler  
State of Hawaii  
Board of Land and Natural Resources  
Division of Forestry and Wildlife  
1151 Punchbowl Street, Room 325  
Honolulu, Hawaii 96813

Dear Mr. Metzler:

SUBJECT: Availability of Draft Supplemental Environmental Impact Statement  
Kawailoa Wind Farm Oahu, Hawaii

The Department of Parks and Recreation has reviewed the Supplemental Draft Environmental Statement published by the Department of Health, Office of Environmental Quality Control.

The Department encourages the Department of Land and Natural Resources to require Kawailoa Wind, LLC, to reduce the taking of all threatened and endangered species as a result of this subject wind farm project.

Should you have any questions, please contact John Reid, Planner at 768-3017.

Sincerely,

A handwritten signature in black ink, appearing to read "MKNekota", is written over a horizontal line.

Michele K. Nekota  
Director

MKN:jr  
(771684)

cc: Ms. Brita Woeck, Kawailoa Wind LLC  
Ms. Lisa Kettley, Tetra Tech, Inc.  
Mr. Miles Hazama, District IV  
Ms. Eileen Helmstetter, PMRS



**TETRA TECH**

September 3, 2019

Ms. Michele K. Nekota, Director  
Department of Parks & Recreation  
City & County of Honolulu  
1000 Ulu'ohia Street, Suite 309  
Kapolei, Hawaii 96707

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Ms. Nekota:

Thank you for your comment letter dated May 17, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We acknowledge your request that the take of all threatened and endangered species be reduced.

Kawaihoa Wind is committed to avoiding and minimizing take of the Hawaiian hoary bat and Hawaiian petrel to the maximum extent practicable, while also providing clean, renewable energy for Hawaii. The HCP Amendment has been developed through consultation with the U.S. Fish and Wildlife Service (USFWS) and State of Hawaii Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW) based on the requirements of the federal Endangered Species Act and Hawaii Revised Statutes (HRS) Chapter 195D, respectively. It identifies both the steps that would be taken to minimize impacts, as well as mitigation that would be implemented to provide a net environmental benefit and increase the likelihood of recovery for the Hawaiian hoary bat and Hawaiian petrel. Pursuant to HRS Chapter 195D, the HCP Amendment requires approval from the Board of Land and Natural Resources (BLNR).

The purpose of the SEIS is to disclose the increased Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel as well as the additional measures that would be implemented to minimize and mitigate those impacts, within the context of the HRS Chapter 343 requirements. Based on the information presented in the HCP Amendment, a discussion of the increased impacts and the associated minimization and mitigation measures for these species is contained in Section 3.5.4.1 of the SEIS. As detailed in this section, implementation of minimization and mitigation measures would fully offset the increased take of the Hawaiian hoary bat and Hawaiian petrel and result in a net environmental benefit.

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

**DEPARTMENT OF DESIGN AND CONSTRUCTION  
CITY AND COUNTY OF HONOLULU**

850 SOUTH KING STREET, 11<sup>TH</sup> FLOOR  
HONOLULU, HAWAII 96813  
Phone: (808) 768-8480 • Fax: (808) 768-4567  
Web site: [www.honolulu.gov](http://www.honolulu.gov)



KIRK CALDWELL  
MAYOR

ROBERT J. KRONING, P.E.  
DIRECTOR

MARK YONAMINE, P.E.  
DEPUTY DIRECTOR

May 22, 2019

Kawailoa Wind, LLC  
ATTN: Brita Woeck  
1166 Avenue of the Americas, 9<sup>th</sup> Floor  
New York, NY 10036

Dear Ms. Woeck,

Subject: Draft Supplemental Environmental Impact Statement for the Kawailoa  
Wind Farm; Oahu, Hawaii

Thank you for the opportunity to review and comment. The Department of Design  
and Construction does not have any comments at this time.

Should you have any further questions, please call me at 768-8480.

Sincerely,

A handwritten signature in black ink, appearing to read "R. M. Kroning".

Robert J. Kroning, P.E.  
Director

RJK:ms(771531)  
cc: Glenn Metzler, Department of Land and Natural Resources  
Lisa Kettley, Tetra, Inc.



September 3, 2019

Mr. Robert Kroning, Director  
Department of Design and Construction  
City & County of Honolulu  
650 South King Street, 11<sup>th</sup> floor  
Honolulu, Hawaii 96813

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Mr. Kroning:

Thank you for your comment letter dated May 22, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We understand that you do not have any comments at this time. We appreciate your review and will keep you informed regarding publication of the Final SEIS.

A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Keith', written over a light blue horizontal line.

**Tetra Tech, Inc.**

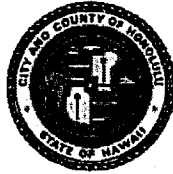
cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



HONOLULU FIRE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

636 South Street  
Honolulu, Hawaii 96813-5007  
Phone: 808-723-7139 Fax: 808-723-7111 Internet: [www.honolulu.gov/hfd](http://www.honolulu.gov/hfd)

KIRK CALDWELL  
MAYOR



MANUEL P. NEVES  
FIRE CHIEF

LIONEL CAMARA JR.  
DEPUTY FIRE CHIEF

May 23, 2019

Ms. Lisa Kettley  
Tetra Tech, Inc  
737 Bishop Street, Suite 2340  
Honolulu, Hawaii 96813

Dear Ms. Kettley:

Subject: Supplemental Draft Environmental Impact Statement (DEIS)  
Kawailoa Wind Farm  
61-488 Kamehameha Highway  
Haleiwa, Hawaii 96712  
Tax Map Key: 6-1-006: 001

In response to your letter dated May 3, 2019, regarding the abovementioned subject, the Honolulu Fire Department (HFD) reviewed the submitted information and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 meters) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; 2012 Edition, Sections 18.2.3.2.2 and 18.2.3.2.2.1.)

A fire department access road shall extend to within 50 feet (15 meters) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; 2012 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter

M. Lisa Kettley  
Page 2  
May 23, 2019

constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet (45,720 millimeters) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; 2012 Edition, Section 18.3.1, as amended.)

3. The unobstructed width and unobstructed vertical clearance of a fire apparatus access road shall meet county requirements. (NFPA 1; 2012 Edition, Section 18.2.3.4.1.1 and 18.2.3.4.1.2, as amended.)
4. Submit civil drawings to the HFD for review and approval.

Should you have questions, please contact Battalion Chief Wayne Masuda of our Fire Prevention Bureau at 723-7151 or [wmasuda@honolulu.gov](mailto:wmasuda@honolulu.gov).

Sincerely,



SOCRATES D. BRATAKOS  
Assistant Chief

SDB/TC:gl





September 3, 2019

Mr. Socrates D. Bratakos, Assistant Chief  
Honolulu Fire Department  
636 South Street  
Honolulu, Hawaii 96813

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Mr. Bratakos:

Thank you for your comment letter dated May 23, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. Kawaihoa Wind acknowledges the specific requirements referenced in your letter, including those related to fire department access roads, an approved water supply for fire protection, unobstructed clearances for fire apparatus, and submittal of civil drawings. The Project was constructed in 2012, and the specific requirements identified by the Honolulu Fire Department were met at that time.

The subject SEIS is related to an amendment to the Project's Habitat Conservation Plan (HCP) and addresses the increase in Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel and the additional measures that will be implemented to minimize and mitigate those impacts. No changes in the Project facilities are proposed, such that the Project is understood to still be in compliance with the relevant fire protection requirements.

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in dark ink, appearing to read 'J. Path'.

**Tetra Tech, Inc.**

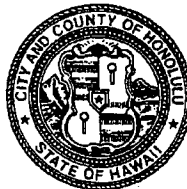
cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

19782

DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7<sup>TH</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041  
DEPT. WEB SITE: [www.honolulu.gov/dpp](http://www.honolulu.gov/dpp) • CITY WEB SITE: [www.honolulu.gov](http://www.honolulu.gov)

KIRK CALDWELL  
MAYOR



KATHY K. SOKUGAWA  
ACTING DIRECTOR

TIMOTHY F. T. HIU  
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI  
DEPUTY DIRECTOR

May 24, 2019

2019/ELOG-907(WA)

Mr. Glen Metzler  
State of Hawaii  
Department of Land and Natural Resources  
1151 Punchbowl Street, Room 325  
Honolulu, Hawaii 96813

Dear Mr. Metzler:

SUBJECT: Draft Supplemental Environmental Impact Statement (DSEIS)  
Kawailoa Wind Project  
62-350 Kawailoa Drive and  
61-488 Kamehameha Highway - Haleiwa  
Tax Map Keys 6-1-005: 001; 6-1-006: 001; 6-1-007: 001;  
and 6-2-001: 001

Thank you for the opportunity to provide comments on the DSEIS, received May 7, 2019, for the above-mentioned Project. We have no comments.

Should you have any further questions on this matter, please contact William Ammons, of our Urban Design Branch, at 768-8025 or [wammons@honolulu.gov](mailto:wammons@honolulu.gov).

Very truly yours,

A handwritten signature in black ink, appearing to read "Kathy K. Sokugawa", is written over the typed name.

Kathy K. Sokugawa  
Acting Director



September 3, 2019

Ms. Kathy Sokugawa, Acting Director  
Department of Planning and Permitting  
City & County of Honolulu  
650 South King Street, 7<sup>th</sup> floor  
Honolulu, Hawaii 96813

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Ms. Sokugawa:

Thank you for your comment letter dated May 24, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We understand that you do not have any comments at this time. We appreciate your review and will keep you informed regarding publication of the Final SEIS.

A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Kathy', written over a light blue horizontal line.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

*For the Protection of Hawaii's Native Wildlife*  
**HAWAII AUDUBON SOCIETY**

850 Richards Street, Suite 505, Honolulu, HI 96813-4709  
Phone (808) 528-1432, Email [hiaudsoc@gmail.com](mailto:hiaudsoc@gmail.com)  
[www.hawaii-audubon.org](http://www.hawaii-audubon.org)



**Sent Via E-mail**  
June 18, 2019

Glenn Metzler  
State of Hawai'i  
Department of Land and Natural Resources  
Division of Forestry and Wildlife

**Re: Kawaihoa Wind Farm--Draft Supplemental EIS**

Dear Mr. Metzler:

The Hawaii Audubon Society (HAS) herein submits its Comments on the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Farm. Hawaii Audubon Society is a nonprofit organization that was established locally in 1939 that fosters community values to protect and restore native wildlife and ecosystems and conserve natural resources through education, science and advocacy in Hawai'i and the Pacific. We submit these comments on behalf of our more than 1,700 members.

HAS is concerned that the Kawaihoa Wind project has exceeded the allowable take for the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) and Hawaiian Petrel (*Pterodroma sandwichensis*) as permitted by the issued incidental take permit and license. The request for a tremendous increase in the allowable take for these two endangered species is alarming. While HAS generally supports the State's renewable energy goals, HAS firmly

believes those goals must be reached with continued protections for Hawai'i's endangered species.

We understand that implementing new technologies often comes with costs. With wind turbines, as noted in the EIS, there is a unique risk to flying species that must be carefully studied and mitigated. As such, HAS appreciates that the Department of Land and Natural Resources (DLNR) is carefully considering and scrutinizing the avoidance, minimization, and mitigation strategies put forth by the Kawailoa Wind project as part of their request for an increase in the allowable take limits for the Hawaiian Hoary Bat and Hawaiian Petrel.

**Avoidance and mitigation strategies should be implemented and strengthened to prevent a quadruple increase in the anticipated take of the Hawaiian hoary bat.**

It is imperative that Kawailoa Wind reduce the risk caused by its operation for the Hawaiian Hoary Bats and Hawaiian Petrel. HAS supports the continued use of the low wind speed curtailment (LWSC), implementation of mortality monitoring, and efforts to develop technology that would safely deter bats from colliding with turbines. The following proposed minimization strategies must prove to be more effective as the project continues operation:

- (1) extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise,
- (2) increase LWSC cut-in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the "down time" of the wind turbines and reduce the number of stop/start events per night,
- (3) conduct an ultrasonic acoustic bat deterrent "proof of concept" test, and
- (4) install bat deterrents at all 30 Project turbines when they are shown to be at least as effective as LWSC at reducing bat take.

We are pleased to read that the current mitigation efforts for Tiers 1-3 of take are being successfully implemented in coordination with U.S. Fish and Wildlife Service (USFWS) and the State of Hawai'i DLNR Division of Forestry and Wildlife (DOFAW). HAS is hopeful that the mitigation efforts for Tiers 4 through 6<sup>1</sup> will prove to be as effective as predicted, however, if monitoring proves otherwise, additional mitigation should be

---

<sup>1</sup> Tier 4 bat mitigation consists of contributing \$2,750,000 toward acquisition and long-term protection of the Helemano Wilderness Area through a partnership with the Trust for Public Land (TPL), USFWS, DOFAW and other funding partners. Tier 5 and Tier 6 mitigation for the Hawaiian hoary bat will include either (1) contribution of funding to acquire property to protect bat roosting and foraging habitat in perpetuity, or (2) bat habitat management/restoration at Helemano Wilderness Area, Waimea Native Forest, or a similar site.

required. Ideally, there would be no increase to take while simultaneously providing habitat for species recovery in mitigation for the bats and birds already harmed by the project operation. While this mitigation strategy appears to strike a good balance and hopefully will in fact provide a net benefit to the species, we request that the increase in take be minimal and reassessed regularly throughout the remaining life of Kawaiiloa Wind's operations.

**The Hawaiian Petrel should be allowed to flourish on O'ahu.**

It is with great concern that we respond to the inclusion and increase of allowable take for the Hawaiian Petrel. It is exciting to learn that the Hawaiian Petrel was found in an area it was not previously known or believed to frequent. However, to learn of the petrel's presence through its death, and to then allow for loss of more of the species is unacceptable. As stated in the SEIS, the total population of Hawaiian Petrels is estimated between 19,000 and 52,000. According to the assertions of the SEIS, it is not believed that the take of 19 adults and 5 chicks will have a population-level effect on Hawaiian Petrel over the lifetime of the project. However, given the recent discovery of their presence on O'ahu, we ask that further observation and research be conducted.

While there is no conclusive evidence of a breeding colony on O'ahu, the continued take of the species may be prohibiting a colony from reestablishing. HAS asks that further study of the Hawaiian Petrel and its presence on and around O'ahu in addition to the proposed mitigation plans. Observing native Hawaiian birds in their natural habitat is a rare and remarkable opportunity for HAS members, Hawai'i residents, visitors, and the global birding community.

**Continued monitoring, evaluation, and reporting is necessary to prevent further impact.**

The Hawaii Audubon Society is against an increase in the allowable take of these endangered species. The silver lining, however, is that this is a unique opportunity to learn more about the Hawaiian Hoary Bat and Hawaiian Petrel to be better able to protect and rehabilitate both species in the future. The gross underestimation of the impact to these species in the 2011 Environmental Impact Statement (EIS) clearly shows the need for more research on the habitat and habits of these two endangered species.

To avoid making similar mistakes in determining the allowable take limit at future developments, we ask that the proposed safer operation protocols be implemented and continuously monitored for effectiveness. HAS also requests that the habitat purchased as part of the mitigation effort be subject to strict monitoring. Kawaiiloa Wind should continue to conduct regular evaluation and make adjustments to its operations based on the findings of neutral third party monitoring. The findings of all monitoring should be reported to DLNR and the public.

Thank you for your consideration of these comments and your continued commitment to the protection and rehabilitation of Hawai'i's environment.

Sincerely,

Hawaii Audubon Society  
Board of Directors





September 3, 2019

Board of Directors  
Hawaii Audubon Society  
850 Richards Street, Suite 505  
Honolulu, Hawaii 96813

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement for the Kawailoa Wind Project; Waialua District, Oahu**

Dear Directors:

Thank you for your comment letter dated June 18, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawailoa Wind Project. We acknowledge your concern regarding take of the Hawaiian hoary bat and Hawaiian petrel. Kawailoa Wind is committed to avoiding and minimizing take of the Hawaiian hoary bat and Hawaiian petrel to the maximum extent practicable, while also providing clean, renewable energy for Hawaii. Following, please find Kawailoa Wind's responses to the comments provided in your letter:

- 1. Avoidance and mitigation strategies should be implemented and strengthened to prevent a quadruple increase in the anticipated take of the Hawaiian hoary bat.**
- a. It is imperative that Kawailoa Wind reduce the risk caused by its operation for the Hawaiian Hoary Bats and Hawaiian Petrel. HAS supports the continued use of the low wind speed curtailment (LWSC), implementation of mortality monitoring, and efforts to develop technology that would safely deter bats from colliding with turbines. The following proposed minimization strategies must prove to be more effective as the project continues operation:**
  - (1) extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise,**
  - (2) increase LWSC cut - in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the "down time" of the wind turbines and reduce the number of stop/start events per night,**
  - (3) conduct an ultrasonic acoustic bat deterrent "proof of concept" test, and**
  - (4) install bat deterrents at all 30 Project turbines when they are shown to be at least as effective as LWSC at reducing bat take.**

The minimization measures proposed as part of the HCP Amendment are summarized in Section 3.5.4.1 of the SEIS. This discussion has been updated to include recent results of bat deterrent test trials. Specifically, this section states: "*NRG Systems Inc. (NRG) makes acoustic deterrents that are being tested in broad-scale field trials and studies at commercial wind facilities on the mainland. In these studies, hoary bat fatalities were reduced by up to 78 percent compared to control turbines (Weaver et al. 2018). The effectiveness of NRG acoustic deterrents presently ranges from 20 to 100 percent, with higher effectiveness shown for mainland hoary bats than other mainland bat species (NRG 2018). As demonstrated at Pilot Hill, Illinois in 2018 (Lillian 2019), take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent more than LWSC alone (B. Morton/NRG, pers. comm., May 2019).*"



Given these results, Kawaiiloa Wind proactively installed bat deterrents at all 30 Project turbines in May and June 2019. As stated in Section 3.5.4.1, the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment will include both LWSC and installation of bat deterrent devices, as follows:

- "1. Extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise.*
- 2. Increase LWSC cut-in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the "down time" of the wind turbines and reduce the number of stop/start events per night by extending the rolling average time from 10 to 20 minutes. Hysteresis is a LWSC regime that offsets the "cut-out" and "cut-in" speeds, such that it takes a higher average wind speed (raised cut-in speed) for the turbines to return to operation after stopping due to LWSC. All Project turbines individually monitor wind speed using turbine-mounted anemometers and are programmed to shut off when wind speeds are 5.0 m/s or lower and to start up again when wind speeds reach 5.2 m/s, thereby increasing the cut-in speed and extending the period during which collision risk for bats is minimized.*
- 3. Install bat deterrents at all 30 Project turbines in May and June 2019. For the purposes of take estimation, it is assumed the deterrents will be effective beginning in 2020."*

As reflected in the SEIS, the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment will include both LWSC and bat deterrent devices. Based on the results published by Lillian (2019), the best available science indicates that the use of deterrents with LWSC is 24 percent more effective than the use of LWSC alone.

- b. We are pleased to read that the current mitigation efforts for Tiers 1-3 of take are being successfully implemented in coordination with U.S. Fish and Wildlife Service (USFWS) and the State of Hawai'i DLNR Division of Forestry and Wildlife (DOFAW). HAS [Hawaii Audubon Society] is hopeful that the mitigation efforts for Tiers 4 through 6 will prove to be as effective as predicted, however, if monitoring proves otherwise, additional mitigation should be required.**

For each tier of mitigation, specific measures of success have been identified, as well as an adaptive management strategy that would be implemented in the event those criteria are not achieved. The measures of success and the adaptive management approach are summarized in Section 3.5.4.1 of the SEIS, with additional detail provided in the HCP Amendment. As the mitigation for Tiers 4 – 6 already includes these components, as summarized in the SEIS, no revisions were made in response to this comment.

- c. Ideally, there would be no increase to take while simultaneously providing habitat for species recovery in mitigation for the bats and birds already harmed by the project operation. While this mitigation strategy appears to strike a good balance and hopefully will in fact provide a net benefit to the species, we request that the increase in take be minimal and reassessed regularly throughout the remaining life of Kawaiiloa Wind's operations.**

As discussed in Section 3.5.4.1 of the SEIS, Kawaiiloa Wind has been and will continue to conduct post-construction mortality monitoring to monitor direct take of wildlife species to ensure compliance with the provisions and take limitations in the HCP. Furthermore, Kawaiiloa Wind has developed an adaptive management strategy to account for uncertainty in the amount of take expected over the remainder of the permit term and the effectiveness of minimization measures (e.g., LWSC). This section has been updated to include additional detail from the HCP Amendment, as follows:

*“Kawailoa Wind meets with USFWS and DOFAW on an annual basis to review ITP/ITL compliance and evaluates the take trajectory annually, in consultation with USFWS and DOFAW. Kawailoa Wind also submits to USFWS and DOFAW a summary of adjusted take after each fatality. Kawailoa Wind has established “within-tier” triggers to minimize the chances of the Project bat take reaching the next tier, such that planning for mitigation will occur in parallel with implementation of additional adaptive management. The adaptive management strategy is intended to allow the Project to remain in the lowest tier possible.*

*As part of the adaptive management strategy, Kawailoa Wind has identified additional minimization measures that will be implemented, if necessary, in the future to minimize take of the Hawaiian hoary bat should the current measures prove to not have the anticipated effect. Kawailoa Wind will evaluate take quarterly and will implement additional minimization measures based on specific triggers related to estimated take rates; the triggers would occur when 75 percent of the estimated take for the current tier has been reached (using the 80 percent upper credible limit) and projected take is on a trajectory to exceed the authorized take limit before the end of the permit term.”*

Additional detail regarding monitoring and adaptive management is provided in Section 3.5.4.1 of the SEIS.

## **2. The Hawaiian petrel should be allowed to flourish on O‘ahu.**

- a. It is with great concern that we respond to the inclusion and increase of allowable take for the Hawaiian Petrel. It is exciting to learn that the Hawaiian Petrel was found in an area it was not previously known or believed to frequent. However, to learn of the petrel’s presence through its death, and to then allow for loss of more of the species is unacceptable. As stated in the SEIS, the total population of Hawaiian Petrels is estimated between 19,000 and 52,000. According to the assertions of the SEIS, it is not believed that the take of 19 adults and 5 chicks will have a population-level effect on Hawaiian Petrel over the lifetime of the project. However, given the recent discovery of their presence on O‘ahu, we ask that further observation and research be conducted.**

**While there is no conclusive evidence of a breeding colony on O‘ahu, the continued take of the species may be prohibiting a colony from reestablishing. HAS asks that further study of the Hawaiian Petrel and its presence on and around O‘ahu in addition to the proposed mitigation plans. Observing native Hawaiian birds in their natural habitat is a rare and remarkable opportunity for HAS members, Hawai‘i residents, visitors, and the global birding community.**

Kawailoa Wind is not proposing research on Hawaiian petrel occurrence around O‘ahu, as this is outside the scope of the HCP Amendment and SEIS. As discussed in Section 3.5.4.1 of the SEIS, the Hawaiian petrel mitigation included in the HCP Amendment involves predator control and burrow monitoring of known breeding colonies on Kaua‘i. The mitigation was developed in response to detailed guidance from USFWS and DOFAW based on their targeted recovery strategy, which focuses on managing the core colonies on the islands of Kaua‘i, Maui, and Hawai‘i. As explained in Section 3.5.4.1 of the SEIS, *“Restoration on O‘ahu was not included in the Hawaiian petrel recovery priorities developed by USFWS and DOFAW because (1) breeding colonies have not been located, if they are present on O‘ahu, and (2) the insurmountable threats of fallout potential due to extreme light effects from heavy urbanization suggests few, if any, juveniles would survive. An additional concern is that locating any breeding populations (if any exist) would take considerable effort and time. These considerations make conservation efforts on O‘ahu impractical, given the scope of the HCP Amendment.”* Additional detail regarding the Hawaiian petrel mitigation is provided in Section 3.5.4.1 of the SEIS.

**3. Continued monitoring, evaluation and reporting is necessary to prevent further impact.**

- a. The Hawaii Audubon Society is against an increase in the allowable take of these endangered species. The silver lining, however, is that this is a unique opportunity to learn more about the Hawaiian Hoary Bat and Hawaiian Petrel to be better able to protect and rehabilitate both species in the future. The gross underestimation of the impact to these species in the 2011 Environmental Impact Statement (EIS) clearly shows the need for more research on the habitat and habits of these two endangered species.**

**To avoid making similar mistakes in determining the allowable take limit at future developments, we ask that the proposed safer operation protocols be implemented and continuously monitored for effectiveness.**

As noted in response to Comment #1, Kawaiiloa Wind proactively installed bat deterrents at all 30 Project turbines in May and June 2019; the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment will include both LWSC and installation of bat deterrent devices. Post-construction mortality monitoring has been and will continue to be conducted. As stated in Section 3.5.4.1 of the SEIS, *"The purpose of these efforts is to monitor direct take of wildlife species to ensure compliance with the ITP/ITL and the provisions and take limitations in the HCP. As detailed in the approved HCP and further described in the HCP Amendment, the protocol includes an initial 3-year intensive monitoring period, followed by alternating periods of scaled-back systematic monitoring, punctuated by a year of intensive monitoring every 5 years (e.g., years 6, 11, and 16)...Kawaiiloa Wind has and will continue to prepare written reports describing results from monitoring efforts to demonstrate HCP compliance and identify any proposed adaptive management strategies. In addition, at a minimum, Kawaiiloa Wind has and will continue to meet with USFWS and DLNR semi-annually throughout the permit term to discuss the monitoring results in the context of compliance with authorized take limits."* Additional information regarding the monitoring protocol is provided in the SEIS, with more detail provided in the HCP Amendment. The annual reports, which include the monitoring results, are available on DLNR's website (<https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>).

- b. HAS also requests that the habitat purchased as part of the mitigation effort be subject to strict monitoring.**

The contribution of funds to the acquisition of Helemano Wilderness Area for Tier 4 mitigation is discussed in Section 3.5.4.1 of the SEIS. As summarized in the SEIS and further detailed in the HCP Amendment, acquisition of this habitat was thoroughly vetted in coordination with USFWS and DOFAW to ensure that it would provide a net benefit for the Hawaiian hoary bat; no long-term monitoring is required as part of the mitigation for Kawaiiloa Wind's HCP Amendment. As described in the SEIS, DOFAW is responsible for long-term ownership and management of the Helemano Wilderness Area.

- c. Kawaiiloa Wind should continue to conduct regular evaluation and make adjustments to its operations based on the findings of neutral third party monitoring. The findings of all monitoring should be reported to DLNR and the public.**

As described above and in Section 3.5.4.1 of the SEIS, monitoring for downed wildlife is conducted based on the post-construction mortality monitoring protocol and associated adaptive management provisions; the results are presented in annual reports, which are submitted to the agencies and are available to the public. The SEIS has been updated to indicate that *"The annual reports are available on DLNR's website (<https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>)."*

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read "J. Keith", written in a cursive style.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 20, 2019

LD 784

Brita Woeck  
Kawailoa Wind, LLC  
1166 Avenue of the Americas, 9<sup>th</sup> Floor  
New York, NY 10036

*via email: BRIWO@orsted.com*

Lisa Kettley  
Tetra Tech, Inc.  
737 Bishop Street, Suite 2340  
Honolulu, HI 96813

*via email: lisa.kettley@tetrattech.com*

To Whom It May Concern:

**SUBJECT: Availability of Draft Supplementary Environmental Impact Statement for the Kawailoa Wind Farm, Waialua District, Island of O'ahu, Hawaii.**  
TMK: (1) 6-1-006:001, 6-1-007:001, and 6-2-011:001

Thank you for the opportunity to review and comment on the above subject matter. The Land Division of the Department of Land and Natural Resources ("DLNR") distributed a copy of your request pertaining to the subject matter to selected DLNR Divisions for their review and comments.

Enclosed are comments from DLNR's a) Engineering Division, b) Division of Forestry and Wildlife, and c) Land Division—Oahu District. Should you have any questions, please feel free to contact Barbara Lee, Project Development Specialist, by phone at (808) 587-0453 or via email at [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov). Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to be "R. Tsuji".

Russell Y. Tsuji  
Land Administrator

Enclosure(s)  
cc: Central Files



LD 784

0079027

RECEIVED  
LAND DIVISION

To: Agencies and Interested Stakeholders  
From: Kawaiiloa Wind, LLC 201 MAY 13 AM 11:05  
Date: May 3, 2019  
Subject: Availability of Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaiiloa Wind Farm; O'ahu, Hawaii

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

A Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaiiloa Wind Farm (Project) has been prepared pursuant to Hawaii Revised Statutes (HRS) Chapter 343 and Hawaii Administrative Rules (HAR) 11-200. Notice of availability is being published by the State of Hawaii Office of Environmental Quality Control (OEQC) in the May 8, 2019 edition of the Environmental Notice. Starting that day, the document can be accessed via the link provided below. In addition, a hard copy of the Draft SEIS will be available at the Hawaii State Library (478 S. King Street, Honolulu), Kahuku Public and School Library (56-490 Kamehameha Hwy, Kahuku) and Waialua Public Library (67-068 Kealohanui Street, Waialua).

[http://oeqc2.doh.hawaii.gov/EA\\_EIS\\_Library/2019-05-08-OA-DSEIS-Kawaiiloa-Wind-Farm.pdf](http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2019-05-08-OA-DSEIS-Kawaiiloa-Wind-Farm.pdf)

The Project is an approximately 69-megawatt wind farm located approximately 5 miles northeast of Hale'iwa town on the north shore of O'ahu. Pursuant to HRS Chapter 343, an Environmental Impact Statement (EIS) was accepted by the State of Hawai'i Department of Business, Economic Development, and Tourism (DBEDT) in July 2011. The Project was subsequently constructed and has been in operation since 2012. The Project is operating under an approved Habitat Conservation Plan (HCP) and associated Incidental Take Permit (ITP) and Incidental Take License (ITL), which authorize take of threatened and endangered species protected under the federal Endangered Species Act and HRS Chapter 195D, respectively. Post-construction mortality monitoring data indicate that operation of the wind turbines is resulting in a greater number of endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*) fatalities than anticipated in the HCP and authorized by the ITP/ITL. As such, Kawaiiloa Wind is pursuing an amendment to the HCP as part of the request to increase the amount of Hawaiian hoary bat take authorized by the ITP/ITL. Additionally, Kawaiiloa Wind is requesting to add take authorization for the endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*). Given that the impacts to the Hawaiian hoary bat and Hawaiian petrel are greater than anticipated, the State of Hawaii Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW) requested that an SEIS be prepared to support its' decision making for the HCP Amendment and ITL. A separate but parallel HCP Amendment and environmental review process is being conducted in compliance with federal requirements, pursuant to the Endangered Species Act and National Environmental Policy Act.

If you would like to submit comments on the Draft SEIS, they must be postmarked by June 24, 2019 (45-day comment period). Please submit written comments to the parties listed below.

**APPROVING AGENCY:**

State of Hawaii Board of Land and Natural Resources; 1151 Punchbowl Street, Room 325, Honolulu, HI 96813  
Contact: Glenn Metzler, Division of Forestry and Wildlife, Glenn.M.Metzler@hawaii.gov

**APPLICANT:**

Kawaiiloa Wind, LLC; 1166 Avenue of the Americas, 9th Floor; New York, NY 10036  
Contact: Brita Woeck; BRIWO@orsted.com

**CONSULTANT:**

Tetra Tech, Inc. 737 Bishop Street, Suite 2340, Honolulu, HI 96813  
Contact: Lisa Kettley; lisa.kettley@tetratech.com

DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 13, 2019

MEMORANDUM

TO:

**DLNR Agencies:**

- ☐ Div. of Aquatic Resources
- ☐ Div. of Boating & Ocean Recreation
- ☒ **Engineering Division**
- ☒ Div. of Forestry & Wildlife
- ☐ Div. of State Parks
- ☒ Commission on Water Resource Management
- ☐ Office of Conservation & Coastal Lands
- ☒ Land Division – Oahu District
- ☒ Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

**Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Farm**

LOCATION:

Waialua District, Island of Oahu; TMK Nos. (1) 6-1-006:001, 6-1-007:001, and 6-2-011:001

APPLICANT:

Tetra Tech, Inc. on behalf of Kawaihoa Wind LLC

Transmitted for your review and comment is information on the above-referenced project. The Draft SEIS has been published in OEQC's official publication, The Environmental Notice (TEN), on May 08, 2019. This issue of the TEN and a link to the Draft SEIS can be found at: [http://oeqc2.doh.hawaii.gov/The\\_Environmental\\_Notice/2019-05-08-TEN.pdf](http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2019-05-08-TEN.pdf)

Please submit any comments by **June 20, 2019**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Barbara Lee at 587-0453 or by email at [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov). Thank you.

- ☐ We have no objections.
- ☐ We have no comments.
- ☒ Comments are attached.

Signed:

Carty S. Chang, Chief Engineer

Print Name:

Date:

Attachments

Cc: Central Files

LD 784

RECEIVED  
LAND DIVISION  
JUN 19 AM 11:12  
DEPT. OF LAND & NATURAL RESOURCES  
STATE OF HAWAII

RECEIVED  
JUN 19 2019 10:01 AM  
LAND DIVISION

**DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION**

**LD/Russell Y. Tsuji**

**Ref: Draft Supplemental Environmental Impact Statement (SEIS) for the  
Kawailoa Wind Farm  
Location: Waialua District, Island of Oahu  
TMK(s): (1) 6-1-006:001, 6-1-007:001, and 6-2-011:001  
Applicant: Tetra Tech, Inc. on behalf of Kawailoa Wind LLC**

**COMMENTS**

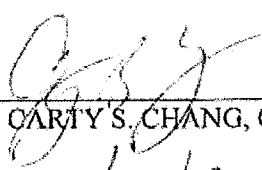
The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaiiinfip.org/FHAT>).

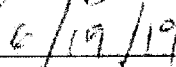
If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4846.

Signed: \_\_\_\_\_

  
CARTY S. CHANG, CHIEF ENGINEER

Date: \_\_\_\_\_

  
6/19/19





September 3, 2019

Mr. Carty Chang, Chief Engineer  
Department of Land and Natural Resources, Engineering Division  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaiiloa Wind Project; Waialua District, Oahu**

Dear Mr. Chang:

Thank you for your comment letter dated June 19, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaiiloa Wind Project. Kawaiiloa Wind acknowledges the specific requirements referenced in your letter, including those related to the National Flood Insurance Program (NFIP) and flood hazard zone designations. The Project was constructed in 2012 and the referenced requirements were met at that time.

The subject SEIS is related to an amendment to the Project's Habitat Conservation Plan (HCP) and addresses the increase in Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel and the additional measures that will be implemented to minimize and mitigate those impacts. No changes in the Project facilities are proposed, such that the Project is understood to still be in compliance with the relevant flood hazard zone requirements.

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. Keith', written over a faint circular stamp.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

19815

DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 13, 2019

MEMORANDUM

TO:

**DLNR Agencies:**

- ☐ Div. of Aquatic Resources
- ☐ Div. of Boating & Ocean Recreation
- ☒ Engineering Division
- ☒ Div. of Forestry & Wildlife
- ☐ Div. of State Parks
- ☒ Commission on Water Resource Management
- ☐ Office of Conservation & Coastal Lands
- ☒ Land Division – Oahu District
- ☒ Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

**Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Farm**

LOCATION:

Waialua District, Island of Oahu; TMK Nos. (1) 6-1-006:001, 6-1-007:001, and 6-2-011:001

APPLICANT:

Tetra Tech, Inc. on behalf of Kawaihoa Wind LLC

Transmitted for your review and comment is information on the above-referenced project. The Draft SEIS has been published in OEQC's official publication, The Environmental Notice (TEN), on May 08, 2019. This issue of the TEN and a link to the Draft SEIS can be found at: [http://oeqc2.doh.hawaii.gov/The\\_Environmental\\_Notice/2019-05-08-TEN.pdf](http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2019-05-08-TEN.pdf)

Please submit any comments by **June 20, 2019**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Barbara Lee at 587-0453 or by email at [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov). Thank you.

- (✓) We are the applying agency
- ( ) We have no objections.
- ( ) We have no comments.
- ( ) Comments are attached.

Signed:

Attachments  
Cc: Central Files

Print Name:  
Date:

**DAVID G. SMITH, Administrator**  
6/18/19

RECEIVED  
LAND DIVISION  
2019 JUN 20 AM 11:01  
LD 784  
DEPT. OF LAND & NATURAL RESOURCES  
STATE OF HAWAII



September 3, 2019

Mr. David Smith, Administrator  
Department of Land and Natural Resources, Division of Forestry and Wildlife  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Mr. Smith:

Thank you for your comment letter dated June 18, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We acknowledge your comment that the Division of Forestry and Wildlife (DOFAW) is the approving agency for the SEIS and appreciate your effort in this role.

A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in dark ink, appearing to read 'J. Keith', written over a light blue circular stamp.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 13, 2019

LD 784

MEMORANDUM

TO: **DLNR Agencies:**  
\_\_\_ Div. of Aquatic Resources  
\_\_\_ Div. of Boating & Ocean Recreation  
X Engineering Division  
X Div. of Forestry & Wildlife  
\_\_\_ Div. of State Parks  
X Commission on Water Resource Management  
\_\_\_ Office of Conservation & Coastal Lands  
X Land Division – Oahu District  
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: **Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Farm**

LOCATION: Waialua District, Island of Oahu; TMK Nos. (1) 6-1-006:001, 6-1-007:001, and 6-2-011:001

APPLICANT: Tetra Tech, Inc. on behalf of Kawaihoa Wind LLC

Transmitted for your review and comment is information on the above-referenced project. The Draft SEIS has been published in OEQC's official publication, The Environmental Notice (TEN), on May 08, 2019. This issue of the TEN and a link to the Draft SEIS can be found at: [http://oegc2.doh.hawaii.gov/The\\_Environmental\\_Notice/2019-05-08-TEN.pdf](http://oegc2.doh.hawaii.gov/The_Environmental_Notice/2019-05-08-TEN.pdf)

Please submit any comments by **June 20, 2019**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Barbara Lee at 587-0453 or by email at [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov). Thank you.

- ( ) We have no objections.  
(X) We have no comments.  
( ) Comments are attached.

Signed:

A handwritten signature in black ink, appearing to read "Patti Miyashiro", is written over a horizontal line.

Attachments  
Cc: Central Files

Print Name: Patti Miyashiro  
Date: 6/19/19



September 3, 2019

Ms. Patti Miyashiro  
Department of Land and Natural Resources, Land Division  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Ms. Miyashiro:

Thank you for your comment letter dated June 19, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We understand that you do not have any comments at this time. We appreciate your review and will keep you informed regarding publication of the Final SEIS.

A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'J. P. Kelly'.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



**DEPARTMENT OF THE ARMY**  
HEADQUARTERS, UNITED STATES ARMY GARRISON, HAWAII  
DIRECTORATE OF PUBLIC WORKS  
947 WRIGHT AVENUE, WHEELER ARMY AIRFIELD  
SCHOFIELD BARRACKS, HAWAII 96857-5013

**JUN 21 2019**

Directorate of Public Works

**SUBJECT: Comments to the Kawaihoa Wind Farm Draft Supplemental Environmental Impact Statement, O'ahu, Hawai'i**

Mr. Glen Metzler  
Division of Forestry and Wildlife  
Department of Land and Natural Resources  
State of Hawaii  
1151 Punchbowl Street, Room 325  
Honolulu, Hawaii 96813

Dear Mr. Metzler,

On behalf of the Commander of the U.S. Army Garrison, Hawaii (USAG-HI), I am writing to submit comments on the Kawaihoa Wind Farm draft Supplemental Environmental Impact Statement (SEIS), which will aid in the State of Hawai'i Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW) decision making process on supporting the requested amendment to the project's Habitat Conservation Plan (HCP) and associated Incidental Take License.

The USAG-HI has training areas on the island of O'ahu adjacent to the Kawaihoa Wind Farm project. We see that the request for additional take of Hawaiian hoary bats for the project as a large increase. I am concerned that the increase in authorization may restrict the Army's training flexibility on O'ahu. I would like to ask that DOFAW takes into account these potential impacts to the Army's mission and work in partnership with us to help maintain training flexibility in light of the additional stressors on endangered species, should the project be granted an increase in take.

As a member of the Ko'olau Mountains watershed partnership, the Army supports the fencing and removal of ungulates, invasive vegetation removal, and planting of native forest trees proposed as mitigation for Hawaiian hoary bat take at the Kawaihoa Wind Farm.

We have also provided similar comments to on the U.S. Fish and Wildlife Service on their draft Programmatic Environmental Impact Statement (PEIS), which support requests for new or amended incidental take permits (ITPs) under the Endangered Species Act authorizing the take of endangered species from four similar wind energy projects, one of which is the Kawaihoa Wind Farm project.

I would like to thank you for the opportunity to review and comment on the draft SEIS. Should you require additional information, please contact Ms. Rhonda Suzuki, USAG-HI Environmental Division Chief, at (808) 656-5790 or by email at rhonda.l.suzuki.civ@mail.mil.

Sincerely,



Kent K. Watase, PE  
Director of Public Works

cc:

Brita Woeck, Kawaiiloa Wind, LLC  
Lisa Kettley, Tetra Tech, Inc.



September 3, 2019

Mr. Kent K. Watase, Director of Public Works  
Directorate of Public Works  
U.S. Army Garrison, Hawaii  
947 Wright Avenue, Wheeler Army Airfield  
Schofield Barracks, Hawaii 96857

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Mr. Watase:

Thank you for your comment letter dated June 21, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project.

Kawaihoa Wind understands that the U.S. Army Garrison Hawaii (USAG-HI) has a training area on the island of O'ahu adjacent to the Project site and is concerned about maintaining training flexibility. As part of the Project development process, potential conflicts with military training were addressed through the Regional Mission Compatibility Review Team (RMCRT), a working group comprised of the Army and other affected Department of Defense services, First Wind (the Project developer), and Kamehameha Schools. As described in the 2011 EIS for the Project, discussions by RMCRT resulted in modification to the project layout (e.g., relocating wind turbines away from training areas and undergrounding of electrical lines to avoid training impacts), as well as other specific mitigation measures. The Project was constructed in 2012 and incorporated the measures specified by the RMCRT.

The subject SEIS is related to an amendment to the Project's Habitat Conservation Plan (HCP) and addresses the increase in Project-related impacts to the Hawaiian hoary bat and Hawaiian petrel and the additional measures that will be implemented to minimize and mitigate those impacts. No changes in the Project facilities are proposed, and Kawaihoa Wind plans to continue to operate the Project in a manner that is consistent with the terms of the previous discussions by the RMCRT. As such, implementation of the HCP Amendment is not expected to have any additional impact on the USAG-HI's training area. This conclusion is provided in Section 3.11 of the SEIS; as additional impacts are not anticipated, no revisions have been made to this section. Kawaihoa Wind defers to the State of Hawai'i Department of Land and Natural Resources Division of Forestry and Wildlife (DOFAW) regarding your request to work with them in partnership regarding your training. Your support for the mitigation activities is also acknowledged.



We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in black ink, appearing to read "J. Keith". The signature is fluid and cursive, with the first name "J." and last name "Keith" clearly distinguishable.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

June 21, 2019

Glenn Metzler, Division of Forestry and Wildlife  
1151 Punchbowl St., Room 325  
Honolulu, HI 96813  
[Glenn.M.Metzler@hawaii.gov](mailto:Glenn.M.Metzler@hawaii.gov)

Lisa Kettley/Tetra Tech, Inc.  
737 Bishop St., Suite 2340  
HNL, HI 96813  
[Lisa.kettley@tetrattech.com](mailto:Lisa.kettley@tetrattech.com)

Brita Woeck  
Kawailoa Wind, LLC.  
1166 Ave. of the Americas, 9th Floor  
New York, NY 10036  
[briwo@orsted.com](mailto:briwo@orsted.com)

Re: Draft Supplemental EIS: Kawailoa Wind Power Facility

Dear Mr. Metzler:

Having reviewed the Draft Supplemental EIS for the Kawailoa wind power plant ("applicant"), the undersigned recommends that the Division of Forestry and Wildlife ("DOFAW") not accept the document as it is incomplete and inadequate.

The applicant acknowledges that a supplemental environmental statement ("SEIS") is warranted pursuant to HAR §11-200-27, and has been expressly requested by DOFAW to "support its decision making for [the applicant's] requested amendment to a previously issued Habitat Conservation Plan [HCP] and Incidental Take License [ITL]". (SEIS at 3) However, the applicant has failed to provide factual support and adequate data underpinning several claims made in this draft SEIS, (see attached statements submitted by the undersigned in February, 2019 to the HCPA) and the draft SEIS is therefore unacceptable.

**I. THE APPLICANT'S SEIS FAILS TO COMPLY WITH HAR §11-200-16 AND §28.**

Section 11-200-16 requires that the draft SEIS "shall contain an explanation of the environmental consequences of the proposed action" and "**fully declare the environmental implications of the proposed action and shall discuss all relevant and feasible consequences of the action.** [A] statement shall include responsible opposing views, if any, on significant environmental issues raised by the proposal." (Emphasis supplied.)

Section 11-200-28 in turn requires that the SEIS "**fully document** the proposed changes from the original EIS, including changes in ambient conditions or **available information that have a bearing on a proposed action or its impacts**, the positive and negative aspects of these changes". (Emphasis supplied.)

Applicant's draft complies with neither section, as demonstrated below:

**A. THE APPLICANT FAILS TO PROVIDE DATA OR FACTUAL SUPPORT FOR A CLAIM THAT FULL NIGHT-TIME CURTAILMENT (THAT APPLICANT ADMITS WOULD ELIMINATE BAT TAKE) WILL HURT APPLICANT FINANCIALLY.**

The applicant acknowledges that it has exceeded the total hoary bat take requested under the initial HCP for the 20-year ITP/ITL term; in exchange for certain contributions, the applicant now seeks permission to take an additional 205 of the endangered hoary bat, after rejecting mitigation measures that would all but eliminate any taking.

The applicant rejects full night-time curtailment, arguing that it would be unable to meet its PPA “contractual obligations” and would result in so much (unidentified) “revenue losses” that it would be forced to cease operating. (SEIS at 12)

This is insufficient justification for rejecting the best course available to protect the threatened species. While the applicant has no problem identifying a proposed loss of annual MW hours (purportedly 61,000), it fails to quantify the financial implications. Given that the applicant’s operations are really those of a subsidiary of D.E. Shaw Renewable Investments, “a global investment and technology development firm with more than \$53 billion in investment and committed capital as of September 1, 2018” the applicant should be required to divulge the anticipated financial loss and explain why it could not be absorbed by its \$53 billion-in-assets parent, and why it would result in cessation of operations. Applicant should also disclose the terms of its existing PPA with the utility and explain why it could not be re-negotiated.

Failure to provide the above results in a failure to “fully document the proposed changes” while also failing to provide “available information” that has a bearing on applicant’s proposed HCP amendment. Applicant’s inadequate effort to comply with the Rules is sufficient grounds for rejecting the draft SIES.<sup>1</sup>

**B. THE APPLICANT ALSO FAILS TO PROVIDE DATA OR FACTUAL SUPPORT FOR A CLAIM THAT IT WOULD BE HURT FINANCIALLY IF IT ADOPTED LWSC OF 5.5 METERS PER SECOND OR ABOVE (THAT WOULD CLEARLY REDUCE BAT TAKE).**

Applicant acknowledges that because “bat fatalities have been observed at the Project in all months, curtailment at higher cut-in speeds would be implemented year-round. This alternative was not considered further for two reasons: (1) the benefits of cut-in speeds above 5.0 m/s are uncertain, and (2) the nature of the wind regime at the Project is such that this alternative would result in unacceptable reductions to power generation.” (SEIS at 12)

With respect to an assertion that benefits of cut-in speeds above 5.0 m/s are “uncertain,” studies over the past decade have established that increasing cut-in speeds has proven to be an effective reducer of bat fatalities. Applicant counters with a complaint that an anticipated reduction in annual energy output of 2% is more important; applicant insists that

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<sup>1</sup> At a minimum, imposition of full nighttime curtailment is warranted as a condition precedent to any consideration whether to issue the requested HCP amendment.

because it can't meet minimum PPA production requirements in some (unidentified) individual years under its current LWSC regime of 5.0 m/s, continued operation is jeopardized. (SEIS at 13)

This merely advances an additional and unsupported financial-harm argument as that applicant raised in rejecting full night-time curtailment. A review of the docket filings before the PUC (Docket 2007-0331) confirms that applicant (and its predecessors in interest) were well aware that the wind speeds at the project's location might be inadequate, as gleaned from the Independent Observer's (NEO) 2011 Report, yet plowed ahead regardless in order to secure tax benefits:

- The [Kawailoa] project's estimated energy output, and project capacity factor, was based on a wind resource assessment, which, in turn, was based on one year of wind data obtained from monitoring equipment located in Kahuku (which had been obtained from HECO) and use of a specified wind turbine in widespread commercial use. The Original Kawailoa Bidder indicated that there was moderate uncertainty in the estimate because the data was not collected at the site and there was only one year of local data. However, the bidder indicated that it had taken into consideration this uncertainty in its energy production estimates and planned to collect on-site wind data. (p. 3)
- HECO's decision to select First Wind's no-BESS proposal created problems for the RFP process inadvertently. First Wind was able to hold to its bid pricing for its BESS proposal because First Wind could construct and operate a BESS for substantially less than was contemplated in the initial proposal which offset the fact that the projected energy output was much lower than originally anticipated. However, for its non-BESS pricing proposal, First Wind could not hold its offered price due to the fact that the wind resource was less robust than originally estimated. First Wind materially increased its price offer for the no-BESS scenario. (p. 11)
- First Wind requested HECO to rerun its interconnection studies because it wanted to evaluate different wind turbines than originally proposed, in large part because the wind resource regime at the proposed site was less favorable. This, in sum, was the result of First Wind having only recently conducted on-site meteorological testing as none had been conducted at the time of the initial proposal. (p. 14)

The applicant's hasty and inadequate planning should not be allowed to excuse continued harm to endangered species. Applicant well knew the wind speed was inferior, struck a deal regardless, and makes no claim to have made an attempt to renegotiate the PPA with the utility or otherwise explain why this is not possible.

Applicant's failure to provide factual support for its rejection of instituting LWSC of 5.5 m/s or above renders the SEIS incomplete and unacceptable. DOFAW should refuse to accept an incomplete document until such time as applicant provides a full and transparent financial accounting of the alleged financial "harm" it relies on.

**C. DOFAW SHOULD REJECT THE DRAFT SEIS FOR FAILING TO ADEQUATELY SUPPORT A REJECTION OF PETREL PROTECTIONS ON O`AHU WHERE THE HARM IS OCCURING.**

Having discovered the take of a Hawaiian petrel at its facility on Oahu in 2017, applicant now asks to take 19 adults and 5 petrel chicks over the remaining life of the project. (Notably, since the HCP Amendment request was submitted in 2018, applicant now acknowledges there have been two fatalities. SEIS at 16)

Applicant's SEIS is woefully inadequate in terms of "avoidance" techniques it now suggests it will apply to protect the petrel. Applicant acknowledges that the same avoidance techniques it now proposes to protect the petrel were implemented for the Newell Shearwater and are "described in detail in Section 5.3 of the approved HCP and include: minimizing on-site lighting at buildings; implementation of a Wildlife Education and Observation Program (WEOP) to reduce vehicle collision risk; and following Avian Power Line Interaction Committee (APLIC) guidelines for overhead collection lines." (SEIS at 39) Clearly, with two fatalities notwithstanding implementing these ineffective avoidance techniques, applicant should be expected to propose additional measures. Applicant does not.

Instead, applicant proposes to mitigate the anticipated take by spending \$392,800 on predator control and monitoring – on Kauai. (SEIS at 40) Applicant cites to funding lapses for the targeted areas on Kauai in 2019, but does not address whether additional funds would be available for this purpose from other sources, nor why these funds would not be better spent on O`ahu, aside from the vague assertion that "conclusive evidence of a breeding colony on O`ahu has not been found, and if breeding colonies are present on Mt. Ka`ala or elsewhere, there is no evidence to indicate they are genetically distinct from colonies on all other islands."<sup>2</sup>

Because applicant fails to provide sufficient factual support for its rejection of instituting measures to benefit the Hawaiian petrel on O`ahu, where the harm is incurred, the SEIS is inadequate and therefore unacceptable in its present form and should be rejected.

In light of applicant's concession that LWSC would benefit the endangered petrels as well as hoary bats, DOFAW should insist applicant institute this preventive measure as well as expend its resources to benefit the petrel – on Oahu, where take has and will likely continue to occur, in considering whether to approve the HCPA.

**D. APPLICANT'S PROPOSED MITIGATION MEASURES FOR TIER 4 CONTAINS A THINLY-VEILED THREAT THAT DOFAW SHOULD REJECT, AND MITIGATION MEASURES FOR**

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<sup>2</sup> SEIS at 39. In the HCPA applicant acknowledged that "providing mitigation for this species on Oahu would be preferred because this is where Project-related impacts would occur" but complained that "this is not the most effective approach for Hawaiian petrel recovery because breeding colonies are not known on Oahu, and locating any breeding populations (if any exist) would take considerable effort and time." (HCPA p. 37). Applicant now acknowledges that "recent surveys have documented Hawaiian petrel occurrence on O`ahu." SEIS at 70.

**TIERS 5 AND 6 ARE SPECULATIVE TO THE POINT THAT THE DRAFT SEIS COULD BE DETERMINED TO BE INCOMPLETE.**

With respect to Tier 4 mitigation, applicant promised in its HCPA application to provide \$2,750,000 of a total of \$15,163,800 to acquire a portion of the Helemano Wilderness Area, which acquisition it suggested would occur prior to any determination of the requested HCP Amendment. (HCPA Appendix 18). In Appendix 19 of the HCPA (at p. 6) applicant threatened the following:

“Because of its commitment to this land acquisition as appropriate bat mitigation and knowing that other buyers are interested in these parcels for development, Kawailoa Wind is willing to provide a funding deposit to TPL prior to issuance of the ITP/ITL to ensure that the HWA can be purchased for conservation in a timely manner. However, should USFWS or DOFAW fail to grant an ITP or ITL to Kawailoa Wind for the HCP Amendment, Kawailoa Wind reserves the right to sell their paid interest in this mitigation.”

It appears this acquisition was finalized in October, 2018, with funding supplied by multiple entities including applicant,<sup>3</sup> yet applicant continues to threaten to “sell” its paid interest (SEIS at 33, fn 14) if it doesn’t get its ITP/ITL for the HCPA. Without knowing at what price, to whom and on what terms such a sale of its interests could occur, the participating entities and state agencies are at risk of being blackmailed into issuing the HCPA; in any event the SEIS is incomplete without a full public disclosure of the results and impacts on public moneys that went into this land acquisition that might result if applicant carries through its threat.

With respect to Tier 5 and 6 mitigation measures, applicant clearly believes the take that would trigger them is so far out in time that proposed measures are entirely speculative. DOFAW should consider whether this renders the SEIS too vague and incomplete to be accepted as drafted.

**CONCLUSION:**

Applicant has failed to prove that nighttime curtailment would cause irreparable economic harm or force it to cease operations. In the absence of such data or proof, DOFAW should reject the SEIS as incomplete.

Applicant has also failed to factually support a claim that instituting a LWSC higher than 5.0 m/s would cause irreparable financial harm. Applicant was well aware that the location of its wind power plant was of questionable wind regime, and the endangered species it is now slaughtering should not have to pay the price for any speculative (and unsupported) negative economic repercussions of instituting a LWSC over 5.0 m/s; applicant should be required to

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<sup>3</sup> <https://dlnr.hawaii.gov/blog/2018/10/25/nr18-210/>

divulge the terms of its PPA with the utility and explain why it cannot renegotiate this agreement.

Applicant threatens to sell its paid interest into the Helemano land purchase but fails to disclose or discuss the impact and risks of such a sale on taxpayer funding that also contributed to the purchase.

Applicant fails to adequately support a claim that mitigating harm to the petrel on Kauai is sufficient to offset the harm occurring to the endangered petrel on O'ahu, and the SEIS is unacceptable on this basis.

For the foregoing reasons, DOFAW should find the draft SEIS inadequately supported by fact, and inadequate in supporting claims that the HCPA applicant seeks would adequately protect the threatened endangered species. The draft SEIS should be rejected as incomplete.

As a final note, DOFAW should consider eliminating consideration of HCP amendments on a piecemeal basis. For example, applicant avoids meaningful discussion of applicant's take numbers when aggregated with those of other wind power plant operations across the state, and simply acknowledges, "There are uncertainties in evaluating if the Kawailoa Wind Hawaiian hoary bat take request under the HCP Amendment, in combination with other past and anticipated future actions, will result in a significant cumulative effect to the species." (SEIS at 56) This is unacceptable. Each and every wind power plant that exceeds its allotted take (and this is most of those now operating) will ask that its operations be considered in a vacuum and suggest more studies are needed before they are forced to place the well-being of Hawaii's endangered species at higher value than profits.

DOFAW should end this inadequate assessment process.

Sincerely,



Sally Kaye  
511 Ilima Ave.  
Lāna'i City, HI 96763  
808-565-6276  
[skaye@runbox.com](mailto:skaye@runbox.com)





September 3, 2019

Sally Kaye  
511 Ilima Avenue  
Lanai City, Hawaii 96763

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement for the Kawailoa Wind Project; Waialua District, Oahu**

Dear Ms. Kaye:

Thank you for your comment letter dated June 21, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawailoa Wind Project. We acknowledge your concern regarding take of the Hawaiian hoary bat and Hawaiian petrel. Kawailoa Wind is committed to avoiding and minimizing take of the Hawaiian hoary bat and Hawaiian petrel to the maximum extent practicable, while also providing clean, renewable energy for Hawaii. Following, please find Kawailoa Wind's responses to the comments provided in your letter:

**A. The applicant fails to provide data or factual support for a claim that full night-time curtailment (that applicant admits would eliminate bat take) will hurt applicant financially.**

As referenced in the comment, the SEIS addresses alternative operational protocols which were identified and evaluated through the Habitat Conservation Plan (HCP) amendment process. The discussion of full nighttime curtailment in Section 2.2.2.1 of the SEIS explains that this alternative would avoid future Hawaiian hoary bat take and further reduce collision risk for the Hawaiian petrel and Newell's shearwater, but would reduce power generation to an extent that Kawailoa Wind would not meet its contractual obligations under the existing power purchase agreement (PPA) with Hawaiian Electric Company (HECO) and the Project would be commercially unviable. The comment states that this is insufficient justification for rejecting the best course available to protect the threatened species. Specifically, it states that the discussion fails to quantify the financial implications and emphasizes that the applicant should be required to divulge the anticipated financial loss and explain why those losses cannot be absorbed.

Based on the analysis conducted for the HCP amendment process, Section 2.2.2.1 of the SEIS quantifies the loss in energy production associated with full nighttime curtailment, as follows: *"this alternative would reduce annual energy production by approximately 45 percent, resulting in an annual power generation loss on the order of 61,000 MW hours per year. Revenue losses under full nighttime curtailment would render the Project commercially unviable, forcing Kawailoa Wind to cease operation. As the largest wind energy generating facility in Hawai'i, this would eliminate a significant contribution to the State's RPS and would not meet the purpose and need. In addition to reducing the availability of clean, renewable energy, ceasing operation would also preclude other benefits including those related to Project employment and lease and tax revenues."* This discussion provides sufficient information on the costs and risks of full nighttime curtailment as the basis to explain why this alternative was rejected. A detailed revenue analysis and explanation of why a financial loss cannot be absorbed is beyond the scope of the SEIS; as such, no revisions to the SEIS were made in response to this comment.

In addition, the comment states that the applicant should also disclose the terms of its existing PPA with the utility and explain why it could not be re-negotiated. The existing PPA is a legally binding document and Kawailoa Wind is obligated to meet the contractual terms established with HECO. The terms of the PPA are publicly available and may be accessed through the Public Utilities Commission. As this comment relates to the terms and conditions of the PPA, no revisions to the SEIS were made in response to this comment.



**B. The applicant also fails to provide data or factual support for a claim that it would be hurt financially if it adopted LWSC of 5.5 meters per second or above (that would clearly reduce bat take).**

The comment relates to the alternative operational protocol involving curtailment with cut-in speeds of 5.5 meters per second (m/s) or above, which is discussed in Section 2.2.2.2 of the SEIS. Based on analysis conducted as part of the HCP amendment process, this section provides a summary of available information regarding the benefits of increased cut-in speeds, as well as Project-specific factors including the wind regime, PPA contractual obligations and financial considerations. It explains that this alternative was not considered further for two reasons: (1) the benefits of cut-in speeds above 5.0 m/s are uncertain, and (2) the nature of the wind regime at the Project is such that this alternative would result in unacceptable reductions to power generation.

The comment states that, with respect to an assertion that benefits of cut-in speeds above 5.0 m/s are “uncertain,” studies over the past decade have established that increasing cut-in speeds has proven to be an effective reducer of bat fatalities. A detailed analysis of these studies was conducted as part of the HCP amendment process; as summarized in Section 2.2.2.2 of the SEIS, only one study (Good et al. 2012) has shown a statistically significant reduction in bat fatalities between different LWSC cut-in speeds (bat fatalities were lower at a cut-in speed of 6.5 m/s than 5.0 m/s). Additional detail has been added to this discussion to further clarify this point, as follows: *“Hein et al. (2014) at Pinnacle Wind (Vermont) and Arnett et al. (2011) at Casselman (Pennsylvania) found no statistically significant difference between 5.0 and 6.5 m/s cut-in speeds. Other studies of LWSC with higher cut-in speeds suffer from either no control treatment, or lack of sampling for comparison (Stantec 2015, Tidhar et. al 2013).”* Furthermore, Kawaiiloa Wind proactively installed acoustic bat deterrents at all 30 Project turbines in May and June 2019. Thus, as described in Section 3.5.4.1 of the SEIS, the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment include both LWSC and bat deterrent devices. The discussion of the baseline minimization measures has been updated to include recent results of bat deterrent test trials, as follows: *“As demonstrated at Pilot Hill, Illinois in 2018 (Lillian 2019), take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent over LWSC alone (B. Morton/NRG, pers. comm., May 2019). There are no data to suggest that curtailment at higher windspeeds would have an appreciable benefit over the current minimization measures for the Project.”*

The comment then addresses the issue of reduced power generation and the nature of the wind regime at the Project. It references details from the Independent Observer’s (NEO) 2011 Report regarding the estimated energy output, wind resource assessment and pricing from the development phase of the Project. The comment states that the applicant’s hasty and inadequate planning should not be allowed to excuse continued harm to endangered species, and notes that the applicant made no claim to have made an attempt to renegotiate the PPA with the utility or otherwise explain why this is not possible. The comment concludes that a full and transparent financial accounting should be provided. As previously described, Kawaiiloa Wind is legally bound to the contractual terms of the existing PPA with HECO. The discussion in Section 2.2.2.2 of the SEIS quantifies the generation losses associated with cut-in speeds of 5.5 m/s or greater, as follows: *“Under this alternative, implementing LWSC at the Project with a cut-in speed of 5.5 m/s would reduce annual energy production by approximately 2 percent, resulting in an annual power generation loss on the order of 2,500 MW hours per year. Generation losses and costs associated with implementing cut-in speeds of 6.0 or 6.5 m/s would be substantially greater. Even under the current LWSC regime of 5.0 m/s, Kawaiiloa Wind does not consistently meet minimum production requirements in individual years. Therefore, this alternative would increase the risk that Kawaiiloa Wind would not meet the requirements specified in its PPA with HECO, thereby jeopardizing continued operation of the Project. As described in Section 2.2.2.1, ceasing operation would eliminate a significant contribution to the State’s RPS and reduce the availability of clean, renewable energy, as well as preclude other benefits including those related to Project employment and lease and tax revenues.”* This discussion provides sufficient information on the costs and risks of increased cut-in speeds as the basis to explain why this alternative was rejected. A detailed financial accounting of the Project is beyond the scope of the SEIS; as such, no revisions to the SEIS were made in response to this comment.

**C. DOFAW should reject the Draft SEIS for failing to adequately support a rejection of petrel protections on Oahu where the harm is occurring.**

The comment states that the avoidance measures for the Hawaiian petrel are inadequate. It references the two observed fatalities at the Project, indicating that the current avoidance measures are ineffective and additional measures should be proposed. The avoidance and minimization measures referenced in the comment were previously identified and are being implemented to avoid and minimize impacts to the Newell's shearwater; as stated in the SEIS, these same measures are also applicable to the Hawaiian petrel. Section 3.5.4.1 of the SEIS has been updated to provide further detail and clarification, as follows: *"The avoidance and minimization measures previously implemented for the Newell's shearwater also minimize risk to the Hawaiian petrel. These measures are based on USFWS guidance for wind energy projects and are described in detail in Section 5.3 of the approved HCP; specific measures include: site selection away from known colonies, the selection of monopole towers, the use of red, flashing, and synchronized FAA lighting on a subset of turbines, minimizing nighttime activity, minimizing and shielding on-site lighting at buildings and the use of motion sensor to limit activity; implementation of a Wildlife Education and Observation Program (WEOP) to reduce vehicle collision risk; the use of buried collector lines where possible, and following Avian Power Line Interaction Committee (APLIC) guidelines for overhead collection lines. These measures reflect the current agency guidance for avoidance and minimization of impacts to Hawaiian seabird species; no additional minimization measures specific to wind farms are known for these species."* In accordance with HRS Chapter 195D, the HCP process is intended to identify both the steps that would be taken to minimize impacts as well as mitigation that would be implemented, thus increasing the likelihood of recovery of the endangered or threatened species that are the focus of the plan. In addition to the minimization measures discussed above, the HCP Amendment incorporates mitigation that meets the requirements of HRS Chapter 195D. Based on the information presented in the HCP Amendment, a discussion of the mitigation measures is contained in Section 3.5.4.1 of the SEIS. As detailed in this section, implementation of mitigation measures would fully offset take of the Hawaiian petrel and result in a net environmental benefit.

The comment then addresses the proposed mitigation for predator control and burrow monitoring on Kaua'i. It questions whether additional funds would be available for this purpose from other sources, and why these funds would not be better spent on O'ahu. Kawaiiloa Wind worked closely with USFWS and DOFAW to determine the appropriate location for the Hawaiian petrel mitigation. Through this process, USFWS and DOFAW recommended that mitigation occur at known colonies on Kaua'i. Section 3.5.4.1 of the SEIS has been updated to provide further detail, as follows: *"The USFWS 5-year review for Hawaiian petrels provided guidance to identify appropriate mitigation measures anticipated to benefit the petrel including: (1) efforts to reduce fallout from light attraction and disorientation, (2) protection of known breeding colonies, and (3) development of efficient predator control methods. The 5-year review also recommended expanding knowledge of the species' population trend and distribution (USFWS 2017). Although mitigation for a species is typically preferred to occur on the same island as the Project-related impacts, this is not the most effective approach for the Hawaiian petrel. The USFWS and DOFAW worked with their seabird biologists to develop a targeted recovery strategy that focuses on managing the core colonies on the islands of Kaua'i, Maui, and Hawai'i. Restoration on O'ahu was not included in the Hawaiian petrel recovery priorities developed by USFWS and DOFAW because (1) breeding colonies have not been located, if they are present on O'ahu, and (2) the insurmountable threats of fallout potential due to extreme light effects from heavy urbanization suggests few, if any, juveniles would survive. An additional concern is that locating any breeding populations (if any exist) would take considerable effort and time. These considerations make conservation efforts on O'ahu impractical, given the scope of the HCP Amendment. Therefore, Kawaiiloa Wind has determined, in coordination with USFWS and DOFAW that the Hawaiian petrel mitigation will consist of funding predator control and burrow monitoring for known Hawaiian petrel breeding colonies within the Hono O Nā Pali NAR, located in the northwest portion of Kaua'i."* It is not known whether there are other sources of additional funds that could be used for predator control and burrow monitoring; whether or not additional funding sources are available, based on the analysis in the HCP Amendment and SEIS, the mitigation efforts for the Hawaiian petrel will be most effective on Kaua'i as they will support management of core colonies as specified in the agencies' targeted recovery strategy.

**D. Applicant's proposed mitigation measures for Tier 4 contains a thinly-veiled threat that DOFAW should reject, and mitigation measures for Tiers 5 and 6 are speculative to the point that the Draft SEIS could be determined to be incomplete.**

The comment addresses Kawaihoa Wind's contribution of \$2,750,000 for acquisition of Helemano Wilderness Area for the Hawaiian hoary bat Tier 4 mitigation. It references a footnote in the SEIS which explains that Kawaihoa Wind provided a funding deposit for the acquisition prior to issuance of the incidental take authorizations to ensure that the purchase could occur in a timely manner, but states that Kawaihoa Wind reserves the right to sell their paid interest in the mitigation should the incidental take authorizations not be granted. The comment suggests that without knowing at what price, to whom, and on what terms such a sale of interests could occur, the participating entities and state agencies are at risk of being blackmailed into issuing the HCP Amendment. It is stated that the SEIS is incomplete without a full public disclosure of the results and impacts on public moneys that went into the land acquisition that might result if applicant carries through its threat.

As noted, Kawaihoa Wind proactively contributed to the acquisition of Helemano Wilderness Area to allow the transaction to proceed in light of known interest from other buyers and associated development pressure. The acquisition has since been completed and ownership in the property has been transferred to DOFAW. The intention of the footnote referenced in the comment was not to threaten the agencies, but rather to allow Kawaihoa Wind to retain rights to their paid interest. If the amended take authorizations are not granted, Kawaihoa Wind would no longer have a mitigation commitment to fulfill and may wish to seek other parties that are interested in buying the unused portion of their interest in the mitigation. The footnote has been revised to clarify this intent, as follows: *"In the event that the amended take authorizations are not granted, Kawaihoa Wind may seek other parties that are interested in purchasing the unused portion of its paid interest in the mitigation. Any such transfer of interest in the mitigation would be reviewed with the relevant parties and would not affect the protection status of the Helemano Wilderness Area."*

The comment also references the Tier 5 and 6 mitigation measures as entirely speculative and suggests that the SEIS is too vague and incomplete to be accepted. The mitigation approach for Tiers 5 and 6 was developed through the HCP amendment process and incorporates specific options identified by USFWS and DOFAW. Section 3.5.4.1 of the SEIS describes the possible mitigation options, including the types of activities, total acreage and potential locations, as well as the approach for monitoring and adaptive management. As explained in Section 3.5.4.1 of the SEIS, the most appropriate option will be selected in consultation with USFWS and DOFAW at the time mitigation planning is triggered. Within 6 months of reaching the trigger for Tier 5 or Tier 6 mitigation (should each tier be triggered), a detailed site-specific mitigation implementation plan will be submitted to USFWS and DOFAW for the applicable tier of mitigation. This approach allows Kawaihoa Wind to describe the preferred mitigation based on current information for the purposes of the HCP Amendment and SEIS, while leveraging information that will be learned from ongoing Hawaiian hoary bat research that addresses some of the existing information gaps, best available science, and current USFWS and DOFAW guidance. Adaptive management is identified as a strategy to address uncertainty due to current information and data gaps. As this information is already contained in the SEIS, no revisions were made in response to the comment.

**E. Applicant avoids meaningful discussion of applicant's take numbers when aggregated with those of other wind power plant operations across the state.**

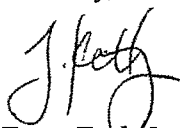
Sections 3.5.4.1 and 4.1.1.1 of the SEIS address population-level impacts and cumulative impacts, respectively. Based on analyses conducted for the HCP Amendment, these discussions have been updated to incorporate the results of population modeling exercises as well as an evaluation of the conditions under which the Hawaiian hoary bat population would be at risk. As described in Section 3.5.4.1, *"a population model was used to estimate potential population growth rates and a range of population sizes using the best available information and clearly identified assumptions... The results of the modeling exercise are compared to estimated take rates to evaluate the risk of Project take to bats at the population level, as well as to evaluate the risk of cumulative impacts... The population modeling exercise is intended only to provide context for a risk analysis and is not meant to provide a precise estimate of growth rate or population size. Despite the use of conservative*

*estimates of density, occupancy, and annual survival, the exact numbers should be treated with caution, as the estimates may vary if the input parameters or assumptions are altered.*" The result of the population modeling exercises is a downwardly conservative range of population sizes on O'ahu, between 2,000 and 9,200 bats. This range of population sizes was then assessed relative to the maximum estimated average annual rate of total take for the Project. This assessment concludes that *"Although it is difficult to assess the effect that take of Hawaiian hoary bat resulting from the Project may have on the local population of this species, population modeling using the best available information suggests the population on O'ahu is robust relative to the low levels of take proposed by the Project."*

Furthermore, Section 4.1.1.1 has been updated to include an evaluation of the conditions under which the Hawaiian hoary bat population on O'ahu would be at risk. Specifically, the model assessed the risk to bats based on the range of possible population sizes and growth rates, and also accounted for the authorized and requested take levels associated with all O'ahu wind projects. The modeling results are summarized as follows, *"A growth rate of 1.03 or higher will lead to an increasing population in all scenarios except those scenarios with starting populations less than 600. The downwardly conservative range of population sizes modeled above suggests that a reasonable minimum population size is 2,000 bats, which would have an increasing population with a growth rate as small as 1.01. The cumulative impacts from all existing and permitted wind farms on O'ahu (15 bats per year) are estimated at less than 1 percent of the population per year (0.75%; assuming the lower end of the range of population sizes). Therefore, even if growth rates are as low as 1.01 and decreased by an additional 0.0075 per year due to all authorized and requested take on O'ahu, the actual growth rate would be 1.0025 and the population would remain stable to increasing with a starting population as small as 2,000."* Based on the results of the population modeling exercises, the evaluation concludes that *"the population would be sustained even given the added mortality from the direct and indirect take from all existing and permitted wind farms."* Section 4.1.1.1 also addresses statewide impacts to the Hawaiian hoary bat, stating: *"The activities that directly impact bats on O'ahu, as discussed above, also occur statewide. The direct impacts from other authorized or proposed actions that could result in take of this species include: (1) authorized take approved for three existing wind projects on Maui (KWP II and Auwahi Wind are seeking HCP amendments to increase the amount of authorized Hawaiian hoary bat take), and (2) requested take for two existing wind projects and one restoration project on Hawai'i Island (refer to Table 4-1). Take authorization for these wind farms is contingent upon approved mitigation, which is expected to offset these projects' take."* This discussion addresses the approved and pending authorized take and associated mitigation for projects statewide. It concludes: *"Based on the best scientific data currently available, the Project is unlikely to cause significant adverse impacts to the species' population on O'ahu or statewide, or to the recovery potential of the species. The provisions of the HCP Amendment, including avoidance and minimization measures, mitigation, and adaptive management program identify how bat take will not jeopardize the survival and recovery of the species. The mitigation increases the chances of survival and the likelihood of recovery for the listed species by providing a net benefit to the species."* Additional detail regarding the methodology for the population modeling exercises and population-level and cumulative impact analyses is provided in Section 3.5.4.1 and 4.1.1.1 of the SEIS.

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,



**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife

**TETRA TECH**



## The Senate

STATE CAPITOL  
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June 24, 2019

SUBMITTED BY EMAIL

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RE: Draft SEIS for Kawailoa Wind, LLC

Dear Mr. Metzler.

I have read the Draft SEIS for the Kawailoa HCP Amendment and I offer the following comments and questions.

Why was Kawailoa Wind allowed to continue nighttime operations and not immediately curtailed when they exceeded their permitted take of 'ōpe'ape'a? Who is responsible for the decision to allow continued nighttime operation? If a new ITL is not granted, what is the remedy for the non-permitted take that has occurred since Kawailoa exceeded its third tier for 'ōpe'ape'a?

Why is bat deterrence not considered take (harass, harm, pursue)?

The report states, "Kawailoa Wind will install bat deterrents at all 30 Project turbines when bat deterrents become commercially available and are shown to be at least as effective as LWSC at reducing bat take." As effective as which speed of LWSC? How will this be measured and compared?

What side effects or unintended consequences might be brought by installation of bat deterrence? Is there any possible effect on humans or animals who live nearby in Pupukea?

The applicant dismisses full nighttime curtailment as commercially unviable. What exactly is the financial impact of the various options for cut-in speed or full curtailment? How much revenue would be lost and how much revenue is needed to maintain operations?

The report says "Even under the current LWSC regime of 5.0 m/s, Kawaihoa Wind does not consistently meet minimum production requirements in individual years." Has HECO ever threatened Kawaihoa Wind for failure to meet contractual obligations in the PPA? What are the potential sanctions against Kawaihoa Wind and remedies available to HECO, if power production were restricted through higher cut-in speeds of LWSC or nighttime curtailment?

This statement seems disingenuous: "No studies to date have provided evidence that the population is in decline, and the bat population appears to be larger than once thought." Is there a study demonstrating the 'ōpe'ape'a population on Oahu is rising or stable? What is the current population?

How many bats have been replaced or saved by Kawaihoa Winds' first three tiers of mitigation? What observations have been made to demonstrate improved viability of the species from these actions, or effectiveness of the mitigation measures?

The Avoidance and Mitigation Measures section speaks of "restrictions on clearing trees greater than 15 feet in height between July 1 to August 15 (when non-volant Hawaiian hoary bats juveniles may occur)." Is that not properly June rather than July? If peak activity begins in April, why are the tree trimming restrictions not in effect then?

The report claims "This mitigation will fully offset the take for Tier 4 and will provide a net benefit to the Hawaiian hoary bat." How will they know that more 'ōpe'ape'a will have been replaced than killed?

Where is the detailed discussion on cumulative impacts on 'ōpe'ape'a on Oahu? How much take of 'ōpe'ape'a is significant and harmful to the species on this island?

"The long-term monitoring involves searches at each turbine twice per week, including roads and graded pads occurring within a 115-foot radius of the turbine." Are the search radius and frequency subject to modification under adaptive management or should they be considered in this amendment?

Hawaii law requires protection of each species on the affected island. How does the Hawaiian petrel mitigation proposed for Kauai satisfy this requirement?

Mahalo for your commitment to protecting our endangered species and for taking into consideration these comments.

Sincerely,



Gil Riviere  
District 23  
Oahu's North and Windward Shores





September 3, 2019

Senator Gil Riviere  
Hawaii State Capitol, Room 202  
415 S. Beretania Street  
Honolulu, HI 96813

**RE: Response to Comments on the Draft Supplemental Environmental Impact Statement for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Senator Riviere:

Thank you for your comment letter dated June 24, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. Following, please find Kawaihoa Wind's responses to the comments provided in your letter:

**1. Why was Kawaihoa Wind allowed to continue nighttime operations and not immediately curtailed when they exceeded their permitted take of 'ope'ape'a? Who is responsible for the decision to allow continued nighttime operation? If a new ITL is not granted, what is the remedy for the non-permitted take that has occurred since Kawaihoa exceeded its third tier for 'ope'ape'a?**

Development of a habitat conservation plan (HCP) is a voluntary, applicant-driven process to request authorization for incidental take; Kawaihoa Wind initiated the process to amend its authorized HCP in 2015, approximately two years prior to exceeding the authorized take limits. Since that time, Kawaihoa Wind has been working to finalize the HCP Amendment in coordination with U.S. Fish and Wildlife Service (USFWS) and the State of Hawaii Department of Land and Natural Resources (DLNR). Kawaihoa Wind is seeking approval of the HCP Amendment from USFWS in accordance with the Endangered Species Act (ESA), as well as from the Board of Land and Natural Resources (BLNR) in accordance with Hawaii Revised Statutes (HRS) Chapter 195D. In the event the HCP Amendment is not approved, the decision of how to address the unauthorized take would be that of USFWS and DLNR. The HCP Amendment approval process is summarized in Section 5.2.10 of the SEIS.

As this comment requests clarification of the HCP decision-making process and does not relate to the scope or analysis of the SEIS, no revisions to the SEIS were deemed necessary.

**2. Why is bat deterrence not considered take (harass, harm, pursue)?**

The ESA and HRS Chapter 195D-2 define "take" to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect...or to attempt to engage in any such conduct." "Harass" is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Harm" is defined as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." (50 CFR § 17.3)

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As described in Section 3.5.4.1 of the SEIS, acoustic bat deterrent devices are designed to emit an ultrasonic acoustic field in the same range as bats' natural calling frequencies, which interferes with their ability to receive and interpret their own echolocation calls. The result is a disorienting airspace that is difficult to navigate, and thus discourages bats from entering the area (NRG 2018). This discussion has been expanded to provide further clarification, as follows: *"The acoustic field from the deterrent devices extends to just beyond the turbine blades; bats are excluded from only the rotor swept area and may continue to use the surrounding airspace for normal activities, including foraging and transit. As such, the bat deterrent devices do not significantly disrupt or impair normal behavior patterns, but rather are designed to reduce the likelihood of harm to bats through exclusion from the rotor swept areas."* At the recommendation of USFWS and DOWAW, Kawaiioa Wind has installed bat deterrents at the Project for all 30 turbines, as further discussed in response to Comment #3.

**3. The report states, "Kawaiioa Wind will install bat deterrents at all 30 Project turbines when bat deterrents become commercially available and are shown to be at least as effective as LWSC at reducing bat take." As effective as which speed of LWSC? How will this be measured and compared?**

Section 3.5.4.1 of the SEIS has been updated to include recent results of bat deterrent test trials. Specifically, this section states: *"NRG Systems Inc. (NRG) makes acoustic deterrents that are being tested in broad-scale field trials and studies at commercial wind facilities on the mainland. In these studies, hoary bat fatalities were reduced by up to 78 percent compared to control turbines (Weaver et al. 2018). The effectiveness of NRG acoustic deterrents presently ranges from 20 to 100 percent, with higher effectiveness shown for mainland hoary bats than other mainland bat species (NRG 2018). As demonstrated at Pilot Hill, Illinois in 2018 (Lillian 2019), take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent more than LWSC alone (B. Morton/NRG, pers. comm., May 2019)."*

Given these results, Kawaiioa Wind proactively installed bat deterrents at all 30 Project turbines in May and June 2019. Thus, the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment include both low wind speed curtailment (LWSC) and bat deterrent devices, which obviates the need for a comparison. The updated description of the baseline minimization measures, as described in Section 3.5.4.1 of the SEIS, is as follows:

- "1. Extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise.*
- 2. Increase LWSC cut-in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the "down time" of the wind turbines and reduce the number of stop/start events per night by extending the rolling average time from 10 to 20 minutes. Hysteresis is a LWSC regime that offsets the "cut-out" and "cut-in" speeds, such that it takes a higher average wind speed (raised cut-in speed) for the turbines to return to operation after stopping due to LWSC. All Project turbines individually monitor wind speed using turbine-mounted anemometers and are programmed to shut off when wind speeds are 5.0 m/s or lower and to start up again when wind speeds reach 5.2 m/s, thereby increasing the cut-in speed and extending the period during which collision risk for bats is minimized.*
- 3. Install bat deterrents at all 30 Project turbines in May and June 2019. For the purposes of take estimation, it is assumed the deterrents will be effective beginning in 2020."*

Given this update, the question of how Kawaiioa Wind will determine when bat deterrents are at least as effective as LWSC at reducing bat take is no longer applicable and based on the results published by Lillian (2019), the best available science indicates that the use of deterrents with LWSC is 24 percent more effective than LWSC alone.



**4. What side effects or unintended consequences might be brought by installation of bat deterrence? Is there any possible effect on humans or animals who live nearby in Pupukea?**

To address your comment, the discussion of bat deterrents in Section 3.5.4.1 of the SEIS has been expanded to address the lack of anticipated side effects, as follows: *"The effect on other wildlife, such as birds, has also been considered in field testing and there is no evidence that birds can hear or are repelled by ultrasound, such that effects on other wildlife are not anticipated (NRG 2019). Given the rapid attenuation of the acoustic field, coupled with the fact that deterrent devices utilize ultrasonic technology (which is outside of the range of human hearing) and do not emit any light, effects on nearby residences or humans are also not anticipated."*

**5. The applicant dismisses full nighttime curtailment as commercially unviable. What exactly is the financial impact of the various options for cut-in speed or full curtailment? How much revenue would be lost and how much revenue is needed to maintain operations?**

Section 2.2.2.1 of the SEIS addresses full nighttime curtailment as one of the alternative operational protocols considered in the HCP Amendment. The discussion explains that *"full nighttime curtailment would reduce power generation such that Kawaihoa Wind would not be able to meet the contractual obligations under the Project's PPA with HECO. Specifically, this alternative would reduce annual energy production by approximately 45 percent, resulting in an annual power generation loss on the order of 61,000 MW hours per year. Revenue losses under full nighttime curtailment would render the Project commercially unviable, forcing Kawaihoa Wind to cease operation. As the largest wind energy generating facility in Hawai'i, this would eliminate a significant contribution to the State's RPS and would not meet the purpose and need. In addition to reducing the availability of clean, renewable energy, ceasing operation would also preclude other benefits including those related to Project employment and lease and tax revenues."*

Section 2.2.2.2 of the SEIS addresses curtailment with cut-in speeds of 5.5 meters per second (m/s) or above. This discussion explains that *"While the additional benefits to bats from raising cut-in speeds above 5.0 m/s are ambiguous, the negative impacts to energy generation are significant. Under this alternative, implementing LWSC at the Project with a cut-in speed of 5.5 m/s would reduce annual energy production by approximately 2 percent, resulting in an annual power generation loss on the order of 2,500 MW hours per year. Generation losses and costs associated with implementing cut-in speeds of 6.0 or 6.5 m/s would be substantially greater. Even under the current LWSC regime of 5.0 m/s, Kawaihoa Wind does not consistently meet minimum production requirements in individual years. Therefore, this alternative would increase the risk that Kawaihoa Wind would not meet the requirements specified in its PPA with HECO, thereby jeopardizing continued operation of the Project. As described in Section 2.2.2.1, ceasing operation would eliminate a significant contribution to the State's RPS and reduce the availability of clean, renewable energy, as well as preclude other benefits including those related to Project employment and lease and tax revenues."*

The purpose of these sections is to describe the alternative operational protocols that were considered in the HCP amendment process and explain why they were rejected from further consideration. In both cases, the discussion acknowledges the environmental benefits that could occur (i.e., potential reduction in take levels), but explains that the financial and contractual consequences of the reduced power generation would jeopardize continued operation of the Project and contribution to the State's RPS. A detailed accounting of the revenue needed to maintain operations is beyond the scope of the SEIS; as such, no revisions to the SEIS were made in response to this comment.

**6. The report says "Even under the current LWSC regime of 5.0 m/s, Kawaiiloa Wind does not consistently meet minimum production requirements in individual years." Has HECO ever threatened Kawaiiloa Wind for failure to meet contractual obligations in the PPA? What are the potential sanctions against Kawaiiloa Wind and remedies available to HECO, if power production were restricted through higher cut-in speeds of LWSC or nighttime curtailment?**

Kawaiiloa Wind is legally obligated to meet the contractual terms of its existing PPA with HECO. In the event that the contractual obligations are not met, Kawaiiloa Wind is required to pay liquidated damages as specified in the PPA. Specific interactions between Kawaiiloa Wind and HECO regarding compliance with the terms of the PPA are not within the scope of analysis for the SEIS.

As this comment requests clarification of the contractual obligations of the existing PPA with HECO and does not relate to the scope or analysis of the SEIS, no revisions to the SEIS were deemed necessary.

**7. This statement seems disingenuous: "No studies to date have provided evidence that the population is in decline, and the bat population appears to be larger than once thought." Is there a study demonstrating the 'ope'ape'a population on Oahu is rising or stable? What is the current population?**

As explained in Section 3.5.2.3 of the SEIS, the current population of the Hawaiian hoary bat is not known. Specifically, this text states: *"Although recent studies and ongoing research have shown that bats have a wide distribution across the Hawaiian Islands, population estimates are not currently available nor are feasible to ascertain at this point in time (DLNR 2015). For a reclusive, solitary, tree-roosting species like the Hawaiian hoary bat, the available monitoring methods do not provide population estimates. The most recent indication of population trends come from an occupancy study on Hawai'i Island from 2007-2011, which found the population to be "stable to increasing" (Bonaccorso et al. 2013). The islands of Kaua'i and Hawai'i are anticipated to support the largest populations (Mitchell et al. 2005, USFWS 2017)." As described in Section 3.5.4.1, an ongoing occupancy study is being conducted on O'ahu as part of Kawaiiloa Wind's Tier 2/3 mitigation; the results of this study will further inform the collective understanding of population trends.*

Despite the lack of a definitive population estimate, quantitative methods can be used to assess population-level impacts. As part of the HCP amendment process, Kawaiiloa Wind performed population modeling exercises to support the evaluation of potential Project-related impacts to the bat on O'ahu. As summarized in Section 3.5.4.1 of the SEIS, *"a population model was used to estimate potential population growth rates and a range of population sizes using the best available information and clearly identified assumptions... The results of the modeling exercise were compared to estimated take rates to evaluate the risk of Project take to bats at the population level, as well as to evaluate the risk of cumulative impacts... The population modeling exercise is intended only to provide context for a risk analysis and is not meant to provide a precise estimate of growth rate or population size. Despite the use of conservative estimates of density, occupancy, and annual survival, the exact numbers should be treated with caution, as the estimates may vary if the input parameters or assumptions are altered."* The result of the population modeling exercises is a downwardly conservative range of population sizes on O'ahu, between 2,000 and 9,200 bats. As explained in Section 3.5.4.1 of the SEIS, *"This exercise gives a sense of scale in which to interpret Project-related take, despite uncertainties in translating core use area and occupancy to a population size."*

The results of the population modeling exercises were used to inform a range of model scenarios to evaluate the conditions under which the Hawaiian hoary bat population on O'ahu would be at risk. Specifically, the model assessed the risk to bats based on the range of possible population sizes and growth rates, and also accounted for the authorized and requested take levels associated with all

wind farms on O'ahu. Section 4.1.1.1 of the SEIS concludes, "*Population modelling results indicate that reasonable scenarios of population size and growth rates are sufficient to sustain stable to increasing bat populations on O'ahu after accounting for cumulative impacts.*" Additional detail regarding the methodology for the population modeling exercises and the population-level and cumulative impact analyses is provided in Sections 3.5.4.1 and 4.1.1.1 of the SEIS.

**8. How many bats have been replaced or saved by Kawaihoa Winds' first three tiers of mitigation? What observations have been made to demonstrate improved viability of the species from these actions, or effectiveness of the mitigation measures?**

As noted in response to Comment #7, the available monitoring methods do not provide population estimates for reclusive, solitary, tree-roosting species such as the Hawaiian hoary bat. As such, it is nearly impossible to accurately count the exact number of individual bats in a given area. Furthermore, HRS Chapter 195D requires that an HCP "*increase the likelihood of recovery of the endangered or threatened species that are the focus of the plan*" and does not require an accounting of individuals to demonstrate a net benefit. Therefore, other measures are used to demonstrate the success of mitigation in increasing the likelihood of species recovery.

Mitigation for Tiers 1 – 3 of Hawaiian hoary bat take, including the measures of success, was defined as part of the authorized HCP and included in the associated environmental assessment. The mitigation has been adaptively managed in consultation with USFWS and DOFAW; in 2016, the agencies confirmed the approach for the Tier 1 mitigation, which included tying the success criteria to completion of all management and monitoring components instead of increased bat activity. Each of these components, which include invasive vegetation removal, bat lane construction, and bat acoustic monitoring, has been successfully implemented. The acoustic monitoring is ongoing and will continue to assess bat activity over time; the results to date indicate increased foraging activity following construction of the bat lanes and invasive species removal. For Tier 2/3 mitigation, Kawaihoa Wind contracted with WEST and USGS to conduct three research projects, based on recommendations by USFWS and DOFAW; these projects address (1) modeling to quantify foraging habitat use and suitability, (2) genetic diversity and sex-specific food habits, and (3) distribution and seasonal occupancy on O'ahu. The research component of the mitigation is critical to filling information gaps and was identified by the USFWS as a priority recovery action in the Hawaiian hoary bat recovery plan (USFWS 1998). Research projects approved by USFWS and DOFAW are designed to gain an understanding of basic life history parameters and develop effective mitigation measures for the species (DLNR 2015), which will ultimately guide future management and recovery efforts. As referenced in Section 3.5.4.1 of the SEIS, detailed information regarding the ongoing results of Tier 1 – 3 mitigation is presented in the annual reports, which are submitted to USFWS and DOFAW; the annual reports are available on DLNR's website (<https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>).

As this comment requests further detail on the results of previously authorized mitigation and does not relate to the scope or analysis of the SEIS, no revisions to the SEIS were deemed necessary.

**9. The Avoidance and Mitigation Measures section speaks of "restrictions on clearing trees greater than 15 feet in height between July 1 to August 15 (when non-volant Hawaiian hoary bats juveniles may occur)." Is that not properly June rather than July? If peak activity begins in April, why are the tree trimming restrictions not in effect then?**

The ESRC Hawaiian Hoary Bat Guidance Document states "guidance from DOFAW and the U.S. Fish and Wildlife Service (USFWS) is that harvesting or trimming of woody plants more than 15 feet tall should not occur between June 1 and September 15 without prior consultation with agency biologists." Per your comment, we note that Section 3.5.4 referenced incorrect dates for this

seasonal restriction; this text has been corrected to state *"These measures include the use of monopole steel tubular towers and turbine rotors with a significantly slower rotational speed (compared to older designs), placement of electrical lines underground where practicable, marking of guy wires and overhead lines, minimizing nighttime construction, and seasonal restrictions on clearing trees greater than 15 feet in height (between June 1 to September 15, when non-volant Hawaiian hoary bats juveniles may be present)."*

The tree trimming restrictions are in place because tree trimming "[has] the potential to impact juvenile bats because they may be unable to fly away from a tree when it is cut or disturbed" (DLNR 2015). The agency guidance for restrictions on tree trimming from June 1 to September 15 is based on the presence of non-volant young during this timeframe. Because non-volant young are not present in April, there is no threat from tree trimming.

**10. The report claims "This mitigation will fully offset the take for Tier 4 and will provide a net benefit to the Hawaiian hoary bat." How will they know that more 'ope'ape'a will have been replaced than killed?**

As discussed in response to Comment #8, surrogate measures are used to demonstrate the success of mitigation in increasing the likelihood of species recovery, as required by HRS Chapter 195D. Section 3.5.4.1 of the SEIS explains that conservation of the Helemano Wilderness Area ensures protection of suitable Hawaiian hoary bat habitat from future development and meets the USFWS and DLNR long-term conservation goals, including the enhancement and connectivity of important conservation areas. These actions will benefit bats beyond the term of the ITP/ITL by providing native forest roosting and foraging habitat in perpetuity. Based on the information developed for the HCP Amendment, additional detail has been added to this discussion to further explain how the Tier 4 mitigation will provide a net environmental benefit, as follows:

*"The mitigation credit originally assessed for acquisition of the Helemano Wilderness Area was based on a funding amount of \$50,000 per bat, in accordance with DOFAW guidance at the time. Because of changes to USFWS and DOFAW guidance, updates were made to the HCP Amendment in 2018 to also demonstrate the biological value of the mitigation to the Hawaiian hoary bat by assessing mitigation credit on an acreage-per-bat basis. Based on the median core use area for the Hawaiian hoary bat (20.3 acres per bat [DLNR 2015]), a total of 1,116.5 acres would be required to offset the take of 55 bats (1,116.5 acres / 20.3 acres per bat = 55 bats). There are 1,614 acres of native and mixed forest land that may be used to calculate take offset; this equates to a mitigation credit of at least 55 bats. The details of the applicable acreage and funding are described in Appendix 19 of the HCP Amendment.*

*Additionally, preservation of 20.3 acres per bat as mitigation is relatively conservative based on a variety of parameters and as previously identified above. The bat habitat in the mitigation area will be protected in perpetuity, for multiple generations of bats. A minimum of two generations of bats would be expected to benefit from the protection of Helemano Wilderness Area within the remainder of the permit term. Therefore, the mitigation offset provided by Helemano Wilderness Area could range between 55 to 150 bats over the remaining life of the permit. The impact of productivity and future generations aid in benefit assessment of the mitigation. With the addition of future generations, there is a clear net benefit to the Hawaiian hoary bat from the protection of the Helemano Wilderness Area parcels as Tier 4 mitigation.*

*Acquisition of the Helemano Wilderness Area ensures protection of Hawaiian hoary bat habitat from future development, meeting USFWS and DLNR long-term conservation goals described in the ESRC Bat guidance (DLNR 2015), the Hawaiian hoary bat recovery plan (USFWS 1998), and the USFWS 5-year review (USFWS 2011). Protection of Helemano Wilderness Area also enhances the*

*connectivity of important conservation areas. These actions benefit bats beyond the term of the ITP/ITL by providing native forest roosting and foraging habitat in perpetuity, thereby providing a net benefit to the species. Protection of this area also provides a unique opportunity to conduct habitat management on a large scale to measure the effectiveness of various approaches in recovering bat populations.*

*Based on the above discussion, the Tier 4 mitigation fully offsets the take of the 55 bats in Tier 4 and provides a net environmental benefit. Agency concurrence on the approach to determining the offset of Tier 4 mitigation, including the biological rationale, was provided in letters from USFWS and DOFAW (dated September 26, 2018 and September 21, 2018, respectively)."*

The criteria that will be used to evaluate the success of Tier 4 mitigation are summarized in Section 3.5.4.1 of the SEIS; this section states: "Measures of success for Tier 4 are derived from the protection of land that would otherwise be threatened with destruction or degradation. The benefit of the mitigation is realized upon completion of the acquisition, application of deed restrictions, and the transfer of parcel ownership to DOFAW. The mitigation will be deemed successful if (1) Kawaihoa Wind provides funding of \$2,750,000 to TPL to be used towards the purchase of the Helemano Wilderness Area; (2) the transfer of the parcels includes a requirement that the Helemano Wilderness Area will be managed in perpetuity for the protection of habitat and conservation of listed endangered species including the Hawaiian hoary bat; and (3) TPL secures the ownership of the Helemano Wilderness Area, and transfers ownership to DOFAW or equivalent entity who will then have responsibility for management and oversight of the parcels by the time of ITP/ITL issuance." These actions were successfully completed in 2018.

#### **11. Where is the detailed discussion on cumulative impacts on 'ope'ape'a on Oahu? How much take of 'ope'ape'a is significant and harmful to the species on this island?**

The discussion of cumulative impacts to the Hawaiian hoary bat is provided in Section 4.1.1.1 of the SEIS. Based on analyses conducted for the HCP Amendment, this discussion has been updated to include a range of model scenarios that evaluate the conditions under which the population would be at risk. As noted in response to Comment #7, the model assessed the risk to bats based on the range of possible population sizes and growth rates, and also accounted for the authorized and requested take levels associated with all O'ahu wind projects.

Section 4.1.1.1 of the SEIS summarizes the modeling results, "A growth rate of 1.03 or higher will lead to an increasing population in all scenarios except those scenarios with starting populations less than 600. The downwardly conservative range of population sizes modeled above suggests that a reasonable minimum population size is 2,000 bats, which would have an increasing population with a growth rate as small as 1.01. The cumulative impacts from all existing and permitted wind farms on O'ahu (15 bats per year) are estimated at less than 1 percent of the population per year (0.75%; assuming the lower end of the range of population sizes). Therefore, even if growth rates are as low as 1.01 and decreased by an additional 0.0075 per year due to all authorized and requested take on O'ahu, the actual growth rate would be 1.0025 and the population would remain stable to increasing with a starting population as small as 2,000." Based on the results of the population modeling exercises, the evaluation concludes that "the population would be sustained even given the added mortality from the direct and indirect take from all existing and permitted wind farms." Additional detail regarding the methodology for the cumulative impact analysis for the Hawaiian hoary bat on O'ahu is provided in Section 4.1.1.1 of the SEIS.

**12. "The long-term monitoring involves searches at each turbine twice per week, including roads and graded pads occurring within a 115-foot radius of the turbine." Are the search radius and frequency subject to modification under adaptive management or should they be considered in this amendment?**

No changes in the search radius or monitoring frequency are being considered as part of the HCP Amendment; however, the approved HCP for the Project states "*new technologies or search methods may be incorporated under adaptive management in consultation with USFWS and DOFAW if they are demonstrated to increase the efficiency of the monitoring or enable more accurate take estimates to be obtained. Any change in monitoring measures will require the approval of USFWS and DOFAW prior to implementation.*" Based on this information, the search radius and frequency of long-term monitoring is subject to modification as part of adaptive management. Any modifications to these parameters are approved through consultation with USFWS and DOFAW and are documented in the annual reports for the Project.

As this comment requests clarification regarding the ongoing HCP monitoring protocol and does not relate to the scope or analysis of the SEIS, no revisions to the SEIS were deemed necessary.

**13. Hawaii law requires protection of each species on the affected island. How does the Hawaiian petrel mitigation proposed for Kauai satisfy this requirement?**

HRS Chapter 195D requires that an HCP consider impacts to a species on an island by island basis. Specifically, HRS Chapter 195D-21(b)(2)(C) states that each habitat conservation plan "*Identify the steps that will be taken to minimize and mitigate all negative impacts, including without limitation the impact of any authorized incidental take, with consideration of the full range of the species on the island so that cumulative impacts associated with the take can be adequately assessed; and the funding that will be available to implement those steps.*" The impacts of the Project on the Hawaiian hoary bat and the Hawaiian petrel on O'ahu were addressed as part of the HCP amendment process and are summarized in Sections 3.5.4.1 and 4.1.1 of the SEIS.

Section 3.5.4.1 of the SEIS addresses mitigation for the Hawaiian petrel. This section has been updated to include the following discussion: "*The USFWS 5-year review for Hawaiian petrels provided guidance to identify appropriate mitigation measures anticipated to benefit the petrel including: (1) efforts to reduce fallout from light attraction and disorientation, (2) protection of known breeding colonies, and (3) development of efficient predator control methods. The 5-year review also recommended expanding knowledge of the species' population trend and distribution (USFWS 2017). Although mitigation for a species is typically preferred to occur on the same island as the Project-related impacts, this is not the most effective approach for the Hawaiian petrel. The USFWS and DOFAW worked with their seabird biologists to develop a targeted recovery strategy that focuses on managing the core colonies on the islands of Kaua'i, Maui, and Hawai'i. Restoration on O'ahu was not included in the Hawaiian petrel recovery priorities developed by USFWS and DOFAW because (1) breeding colonies have not been located, if they are present on O'ahu, and (2) the insurmountable threats of fallout potential due to extreme light effects from heavy urbanization suggests few, if any, juveniles would survive. An additional concern is that locating any breeding populations (if any exist) would take considerable effort and time. These considerations make conservation efforts on O'ahu impractical, given the scope of the HCP Amendment. Therefore, Kawaiiloa Wind has determined, in coordination with USFWS and DOFAW that the Hawaiian petrel mitigation will consist of funding predator control and burrow monitoring for known Hawaiian petrel breeding colonies within the Hono O Nā Pali NAR, located in the northwest portion of Kaua'i.*" This mitigation approach complies with the requirements of HRS Chapter 195D-21(b)(1)(B), which specifies that an HCP "*increase the likelihood of recovery of the endangered or threatened species that are the focus of the plan.*"

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or briwo@orsted.com.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Keith", written in a cursive style.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



***VIA ELECTRONIC MAIL***

June 24, 2019

Glenn Metzler  
Department of Land and Natural Resources  
1151 Punchbowl Street Room 325  
Honolulu, Hawai'i, 96813  
glenn.m.metzler@hawaii.gov

**Re:** Comments for the Draft Supplemental Environmental Impact Statement for the Kawaiiloa Wind Project

Dear Mr. Metzler,

These comments are submitted on behalf of the Center for Biological Diversity ("Center") regarding the Draft Supplemental Environmental Impact Statement ("DSEIS") for the Kawaiiloa Wind Project. These comments are timely submitted. The Center is a non-profit public interest conservation organization with more than 1.6 million members and online activists dedicated to protecting imperiled species and their habitats, including members who live and/or recreate in Hawai'i.

The Center supports the development of renewable energy to reduce greenhouse gas emissions. Regardless, all projects, including wind power projects such as Kawaiiloa must be thoughtfully planned and operated to minimize impacts to endangered and threatened species. All renewable energy projects should be operated to avoid impacts to sensitive species and habitats and remaining impacts must be effectively minimized and mitigated through proven effective compensatory mitigation. Local impacts and effects on species and habitat must be thoroughly reviewed so that the public and decision makers are adequately informed. It is only with proper environmental review based on the best available science and data, and strict adherence to environmental laws, that renewable energy production can be truly sustainable.



The Center has the following comments based on the information provided in the DSEIS:

1. As with past Hawai'i Environmental Policy Act ("HEPA") documents for wind energy projects in Hawai'i, the public has not been provided sufficient information to assess the legitimacy of alternatives, take estimates, and effectiveness of mitigation in the DSEIS. HEPA requires that the DEIS "fully declare the environmental implications of the proposed action and . . . discuss all relevant and feasible consequences of the action." HAR §11-200-16. This is imperative so "that the public can be fully informed and that the agency can make a sound decision." *Id.* Therefore, the approving agency must ensure the scientific integrity and accuracy of the information relied upon by the applicant in their DSEIS.

The DSEIS does not provide adequate information regarding:

- The median core use area for a male Hawaiian hoary bat. *See* <https://dlnr.hawaii.gov/wildlife/files/2019/01/ESRC-HTHarvey-24-Jan-2019.pdf> at 23.
- Activity rates for endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*) and endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*) at a precision that allows for the comparison between alternatives or other wind sites that are used for comparison.
- Date, location, and other available information (such as wind speed, curtailment, gender, Etc.) for all observed 'ōpe'ape'a and 'ua'u deaths at all Hawai'i wind project sites.
- Limitations of acoustic monitoring as it relates to demonstrating bat abundance and decline.
- Projects ability to implement nighttime shut down and low wind speed curtailment at a cut-in speed of 6.9 meters per seconds ("m/s"). A detailed economic analysis of full night time curtailment and higher low wind speed curtailment should be required.

- Proven effectiveness of ‘ōpe‘ape‘a compensatory mitigation under Tiers 1-3.
  - Clear requirements and triggers for proposed Tiers 4 through 6.
  - How deterrents will be shown to “be at least as effective as low wind speed curtailment” in light of statistical limitations.
  - The alternative analysis is not “sufficiently detailed to allow the comparative evaluation of the environmental benefits, costs, and risks of the proposed action and each reasonable alternative.” HAR §11-200-16(f).
2. The proposed increases to the authorized take of endangered ‘ōpe‘ape‘a, in the absence of established population estimates, are of great concern. Also of great concern is the increases to the authorized take of endangered O‘ahu ‘ua‘u. Hawai‘i state law requires that projects seeking an HCP explain how they will minimize and mitigate all negative impacts to the maximum extent practicable (HRS §195D-21(b)(2)(D)).

Accordingly, each project must minimize and mitigate to the maximum extent practicable. Given the high numbers and increase of proposed take of Hawaiian hoary bats and lack of credible evidence demonstrating the effectiveness of compensatory mitigation, minimization of bat take must be paramount. Kawaihoa should implement nighttime shut down and low wind speed curtailment at a minimum cut-in speed of 6.9 m/s to minimize bat take to the maximum extent practicable. Furthermore, the possible implementation of deterrent technology should not be allowed to qualify as part of the baseline minimization strategy. It is improper to allow the applicant to rely on technology that *may* become commercially available at some unknown point in the future.

Additionally, the applicant’s proposed avoidance and minimization measures for the ‘ua‘u are inadequate as evidenced by the two ‘ua‘u fatalities that have already occurred while “previously implemented Newell’s shearwater avoidance and minimization measures” were in place. Minimizing on-site

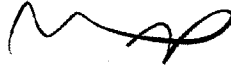
lighting at buildings, implementing a Wildlife Education and Observation Program to reduce vehicle collision risk, and following Avian Power Line Interaction Committee guidelines for overhead collection lines has proven ineffective.

3. The DSEIS does not adequately assess the impacts to endangered and threatened species on island-by-island. Chapter 195-D requires island specific analyses of impacts. The DSEIS should produce valid population viability analyses for O‘ahu ‘ua‘u and ‘ōpe‘ape‘a. In addition, cumulative population viability analyses should be completed that include all operational and anticipated wind projects in Hawai‘i.
4. The use of “tiers of take” is not appropriate. There is over a decade of detailed information on endangered species mortality associated with Hawaiian wind projects. Tiers appear to be used primarily as a cost savings feature by facility operators, rather than as the only option to address the uncertainty of take levels. The HCP Incidental Take License should not incorporate “tiers of take” and the DSEIS should not rely on this framing in its analysis of impacts.
5. Compensatory mitigation for endangered species should be consistent with the U.S. Fish and Wildlife Service’s policy on compensatory mitigation for endangered species. Special attention should be given to ensuring that impacts are fully mitigated, the mitigation is additive and not subsidized by federal or state agencies, and monitoring confirms that expected benefits are achieved during the permit period. Criteria for measuring the success of mitigation efforts must include a demonstration that the required numbers of birds and bats are actually produced to offset the project’s take of endangered species. Mitigation should occur on the same island the proposed take will occur to ensure stability of localized populations. For example, Kawaihoa’s Hawaiian Petrel mitigation should occur on O‘ahu.

*Center Comments for Draft Supplemental Environmental Impact Statement for the Kawaiiloa  
Wind Project  
June 24, 2019*

Mahalo for your consideration of these comments.

Sincerely,



Maxx E. Phillips  
Hawai'i Director and Attorney  
Center for Biological Diversity  
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MPhillips@biologicaldiversity.org



September 3, 2019

Ms. Maxx Phillips, Director  
Center for Biological Diversity  
1188 Bishop Street, Suite 2412  
Honolulu, Hawaii 96713

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement for the Kawaiiloa Wind Project; Waialua District, Oahu**

Dear Ms. Phillips:

Thank you for your comment letter dated June 24, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaiiloa Wind Project. Following, please find Kawaiiloa Wind's responses to the comments provided in your letter:

**1. As with past Hawai'i Environmental Policy Act ("HEPA") documents for wind energy projects in Hawai'i, the public has not been provided sufficient information to assess the legitimacy of alternatives, take estimates, and effectiveness of mitigation in the DSEIS. HEPA requires that the DEIS "fully declare the environmental implications of the proposed action and . . . discuss all relevant and feasible consequences of the action." HAR §11-200-16. This is imperative so "that the public can be fully informed and that the agency can make a sound decision." *Id.* Therefore, the approving agency must ensure the scientific integrity and accuracy of the information relied upon by the applicant in their DSEIS.**

**1. The Draft SEIS does not provide adequate information regarding:**

- **The median core use area for a male Hawaiian hoary bat. See <https://dlnr.hawaii.gov/wildlife/files/2019/01/ESRC-HTHarvey-24-Jan-2019.pdf> at 23.**

The median core use area for the Hawaiian hoary bat is discussed in Section 3.5.2.3 of the SEIS; specifically, this section states: "*The foraging range of the Hawaiian hoary bat is defined as the area traversed by an individual as it forages and moves between day roosts and nocturnal foraging areas. Bonaccorso et al. (2015) studied foraging of the Hawaiian hoary bat on Hawai'i Island and documented a foraging range of approximately 7 miles with a mean of 570.1 ± 178.7 acres. Foraging activity within this area was concentrated within small core use areas with a median of 20.3 acres (DLNR 2015, interquartile range of 16 to 58 acres) that exhibited limited overlap among individual areas.*" This discussion cites the State Endangered Species Recovery Committee (ESRC) Hawaiian hoary bat guidance document.

The comment provides a reference to a presentation by H.T. Harvey to the ESRC, which provides an update on a study identifying core use areas of approximately 3,000 acres. Section 3.5.2.3 of the SEIS has been revised to acknowledge this study and to explain why it was not incorporated into the HCP Amendment: "*Another recent study identified potential core use areas of approximately 3,000 acres (H.T. Harvey and Associates 2019); however, this information was not incorporated into the HCP Amendment as it is understood that the final report has not been released or peer-reviewed, and the results are subject to change based on this process. No methodology was reported and kernel*

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density estimates are highly sensitive to discrepancies in methodology. Furthermore, the study is based on a very limited dataset of five bats over five nights. Extrapolating from a 3,000-acre core use area suggests an unreasonably small population, resulting in an O'ahu population of fewer bats than have been observed as fatalities; bats continue to be detected on O'ahu, such that an estimated population based on a 3,000-acre core use area would not be accurate. Finally, the reported flight speeds are 2-4 times those reported in studies of Hawaiian hoary bats on Hawai'i Island, as well as those of mainland hoary bats (De La Cueva Salcedo et al. 1995, Jacobs 1996)."

- **Activity rates for endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*) and endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*) at a precision that allows for the comparison between alternatives or other wind sites that are used for comparison.**

Activity rates for the Hawaiian hoary bat and the Hawaiian petrel are provided in Section 3.5.2.3 of the SEIS based on details presented in the HCP Amendment and annual reports for the Project. The most recent acoustic monitoring results for Hawaiian hoary bats are described as follows: *"Results of acoustic monitoring since the intensive post-construction monitoring period have shown elevated activity levels in the dry season (roughly April through October) compared to the remainder of the year, which is relatively similar to previous years (Tetra Tech 2017a). In Fiscal Years 2017 and 2018 (based on State of Hawai'i Fiscal Year periods also used for project reporting), Hawaiian hoary bats were detected at the four detectors on 12.6 and 19.4 percent of detector-nights, respectively. Spatially, the majority of bat activity occurred at Turbine 25 compared to the other three locations (Tetra Tech 2018b)."* Additional detail regarding these results is presented in Section 9.1.1 of the Fiscal Year 2018 Annual Report, which is available on the DLNR website (<http://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>). The activity rates for Hawaiian petrels is summarized as follows: *"All surveys found an extremely low number of targets exhibiting flight speeds and flight patterns that fit the 'shearwater-like' category. The mean movement rate across all nights and all sites for 2009 and 2011 was 0.66 shearwater-like targets/hour (Cooper et al. 2011). None of the radar targets could be visually verified during these surveys; however, Cooper et al. (2011) suggested that the individuals were more likely to have been Newell's shearwaters than Hawaiian petrels because of the timing of movements and because the available literature suggested that Newell's shearwaters rather than Hawaiian petrels occur on O'ahu."*

However, in response to the request for information that would allow for comparison of alternatives, it is important to note that activity rates are a poor predictor of Hawaiian hoary bat fatality rates (Hein et al. 2013) and *Procellariid* species risk varies with avoidance rates (Cooper et al. 2009). The most accurate means to compare the impacts of alternatives is to assess fatality rates through the standardized metric: the Evidence of Absence fatality modeling tool (Dalthorp et al. 2017) using data from post construction mortality monitoring results. Information regarding the fatality data presented in the SEIS is provided in responses to the following comment (see below).

- **Date, location, and other available information (such as wind speed, curtailment, gender, Etc.) for all observed 'ōpe'ape'a and 'ua'u deaths at all Hawai'i wind project sites.**

Sections 3.5.4.1 of the SEIS summarizes the Hawaiian hoary bat fatalities observed at the Project, as follows: *"As of December 31, 2017, 32 bat fatalities have been observed during systematic monitoring at the Project (direct take); there have also been two incidentally-detected fatalities."* Section 3.5.4.1 of the SEIS also summarizes the Hawaiian petrel fatalities observed at the Project, as follows: *"On July 21, 2017, a single Hawaiian petrel carcass, confirmed through genetic analysis, was observed incidentally (not during standardized searches)."* This text is footnoted to explain that "A second

*Hawaiian petrel carcass was found onsite in August 2018; also observed incidentally (outside of the search plot and not during standardized searches). Based on the timeframe of the data analysis for the HCP Amendment, this petrel was not included in the projections of take.* A detailed accounting of each fatality (including specific dates and locations) at the Project, as well as those at other wind farms, is not included in the SEIS because these factors are not incorporated into the modeling of estimated Project take and thus are not relevant to the assessment of Project impacts. However, details on the observed fatalities are provided in the annual reports for the Project; the most recent accounting of observed fatalities is presented in Section 7.2 of the Fiscal Year 2018 Annual Report.

- **Limitations of acoustic monitoring as it relates to demonstrating bat abundance and decline.**

Section 3.5.4.1 of the SEIS describes the monitoring that would be conducted for the habitat restoration and land management activities as part of Tier 5 and 6 mitigation. Based on the information contained in the HCP Amendment, this text has been expanded to discuss the limitations of acoustic monitoring. Specifically, this discussion states:

*“Measures of success for the habitat restoration mitigation option are derived from proxy measurements of population, such as habitat equivalency, as the current tools for monitoring the abundance of the Hawaiian hoary bat are limited. Acoustic monitoring is the most common tool to document occurrence of bats; however, acoustic monitoring can only record calls which indicate a local presence but does not provide a measure of abundance (counts of individuals) or population changes. Therefore, while measures of bat activity such as acoustic monitoring are useful tools, assessment of habitat is therefore the most appropriate measure for success criteria for mitigation offset through habitat equivalency.”*

- **Projects ability to implement nighttime shut down and low wind speed curtailment at a cut-in speed of 6.9 meters per seconds (“m/s”). A detailed economic analysis of full night time curtailment and higher low wind speed curtailment should be required.**

Section 2.2.2.1 of the SEIS addresses full nighttime curtailment as one of the alternative operational protocols considered in the HCP Amendment. The discussion quantifies the loss in energy production that would result from full nighttime curtailment and explains that these losses would not allow Kawaiiloa Wind to meet its contractual obligations under the existing power purchase agreement (PPA) with Hawaiian Electric Company (HECO) and would render the Project commercially unviable. Under this alternative, Kawaiiloa Wind would be forced to cease operation of the Project, which would eliminate a significant contribution to the State’s Renewable Portfolio Standard (RPS) and the availability of clean, renewable energy.

Section 2.2.2.2 of the SEIS addresses curtailment with cut-in speeds of 5.5 meters per second (m/s) or above (including cut-in speeds of 6.9 m/s). This discussion explains that the benefits of cut-in speeds above 5.0 m/s are uncertain. It references a detailed analysis of existing studies that was conducted as part of the HCP Amendment; as summarized in Section 2.2.2.2 of the SEIS, only one study (Good et al. 2012) has shown a statistically significant reduction in bat fatalities between different low wind speed curtailment (LWSC) cut-in speeds (bat fatalities were lower at a cut-in speed of 6.5 m/s than 5.0 m/s). The discussion in this section also quantifies the loss in energy production associated with the increased cut-in speeds. It explains that even under the current LWSC regime of 5.0 m/s, Kawaiiloa Wind does not consistently meet minimum production requirements in individual years; as such, this alternative would increase the risk that Kawaiiloa Wind would not meet the requirements specified in its PPA with HECO, thereby jeopardizing

continued operation of the Project; as noted above, discontinuation of the Project would eliminate a significant contribution to the State's RPS and the availability of clean, renewable energy.

The purpose of these sections is to describe the alternative operational protocols that were considered in the HCP Amendment process and explain why they were rejected from further consideration. In both cases, the discussion acknowledges the environmental benefits that could occur (i.e., potential reduction in take levels), but explains that the financial and contractual consequences of the reduced power generation would jeopardize continued operation of the Project and contribution to the State's RPS. A detailed economic analysis is beyond the scope of the SEIS; as such, no revisions to the SEIS were made in response to this comment.

- **Proven effectiveness of 'ōpe'ape'a compensatory mitigation under Tiers 1-3.**

As clarified in Section 3.5.2.3 of the SEIS, the available monitoring methods do not provide population estimates for reclusive, solitary, tree-roosting species such as the Hawaiian hoary bat. As such, it is nearly impossible to accurately count the exact number of individual bats in a given area. Furthermore, HRS Chapter 195D requires that an HCP *"increase the likelihood of recovery of the endangered or threatened species that are the focus of the plan"* and does not require an accounting of individuals to demonstrate a net benefit. Therefore, other measures are used to demonstrate the success of mitigation in increasing the likelihood of species recovery.

Mitigation for Tiers 1 – 3 of Hawaiian hoary bat take, including the measures of success, was defined as part of the authorized HCP and included in the associated environmental assessment. The mitigation has been adaptively managed in consultation with USFWS and DOFAW; in 2016, the agencies confirmed the approach for the Tier 1 mitigation, which included tying the success criteria to completion of all management and monitoring components instead of increased bat activity. Each of these components, which include invasive vegetation removal, bat lane construction, and bat acoustic monitoring, has been successfully implemented. The acoustic monitoring is ongoing and will continue to assess bat activity over time; the results to date indicate increased foraging activity following construction of the bat lanes and invasive species removal. For Tier 2/3 mitigation, Kawaihoa Wind contracted with WEST and USGS to conduct three research projects, based on recommendations by USFWS and DOFAW; these projects address (1) modeling to quantify foraging habitat use and suitability, (2) genetic diversity and sex-specific food habits, and (3) distribution and seasonal occupancy on O'ahu. The research component of the mitigation is critical to filling information gaps and was identified by the USFWS as a priority recovery action in the Hawaiian hoary bat recovery plan (USFWS 1998). Research projects approved by USFWS and DOFAW are designed to gain an understanding of basic life history parameters and develop effective mitigation measures for the species (DLNR 2015), which will ultimately guide future management and recovery efforts. As referenced in Section 3.5.4.1 of the SEIS, detailed information regarding the ongoing results of Tier 1 – 3 mitigation is presented in the annual reports, which are submitted to USFWS and DOFAW; the annual reports are available on DLNR's website (<https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>).

As this comment requests further detail on the results of previously authorized mitigation and does not relate to the scope or analysis of the SEIS, no revisions to the SEIS were deemed necessary.

- **Clear requirements and triggers for proposed Tiers 4 through 6.**

The HCP Amendment includes requirements for both mitigation planning and review of minimization measures prior to reaching the limits of each tier of take; the specific triggers for each requirement are based on estimated take levels. Section 3.5.4.1 of the SEIS describes the requirement for mitigation planning as follows: *"Tier 4 mitigation is already in process; planning for*



the Tier 5 and Tier 6 mitigation will be initiated when 75 percent of the estimated take for the current tier has been reached (using the 80 percent upper credible limit), as listed in Table 3-3." Table 3-3 notes that take of 86 bats would trigger Tier 5 mitigation planning and 150 bats would trigger Tier 6 mitigation planning. The review of minimization measures would occur as part of the adaptive management strategy. Section 3.5.4.1 of the SEIS has been updated to include additional detail regarding this requirement, based on the HCP Amendment: "*Kawailoa Wind will evaluate take quarterly and will implement additional minimization measures based on specific triggers related to estimated take rates; the triggers would occur when 75 percent of the estimated take for the current tier has been reached (using the 80 percent upper credible limit) and projected take is on a trajectory to exceed the authorized take limit before the end of the permit term.*" In addition to these requirements, Kawailoa Wind will ensure adequate funding is available for the next tier of take before it is reached; additional information regarding funding assurances is provided in the HCP Amendment.

- **How deterrents will be shown to "be at least as effective as low wind speed curtailment" in light of statistical limitations.**

Section 3.5.4.1 of the SEIS has been updated to include recent results of bat deterrent test trials. Specifically, this section states: "*NRG Systems Inc. (NRG) makes acoustic deterrents that are being tested in broad-scale field trials and studies at commercial wind facilities on the mainland. In these studies, hoary bat fatalities were reduced by up to 78 percent compared to control turbines (Weaver et al. 2018). The effectiveness of NRG acoustic deterrents presently ranges from 20 to 100 percent, with higher effectiveness shown for mainland hoary bats than other mainland bat species (NRG 2018). As demonstrated at Pilot Hill, Illinois in 2018 (Lillian 2019), take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent more than LWSC alone (B. Morton/NRG, pers. comm., May 2019).*"

Given these results, Kawailoa Wind proactively installed bat deterrents at all 30 Project turbines in May and June 2019. Thus, the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment include both LWSC and bat deterrent devices, which obviates the need for a comparison. The updated description of baseline minimization measures, as described in Section 3.5.4.1 of the SEIS, is as follows:

1. *Extend LWSC with a cut-in speed of 5.0 m/s at all turbines to occur year-round from sunset to sunrise.*
2. *Increase LWSC cut-in speed to 5.2 m/s through a 0.2 m/s hysteresis to increase the "down time" of the wind turbines and reduce the number of stop/start events per night by extending the rolling average time from 10 to 20 minutes. Hysteresis is a LWSC regime that offsets the "cut-out" and "cut-in" speeds, such that it takes a higher average wind speed (raised cut-in speed) for the turbines to return to operation after stopping due to LWSC. All Project turbines individually monitor wind speed using turbine-mounted anemometers and are programmed to shut off when wind speeds are 5.0 m/s or lower and to start up again when wind speeds reach 5.2 m/s, thereby increasing the cut-in speed and extending the period during which collision risk for bats is minimized.*
3. *Install bat deterrents at all 30 Project turbines in May and June 2019. For the purposes of take estimation, it is assumed the deterrents will be effective beginning in 2020."*

Given this update, the question of how Kawailoa Wind will determine when bat deterrents are at least as effective as LWSC at reducing bat take is no longer applicable and based on the results published by Lillian (2019), the best available science indicates that the use of deterrents with LWSC is 24 percent more effective than the use of LWSC alone.

- **The alternative analysis is not “sufficiently detailed to allow the comparative evaluation of the environmental benefits, costs, and risks of the proposed action and each reasonable alternative.” HAR §11-200-16(f).**

Section 2.2.1 of the SEIS explains that a range of alternatives to construction and operation of the Project were identified and considered through the Project planning and site layout process; these alternatives were addressed in the 2011 EIS. Because the Project was constructed generally as described in the 2011 EIS, the original discussion of Project alternatives in the 2011 EIS is still applicable (and is incorporated into the SEIS by reference). As the Project is fully operational, no additional Project alternatives are considered in the SEIS.

In addition to this discussion, the SEIS addresses alternative operational protocols which were identified and evaluated through the HCP amendment process. As detailed in the response to bullet #5 above, Sections 2.2.2.1 and 2.2.2.2 address full nighttime curtailment and curtailment with cut-in speeds of 5.5 m/s or above as alternative operational protocols.

The discussion of full nighttime curtailment in Section 2.2.2.1 explains that this alternative would avoid future Hawaiian hoary bat take and further reduce collision risk for the Hawaiian petrel and Newell’s shearwater, but would reduce power generation such that Kawaiiloa Wind would not be able to meet the contractual obligations under the Project’s PPA with HECO. Specifically, this discussion states that *“full nighttime curtailment would reduce power generation such that Kawaiiloa Wind would not be able to meet the contractual obligations under the Project’s PPA with HECO. Specifically, this alternative would reduce annual energy production by approximately 45 percent, resulting in an annual power generation loss on the order of 61,000 MW hours per year. Revenue losses under full nighttime curtailment would render the Project commercially unviable, forcing Kawaiiloa Wind to cease operation. As the largest wind energy generating facility in Hawai’i, this would eliminate a significant contribution to the State’s RPS and would not meet the purpose and need. In addition to reducing the availability of clean, renewable energy, ceasing operation would also preclude other benefits including those related to Project employment and lease and tax revenues.”*

Section 2.2.2.2 of the SEIS addresses the alternative approach of curtailment with cut-in speeds of 5.5 meters per second (m/s) or above. It provides a summary of available information regarding the benefits of increased cut-in speeds, as well as Project-specific factors including the wind regime, PPA contractual obligations and financial considerations. The discussion concludes: *“While the additional benefits to bats from raising cut-in speeds above 5.0 m/s are ambiguous, the negative impacts to energy generation are significant. Under this alternative, implementing LWSC at the Project with a cut-in speed of 5.5 m/s would reduce annual energy production by approximately 2 percent, resulting in an annual power generation loss on the order of 2,500 MW hours per year. Generation losses and costs associated with implementing cut-in speeds of 6.0 or 6.5 m/s would be substantially greater. Even under the current LWSC regime of 5.0 m/s, Kawaiiloa Wind does not consistently meet minimum production requirements in individual years. Therefore, this alternative would increase the risk that Kawaiiloa Wind would not meet the requirements specified in its PPA with HECO, thereby jeopardizing continued operation of the Project. As described in Section 2.2.2.1, ceasing operation would eliminate a significant contribution to the State’s RPS and reduce the availability of clean, renewable energy, as well as preclude other benefits including those related to Project employment and lease and tax revenues.”*

In both cases, the discussion describes the environmental benefits (i.e., potential reduction in take levels), quantifies the power generation losses, and identifies the financial and contractual impacts that were evaluated and allowed comparison of the alternative operational protocols as part of the HCP amendment process. As discussed above, the SEIS explains why each alternative was not

considered reasonable and was thus dismissed from further consideration; thus, no revisions to the SEIS were deemed necessary in response to this comment.

**2. The proposed increases to the authorized take of endangered 'ōpe'ape'a, in the absence of established population estimates, are of great concern. Also of great concern is the increases to the authorized take of endangered O'ahu 'ua'u. Hawai'i state law requires that projects seeking an HCP explain how they will minimize and mitigate all negative impacts to the maximum extent practicable (HRS 195D-21(b)(2)(D)).**

Your concern regarding the proposed increase to the authorized take of the Hawaiian hoary bat and Hawaiian petrel is noted. Specifically, regarding your reference to the absence of an established population estimate for the Hawaiian hoary bat, a discussion of population modeling exercises that were conducted as part of the HCP amendment process to support the evaluation of potential Project-related impacts is provided in response to Comment #3.

- a. Accordingly, each project must minimize and mitigate to the maximum extent practicable. Given the high numbers and increase of proposed take of Hawaiian hoary bats and lack of credible evidence demonstrating the effectiveness of compensatory mitigation, minimization of bat take must be paramount. Kawaiiloa should implement nighttime shut down and low wind speed curtailment at a minimum cut-in speed of 6.9 m/s to minimize bat take to the maximum extent practicable.**

The comment specifies that Kawaiiloa Wind should implement nighttime shut down and LWSC at a minimum cut-in speed of 6.9 m/s to minimize bat take; these two alternative operational protocols were identified and considered through the HCP Amendment process. As summarized in response to Comment #1 (bullets #5 and #9), Section 2.2.2 of the SEIS describes these two approaches and discusses the reasons why they were not carried forward for further consideration.

Section 3.5.4.1 of the SEIS describes the minimization measures that are proposed as part of the HCP Amendment and provides a detailed explanation regarding the effectiveness of these measures. As detailed in response to Comment #1 (bullet #8), this discussion has been updated to include recent results of bat deterrent test trials. In particular, this discussion reports that results published by Lillian (2019) demonstrate that take rates for hoary bats were reduced by 71 percent at treatment turbines where both deterrents and LWSC with cut-in speeds of 5.0 m/s were implemented, which is 24 percent more than LWSC alone. Given these results, Kawaiiloa Wind proactively installed bat deterrents at all 30 Project turbines in May and June 2019. Thus, the baseline minimization measures to minimize risk to the Hawaiian hoary bat as part of the HCP Amendment include both LWSC and bat deterrent devices.

The comment references alternative operational protocols that were already evaluated and dismissed from further consideration as part of the HCP amendment process, and this information is summarized in the SEIS; as such, no revisions to the SEIS were deemed necessary.

- b. Furthermore, the possible implementation of deterrent technology should not be allowed to qualify as part of the baseline minimization strategy. It is improper to allow the applicant to rely on technology that may become commercially available at some unknown point in the future.**

As explained above, Kawaiiloa Wind proactively installed bat deterrents at all 30 Project turbines in May and June 2019. Section 3.5.4.1 of the SEIS has been updated to reflect this information, as follows: *"implementation of deterrent technology has been included as part of the baseline minimization strategy, with acoustic bat deterrents from NRG installed in May and June 2019."* As

such, the comment regarding the improper use of possible deterrent technology as part of the baseline minimization strategy is no longer applicable.

- c. Additionally, the applicant's proposed avoidance and minimization measures for the 'ua'u are inadequate as evidenced by the two 'ua'u fatalities that have already occurred while "previously implemented Newell's shearwater avoidance and minimization measures" were in place. Minimizing on-site lighting at buildings, implementing a Wildlife Education and Observation Program to reduce vehicle collision risk, and following Avian Power Line Interaction Committee guidelines for overhead collection lines has proven ineffective.**

The avoidance and minimization measures referenced in the comment are those that were previously identified based on agency guidance and are being implemented to avoid and minimize impacts to the Newell's shearwater; as stated in the SEIS, these same measures are also applicable to the Hawaiian petrel. Section 3.5.4.1 of the SEIS has been updated to clarify, *"The avoidance and minimization measures previously implemented for the Newell's shearwater also minimize risk to the Hawaiian petrel. These measures are based on USFWS guidance for wind energy projects and are described in detail in Section 5.3 of the approved HCP; specific measures include: site selection away from known colonies, the selection of monopole towers, the use of red, flashing, and synchronized FAA lighting on a subset of turbines, minimizing nighttime activity, minimizing and shielding on-site lighting at buildings and the use of motion sensor to limit activity; implementation of a Wildlife Education and Observation Program (WEOP) to reduce vehicle collision risk; the use of buried collector lines where possible, and following Avian Power Line Interaction Committee (APLIC) guidelines for overhead collection lines. These measures reflect the current agency guidance for avoidance and minimization of impacts to Hawaiian seabird species; no additional minimization measures specific to wind farms are known for these species."*

In accordance with HRS Chapter 195D, the HCP process is intended to identify both the steps that would be taken to minimize impacts as well as mitigation that would be implemented, thus increasing the likelihood of recovery of the endangered or threatened species that are the focus of the plan. In addition to the minimization measures referenced in the comment, the HCP Amendment incorporates mitigation that meets the requirements of HRS Chapter 195D. This information is presented in Section 3.5.4.1 of the SEIS. For purposes of HRS Chapter 343, the SEIS focuses on the impacts of the proposed mitigation and minimization measures proposed as part of the HCP Amendment.

As the information in the SEIS reflects current agency guidance regarding avoidance and minimization measures for the Hawaiian petrel as well as the proposed mitigation developed as part of the HCP Amendment, no revisions were deemed necessary.

**3. The DSEIS does not adequately assess the impacts to endangered and threatened species on island-by-island. Chapter 195D requires island specific analyses of impacts. The DSEIS should produce valid population viability analyses for O'ahu 'ua'u and 'ōpe'ape'a. In addition, cumulative population viability analyses should be completed that include all operational and anticipated wind projects in Hawai'i.**

As part of the HCP amendment process, Kawaiiloa Wind performed population modeling exercises to support the evaluation of potential Project-related impacts to the Hawaiian hoary bat on O'ahu. The discussion of potential impacts presented in Section 3.5.4.1 of the SEIS has been updated to include this information. As summarized in this section, *"a population model was used to estimate potential population growth rates and a range of population sizes using the best available information*

*and clearly identified assumptions...The results of the modeling exercise were compared to estimated take rates to evaluate the risk of Project take to bats at the population level, as well as to evaluate the risk of cumulative impacts... The population modeling exercise is intended only to provide context for a risk analysis and is not meant to provide a precise estimate of growth rate or population size. Despite the use of conservative estimates of density, occupancy, and annual survival, the exact numbers should be treated with caution, as the estimates may vary if the input parameters or assumptions are altered."* The result of the population modeling exercises is a downwardly conservative range of population sizes on O'ahu, between 2,000 and 9,200 bats. This range of population sizes was then assessed relative to the maximum estimated average annual rate of total take for the Project. This assessment concludes that *"Although it is difficult to assess the effect that take of Hawaiian hoary bat resulting from the Project may have on the local population of this species, population modeling using the best available information suggests the population on O'ahu is robust relative to the low levels of take proposed by the Project."*

Further analysis is presented in Section 4.1.1.1 regarding potential cumulative impacts to the bat. This discussion has been updated to include a range of model scenarios that evaluate the conditions under which the Hawaiian hoary bat population on O'ahu would be at risk. Specifically, the model assessed the risk to bats based on the range of possible population sizes and growth rates, and also accounted for the authorized and requested take levels associated with all O'ahu wind projects. Section 4.1.1.1 of the SEIS summarizes the modeling results, *"A growth rate of 1.03 or higher will lead to an increasing population in all scenarios except those scenarios with starting populations less than 600. The downwardly conservative range of population sizes modeled above suggests that a reasonable minimum population size is 2,000 bats, which would have an increasing population with a growth rate as small as 1.01. The cumulative impacts from all existing and permitted wind farms on O'ahu (15 bats per year) are estimated at less than 1 percent of the population per year (0.75%; assuming the lower end of the range of population sizes). Therefore, even if growth rates are as low as 1.01 and decreased by an additional 0.0075 per year due to all authorized and requested take on O'ahu, the actual growth rate would be 1.0025 and the population would remain stable to increasing with a starting population as small as 2,000."* Based on the results of the population modeling exercises, the evaluation concludes that *"the population would be sustained even given the added mortality from the direct and indirect take from all existing and permitted wind farms."* Section 4.1.1.1 also addresses statewide impacts to the Hawaiian hoary bat, stating: *"The activities that directly impact bats on O'ahu, as discussed above, also occur statewide. The direct impacts from other authorized or proposed actions that could result in take of this species include: (1) authorized take approved for three existing wind projects on Maui (KWP II and Auwahi Wind are seeking HCP amendments to increase the amount of authorized Hawaiian hoary bat take), and (2) requested take for two existing wind projects and one restoration project on Hawai'i Island (refer to Table 4-1). Take authorization for these wind farms is contingent upon approved mitigation, which is expected to offset these projects' take."* This discussion addresses the approved and pending authorized take and associated mitigation for projects statewide. It concludes: *"Based on the best scientific data currently available, the Project is unlikely to cause significant adverse impacts to the species' population on O'ahu or statewide, or to the recovery potential of the species. The provisions of the HCP Amendment, including avoidance and minimization measures, mitigation, and adaptive management program identify how bat take will not jeopardize the survival and recovery of the species. The mitigation increases the chances of survival and the likelihood of recovery for the listed species by providing a net benefit to the species."* Additional detail regarding the methodology for the population modeling exercises and population-level and cumulative impact analyses is provided in Section 3.5.4.1 and 4.1.1.1 of the SEIS.

Regarding the Hawaiian petrel, Section 3.5.2.3 addresses species occurrence on O'ahu and explains that there is no conclusive evidence of a population on O'ahu; although there have been recent detections, it cannot be determined from the acoustic data alone whether the species was

breeding/nesting or whether the recorded calls were from prospecting birds. Based on the known population, Sections 3.5.4.1 and 4.1.1.2 of the SEIS address the population-level impacts and cumulative impacts, respectively. As there is no further information available regarding potential impacts to the Hawaiian petrel, no revisions were made to the SEIS.

**4. The use of “tiers of take” is not appropriate. There is over a decade of detailed information on endangered species mortality associated with Hawaiian wind projects. Tiers appear to be used primarily as a cost savings feature by facility operators, rather than as the only option to address the uncertainty of take levels. The HCP Incidental Take License should not incorporate “tiers of take” and the DSEIS should not rely on this framing in its analysis of impacts.**

A tiered approach was developed for the HCP amendment process in consultation with USFWS and DOFAW. This approach is based on uncertainty in the effectiveness of minimization measures, rather than predictions of fatality rates as suggested in the comment. The implementation of deterrents in Hawaii is novel; the effectiveness of deterrents relative to Hawaiian hoary bats is suggested by mainland studies but requires additional data before calculations can predict changes to fatality rates. This is described in Section 3.5.4.1 of the SEIS, which states “...because there is uncertainty as to the effectiveness of deterrents at reducing bat take, conservative estimates of the variation in effectiveness have been incorporated into the take estimation. Specifically, the following two scenarios were modeled based on assumed effectiveness or availability of deterrents at reducing take:

- Tier 5: Modeling of projected take at the Tier 5 level assumed minimization measures will realize a 50 percent reduction in the current level of take; and
- Tier 6: Modeling of projected take at the Tier 6 level (the total requested take authorization) assumed minimization measures realize a 25 percent reduction in the current level of take. This tier is designed to be conservative in order to provide assurance that the total requested take will not be exceeded.

The discussion then includes a summary of the total take request (including a breakdown of the take request by tier) and concludes by stating: “The values of estimated take allotted to each tier is based on USFWS recommendations for tiered take at wind facilities (USFWS 2018).” Based on the information summarized above, tiers are used as a framework for purposes of the HCP Amendment; however, it is important to note that the analysis of potential impacts in the SEIS is based on the total amount of take in the HCP Amendment (i.e., the total for all tiers). As the SEIS provides an explanation regarding the basis for the tiers of take and considers the impact of all tiers included in the HCP Amendment, no revisions were deemed necessary.

**5. Compensatory mitigation for endangered species should be consistent with the U.S. Fish and Wildlife Service’s policy on compensatory mitigation for endangered species. Special attention should be given to ensuring that impacts are fully mitigated, the mitigation is additive and not subsidized by federal or state agencies, and monitoring confirms that expected benefits are achieved during the permit period.**

The mitigation included in the HCP Amendment was developed through extensive consultation with both USFWS and DOFAW, and reflects agency guidance and input. Consistency with agency guidance is addressed throughout the SEIS. Specific to the mitigation for Hawaiian hoary bat, Section 3.5.4.1 of the SEIS states: “The proposed mitigation for Tiers 4-6 was developed as part of the HCP amendment process and is responsive to the recovery goals identified in the Hawaiian Hoary Bat Recovery Plan (USFWS 1998), agency guidance described in the ESRC Bat Guidance (DLNR 2015), and

conservation and management priorities identified by the agencies. Additional information regarding the guidance to date is provided in the Draft HCP Amendment.” The SEIS has been updated to further detail agency input for Tier 4 mitigation, as follows: “Agency concurrence on the approach to determining the offset of Tier 4 mitigation, including the biological rationale, was provided in letters from USFWS and DOFAW (dated September 26, 2018 and September 21, 2018, respectively).” Specific to Tier 5 and Tier 6 mitigation, the SEIS states: “For Tier 5 and Tier 6 mitigation, Kawaiiloa Wind will identify and implement mitigation based on the options identified as priorities by USFWS and DOFAW.” Mitigation for the Hawaiian petrel was also formulated based on guidance provided by USFWS and DOFAW, as further detailed below in response to Comment #5c. A discussion of the mitigation activities, success criteria and monitoring for Hawaiian hoary bat and Hawaiian petrel mitigation is provided in Section 3.5.4.1. As detailed in this section, implementation of the mitigation as part of the HCP Amendment has been considered in the evaluation of the net impacts of the Project.

**b. Criteria for measuring the success of mitigation efforts must include a demonstration that the required numbers of birds and bats are actually produced to offset the project’s take of endangered species.**

As explained in response to Comment #1 (bullet #5), HRS Chapter 195D requires that an HCP “increase the likelihood of recovery of the endangered or threatened species that are the focus of the plan” and does not require an accounting of individuals to demonstrate a net benefit. Furthermore, given the nature of the Hawaiian hoary bat, it is nearly impossible to accurately count the exact number of individual bats in a given area. As such, other measures are used to demonstrate the success of mitigation in increasing the likelihood of species recovery. The measures of success for the Hawaiian hoary bat and Hawaiian petrel mitigation are summarized in Section 3.5.4.1 of the SEIS, with further detail provided in the HCP Amendment.

As this comment relates to the requirements of an HCP and does not relate to the scope or analysis of the SEIS, no revisions to the SEIS were deemed necessary.

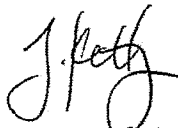
**c. Mitigation should occur on the same island the proposed take will occur to ensure stability of localized populations. For example, Kawaiiloa’s Hawaiian Petrel mitigation should occur on O’ahu.**

Kawaiiloa Wind worked closely with USFWS and DOFAW to determine the appropriate location for the Hawaiian petrel mitigation. Through this process, USFWS and DOFAW recommended that mitigation occur at known colonies on Kaua’i. Section 3.5.4.1 of the SEIS addresses mitigation for the Hawaiian petrel. This section has been updated to provide further detail regarding the agencies’ guidance, as follows: “The USFWS 5-year review for Hawaiian petrels provided guidance to identify appropriate mitigation measures anticipated to benefit the petrel including: (1) efforts to reduce fallout from light attraction and disorientation, (2) protection of known breeding colonies, and (3) development of efficient predator control methods. The 5-year review also recommended expanding knowledge of the species’ population trend and distribution (USFWS 2017). Although mitigation for a species is typically preferred to occur on the same island as the Project-related impacts, this is not the most effective approach for the Hawaiian petrel. The USFWS and DOFAW worked with their seabird biologists to develop a targeted recovery strategy that focuses on managing the core colonies on the islands of Kaua’i, Maui, and Hawai’i. Restoration on O’ahu was not included in the Hawaiian petrel recovery priorities developed by USFWS and DOFAW because (1) breeding colonies have not been located, if they are present on O’ahu, and (2) the insurmountable threats of fallout potential due to extreme light effects from heavy urbanization suggests few, if any, juveniles would survive. An additional concern is that locating any breeding populations (if any exist) would take considerable

*effort and time. These considerations make conservation efforts on O'ahu impractical, given the scope of the HCP Amendment. Therefore, Kawailoa Wind has determined, in coordination with USFWS and DOFAW that the Hawaiian petrel mitigation will consist of funding predator control and burrow monitoring for known Hawaiian petrel breeding colonies within the Hono O Nā Pali NAR, located in the northwest portion of Kaua'i."*

We appreciate your review and will keep you informed regarding publication of the Final SEIS. A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or briwo@orsted.com.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Keith", written in a cursive style.

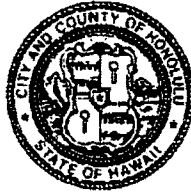
**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



DEPARTMENT OF COMMUNITY SERVICES  
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REBECCA J'I. SOON  
DEPUTY DIRECTOR

June 24, 2019

Mr. Glenn Metzler  
Division of Forestry and Wildlife  
State of Hawaii  
Board of Land and Natural Resources  
1151 Punchbowl Street, Room 325  
Honolulu, Hawaii 96813

Dear Mr. Metzler:

SUBJECT: Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaiiloa Wind Farm; O'ahu, Hawai'i, prepared pursuant to the State of Hawaii EIS Law (Hawaii Revised Statutes, Chapter 343), and the State of Hawaii EIS Rules (Hawaii Administrative Rules, Title 11, Chapter 200)

Thank you for your Draft Supplemental Environmental Impact Statement (SEIS) for Kawaiiloa Wind Farm project.

Applicant: Kawaiiloa Wind, LLC  
1166 Avenue of the Americas, 9<sup>th</sup> Floor  
New York, New York 10036  
Contact: Brita Woeck

Consultant: Tetra Tech, Inc.  
737 Bishop Street, Suite 2340  
Honolulu, Hawaii 96813  
Contact: Lisa Kettley

Mr. Glenn Metzler  
June 24, 2019  
Page 2

Our review of the documents indicated that the proposed project will have no adverse impacts on any Department of Community Services' activities or projects in the surrounding neighborhood.

Thank you for providing us the opportunity to comment on this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Pamela A. Witty-Oakland", written in a cursive style.

Pamela A. Witty-Oakland  
Director

PWO/ta

cc: Kawaihoa Wind, LLC  
Tetra Tech, Inc.✓



September 3, 2019

Ms. Pamela A. Witty-Oakland, Director  
Department of Community Services  
City & County of Honolulu  
925 Dillingham Boulevard, Suite 200  
Honolulu, Hawaii 96817

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaiiloa Wind Project; Waialua District, Oahu**

Dear Ms. Witty-Oakland:

Thank you for your comment letter dated June 24, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaiiloa Wind Project. We understand that your review indicated there will be no adverse impacts to the Department of Community Services' activities or projects in the surrounding neighborhood. We appreciate your review and will keep you informed regarding publication of the Final SEIS.

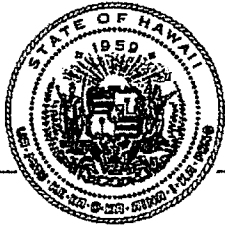
A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in dark ink, appearing to read 'J. Keith', written over a light blue horizontal line.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife



## OFFICE OF PLANNING STATE OF HAWAII

DAVID Y. IGE  
GOVERNOR

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DTS201906261059NA

June 27, 2019

To: Suzanne Case, Chairperson  
Department of Land and Natural Resources

From: Mary Alice Evans, Director *Mary Alice Evans*  
Office of Planning

Attention: Glenn Metzler  
Division of Forestry and Wildlife

Subject: Draft Supplemental Environmental Impact Statement for the Kawailoa Wind  
Project, Haleiwa, Waialua District, Oahu  
TMKs: (1) 6-1-006: 001, 6-1-007: 001 and 6-2-011: 001

Thank you for the opportunity to provide comments on this Draft Supplemental Environmental Impact Statement (Draft SEIS) for the Kawailoa Wind Project. The Draft SEIS notification of availability notice was transmitted to our office via letter dated May 3, 2019.

It is our understanding that Kawailoa Wind, LLC, is not proposing any substantive changes to the existing project or its operation including to its size, scope, or location. The Project was constructed in 2012 and has been in operation since that time. The windfarm project operates under an approved Habitat Conservation Plan (HCP) and Incidental Take License (ITL) issued by the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), pursuant to Hawaii Revised Statute Chapter 195D.

In the Draft SEIS, Kawailoa Wind is providing additional information in support of its request to increase in the amount of authorized incidental take of the Hawaiian hoary bat to cover the remaining permit term and is requesting the HCP be amended to include the Hawaiian petrel as a new covered species.

The Office of Planning (OP) has reviewed the Draft EA and has the following comments to offer:

1. As the applicant is not proposing any substantive changes to the existing project or its operation to the Kawailoa Wind Farm, we do not offer any additional comments on the Draft SEIS. We acknowledge that the finding of the 2011 Final Environmental Impact Statement adequately addressed the wind farm and its impact on plans, policies, and initiatives that fall under the jurisdiction of our office.

Ms. Suzanne Case  
June 27, 2019  
Page 2

2. Hawaii Revised Statutes (HRS) Chapter 205A-4(a) states that in implementing the objectives of the coastal zone management (CZM) program, agencies shall give full consideration to ecological, cultural, historic, esthetic, recreational, scenic, and open space values, coastal hazards, and economic development. HRS § 205A-2(c)(4)(A) provides policies that encourage a conservation ethic and stewardship of marine and coastal resources. Therefore, State and county agencies are required to consider a conservation ethic in the protection and management of native species, such as the Hawaiian hoary bat (*Lasiurus cinereus semotus*) and the Hawaiian petrel (*Pterodroma sandwichensis*).

The evaluation of the Draft SEIS should include balanced consideration for State goals to achieve energy generation from renewable resources and the conservation and protection of these two species.

If you have any questions regarding this comment letter, please contact Joshua Hekekie of our office at (808) 587-2845.

c: Ms. Brita Woeck, Kawaihoa Wind, LLC  
✓Ms. Lisa Kettley, Tetra Tech, Inc.



September 3, 2019

Ms. Mary Alice Evans, Director  
Office of Planning  
State of Hawaii  
P.O. Box 2359  
Honolulu, Hawaii 96804

**RE: Response to Comment on the Draft Supplemental Environmental Impact Statement  
for the Kawaihoa Wind Project; Waialua District, Oahu**

Dear Ms. Evans:

Thank you for your comment letter dated June 27, 2019 in response to the Draft Supplemental Environmental Impact Statement (SEIS) for the Kawaihoa Wind Project. We understand that your agency does not have any comments on the Draft SEIS. We acknowledge your input that evaluation of the Draft SEIS should include balanced consideration for State goals to achieve energy generation from renewable resources and the conservation and protection of the Hawaiian hoary bat and Hawaiian petrel. Consistency of the Habitat Conservation Plan (HCP) Amendment with State plans and goals is discussed in Section 5 of the Final SEIS to aid the approving agency in its review of the Final SEIS. We appreciate your review and will keep you informed regarding publication of the Final SEIS.

A copy of your comment letter and this response will be included in Appendix E of the Final SEIS. If you have any questions or require additional information, please contact Brita Woeck at (206) 949-5228 or [briwo@orsted.com](mailto:briwo@orsted.com).

Sincerely,

A handwritten signature in dark ink, appearing to read 'J. Keith', written over a light blue horizontal line.

**Tetra Tech, Inc.**

cc: Jim Cogswell, Department of Land and Natural Resources Division of Forestry and Wildlife  
Lauren Taylor, Department of Land and Natural Resources Division of Forestry and Wildlife