

***Significant Changes Since Environmental Notice Publication 10-8-17 and Last ESRC Review 10-19-18.***

**1.1 Summary and Rationale for the Amendment**

- a. Permit term for operations is 19.5 years, all take “20-year permit term” take projections are for 19.5 years.
- b. Additional summary explanation for amended take permit request rationale in first section.
- c. Table 1.1: removed “Tier 4” for nēnē, adjusted up Tier 3 (and total) take estimates from 36 to 44 nēnē total; adjusted down Tier 3 and Tier 4 take estimates for bats from 45 and 48 to 30 and 38, respectively.
- d. Table 1.3: removed Tier 4 nēnē mitigation; changed Tier 3 nēnē mitigation- removed language about sites other than Pi’iholo Ranch pen. Separated mitigation options into Tier 3 and Tier 4 (from options for both Tiers in one cell), added specific detail to Tier 3 and Tier 4 bat mitigation.
- e. Paragraph, page 15, about mitigation options removed. Mitigation options, etc., detailed in later sections specifically relating to bat mitigation.

**1.3.2 Federal National Environmental Policy Act**

- a. Moved any “state” details to section 1.3.6, added NEPA process details.

**1.3.6 State Environmental Review: Chapter 343, Hawai’i Revised Statutes**

- a. Updated additional details for HEPA process.

**1.4.2.1. Reduced Pollutants during Operations**

- a. Updated with additional, current years of generation data.

**1.4.5 Changes and Improvements that have Affected Projected Take -NEW**

- a. Moved first two paragraphs up to section 1.1.

**1.4.5.1. Compliance Monitoring**

- a. Figure 1.3, 1.4 and 1.5 - updated with 2018 data.

**1.4.5.2 Take Estimation, Modeling and Uncertainty**

- a. Added more detail and explanation about the Estimate of Absence fatality estimation program. Added hypothetical permit term total take projection if no more take is observed.

**1.4.5.2.1 Assumptions Made in the Take Estimation Calculation Inputs**

- a. Added “assumptions made” for any input where a choice is offered.
- b. Added and updated Figure 1.6 and 1.7 showing total fall distribution for bat and nēnē including Hull and Muir ballistics-based distributions for comparison (also found in Appendix 27) and details how the fall distributions were derived.

## **2.1 Purpose of this HCP**

- a. Added detail making clear that the “loss of habitat threatening the Hawaiian hoary bat” has never been proven or ever been successfully documented as a limiting factor to the species recovery.

### **3.8.4.1 Population, Biology and Distribution of the Hawaiian Hoary Bat**

- a. Removed sentence about Menard (2001) unsubstantiated guess about bat population size.

### **3.8.4.3 Occurrence of the Hawaiian Hoary Bat in West Maui and the Project Area**

- a. Updated observed take values from KWP I and II.
- b. Added analysis of bat detection data collected at both KWP I and II relative to observed fatalities.

## **4.2.2 Alternative 2 (Proposed Action)**

- a. Updated nēnē and bat take requested, detail on land conservation and in-lieu fee options for bat mitigation, extending low wind speed curtailment to be year-round.
- b. Added likelihood ratio test of null hypothesis (from Evidence of Absence program) that mortality rate did not change comparing before and after low wind speed curtailment increase in August 2014.
- c. Added analysis of existing low wind speed curtailment studies made in the US.

## **4.2.3 Alternative 3 (Additional Low Wind Speed Curtailment to 6.5 m/s)**

- a. Added analysis and discussion of the few studies that tested the statistical significance in fatality found between experiments at the same site during the same study considering low wind speed curtailment at 5.0 m/s and 6.5 m/s.
- b. Added existing information about Hawaiian hoary bat activity relative to wind speed measured on the ground and at nacelle height.
- c. Updated additional generation losses expected at KWP II if low wind speed curtailment were increased to 6.5 m/s.
- d. Removed paragraphs suggesting additional low wind speed curtailment could contribute to financial hardship jeopardizing operation viability and explanation of Power Purchase Agreement rules scenario where jeopardy could occur.

## **5.2.4.5 Estimating Total Adjusted Take for Nēnē Based on Post-Construction Fatality Monitoring Data**

- a. Updated direct and indirect take estimates, consolidated Tier 3 and Tier 4 into one Tier 3 (removed Tier 4).

### **5.2.5 Hawaiian Hoary Bat**

- a. Removed statements that suggested bats would not roost or pup in the area around KWPII and added statement that the possibility exists given new information about roosting in ironwood trees.

#### **5.2.5.1 Collision Risk and Other Potential Causes of Take at KWP II**

- a. Returned this section's discussion found in the original HCP to retain original but uninformed assessment of potential take risk.

#### **5.2.5.3 Estimating Total Take for the Hawaiian Hoary Bat**

- a. Added new header to distinguish between pre- and post-construction take estimates and returned paragraph indicating percent reduction in take assumed with implementation of low wind speed curtailment based on Arnett et al. (2009, 2010).
- b. Moved paragraph about unobserved direct take to "Estimating Indirect Take" section 5.2.5.4.
- c. Removed paragraph and Figure 5.1 (now in section 5.2.5.4) about low wind speed curtailment results (now discussed in detail with added new information in section 4.2.3 and Appendix 33).
- d. Removed "15% reduction in take rate" factor (discussion now found in section 5.2.5.4) from take estimation, now determined invalid, after additional low wind speed curtailment was implemented in August 2014.
- e. Updated Table 5.8.

#### **5.2.5.4 Estimating Total Adjusted Take for Hawaiian Hoary Bats Based on Post-Construction Fatality Monitoring Data**

- a. Added New section 5.2.5.4 to distinguish pre- and post-construction estimates.
- b. Updated direct and indirect take estimates.
- c. Added explanation how Tier 3 and Tier 4 take level values were derived.

#### **5.2.5.5 Population Assessment and Impact of Take**

- a. Created new section 5.2.5.5 from previous subsection in 5.2.5.4.
- b. Added detail explaining that the Hawaiian hoary bat has never been shown to be endangered and the original listing was based on insufficient or no studies indicating any jeopardy, any habitat loss or any statistically valid population assessment.
- c. Added information about population assessments, lack of information available to have previously projected actual take impact from wind turbine collision, how new information suggests bats are more abundant and widespread than previously guessed and what information exists about causes of mortality.
- d. Added discussion of the few studies other than wind farm fatality assessments that provide any detail about causes of mortality.

## **5.3 CUMULATIVE IMPACTS**

- a. Updated Table 5.9 and 5.10.

### **6.4.2.3 Tier 1 Mitigation Plan**

- a. Added more detail about nēnē mitigation, updated Appendix 31 (SOW for nēnē mitigation) and the calculation for how many nēnē fledglings would have to be created to mitigate for Tier 1 adult take requested (based on accepted survival rates).

### **6.4.3 Mitigation for Tier 2 Rates of Take**

- a. Added detail about nēnē mitigation and the calculation for how many nēnē fledglings would have to be created to mitigate for Tier 2 adult take requested (based on accepted survival rates).

### **6.4.4 Proposed Tier 3 Mitigation for Additional Take of Nēnē**

- a. Added detail about nēnē mitigation and the calculation for how many nēnē fledglings would have to be created to mitigate for Tier 3 adult take requested (based on accepted survival rates).

### **6.4.6 Measures of Success**

- a. Added more specific nēnē mitigation success metrics

### **6.5.3 Tier 3 and Tier 4 Mitigation for Additional Take of Hawaiian Hoary Bat**

- a. Updated Tier take levels and subsequent research mitigation costs (for Tier 3). Added detail for each option.
- b. Added explanation that only research as mitigation has a fixed cost and all other mitigation cost depends on costs of projects undertaken and effort to achieve success.

#### **6.5.3.2.2 Protect or Enhance Native Bat Habitat**

- a. Removed “fire-fuel management” as a stand-alone mitigation option.

#### **6.5.3.3 Proposed Mitigation**

- a. Updated take estimates and next tier mitigation trigger take estimate values.

##### **6.5.3.3.1 Tier 3 Mitigation**

- a. Added explanation that research as mitigation is underway even though the HCP amendment has not been approved and permits issued but has been documented as appropriate by both state and federal wildlife agencies and the ESRC.

#### **6.5.3.3.2 Tier 4 Mitigation**

- a. Removed “fire-fuel management” as a stand-alone mitigation option. Added detail to provisions for land acquisition as mitigation and an in-lieu fee program option.

#### **6.5.4.1 Tier 3 Mitigation:**

- a. Added more specific detail for bat mitigation success measures for Tier 3, updated fund contribution by KWP II to the research contract and added the contribution expected by KWP I and Kahuku Wind Power.
- b. Added specific parts of research contract delegated to each wind site involved. Added new section for specific Adaptive Management responses.

#### **6.5.4.2 Tier 4 Mitigation:**

- a. Removed “fire-fuel management” as a stand-alone mitigation option. Added detail to provisions for land acquisition as mitigation and an in-lieu fee program option.

#### **6.5.4.3 Adaptive Management for Higher than Projected Take**

- a. Added new section 6.5.4.3 to detail specific adaptive management triggers and additional minimization expected if triggers are met.

#### **7.2.1 Monitoring**

- a. Removed: *“For example, systematic searches of 50% reduced effort could subsequently be conducted at five-year intervals and a further reduced but regular sampling method conducted during the interim years.” and “Third party quality control of data analysis and the proctoring of SEEF trials will cost \$30,000/yr during intensive monitoring years.”*

#### **7.3 Summary of Adaptive Management Program**

- a. Added brief update to Tier 1, 2 and 3 bat and nēnē mitigation progress.

#### **7.4 Funding**

- a. Updated funding expectations and Table 7.1.