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STATE CLEARINGHOUSE

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Subject: Draft Environmental Impact Report for the Humboldt Wind Energy Project (State Clearinghouse No. 2018072076)

Dear Ms. Burks:

On April 15, 2019, The California Department of Fish and Wildlife (CDFW) received a Draft Environmental Impact Report (DEIR) from the Humboldt County Planning and Building Department (Lead Agency) for the Humboldt Wind Energy Project (Project) pursuant to the California Environmental Quality Act and Guidelines (CEQA) (Pub. Resources Code § 21000 et seq. and Cal. Code Regs., tit. 14 § 15000 et seq.). CDFW provided comments on the Notice of Preparation (NOP) for the Project on August 30, 2018. CDFW understands that the Lead Agency will accept comments on the DEIR through June 14, 2019.

The Department recognizes producing electricity from renewable resources such as wind provides multiple and significant benefits to California's environment and economy including: improving local air quality and reducing global warming pollution, diversifying energy supply, improving energy security, enhancing economic development, and creating jobs. To achieve these goals while maintaining California's diverse natural resources and meeting the Department's mission, we have consulted regularly with the Project team during project development, and provide these comments and recommendations in order to address potential natural resource impacts.

CDFW TRUSTEE AND RESPONSIBLE AGENCY ROLE

CDFW is the Trustee Agency for the State's fish and wildlife resources and holds those resources in trust by statute for all the people of the State, pursuant to Fish and Game Code sections 711.7(a) and 1802 and CEQA sections 15386(a) and 21070. As such, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and their habitat.

CDFW is also a Responsible Agency pursuant to CEQA. As such, CDFW administers the California Endangered Species Act (CESA) (Fish & G. Code § 2050 et seq.), the Lake or Streambed Alteration (LSA) program (Fish & G. Code § 1600 et seq.) and other provisions of Fish and Game Code that conserve the State's fish and wildlife public trust

resources. CDFW offers the following comments and recommendations on this Project in our role as a Trustee and Responsible Agency pursuant to CEQA.

PROJECT DESCRIPTION

The Project consists of construction and operation of a wind energy facility with a nameplate capacity of up to 155 megawatts (MW). The Project site consists of an approximately 2,000-acre study corridor where various Project components would be constructed. Within that corridor, the Project would have approximately 900 acres of temporary or permanent impacts. The initial Project term is 30 years, and additional operation, expansion, or decommissioning at the end of the 30-year Project duration would require subsequent environmental review and permitting.

The Project is in the Monument Ridge/Bear River Ridge area, south of the town of Scotia, Humboldt County, CA. According to the DEIR's Project Description, Project components include:

- Up to 60 turbines, each up to 600 feet in height and capable of generating 2–5 MW of electricity, erected on tubular steel towers set on concrete foundations, with associated turbine pads, temporary staging areas, and transformers.
- Up to 17 miles of new access roads with potential maximum widths of 224 feet, consisting of the following:
 - Turbine string roads: 24-foot-wide gravel surface with 1-foot shoulder on both sides plus up to 12-feet on either side where required for stormwater management. Roads may be constructed with temporary widths of up to 50 feet for crane access, and 200 feet for grading and matching slopes.
 - Project access roads: 24-foot-wide gravel surface with 200-foot width for grading and matching slopes, for a total potential width of 224 feet.
- Temporary improvements to public roads at two locations along U.S. 101 to facilitate the delivery of turbines from the Fields Landing Drive delivery site to the staging yard at Jordan Creek.
- 80-foot wide corridor for a 25-mile long 115 kilovolt (kV) primarily overhead transmission line (gen-tie line) including an underground crossing of the Eel River, following Shively Ridge and eventually connecting to the existing Pacific Gas and Electric transmission system at the Bridgeville Substation.
- Project substation located on-site.
- Underground electrical collection system linking turbines to each other and to the Project substation.
- Underground communication system (fiber optic cable) adjacent to the collection system.
- Supervisory Control and Data Acquisition system between each turbine and the substation and between the Project substation and the Bridgeville Substation to monitor and control Project output and the transmission of energy into the system.

- 5-acre operations and management (O&M) facility, including an operations building, water and septic systems, a parking area, and an outdoor storage area with perimeter fencing.
- 10-acre temporary staging area and a construction trailer and parking area at the O&M facility.
- Component offloading site at Fields Landing.
- Two temporary bypasses off U.S. 101 (Hookton Overpass and 12th Street Bypass) for transporting oversize loads.
- Up to six temporary and six permanent meteorological towers.
- Three 5-acre, temporary staging areas distributed throughout the Project site, one of which would include one temporary cement batch plant on Monument Ridge.

The Project footprint consists of 92 parcels, beginning west of State Highway 101, south of Rio Dell and Scotia, and terminating east of State Highway 101 in Bridgeville. The majority of the Project is proposed to be located on parcels owned by the Humboldt Redwood Company (HRC) and Russ Ranch and Timber, LLC., with the gen-tie transmission line crossing other privately-held parcels. The turbines and related components would enter Humboldt County by barge via Humboldt Bay with anticipated port of entry at Fields Landing.

According to the DEIR, the Project proposes to begin construction in fall 2019, to ensure the Project is operational no later than December 30, 2020, and to achieve the maximum federal tax credit. Construction is projected to last 12-18 months.

CONSULTATION HISTORY

CDFW has consulted regularly with the Project team since late 2017, and CDFW staff have attended numerous meetings and site visits with Project proponents, the Lead Agency, and other regulatory agency staff. CDFW provided informal comments on various work plans, and formal comments on the Notice of Preparation (CDFW 2018). Here we provide additional comments specific to the DEIR and Project as currently proposed.

CDFW PRIMARY CONCERNS

CDFW's primary concerns regarding the DEIR and proposed Project are as follows:

- The DEIR was circulated prior to collection, study results, and analysis of Project-specific data vital for the DEIR's impact analyses primarily related to wind turbine facilities and operation impacts to State-and Federally-listed species, fully protected species and raptors, and sensitive birds and bats that may be impacted during certain phases of the Project implementation.
 - Specifically, CDFW recommends completing a second year of marbled murrelet (murrelet) (*Brachyramphus marmoratus*) radar surveys, adjusting

murrelet take estimates informed by this data and site-specific environmental factors, completing two years of protocol-level northern spotted owl (*Strix occidentalis caurina*) surveys, and completing site-specific analyses for birds and bats based on a minimum of two-years of data.

- A second year of survey data for murrelet, bats, and birds in relation to wind turbine facilities will facilitate the Lead Agency's and CDFW's assessment of the Project impacts. Northern spotted owl protocol surveys will be needed throughout the Project. As discussed within this letter and our NOP comments, reliance on one year of survey data and comparisons to similar and dissimilar projects rather than comprehensive site-specific data and analyses, impacts CDFW's ability to determine the Project fully mitigates for take of listed species and has lessened impacts to a level of less than significant.
- The CDFW provides recommendations on feasible alternatives within this letter related to listed species, birds, and bats that were previously recommended by CDFW, but were not considered in the DEIR.
- Wind turbine siting and operation is likely to result in considerable take over the 30 year Project period via collisions with turbines for numerous special status species that are State-and Federally-listed, Fully Protected (FP), locally rare, and State Species of Special Concern (SSC). Based on Project-provided information and estimates, the potential take includes:
 - For State Endangered/Federally Threatened murrelets, the number may exceed the 20.86 murrelets that the DEIR estimates will be killed over the 30-year duration of the Project;
 - Bat fatalities could exceed the Project's estimated maximum of 21,600 bats killed over the 30-year duration of the Project, due to documented "swarming" behavior by hoary bats (*Lasiurus cinereus*) near turbines;
 - Loss and possible extirpation of a disjunct population of horned larks (*Eremophila alpestris*) that breed on the turbine siting and gen-tie portions of the Project;
 - Loss of over 3,400 raptors over the 30-year Project duration (based on Project-provided estimates) including State FP raptors such as golden eagles (*Aquila chrysaetos*); bald eagles (*Haliaeetus leucocephalus*), white-tailed kites (*Elanus leucurus*), and peregrine falcons (*Falco peregrinus anatum*) as a result of collisions with turbines and power lines;
 - Passerine bird loss related to turbine collisions could exceed by 300 percent or more the Project's estimate of up to 9,000 over the 30-year duration of the Project.
- Surveys and mitigation for potentially significant impacts to Sensitive Natural Communities (SNCs) and rare plants are not adequate or are deferred.
- Information or mitigation for potentially significant impacts related to removal, degradation, and fragmentation of habitat for special status species are not adequate or are deferred.

- The CDFW relies upon the a certified CEQA process, in this case the EIR, as the underlying environmental review and documentation for permitting under the CESA. Permits issued under the CESA are a discretionary action and the requirement for CEQA review. When a project EIR is sufficient to cover that review, we can rely upon it for issuing CESA permits. In the case of this Project, we are concerned the CEQA review is insufficient to support permit issuance and that additional CEQA review would be required if the applicant were to seek an Incidental Take Permit under CESA. Given the documented impacts to listed species identified in the DEIR, we believe an Incidental Take Permit would be necessary.

COMMENTS AND RECOMMENDATIONS

Project Siting

The California Energy Commission (CEC) and CDFW developed the California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (Guidelines) to address coexisting and sometimes conflicting objectives: to encourage the development of wind energy in the state while minimizing and mitigating harm to birds and bats. As stated in the Guidelines, wind energy developers and Lead Agencies who use the methods described in the Guidelines will secure information on impact assessment and mitigation that would apply to CEQA and to the other wildlife protection laws and will demonstrate a good faith effort to develop and operate their projects in a fashion consistent with the intent of local, state, and federal laws. The DEIR includes Project siting and operational features that maximize the Project's objectives; however, the DEIR does not include or analyze in any detail potentially feasible siting, operational alternatives, and mitigation that would avoid or substantially lessen the Project's significant environmental impacts. CDFW continues to recommend that the DEIR include a more robust range of siting and operational alternatives, as discussed in its comments in response to the NOP, provided on August 30, 2018.

The Guidelines contain preliminary site screening questions. CDFW previously commented that the siting impacts meet screening criteria for either the CDFW/CEC Guidelines' Category 3 – Project Sites with High or Uncertain Potential for Wildlife Impacts, or Category 4 – Project Sites Inappropriate for Wind Development.

The CDFW/CEC Guidelines state: "*Sites for which existing data indicate unacceptable risk of bird or bat fatalities might also be appropriately classified as Category 4, particularly if no feasible avoidance or mitigation measures are available to reduce impacts.*"

Based on our review of the Project's scope, the substantial ecological data on the Project site, and the site screening criteria in the Guidelines, CDFW concluded that all or portions of the Project site fall into Category 4, "*Project Sites Inappropriate for Wind Development.*"

As stated in the Guidelines, *“if such a [Category 4] project moves forward despite indications that high levels of bird or bat fatalities might occur, operations avoidance and minimization options to reduce the impacts are limited, and the project may require costly, ongoing reassessment of impacts and adjustment of mitigation.”*

The DEIR should include robust wind turbine and powerline siting alternatives analysis, propose adequate avoidance and mitigation, monitoring, and provide for ongoing assessment and a suite of adaptive management strategies that would avoid or substantially lessen the Project's significant impacts to birds and bats.

Marbled Murrelet

Wind Turbine Collision Risk Model and Take Estimate

Radar data collected during pre-Project surveys indicate that take, defined by Fish and Game Code section 86 as to *“hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill,”* of murrelet is likely due to collisions with Project turbines as birds travel through the Project area between inland old-growth forest nesting sites and nearshore ocean foraging areas. Because of its unique life-history and old-growth forest nesting habitat requirements, it is extremely difficult to fully mitigate take pursuant to CESA for this State Endangered species.

CDFW is aware Project approaches for modeling collision risk are still undergoing revisions. A collision risk model is necessary to create an estimate of the number of murrelets that could be killed or injured by collision with turbines and other Project components. Currently, the Project has two collision risk reports. The first is included in the DEIR as Appendix O (*Biological Resources: Marbled Murrelet Collision Risk Assessment Associated with the Humboldt Wind Project Proposed for Humboldt County, California, November 2018*). However, this document has been replaced by a new Collision Risk Assessment Report that was provided to CDFW and United States Fish and Wildlife Service (USFWS) on April 15, 2019 and was not included in the DEIR.

CDFW is not yet confident with the model inputs nor with either collision risk modeling approach or the resulting take estimates. Additional model refinement may be needed, and this may result in a significantly higher take estimate than the 20.86 murrelets calculated in the DEIR. The 20.86 murrelet take estimate was developed by doubling the original model output to account for potential interannual variation in murrelet occurrence at the site, in part because the models utilize only one year of radar monitoring data that has been collected thus far (DEIR Appendix O), despite CDFW's recommended two years of murrelet surveys (CDFW 2018). This 20.86 murrelet take estimate is substantially different from the take estimate in the *“Biological Resources: Humboldt Wind Energy Project Bird and Bat Conservation Strategy”* (DEIR Appendix S), which states, *“...the anticipated level of take is set conservatively at 15 marbled murrelets over 30 years of project operation.”*

The factor that most strongly influences the models' collision risk and take estimate is the avoidance probability. The collision risk models assign an avoidance probability of 0.98 (DEIR Appendix O) and 0.997 (April 15 Report, not in DEIR), respectively. These avoidance probabilities assume that murrelets flying through the proposed Project site would avoid colliding with wind turbines 98 percent or 99.7 percent of the time. The model detailed in DEIR Appendix O also included a lower avoidance probability (0.95) for April only *"with the presumption that inbound birds could include naïve first-year birds that may be naïve to turbines or other structures."*

The avoidance probabilities used in the DEIR and April 15 Report models were based on studies primarily conducted at offshore wind facilities. Most of these studies focused on avoidance behaviors of species that have different wing-loading and flight patterns than murrelets. Further, the Project area is unique in that it experiences frequent fog and low cloud ceiling conditions, which increases risk of bird collisions (Aschwanden et al. 2018). United States Geological Survey data shows the Project site where turbines are proposed experiences an average of 9 – 10.5 hours of fog and low cloud ceiling conditions per 24-hour period during summer (Torregrosa et al. 2016). Data summaries from the National Weather Service Forecast Office in Eureka, CA, show that the weather station on Woodley Island recorded fog on an average of 161 days per year between 2013 and 2018 (data summaries available: <https://w2.weather.gov/climate/index.php?wfo=eka>).

This is supported by information in the DEIR (DEIR Appendix L) which states that surveys conducted for the Project encountered *"moderate to heavy fog"* that *"periodically reduced visibility during 20 out of 59 survey-days."* Thus, it is reasonable to assume that collision risk, for murrelets and birds generally, is likely substantially higher at this site than at other wind facilities that do not experience weather conditions frequently resulting in poor visibility. Reliance on data and comparing birds flying over open ocean to birds flying over the complex topography of forested ridgelines with fog and low cloud ceiling is questionable.

The collision risk models used here are highly sensitive to changes in bird avoidance probabilities, thus any change in avoidance probability model inputs substantially affects the resulting take estimate. Setting the avoidance probability lower than 0.98 results in an almost 50 percent increase in the estimated number of murrelets that could collide with a turbine for each 0.01 change in avoidance probability (DEIR Appendix O). For example, the original model used an avoidance probability of 0.98 and determined that 10.43 murrelets would collide with turbines over the 30-year duration of the Project. If an avoidance probability of 0.97 is used, the take estimate would increase to 15.29 birds (DEIR Appendix O). Using this approach, an avoidance probability of 0.90 results in projected take of 222 murrelets over the 30-year project. Given that no information exists on murrelet avoidance of terrestrial wind turbines, the complex weather and topography at the Project site, and given that there have been documented collisions of murrelets with stationary anthropogenic structures such as powerlines (DEIR Biological

Resources Chapter 3.5b page 3.5-77), the avoidance probability of 98 percent or higher is unsupported by adequate data.

The Draft Habitat Conservation Plan (HCP) for the Skookumchuck Wind Energy Project in Lewis County, WA, is the only other wind energy project currently being developed in the range of murrelet, and uses an avoidance probability of 0.75 during operational periods and an avoidance probability of either 0.95 or 0.99 during periods when rotors are not turning either due to wind conditions or curtailment (Chambers Group Inc. 2018). CDFW recommends the DEIR evaluate impacts using more conservative avoidance probabilities and associated take estimates.

To propose measures that will be “*roughly proportional*” to the impacts of the taking (CEQA § 15126.4(a)(4)(B)), and minimize and fully mitigate (Fish & G. Code § 2081(b)(2)), the Project must provide a sound estimate of potential take. Further, CDFW cannot issue an Incidental Take Permit pursuant to Fish and Game Code section 2081 (b) “*if issuance of the permit would jeopardize the continued existence of the species*” (Fish & G. Code § 2081(c)). A sound and supported take estimate is essential for CDFW to determine whether or not the Project may result in jeopardy of the murrelet.

Proposed Mitigation Plan for Marbled Murrelet

The DEIR proposes to develop a mitigation plan that relies on a corvid management approach in Van Duzen County Park where murrelet occupancy has not been determined and relies on a deterministic model to support the assumption that corvid management applied there, similar to other parks, would increase the murrelet population. This proposed mitigation plan lacks specifics, performance standards, and does not contain sufficient detail to reasonably demonstrate proposed measures are capable of successful implementation and enforceable. The DEIR also defers mitigation specifics until a future time, thus precluding meaningful review and analysis required per CEQA.

The DEIR states: “*Implementing [the marbled murrelet mitigation] plan would create as many as 103 marbled murrelets over the life of the project.*” The DEIR (p 3.5-70) states this estimate (103 murrelets) was obtained via a “*deterministic model that was developed to calculate new breeding capable murrelets that could be added to the population if corvid management characteristic of other parks is implemented at Van Duzen County Park.*” However, the specific details of how the estimate was derived are not available for review because neither information on the model, nor the murrelet mitigation plan, are included in the DEIR.

There is no evidence to support that murrelets occupy and breed in Van Duzen County Park. Surveys conducted in 2001 documented sub-canopy flights and circling flights at three survey locations. The 2001 data does not provide adequate detail to conclude whether the Van Duzen County Park stands were occupied, or whether birds were merely in transit within the Van Duzen River corridor to adjacent habitat (McAllister

2019). Surveys in 2018 found “*no evidence of occupancy of any of the [Van Duzen County Park] forest habitats,*” (McAllister 2019), although occupied behavior was detected at nearby Cheatham Grove, on California State Parks Property. Further surveys would be needed to determine whether murrelets breed in Van Duzen County Park in order to formulate a projected increase in murrelet production as a result of corvid management in the Van Duzen County Park.

Although it is a reasonable assumption that corvid reduction could increase murrelet nest success where murrelets are known to breed, CDFW is not aware this effect has been demonstrated or quantified. Given these substantial uncertainties regarding the Van Duzen County Park as a mitigation site, the DEIR should evaluate and propose other feasible mitigation sites and substantially develop the murrelet mitigation plan prior to finalizing the Project’s EIR to allow CDFW to evaluate whether the measures are “*capable of successful implementation*” (Fish & G. Code § 2081(b)(2)). The DEIR also proposes “*adaptive management actions to rectify a shortfall in production of sufficient marbled murrelets to offset take.*” The monitoring necessary to evaluate and ensure the effectiveness of this corvid management producing murrelets should also be evaluated for feasibility. This plan and the associated model that estimates the number of murrelets produced should be included in the DEIR for review.

The DEIR concludes that “*given the uncertainty as to the feasibility and effectiveness of these compensatory mitigation and yet-to-be developed adaptive management measures, operational impacts on marbled murrelet would be significant and unavoidable.*”

Other feasible mitigation measures exist, but have not been incorporated into the Project. For example, murrelets fly inland less frequently during the non-nesting season, and shutting off wind turbines (i.e., curtailment) during all or a portion of the nesting season is a potentially feasible mitigation measure to minimize murrelet collisions with turbines. Additionally, habitat acquisition and preservation in perpetuity via conservation easements or other instruments may be a feasible mitigation measure that should be considered in the DEIR.

CDFW recommends the Project develop a murrelet mitigation plan for the impacts related to turbine construction and operation once there is a CDFW and USFWS accepted collision take estimate. The mitigation plan should propose fully enforceable and feasible mitigations that mitigate for the anticipated take of murrelet as well as a CDFW-accepted monitoring plan to assess its effectiveness.

Analyses Regarding Construction Impacts

Mitigation Measure 3.5-1a states: “*the project applicant shall prepare documentation depicting the location of marbled murrelet nesting habitat overlain with the construction footprint to confirm that construction activities would have no direct impacts on suitable*

marbled murrelet habitat." This analysis should be included in the DEIR. Because the DEIR includes no mapping or location information for murrelet habitat identified near the Project site, it is not possible to evaluate the results of the analysis or the potential Project impacts on murrelet habitat. Mitigation measure 3.5-1b states:

"During the marbled murrelet nesting season (March 24-September 15), the project applicant shall maintain a no-disturbance buffer between the construction activity and marbled murrelet nesting habitat as described below. An exhibit showing the project improvements and marbled murrelet nesting habitat buffers shall be prepared demonstrating compliance with this mitigation measure. In the event the buffers cannot be maintained, an additional marbled murrelet shall be added to the compensatory mitigation required in Mitigation Measure 3.5-2c."

The analysis of construction impacts on murrelet habitat should not be deferred. Without knowing the extent to which the Project may encroach upon murrelet nesting habitat and where, there is no way to ascertain whether compensating for *"an additional marbled murrelet"* is sufficient to fully mitigate potential take that could result from nest failure due to construction disturbance. CDFW recommends the DEIR quantify and disclose the extent to which the Project will encroach upon murrelet nesting habitat and propose appropriate mitigation for potentially significant impacts.

Northern Spotted Owl (NSO)

Information on NSO Activity Centers

The DEIR states:

"Based on available survey data from 2014–2018, one northern spotted owl activity center documented in 2018 occurs inside the 250-meter buffer area within the project area in the vicinity of the Jordan Creek access road. No additional activity centers are located within the 400-meter buffer of the project area."

According to 2018 HRC Annual Report data, there are at least six NSO activity centers within 400 meters of the Project area, although only one active nest was in this area in 2018. An additional 46 activity centers are within 1.3 miles of the Project area. As noted below, this Annual Report activity center data is not based on current systematic protocol level surveys to determine occupancy and reproduction status of NSO for the Project area and Project-related activities; therefore, the data likely underestimates the number and status of activity centers within the Project area. Additional information about NSO sites in relation to the Project footprint is provided in **Figure 1**.

It appears protocol level pre-construction surveys have not yet been conducted for the Project. Unless the Project proponent can demonstrate that recent surveys and activity center survey visits provide comprehensive coverage of the Project area plus 0.5-mile,

additional surveys should be conducted. This would provide an accurate analysis of the potential impacts from Project activities to NSO. These surveys should follow the most current USFWS Survey Protocol for any noise disturbing or habitat altering activities. The protocol calls for six visits in one year prior to operations. Projects that may result in habitat alteration require at least two years of concurrent surveys.

Impacts to Habitat

The DEIR Impact 3.5-7 (*“Removal, Fragmentation, and Modification of Northern Spotted Owl Habitat during Construction”*) and Table 3.5-11 (*“Temporary and Permanent Impacts of the Proposed Project on Northern Spotted Owl Habitat”*) state that the Project will result in 89.7 acres of permanent impacts to NSO habitat. However, Page 3.5-100 states the Project will result in loss of 196.7 acres of NSO habitat *“through timber harvesting on HRC lands”* related to clearing land for the turbine pads, gen-tie, and road construction. It is unclear if this larger acreage is in addition to, or inclusive of the 89.7 acres. The DEIR appears to assume that because HRC will be conducting the timber removal for Project activities, that the permanent and significant impacts associated with this additional NSO habitat loss do not need to be mitigated by the Project. This would be improper pursuant to CEQA’s definition of a Project (CEQA § 15378) as *“the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.”*

Mitigation measure 3.5-7 also states that the Project will develop a map of NSO habitat on the Project site, and, upon completion of construction, will provide an accounting of NSO foraging, nesting, and roosting habitat temporarily and permanently affected by construction. This analysis should be refined to include Project-related temporary and permanent NSO habitat impacts, and propose mitigation for NSO habitat.

Habitat Retention and Proposed Mitigation

Measure 3.5-7 states that the Project will *“provide documentation to the Humboldt County Planning & Building Department, CDFW, and USFWS confirming that functional habitat thresholds have been met for all spotted owl activity sites occurring within 0.7 mile of the Project area upon completion of construction.”* CDFW has two comments regarding this approach:

1. The habitat thresholds listed in this section are from HRC’s *Habitat Conservation Plan for the Properties of the Pacific Lumber Company, Scotia Pacific Holding Company, and Salmon Creek Corporation*, (HCP) established in 1999 and revised in August 2015. These thresholds were negotiated for HCP Covered Activities not Project construction and operation of a wind energy facility and associated infrastructure, permanent forest conversion, or installation of transmission lines clearing for construction and permanent infrastructure. The

Project and related activities are not HCP Covered Activities, so the more current and restrictive conservation measures should apply.

2. An after-the-fact accounting of impacts is inappropriate. The DEIR should include the habitat retention thresholds recommended in Attachment A (USFWS 2011) and identify, based on the proposed Project footprint, whether these habitat thresholds can be met.

Additionally, the Project proposes to mitigate permanent impacts on NSO habitat by *"permanently preserving a minimum 3:1 ratio through purchase of conservation easements or acquisition of suitable northern spotted owl habitat,"* within two years of delivery of first power from the Project. However, the DEIR defers quantifying the impacts it proposes to mitigate until after they have occurred, thus the DEIR does not state how much land the Project proposes to acquire or place under conservation easement for mitigation purposes, nor does it specify a location other than *"in Humboldt County."* If the Project is not able to meet habitat thresholds required by Attachment A (USFWS 2011), the amount of habitat required to mitigate the habitat loss at a 3:1 ratio could be substantial and may be difficult to obtain.

In order to fully mitigate and be a feasible and effective CESA mitigation measure, a conservation easement must be held by an entity approved by CDFW to hold mitigation lands. CDFW should be identified as a third-party beneficiary, and an adequate endowment should be established to monitor and manage the conserved lands. The DEIR includes no details on who would hold the conservation easement or monitor and manage the land to ensure maintenance of its intended mitigation objectives, or details on funding of an endowment. Because the impact analysis has not yet been completed and the proposal lacks essential details, CDFW cannot determine whether the proposal is feasible or would adequately mitigate for significant impacts to NSO.

Mitigation measure 3.5-7 also states, *"the project applicant may implement a barred owl management program in the project vicinity on privately held land occupied by northern spotted owl (owned by either HRC or another entity), and implement this program on the off-site conservation lands described above."* Barred owl management could be a feasible mitigation for impacts to NSO. However, as currently proposed, the measure does not include enforceable language ("may" vs "shall"), nor provide any information about where barred owl management may take place, by whom, on what scale, and when. Even so, the DEIR determines that impacts to NSO would be less than significant, in part because of implementation of a barred owl management program (p.3.5-102).

Based on the limited and incomplete NSO impact analysis, and the lack of detailed and enforceable mitigation measures, the determination of less than significant for NSO is conclusory. Furthermore, based on the impacts to NSO habitat described in the DEIR, the impacts would remain significant, given the substantial uncertainties regarding the effectiveness and enforceability of the DEIR's proposed mitigations.

CDFW recommends the DEIR include an accurate estimate of temporary and permanent impacts to all NSO habitat removed or altered as part of the Project. Once these impacts have been quantified, the DEIR should include NSO mitigations with performance measures, enforceable terms, and sufficient detail to allow meaningful public review of the feasibility and effectiveness of the mitigation.

The Project proposes to use the ESA Section 7 consultation nexus to obtain take coverage for Federally listed species, and to obtain a State Incidental Take Permit pursuant to CESA. However, the DEIR states the Project intends to remain consistent with the HRC HCP. DEIR mitigation measure 3.5-7 states *"the project applicant shall comply with northern spotted owl management objectives, conservation measures, and adaptive management measures required in the HCP EIS/EIR (and incorporated into the HCP) (PALCO 1998)." As stated above, these objectives and conservation measures were applicable to the HRC HCP Covered Activities, not the Project activities.*

Turbines and electrical lines located within an NSO's home range may increase the likelihood of collision fatalities and predation due to habitat fragmentation. Dispersing juvenile birds may be particularly vulnerable. The DEIR states that:

"Clearing of northern spotted owl habitat for the 80-foot-wide gen-tie corridor would also fragment northern spotted owl habitat. The effect of this fragmentation would be potential increases in predator presence, and increased exposure to wind and sunlight that could alter the microclimate of what was formerly part of the stand interior."

However, the DEIR does not evaluate this impact further nor propose mitigation. Feasible mitigation could include measures such as placing lines underground and revegetating disturbed areas, or a more substantive discussion of all the owl activity centers on site and how they could be avoided to the greatest extent feasible. Also, the DEIR does not evaluate the potential for NSO to collide with the gen-tie line.

The DEIR does not adequately identify and mitigate for impacts to NSO as a result of the Project activities. CDFW recommends the DEIR describe how the Project activities will not conflict with the HRC HCP. CDFW requests the opportunity to review this effects analysis prior to the final EIR.

Important Bird Areas (IBAs) and Sensitive Bird Species

The Project is located approximately five miles south of the Humboldt Bay IBA and 28 of the 60 proposed wind turbines (primarily those on Bear River Ridge) are sited within the Cape Mendocino Grasslands IBA. The proposed Project configuration does not follow typical best practices for wind turbine siting. As stated in our August 30, 2018 letter, CDFW recommends adopting an alternative that avoids locating turbines in an IBA. The Project's "Environmentally Superior Alternative" ("Alternative 5, Reduced Turbine Footprint – Bear River Ridge") eliminates most but not all turbines in the IBA, as five of the westernmost Monument Ridge Turbines appear to be sited within the IBA.

Humboldt Bay is California's second largest estuary, and provides vital fish and wildlife habitat, as well as stopover habitat for migratory birds on the Pacific Flyway. In particular, the Pacific Flyway population of black brant (*Branta bernicla*) is dependent upon the eelgrass (*Zostera marina*) in Humboldt Bay, the largest source of eelgrass between black brant wintering areas in Baja California and Willapa Bay in Washington. Humboldt Bay is also part of the Western Hemisphere Shorebird Reserve Network and supports over 500,000 shorebirds of 26 species during spring migration (Colwell and Feucht 2018).

According to the National Audubon Society (2019), the Cape Mendocino Grassland IBA encompasses one of the largest expanses of grassland in northwestern California. The State Endangered (SE), Threatened (ST), or Candidate (CT/E) Species; FP Species, SSC, and State Watch List (WL) species documented along or near Bear River Ridge within the Cape Mendocino Grasslands IBA include:

- Bald eagle (*Haliaeetus leucocephalus*) (SE/FP)
- Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) (SSC)
- Burrowing owl (*Athene cunicularia*) (SSC)
- California horned lark (*Eremophila alpestris actia*) (WL)
- Cooper's hawk (*Accipiter cooperii*) (WL)
- Ferruginous hawk (*Buteo regalis*) (WL)
- Golden eagle (*Aquila chrysaetos*) (FP)
- Grasshopper sparrow (*Ammodramus savannarum*) (SSC)
- Long-eared owl (*Asio otus*) (SSC)
- Northern goshawk (*Accipiter gentilis*) (SSC)
- Northern harrier (*Circus cyaneus*) (SSC)
- Olive-sided flycatcher (*Contopus cooperi*) (SSC)
- Peregrine falcon (*Falco peregrinus anatum*) (FP)
- Prairie falcon (*Falco mexicanus*) (WL)
- Purple martin (*Progne subis*) (SSC)
- Sharp-shinned hawk (*Accipiter striatus*) (WL)
- Short-eared owl (*Asio flammeus*) (SSC)
- Vaux's swift (*Chaetura vauxi*) (SSC)
- White-tailed kite (*Elanus leucurus*) (FP)

- Willow flycatcher (*Empidonax traillii*) (SE)
- Yellow-breasted chat (*Icteria virens*) (SSC)
- Yellow warbler (*Setophaga petechia*) (SSC)

Horned Lark

The Project site supports a small yet persistent breeding population of horned lark (*Eremophila alpestris* ssp). The taxonomy of this subspecies is uncertain. The birds occurring onsite are either California horned lark (*Eremophila alpestris actia*), streaked horned lark (*Eremophila alpestris strigata*), or another subspecies. The streaked horned lark is a Federally Threatened subspecies. The California horned lark is a WL species, a list consisting of taxa that were previously designated as SSC but no longer merit that status, or do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify their status. It is unclear as to whether the horned larks on the Project site are of the California horned lark subspecies, or the Federally threatened streaked horned lark subspecies, and the DEIR does not fully address this taxonomic uncertainty. Regardless, CDFW has determined that impacts to this small, disjunct population are potentially significant, and that the DEIR does not adequately mitigate these impacts to a level of less than significant. Additionally, pursuant to Fish and Game Code section 3513 it is unlawful to take any migratory bird as designated by the federal Migratory Bird Treaty Act. To comply with this code section, the project should be modified to incorporate feasible avoidance measures.

Horned lark specimens collected at Bear River Ridge in 1929 were originally identified as streaked horned lark by Joseph Grinnell (Grinnell 1931) and were subsequently re-identified as California horned lark in the 1940s. The birds are currently assumed to be of the California horned lark subspecies, but experts have raised questions regarding this determination, and the current status is unclear. During pre-permitting surveys related to a prior proposed wind development in this location, McAllister and Fix (2008) wrote:

"Photographs and song recordings of breeding male Horned Larks obtained during our study at Bear River Ridge were sent to a Horned Lark researcher at Oregon State University. Plumage characteristics from the photographs left the researcher less than convinced that the birds were actia, and preliminary results of the song analysis revealed that the sonograms, though not identical to those of Willamette Valley, Oregon strigata, were close enough to warrant further investigation."

McAllister and Fix go on to state:

"Regardless of the taxonomy, the Bear River Ridge population of Horned Larks appears to be part of a disjunctive or peripheral, if not entirely isolated population. They are present year-round in very low densities at Bear River Ridge. The species

has also been observed, at least on one occasion, immediately south on Cape Ridge (Hunter et al. 2005). The species is not known to breed anywhere else in northwestern California."

Horned larks are identified in the 2016 Partners in Flight Landbird Conservation Plan (Rosenberg et al. 2016) as "*Common Birds in Steep Decline*," a designation for species that have lost more than 50 percent of their populations over the past 40 years. Further, based on post-project monitoring at other sites, horned larks were "*by far the most commonly observed fatality*" at wind farms in Wyoming and Colorado (Erickson et al. 2002), and comprised 21.9 percent of small passerine fatalities in a meta-analysis of 116 studies at more than 70 wind energy facilities (Erickson et al. 2014). The DEIR found that horned larks comprised 16 percent of carcasses discovered during fatality searches at 16 regional wind projects (DEIR Appendix J). The horned lark breeding population at the site consisted of approximately 50 birds in 1929 (Grinnell 1931) and according to the DEIR, has consisted of approximately 14 birds since 2008. The Bird Use Count for the project had 137 detections of horned larks during 506 surveys over one year, with most detections occurring in summer and fall (DEIR Appendix J). If turbines are constructed within and adjacent to horned lark breeding sites as currently proposed, it is highly likely that this breeding population will be significantly impacted and possibly extirpated.

CEQA section 15125(c) states:

"Special emphasis should be placed on environmental resources that are rare or unique to that region and would be affected by the project. The EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects of the project to be considered in the full environmental context."

The DEIR's proposed mitigation measures for horned larks would likely be ineffective. For example, measure 3.5-12 recommends a "*150-foot buffer*" between wind turbines and horned lark sites. This buffer would not provide sufficient distance to protect horned larks from collisions with turbines during breeding display flights. Further, horned lark sites may change from year to year, so a buffer in one year may not be adequately protective in subsequent years.

Mitigation measure 3.5-12 also states that the Project will "*provide compensatory mitigation for permanent impacts on grassland habitat at a no-net-loss ratio for grassland and scrub/shrub habitat.*" However, the measure does not indicate how or where this will be achieved. It is unclear whether similar habitats are available for conservation or could be created nearby. Off-site grassland mitigation, if feasible, would be unlikely to be used by the horned lark population currently occupying the site. The DEIR states "*Impacts on horned lark nesting habitat would be avoided or mitigated with implementation of the horned lark mitigation plan described below (Mitigation Measure 3.5-14).*" However, Mitigation Measure 3.5-14 does not describe the mitigation plan, it

merely indicates (under "Timing") that submittal of this plan will occur before issuance of grading permits.

Because the DEIR does not include detailed information or performance standards on the mitigation plan, CDFW cannot determine whether the mitigations are feasible or are likely to be effective. There is considerable evidence that, as proposed, the Project would result in unmitigated significant impacts to this disjunct horned lark population, regardless of taxonomy. To minimize impacts to horned larks to a less than significant level, CDFW recommends turbines be sited outside of the Cape Mendocino Grassland IBA or feasible and effective mitigation measures be included in the DEIR.

Migratory Birds (Non-listed and Not Fully Protected)

Passerine Bird Annual Operational Fatality Estimate

The DEIR estimates the Project operations will annually kill between 150 and 300 non-raptor birds (i.e., passerines or songbirds), which amounts to 4,500 to 9,000 birds over the 30-year project life. The DEIR developed this estimate by compiling results of bird fatality monitoring at 21 wind energy facilities in California, Oregon, and Washington (DEIR Appendix J). Determining reasonably accurate bird and bat mortality rates from wind facility operations is extremely complicated. This is due to inconsistencies in fatality monitoring study design and implementation and addressing three primary sources of sampling error or bias: 1) imperfect searcher efficiency, 2) carcasses removed by scavengers or other forces prior to searcher discovery, and 3) the fact that some carcasses land outside the carcass search area (H.T. Harvey 2018). Not addressing these three types of sampling error or bias can result in a substantially underestimated fatality rate.

From the data presented in the DEIR (Appendix J), it appears some or all of the compiled fatality rates from the wind energy facilities used for comparison are based only on raw data of carcass detections and are "*unadjusted for searcher or carcass persistence biases*." The DEIR Appendix J includes no discussion or details on how, if at all, the referenced fatality studies addressed the well-documented study bias issue of searcher efficiency and carcass persistence. Without a rigorous statistical analysis to quantify and address sampling biases, CDFW has substantial concerns that the averaged turbine mortality rate of three to six annual bird mortalities per wind turbine is significantly underestimated.

The first-year results of a statistically robust bird and bat fatality monitoring study for the 85.92 MW Golden Hills Wind Energy Center (Golden Hills) in Alameda County, were released in February 2018 (H.T. Harvey 2018). This study incorporated 1) comprehensive bat and bird carcass surveys, 2) randomized 7-day and 28-day interval searches, 3) compared both human and scent detection dog survey effectiveness, and 4) extensive integrated searcher efficiency and carcass persistence bias trials for deriving annual fatality estimates.

This study, which was not one of the wind projects used in this Project's DEIR mortality estimate, derived an adjusted annual fatality estimate (using a 7-day search interval) of 11.88 "*small birds*" per turbine, with a 95 percent confidence interval of 7.85 – 18.14 small birds per turbine. Using this fatality rate as a general comparison for this project would result in an annual operational mortality of 712.8 birds (95 percent confidence interval of 471 – 1130.4), or 21,384 birds (95 percent confidence interval 14,130 – 33,912) killed over the 30-year life of the project, which is significantly higher than the DEIR's estimated operational bird mortality rate.

Furthermore, the majority of the wind facilities used to derive the DEIR's bird fatality estimate were in grasslands, shrub-steppe, or agricultural landscapes. Only one site analyzed (the Hatchet Ridge facility in Shasta County, CA) is in forested ridgeline habitat. The location of the Hatchet Ridge facility is dissimilar to northern coastal California, which experiences frequent periods of fog and low cloud cover, resulting in many days per year of poor visibility. Comparing fatality data collected at facilities in different habitats with different climates using different survey methods is likely of limited utility in predicting the magnitude of passerine bird fatalities at this site. When estimating bird collisions, the DEIR also does not account for the well-documented prevalence of fog and low cloud cover at the Project site, which reduces visibility and thus increases bird collision risk.

The DEIR cites several studies indicating that passerines detect and avoid turbines, even when migrating at night. However, one of these studies specifically states, "*ceiling height (including fog) was consistently high (>501 meters) and therefore likely did not exert any appreciable influence on flight altitudes*" (Johnston et al. 2013). This study also states:

"The need to understand how nocturnal migrants respond to fog and low ceiling height conditions is warranted. The largest single-night kill for nocturnal avian migrants at a wind facility in the United States occurred on a foggy night during spring migration, when 27 passerines fatally collided with a turbine near a lit substation at the Mountaineer Wind Energy Center in West Virginia (Kerlinger 2003)."

Another study cited in the DEIR did not find a clear relationship between peak bird movements and collisions, suggesting that other factors, such as reduced visibility, may be more important in determining collision risk (Aschwanden et al. 2018). This study did not measure visibility, but conducted a post-hoc analysis of camera trap data and found limited visibility (mist, fog, or drizzling rain) during the time period preceding carcass discoveries in two-thirds of cases (Aschwanden et al. 2018). Other studies (Johnson et al. 2002; Marques et al. 2014) have also linked limited visibility with avian collision risk at wind facilities.

There is ample evidence showing that limited visibility influences avian collisions with anthropogenic structures. The CDFW/CEC Wind Guidelines specifically ask project

proponents to consider this in their siting guidance with the question: *"Is the site regularly characterized by seasonal weather conditions such as dense fog or low cloud cover that might increase collision risks to birds and bats, and do these events occur at times when birds might be concentrated?"*

As detailed in the *"Marbled Murrelet Collision Risk Model and Take Estimate"* section above, fog and low cloud cover frequently occur on the Project site, and passerine collision risk is likely substantially higher at this site than at other wind facilities that do not experience weather conditions frequently resulting in poor visibility. There are no wind energy facilities operating within the northern coastal California *"fog belt,"* thus comparisons with other wind facilities are likely of limited utility in predicting collision risk at this site. This factor was not addressed in the DEIR.

There are compelling reasons to determine the Project's estimated annual 150 to 300 non-raptor bird fatalities is substantially underestimated. The Project's actual annual non-raptor fatality rate could be significantly higher than the DEIR estimates, and that a more realistic fatality rate may be over 700 non-raptor birds annually, or over 21,000 passerine birds during the life of the Project.

Passerine Bird Mitigations

The DEIR states the Project proponent shall mitigate for potentially significant impacts to non-raptor birds by minimizing the construction footprint, conducting post-construction mortality monitoring, including calculating detection probability, and reporting take. Additionally, there is a reference to compensatory mitigation *"within 1 year of each documented instance of take thereafter"* (pg. 3.5-128) but the DEIR does not provide details or performance standards.

The DEIR includes no information on how the Project has minimized its construction footprint to mitigate for operational bird fatalities. Without a map and any analysis or details to compare the Projects' non-minimized and mitigated footprint with the current proposed mitigated Project footprint, the DEIR does not present evidence this mitigation exists, and does not provide a means to assess this mitigation's effectiveness in reducing operational bird mortality.

DEIR Mitigation Measure 3.5-14 states:

"After collection of 3 years of postconstruction monitoring data, the Humboldt County Planning & Building Department will review the data and, in consultation with USFWS and CDFW, will determine which, if any, specific WTGs [wind turbine generators] generate disproportionately high levels of avian mortalities (based on evidence of statistically significant higher levels of mortality relative to other WTGs). If specific WTGs are found to result in disproportionately high avian mortalities, the project applicant shall consult with the County to evaluate any

feasible measures that can be implemented at the discretion of the County to reduce or avoid mortalities at those specific WTGs."

Conducting postconstruction monitoring, calculating detection probability of avian fatalities, and reporting take, as proposed in the DEIR, does not mitigate potentially significant impacts on passerine birds. They merely monitor and report the impacts. The DEIR does not describe any specific compensatory mitigations to minimize and mitigate for the estimated operational mortality of tens of thousands of passerine birds over the life of the project, and it includes no specific or enforceable mitigation performance standards. For example, habitat acquisition and preservation or restoration of habitat for specific species impacted by the Project may be a feasible mitigation. However, the DEIR does not describe or analyze these actions. Shutting off turbines during low-visibility periods in seasons of peak bird migration, for instance, is also a potentially feasible mitigation that is not evaluated in the DEIR. Additionally, pursuant to Fish and Game Code section 3513 it is unlawful to take any migratory bird as designated by the federal Migratory Bird Treaty Act. To comply with this code section, the project should be modified to incorporate feasible avoidance measures such as those mentioned above.

Compensatory mitigation that is roughly proportional and fully enforceable should be proposed to mitigate impacts to passerine birds to less than significant. The DEIR should provide a passerine bird mitigation plan that including compensatory mitigation for significant impacts to common and special status species. The DEIR's mitigation measures do not comport with requirements that they be "*fully enforceable through permit conditions, agreements, or other legally-binding instruments,*" (CEQA § 15126.4(a)(2)) and "*roughly proportional*" to the impacts of the project (CEQA § 15126.4(a)(4)(B)). A well-designed and effectively implemented Technical Advisory Committee (TAC) could assist the Lead Agency in developing performance standards and feasible measures to meet those standards. It is unclear why the Project proposes a TAC for bats but not for birds.

Given the substantial uncertainties regarding the magnitude of mortality of passerine birds and raptors, CDFW suggests implementation of a TAC with clear roles, responsibilities, and authority outlined in the DEIR. The TAC should include multiple third-party subject-matter experts. The TAC, in consultation with wildlife agencies and the Lead Agency, should provide input and concurrence on monitoring, and should evaluate impacts and propose solutions for bird and bat related mortalities.

Furthermore, a robust CDFW-approved post-construction bird and bat fatality monitoring plan incorporating scent detection dogs and integrated searcher efficiency and carcass persistence bias trails similar to the Golden Hills wind project, should be a requirement of the Lead Agency's conditional use permit for this Project.

Raptors and Fully Protected Species

Mitigation

The DEIR estimates on-going Project operations will annually kill 114 raptors; an estimated 3,420 raptors over the Project's 30-year life.

However, the DEIR also states the wind facilities used to generate this estimate are in habitats unlike those found on the Project site, thus ecological comparisons may be of limited utility. Bear River Ridge is well known locally as a raptor watching site and is frequently a field trip destination for local birding festivals such as the annual "Godwit Days" festival in Arcata.

The DEIR states the Project's raptor fatalities, including Fully Protected species, would "*substantially reduce the region's raptor population*", and concludes that operational impacts on raptors are Significant and Unavoidable. Yet, the DEIR does not propose feasible measures to avoid and minimize impacts. Feasible mitigations to reduce significant impacts should be included in the DEIR. Examples could include alternative turbine locations and/or configuration, biological monitoring and "*informed curtailment*" (rapid shut down turbines when raptors are seen approaching), or other technology to detect raptors and shut down turbines accordingly.

Fully Protected Raptors

Pursuant to Fish and Game Code section 3511, FP raptor species such as the peregrine falcon, golden eagle, bald eagle, and white-tailed kite, may not be taken or possessed at any time, except in accordance with the Natural Community Conservation Planning Act (NCCPA). The Fish and Game Code includes no other specific authorization for take of FP species even where related impacts of the taking would be less than significant with compensatory mitigation required as part of the Project approval pursuant to CEQA. In prior CEQA comments, CDFW recommended the DEIR determine how the Project will avoid take of FP species. CDFW recommended that if state-defined take of these species could not be avoided in the proposed locations, the DEIR should propose alternative turbine locations that would minimize take. Based on the DEIR analysis, the Project is highly likely to result in CEQA significant impacts to and take of FP species. If take of FP species is unavoidable, the Project should develop a Natural Community Conservation Plan (NCCP) to authorize this take.

Proposed Rodent Population Control and Prey Management Program

Mitigation measure 3.5-5a proposes to

"Maintain a landscape around WTGs that does not encourage raptor occurrence by maintaining rodent prey populations to relatively low levels. In addition,

implement a prey management program to reduce the availability of rabbits, ground squirrels, and other prey that could attract eagles and other raptors."

Additional information is needed about how the Project proposes to reduce availability of prey species. This mitigation measure could have potentially significant impacts on other species. CDFW is unaware of any feasible largescale rodent management program that does not utilize rodenticides. Rodenticides have well-documented lethal and sub-lethal impacts on owls, hawks, and other raptor species, as well as mammal SSCs such as the American badger (*Taxidea taxus*) and the Pacific fisher (*Pekania pennant*). These species and others could be poisoned if the Project uses rodenticides.

Pursuant to CEQA section 15126.4 (a)(1)(D): "*If a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but, in less detail, than the significant effects of the project as proposed.*" The DEIR should include detailed information about this proposed prey management program and any potentially significant impact that may result from mitigation measure 3.5-5a.

Bats

The vast majority of bat fatalities at wind farms in North America are made up of migratory forest roosting bats such as the hoary bat (*Lasiurus cinereus*), the silver-haired bat (*Lasionycteris noctivagans*), and the SSC western red bat (*Lasiurus blossevillei*), all of which occur at the Project site. The SSC Townsend's big-eared bat also occurs onsite, and roosts in basal hollows of old growth trees at nearby Humboldt Redwoods State Park. Pre-Project surveys documented 12 of the 13 bat species known to occur in Humboldt County.

Hoary bats constitute the largest proportion of bat fatalities at wind energy facilities in North America (Arnett and Baerwald 2013). Further, recent research indicates wind development may threaten the population viability of this species (Frick et al. 2017). Hoary bats comprise over 95 percent of captures at a long-term study site in nearby Humboldt Redwoods State Park (Weller et al. 2016). Humboldt Redwoods State Park is located less than one mile from the proposed location of the southernmost Monument Ridge turbines. The concentrations of hoary bats documented near the proposed Project site in the fall is undescribed in the literature. This phenomenon is not known to occur near other proposed or operating wind energy sites. Therefore, it is not possible to use fatality estimates from other wind developments to predict with any confidence the potential severity and significance of Project's impacts on hoary bats (Joe Szewczak, pers comm). Given that hoary bats are well documented to be killed disproportionately in areas where they are not concentrating in large numbers, this Project, in a worst-case scenario, has the potential to have a range-wide impact to the species because hoary bats concentrate in this area, possibly from across the western United States, during the fall (Joe Szewczak, pers comm). This phenomenon is akin to

the “swarming” behavior known to occur in cave hibernating bat species and is thought to be a function of mating and courtship (Ted Weller, pers comm).

A feasible mitigation measure for potentially significant impacts to bats is curtailment of operations during high risk periods for bats (low wind nights). This mitigation has been shown to reduce bat mortality by up to 93 percent without significant power loss (Arnett et al. 2011). However, the Project does not propose any operational mitigations. Instead, the Project proposes convening a Technical Advisory Committee “comprised of:

- *Humboldt County Planning & Building Department*
- *CDFW*
- *Pacific Southwest Research Station (or another organization dedicated to bat research)*
- *Humboldt Wind, LLC (operator of facility)”*

According to the DEIR (Mitigation Measure 3.5-18a: Preclude Operational Impacts on Bat Population Level Decline through Consultation with a Technical Advisory Committee) “*the TAC’s duties shall be:*

- *reviewing and interpreting postconstruction fatality data and bat survey data;*
- *assessing whether bat mortality attributable to the project poses a potential for a bat population to drop below self-sustaining levels if left unabated; and*
- *strategically identifying operational minimization measures that will most efficiently minimize impacts on bat populations while recognizing the operational needs of the facility.”*

CDFW does not concur that the DEIR’s proposed mitigation measures for bats reduce impacts to a level of less than significant. The Project proposes a ‘wait and see’ approach, where adjustments in operations are made only after significant fatalities are documented. There is substantial evidence that the Project as proposed will result in significant impacts to hoary bats. In order to mitigate these impacts to less than significant, CDFW recommends the following:

1. TAC formation: the TAC’s structure and authority must be clearly defined to clarify how TAC recommendations are made, to whom, and whether these recommendations are binding and enforceable by the Lead Agency.
2. Operational mitigation during the fall season (September – October at minimum) should be implemented upon commencement of Project operations. This should include raising cut-in speeds (the wind speed at which turbines begin generating power) to at least 5.5 meters per second, or greater if recommended by the TAC. Less conservative measures could be used if a properly implemented and statistically sound post-project fatality monitoring program indicates that bat fatalities are insignificant.

3. CDFW strongly recommends use of scent detection dogs as part of a fatality monitoring plan for both bats and birds. In a blind trial, scent detection dogs located 73 percent of bat carcasses, whereas human searchers detected only 20 percent (Mathews et al. 2013).

Special Status Plants

Survey coverage

Project surveys detected four special-status plant species on the Project site: Pacific gilia (*Gilia capitata* ssp. *pacifica*), Short-leaved evax (*Hesperis matronalis* var. *brevifolia*), Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*), and Howell's montia (*Montia howellii*). All of these species have California Rare Plant Ranks of 1 or 2, indicating that they are "rare, threatened, or endangered in California and elsewhere" (1) or "rare, threatened, or endangered in California but more common elsewhere" (2). According to results of surveys conducted thus far, approximately nine acres of these rare plant occurrences will be permanently or temporarily impacted by the Project.

However, the DEIR (pg. 3.5-161) states Project surveys found 17.31 acres of Siskiyou checkerbloom on Bear River Ridge, so it is unclear whether Project surveys extended far beyond the potential Project footprint, or the impact has been mis-stated.

Further, an additional 560 acres of the Project site have been surveyed "only at a reconnaissance level," thus the extent of potential impacts to rare plants has not been fully determined or disclosed. An additional 50.4 acres of the Project site remain entirely unsurveyed, and according to the DEIR, "special-status plant species determined to potentially occur within the project site may be present in these areas, including special-status plants that were detected during protocol-level surveys conducted in 2018." However, the Project does not propose to survey these areas because of "intractable safety and access limitations (steep slopes, pens with bull cattle, and illegal cannabis cultivation sites)."

CDFW recommends surveys be conducted for all potential rare plant habitat that could be impacted by the Project, so that the DEIR can disclose the full extent of potential impacts on rare plants, propose appropriate mitigation for potentially significant impacts, and provide this information for public review. If the Project proponent cannot obtain access to Project areas having potential rare plant habitat to assess potentially significant impacts to rare plants, then those areas should be removed from consideration as part of the proposed Project.

Mitigation

Mitigation measure 3.5-23d defers mitigation and creation of performance standards to a future plan:

"For any unavoidable impacts on Siskiyou checkerbloom, the project applicant shall develop a mitigation strategy as part of the reclamation, revegetation, and weed control plan. The mitigation strategy shall include performance standards for successful (re)establishment of Siskiyou checkerbloom and enhancement of existing habitat, and a monitoring and reporting program to track revegetation and enhancement success."

Pursuant to CEQA section 15126.4 (a)(1)(B), *"Formulation of mitigation measures should not be deferred until some future time. However, measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way."*

In this case, the DEIR does not provide performance standards, and defers formulation of these standards to a future plan. Without any information about the mitigation strategy, such as identification of responsibility for oversight and corrective action, or triggers for adaptive management, there is no way to determine whether the mitigation measure is feasible, enforceable, or would reduce the impact to less than significant.

Sensitive Natural Communities

Vegetation types are classified into Natural Communities based on their structure, form, and plant species composition. Natural Communities are ranked using NatureServe's Conservation Rank Calculator by CDFW's Vegetation Classification and Mapping Program and the California Native Plant Society. Natural Communities with ranks of S1-S3 are considered SNCs to be addressed during the CEQA environmental review processes.

Project surveys identified multiple SNCs within the Project site and determined approximately 78 acres of SNCs would be permanently affected by the Project, and another 340 acres would be temporarily affected. The DEIR does not analyze or propose any mitigation for the 302 acres of forest community SNCs that will be removed under a Timber Harvesting Plan. The DEIR should analyze the loss of these SNCs and propose mitigation for potentially significant Project impacts.

The DEIR does not adequately differentiate between temporary and permanent impacts to SNCs but indicates that temporary impacts lasting more than 1 year would be considered permanent. Three grassland SNCs followed by their acreage of temporary Project impact include: Coastal Terrace Prairie (34.42 acres); California Brome-Blue Wildrye Prairie (19.78 acres); and California Oat Grass Prairie (11.61 acres). The DEIR indicates these grassland SNCs will be impacted by the proposed miles of extensive road widening from current road widths of approximately 24 feet, to road widths of 200 feet or wider. Once construction is complete, the DEIR anticipates the hillslopes will be regraded and recontoured, and in many places, the roads restored to their original widths.

The extensive grading, and subsequent regrading and recontouring of deep prairie soils in coastal grasslands is likely to result in a permanent impact to these SNCs, not a temporary impact. It is well established in the ecological literature that plowing and grading native grassland soils typically eliminates the native perennial bunchgrasses. Furthermore, deep soil disturbance such as grading disrupts the relationship between native plants and complex soil microbial communities resulting in a dramatic loss of microbial species diversity and composition, thus impeding native plant re-establishment efforts (Stromberg et al. 2007). For these reasons, there is substantial evidence that Project's construction phase ground disturbance activities, such as grading roadways, are highly likely to result in permanent impacts, because graded prairie habitat adjacent to roads and construction sites are unlikely to be restored to their previous habitat quality and natural community assemblage.

The DEIR states,

"For sensitive natural communities that cannot be reestablished/created on-site or off-site because of the limited nature of suitable substrates, such as coastal prairie communities, habitat enhancement/on-site restoration of degraded sensitive natural communities may be used for compensation."

It is unclear the extent to which degraded SNCs currently exist onsite and need restoration; this information is not provided in the DEIR. The DEIR's principal mitigation for impacts to SNCs is Mitigation Measure 3.5-24e, which is to *"Develop and Submit a Reclamation, Revegetation, and Weed Control Plan"* (Reclamation Plan). The DEIR states the Reclamation Plan will be submitted to the Lead Agency prior to Project construction, it will include *"minimum performance standards"* for the success of the restoration and revegetation efforts, and that the Humboldt County Planning and Building Department will enforce the mitigation. CEQA section 15126.4(B) states that *"mitigation measures should not be deferred until some future time. However, measures may specify performance standards, which would mitigate the significant effect of the project..."*

Based upon the above, the DEIR does not include sufficient information to support the Lead Agency's finding that the mitigation measures would reduce the impact on SNCs to less than significant. Further, the DEIR states plainly the performance standards for this mitigation will be deferred until after the EIR public review process is complete. Additionally, Mitigation Measure 3.5-23e does not include compensatory mitigation for forest SNCs removed under a Timber Harvesting Plan. CDFW recommends the DEIR include mitigations for impacts to SNC that are of sufficient detail, including performance standards, so CDFW can evaluate if the mitigations are likely to be enforceable and effective.

Eelgrass

The DEIR describes offloading various equipment shipped by sea using a crane located at Field's Landing. The Project description includes placement of a large equipment barge adjacent to the Field's Landing Boat Yard using ropes and a spud barge to keep the equipment barge in place. The areas between the equipment barge and the shore, as well as the surrounding nearby mudflats, have native eelgrass (*Zostera marina*), a wetland plant. The actions described in the DEIR would subject this wetland habitat to potential direct and indirect impacts. While the project proposes mitigation measure 3.5-22c "*Avoid Impacts on Sediment and Habitats in Humboldt Bay and Implement Eelgrass Monitoring and Protection Plan*" to avoid eelgrass, it is unclear if this mitigation measure is feasible. Potential impacts from the project include accidental placement of the barge on eelgrass habitat, scouring by the steel ropes, or indirect impacts such as increased turbidity and shading. If impacts to eelgrass occur as a result of Project activities, CDFW recommends the DEIR propose mitigation sufficient to achieve no-net-loss for this wetland habitat, accounting for any temporal loss prior to mitigation.

As a component of mitigation measure 3.5-22c, CDFW recommends adding language specifying that standard pre-construction surveys of eelgrass be completed within 30 days of the start of this portion of the project, and post-construction surveys be completed within 30 days of the last barge load being brought to shore. Both pre-and post-construction surveys are only valid during the growing season for eelgrass, May through September, so proper planning should be taken into consideration to conduct the surveys given tidal availability and the growing season.

Surveys should include the entirety of the landing zone for the equipment barge, 100 feet in either direction of the equipment barge along the shoreline out to -7 feet MLLW, and the mudflats south and west of the barge landing location. Surveys of the mudflats to the south and west should extend from -7 feet MLLW to 500 feet from the top of the slope, while the other areas should be surveyed in their entirety. Due to the specialized nature of the surveys and to reduce delays, CDFW recommends using consultants experienced with developing and carrying out eelgrass monitoring plans and surveys.

Reliance on Deferred Mitigation for Numerous Impacts

The Project relies on Mitigation Measure 3.5-23e, "*Develop and Submit a Reclamation, Revegetation, and Weed Control Plan*" in making less than significant impact determinations for the following impacts:

1. Impact 3.5-10 Removal and Modification of Special-Status Raptor Nesting and Foraging Habitat during Construction.
2. Impact 3.5-12 Construction Impacts on Avian Nesting and Foraging Habitat
3. Impact 3.5-19 Construction Impacts on Special-Status Mammals
4. Impact 3.5-21 Construction Impacts on Special-Status Amphibians and Reptiles
5. Impact 3.5-22 Impacts of Project Construction on Special-Status Fish

6. Impact 3.5-23 Impacts on Special-Status Plants During Project Construction and Operation
7. Impact 3.5-24 Loss or Disturbance of Sensitive Natural Communities and Riparian Habitat
8. Impact 3.5-25 Disturbance and Loss of Wetlands and Other Waters during Project Construction

However, this mitigation measure defers creation of performance standards, and lacks specific information on what habitat will be created or restored, how much, and where. Thus, it is not possible to determine whether potentially significant impacts will be mitigated to a level of less than significant. CDFW recommends the DEIR include species-specific revegetation and compensatory mitigation performance standards for each of these potentially significant impacts.

Environmental Data

CEQA requires that information developed in EIRs and negative declarations be incorporated into a database that may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code § 21003, subd. (e)). Accordingly, any special status species and sensitive natural communities detected during Project surveys must be reported to the California Natural Diversity Database (CNDDDB). The online submission and PDF CNDDDB field survey forms, as well as information on which species are tracked by the CNDDDB, can be found under their corresponding tabs at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>. Bat acoustic data should also be submitted to the Bat Acoustic Monitoring Portal (BatAMP). Information on BatAMP and submitting data can be found here: <https://batamp.databasin.org/>. In order to inform potential future phases of the Project, the Lead Agency should include, as a condition of approval for the Project, that all biological monitoring data collected for the life of the Project be made publicly available.

Deficiencies in DEIR; Recirculation

As detailed in CDFW's previous correspondence (CDFW 2018), the Project's draft Biological Work Plan proposed collecting two years of site specific data in order to quantify the anticipated take of, and potentially significant impacts to listed species, special status species, resident and migrant birds, raptors, and bats. However, the Project's desired timeline has resulted in circulation of the DEIR prior to completion of those surveys. Thus, the conclusions in the DEIR about potentially significant impacts are based on one year of site-specific data at most.

Circulating the DEIR before data collection is complete does not provide for a scientifically sound basis for identifying and quantifying potentially significant impacts, informing take estimates, and developing feasible alternatives or mitigation measures for this Project site.

Survey results may warrant adjustments to murrelet and other take estimates resulting in greater impacts than are disclosed in the DEIR. CDFW recommends that the Lead Agency recirculate the DEIR once all biological studies are final, and after any modeling related to the Project has been completed and results have been verified by CDFW and USFWS. This will ensure that relevant information is disclosed to the public, and facilitate the Department's responsible agency participation in the CEQA process. CDFW must rely on the final EIR in order to issue an Incidental Take Permit and Lake or Streambed Alteration Agreement(s) for the Project. If the information included in the final EIR is insufficient, CDFW may be unable to rely on the final EIR for purposes of permit issuance. Alternatively, the Project and environmental analysis could be phased to ensure this data is available for review, and provide an opportunity to incorporate changes to the Project or mitigation.

Recirculation is also required if a *"feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it"* (CEQA § 15088.5(a)(3)). In this letter and in consultation with the Lead Agency, CDFW has recommended feasible mitigation measures and Project alternatives for significant operational impacts to murrelets, raptors, passerine birds, and bats.

Environmentally Superior Alternative

The DEIR identifies five Project alternatives pursuant to CEQA section 15126.6 (DEIR Executive Summary p. ES-7). These alternatives include the "no Project" alternative, realignment of Project infrastructure to avoid impacts to the Eel River and NSO, reduced turbine footprints in specific areas, and reduced turbine count overall. The DEIR then identifies Alternative 5, "Reduced Turbine Footprint – Bear River Ridge," which would reduce the total number of turbines and avoid placing turbines on Bear River Ridge, as the Environmentally Superior Alternative. However, the DEIR does not explain how this determination was reached. Given the lack of supporting information, it is unclear whether Alternative 5 is the Environmentally Superior Alternative, and it appears that components of many of the alternatives could be combined to create an alternative that reduces Project impacts to a greater extent while still achieving Project objectives. In this letter, CDFW has recommended alternative Project configurations or operational alternatives that would reduce impacts to certain species or habitats. In addition to the recommendations contained within this letter above, CDFW recommends incorporating elements from other alternatives, particularly Alternatives 2 (avoiding NSO activity center) and 4 (reducing turbine count), in combination with Alternative 5, to achieve a more robust environmentally superior alternative.

SUMMARY OF COMMENTS AND RECOMMENDATIONS

1. CDFW concludes that all or portions of the wind turbine facilities fall into Category 4, "*Project Sites Inappropriate for Wind Development*," and the DEIR does not contain the level of site-specific data and analysis necessary for evaluating the wind turbine facility's impacts to birds and bats to propose adequate mitigation, monitoring, and adaptive management strategies that would avoid or substantially lessen the Project's wind turbine siting and operation related significant impacts to birds and bats.
2. CDFW recommends that collision risk modeling and take estimates for the Project be finalized in consultation with CDFW and the USFWS and included for public review. The Project needs to utilize two or more years of murrelet survey data, and the collision risk model must incorporate a more conservative avoidance probability.
3. The DEIR should develop a murrelet mitigation plan using a finalized take estimate that has been reviewed and accepted by CDFW and USFWS. The mitigation plan should propose feasible mitigation that fully mitigates for the anticipated take of murrelet.
4. The DEIR should quantify and disclose the extent to which the Project will encroach upon murrelet habitat and propose appropriate mitigation for potentially significant impacts to murrelet habitat or active nests.
5. The DEIR should accurately disclose NSO activity centers in and adjacent to the Project site and should include results of protocol-level pre-construction NSO surveys.
6. The DEIR should include mitigation for the permanent removal of NSO habitat. The DEIR should include a NSO mitigation plan with performance standards, enforceable terms, and sufficient detail to allow meaningful public review of both the impacts and proposed mitigation.
7. The DEIR should propose habitat retention thresholds for NSO as recommended in USFWS Attachment A, and identify, based on the proposed Project footprint, whether these habitat retention thresholds can be met.
8. The Project proponent and the Lead Agency should describe how Project activities will not conflict with the HRC HCP.
9. Wind turbines should be sited a) outside of the Cape Mendocino Grassland IBA and b) to minimize impacts to the breeding population of horned larks onsite. Adopting a siting strategy that incorporates elements of DEIR Alternatives 4 and 5 may achieve this.
10. The DEIR should include specific information about formation of a TAC. The TAC should also expressly provide guidance to the Lead Agency on impacts to birds and raptors in addition to bats. The TAC's structure and authority must be clearly defined to establish how TAC recommendations are made, to whom, and whether these recommendations are binding and enforceable by the Lead Agency.
11. The TAC should include multiple third-party subject-matter experts. The TAC, in consultation with wildlife agencies and the Lead Agency, should provide input

and concurrence on monitoring, and should evaluate impacts and propose solutions for bird and bat related mortalities. Compensatory mitigation that is roughly proportional and fully enforceable should be proposed to mitigate impacts to birds and bats to less than significant.

12. Operational mitigation for bats during the fall season (September – October at minimum) should be implemented upon commencement of Project's wind turbine operations. This should include raising cut-in speeds to at least 5.5 meters per second, or greater if recommended by the TAC.
13. As described in the DEIR, the Project is highly likely to result in take of numerous raptor species including FP species. If take of FP species is unavoidable, the Project should develop an NCCP to authorize this take. Biological monitoring and "*informed curtailment*" (rapid shut down turbines when raptors are seen approaching), or other technology to detect raptors and shut down turbines accordingly, may be a feasible mitigation to avoid take of these species at this location.
14. The DEIR should provide information about rodent control and the proposed prey management program described in mitigation measure 3.5-5a, and evaluate any potentially significant impacts that this mitigation may cause, as required by CEQA section 15126.4 (a)(1)(D).
15. Scent detection dogs should be used as part of a robust bat and bird fatality monitoring plan.
16. Surveys should be conducted for all potential habitat for rare plants that may be impacted by the Project. If areas exist that the Project cannot obtain access to, then those areas should be removed from the Project.
17. Mitigation measure 3.5-23d for Siskiyou checkerbloom improperly defers mitigation and creation of performance standards to a future plan. The DEIR should include performance standards for this mitigation measure.
18. Mitigation measure 3.5-23e regarding a Reclamation, Revegetation, and Weed Control Plan improperly defers creation of performance standards, and lacks specific information on what habitat will be created or restored, how much, and where. This measure is relied upon for eight separate less than significant determinations. Species-specific revegetation and compensatory mitigation standards should be developed for each of these potentially significant impacts.
19. The DEIR should propose mitigation with a ratio sufficient to achieve no-net-loss for impacts to eelgrass.
20. The DEIR should specify that standard pre-construction surveys of eelgrass will be completed within 30 days of the start of the barge transportation portion of the project, and post-construction surveys be completed within 30 days of the last barge.
21. In order to inform potential future phases of the Project, the Lead Agency should include, as a condition of approval for the Project, that all biological monitoring data collected for the life of the Project be made publicly available.
22. The Lead Agency should ensure proposed biological survey data are collected and results analyzed to the greatest extent feasible, so that this data can better inform potentially significant impacts for the Project and the development of site-

specific feasible mitigation measures. The Project and environmental analysis and permits could be phased to ensure this data is available for review, and provide an opportunity to incorporate changes to the Project or mitigation.

23. The DEIR should incorporate the feasible mitigation measures and Project alternatives recommended by CDFW in this letter to reduce operational impacts to murrelets, raptors, passerine birds, and bats to less than significant.
24. The DEIR should provide more information regarding how the "Environmentally Superior Alternative" ("Alternative 5, Reduced Turbine Footprint – Bear River Ridge") was selected. CDFW recommends incorporating elements from other alternatives, particularly Alternatives 2 (avoiding NSO activity center) and 4 (reducing turbine count), in combination with Alternative 5, to achieve a more robust environmentally superior alternative.

CDFW recommends that the comments provided in this letter are used to modify the DEIR to avoid and mitigate significant impacts, as reasonably feasible (CEQA §§ 15091 et seq., 15092 et seq.). CDFW acknowledges the scale and complexity of impacts varies by Project segment, especially with respect to the wind turbine facilities and operations segment. CDFW offers to meet with the Project proponent to discuss where it may be appropriate for phased Project implementation and permitting.

We appreciate the Lead Agency's consideration of our comments. Questions regarding this letter should be directed to Environmental Scientist Jennifer Olson at (707) 445-5387 or jennifer.olson@wildlife.ca.gov.

Sincerely,



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Figure 1: 2018 Northern Spotted Owl Activity Centers (Data Source: HRC 2019)

