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October 5, 2020

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Subject: Draft Environmental Impact Report for the Fountain Wind Project, Shasta County, State Clearinghouse No. 2019012029

Dear Mr. Salazar:

On August 4, 2020, the California Department of Fish and Wildlife (CDFW) received the Notice of Availability for the Draft Environmental Impact Report (DEIR) from the Shasta County Department of Resource Management (Lead Agency) for the Fountain Wind Project, Use Permit 16-007 (Project) pursuant to the California Environmental Quality Act (CEQA) and Guidelines (Pub. Resources Code § 21000 et seq. and Cal. Code Regs., tit. 14 § 15000 et seq.). CDFW understands that the Lead Agency will accept comments on the DEIR through October 5, 2020.

CDFW recognizes producing energy 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 CDFW's mission, we have consulted 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 and Streambed Alteration program (LSA) (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, operation, maintenance, and decommissioning of a wind energy facility with a nameplate generating capacity of up to 216 megawatts (MW). The Project would be developed within a 4,464-acre area (Project site) located within an approximately 29,500-acre leased area that encompasses 74 parcels of private property. Parcels within the Project site are zoned Timber Production (approximately 4,457 acres) and Unclassified (approximately 6 acres). Within the Project site, the Project would have approximately 1,384 acres of temporary impacts and 713 acres of permanent impacts, including permanent removal or filling of 3.44 acres of wetlands and other waters, and temporary impacts to 1.48 acres of wetlands and 0.64 acres of other waters. The Project term is 40 years.

The Project is located approximately 1 mile west of the existing Hatchet Ridge Wind Project, 6 miles west of Burney, 35 miles northeast of Redding, immediately north and south of State Route 299, Shasta County, CA. According to the DEIR's Project Description, Project components include:

- Up to 72 turbines, each up to 679 feet in height measured from ground level to vertical blade tip with a generating capacity of 3 to 5.7 MW. The Project would use three-bladed, horizontal-axis turbines with the rotor shaft and nacelle mounted at the top of a cylindrical tower. Each turbine tower would be mounted on a concrete pedestal supported by a permanent foundation. Each turbine is expected to be lit with two flashing red lights. Spread footing foundations would be buried underground to a depth of approximately 15 to 20 feet with a pedestal that extends approximately one foot above ground. The widest underground portion of the turbine spread footing would be between 50 to 80 feet in diameter. Each turbine would have temporary disturbance area of up to 5-acres and up to 2.5-acres of permanent disturbance.
- Up to 51 miles of underground collector system consisting of cables buried in trenches, generally co-located with turbine access roads. In areas where trenches cannot be co-located, a temporary 50-foot wide disturbance area and permanent 30-foot wide area maintained clear of woody vegetation would be required. Blasting may be required prior to trenching in rocky areas.
- Road crossings at 32 streams, including 24 new road crossings at 5 perennial streams, 12 ephemeral and intermittent streams, and 7 non-vegetated ditches. Eight crossings may require improvement or replacement at 3 perennial streams and 5 ephemeral and intermittent streams.
- Up to 12 miles of 34.5 kV overhead electrical line installed on wood poles with a maximum height of 90 feet. A temporary 100-foot-wide corridor and permanent 80-foot-wide corridor maintained clear of tall woody vegetation would be required.

- Communication system collocated with collector lines consisting of fiber optic cable for the Supervisory Control and Data Acquisition system.
- Onsite collector substation, switching station, and interconnection facilities including temporary disturbance of up to 19 acres and permanent disturbance of up to 5 acres for the collector substation and 8 acres for the switching station.
- Up to 24 miles of new access roads and widening of up to 33 miles of existing roads, including the replacement of existing culverts. Roads would consist of a temporary 80-foot-wide disturbance area and a permanent 20-foot-wide drivable surface with 1-foot shoulder and additional 10 feet on either side for stormwater drainage, with potential maximum widths of 200 feet.
- 10-acre temporary construction and equipment area, construction trailer area, and associated parking area.
- Fourteen two-acre temporary laydown (staging areas).
- Permanent 5-acre operation and maintenance (O&M) facility consisting of the O&M building, storage yard, and parking area.
- Up to four permanent, unguyed 394-foot-tall meteorological towers.
- Up to three temporary concrete batch plants.
- Timber clearance and harvesting.
- Potential blasting to loosen rock for excavation.
- Potential installation of new domestic wells.
- Decommissioning of existing facilities and infrastructure and restoration of Project site upon cessation of Project operations.

According to the DEIR, construction is projected to last 18 to 24 months. Proposed decommissioning of existing facilities and infrastructure and site restoration would require approximately 18 to 24 months.

CONSULTATION HISTORY

CDFW provided preliminary comments on the Project's Biological Resources Work Plan presented at the June 2017 consultation meeting in a letter dated July 25, 2017. CDFW also provided comments during early consultation in a letter dated March 2, 2018 and on the Notice of Preparation in a letter dated February 19, 2019. 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:

- Wind turbine siting and operation is likely to result in take over the 40 year Project period via collisions with turbines and overhead electrical transmission lines for numerous special status species that are State-and Federally-listed, Fully Protected, and/or State Species of Special Concern.
- CDFW recommends that additional mitigation schemes and compensatory mitigation options for special status species, birds, and bats, including ongoing

monitoring and a suite of adaptive management strategies, be included and analyzed in the DEIR.
- The formation of a Technical Advisory Committee is necessary to inform a scientifically robust post-construction monitoring program and ensure enforcement of mitigation measures.
- Mitigation measures for operational impacts to many special status avian species are not included in the DEIR.
- Mitigation measures for construction impacts to bats and several special status mammal species are not included in the DEIR.
- Invasive species control measures are not proposed in the DEIR.

COMMENTS AND RECOMMENDATIONS

Regulatory Requirements

California Endangered Species Act
Please be advised that a CESA permit must be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA permit.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce a population of a threatened or endangered species. (Pub. Resources Code §§ 21001, subd. (c), 21083; CEQA Guidelines §§ 15380, 15064, and 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with Fish and Game Code section 2080.

Lake and Streambed Alteration
An LSA Notification pursuant to Fish and Game Code section 1600 et seq., is required for Project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake, or stream. Work within ephemeral streams, washes, watercourses with subsurface flow, and floodplains are subject to notification requirements. CDFW will consider the CEQA document for the Project and may issue an LSA Agreement. CDFW may not execute the final LSA Agreement (or CESA Permit) until it has complied with CEQA as a Responsible Agency.

Nesting and Migratory Birds
Fish and Game Code covers actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections protecting birds, their eggs and nests include 3503 (regarding unlawful take, possession or needless destruction of the nests or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird). Fully Protected Species may not be taken or possessed at any time (Fish & G. Code § 3511).

Technical Advisory Committee (TAC)

Given the complexities of developing strong, science-based monitoring plans and identifying species specific approaches and strategies, CDFW strongly recommends the formation of a TAC, prior to Project implementation (**Recommendation 1**). As the development of many monitoring plans described in the DEIR are deferred to a future date and are not available for public review at this time, formation of a TAC to develop these plans would be the appropriate strategy to ensure their adequacy. The TAC will serve to assist with reviewing the design of PCMM studies, reviewing and interpreting post-construction fatality data, and identifying operational minimization measures that will most efficiently minimize impacts on bird and bat populations, thereby ensuring the enforcement of Mitigation Measures 3.4-3b and 3.4-3c. A well-designed and effectively implemented TAC will assist the Lead Agency in developing performance standards and feasible measures to meet those standards. Given the substantial uncertainties regarding the magnitude of mortality of avian species and bats, CDFW suggests implementation of a TAC with clear roles, responsibilities, and authority outlined in the DEIR.

At a minimum, the TAC should be comprised of multiple third-party subject matter experts, such as organizations dedicated bird and bat conservation and research, scientists familiar with post-construction survey protocols, the U.S. Fish and Wildlife Service (USFWS), and CDFW. 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. 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. The TAC should be given authority to require additional post-construction monitoring should unforeseen impacts or high levels of unanticipated fatalities occur.

Final Turbine Siting Considerations

The California Energy Commission (CEC) and CDFW developed the California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (CEC Guidelines) (CEC 2007) 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 CEC Guidelines, wind energy developers and Lead Agencies who use the methods described in the CEC 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.

Additionally, the USFWS Wind Energy Guidelines (WEG) help wind energy project developers avoid and minimize impacts of land-based wind projects on wildlife and their habitats. The WEG provide a structured, scientific process for addressing wildlife conservation concerns at all stages of land-based wind energy development. The goal of the WEG is smart siting, design, and operation of wind energy projects.

The CEC Guidelines and WEG identify multiple considerations for site selection, turbine layout, and infrastructure design. These considerations include minimizing habitat fragmentation and disturbance, establishing buffer zones to minimize collision hazards by avoiding placement of turbines within 100 meters of a riparian area, establishing buffer zones to protect sensitive habitats, utilizing native species when seeding or planting during restoration, reducing the introduction and spread of invasive species, avoiding lighting that attracts birds and bats, reducing artificial habitat for prey at turbine base areas, and minimizing power line impacts by placing lines underground whenever possible. CDFW recommends implementing the considerations outlined in the CEC Guidelines and WEG in determining final Project designs (**Recommendation 2**). For example, *the Year 1 Avian Use Study Report and Risk Assessment for the Fountain Wind Project* discusses Survey Point 30 as having a higher number of raptor flight paths than other survey points. This Survey Point is "*adjacent to a large, incised drainage where the landscape transitions from forest to shrub/scrub, and offers ideal habitat for soaring birds*." In order to decrease potential impacts to raptors, final siting considerations should include the removal of turbines M03 and M04 located in the vicinity of Survey Point 30 (**Recommendation 3**).

State-Listed, Not Fully Protected Species

The Project area supports, or has the potential to support, CESA-listed species, CESA candidate species, and Native Plant Protection Act listed species such as willow flycatcher (*Empidonax trailii*, State Endangered), Swainson's hawk (*Buteo swainsoni,* State Threatened), gray wolf (*Canis lupus*, State Endangered), Shasta snow-wreath (*Neviusia cliftonii*, Candidate for listing as State Endangered), and Tracy's eriastrum (*Eristrum tracyi*, State Rare). As stated in our previous letters (2018 early consultation and 2019 NOP), take of species of plants or animals listed as endangered or threatened under CESA is unlawful unless authorized by CDFW. Given the 40 year length of the Project term and the expected changes in habitat conditions over the life of the Project due to forest maturation, ongoing timber operations, and revegetation efforts, there is a high likelihood that take of a CESA-listed species may occur during that time. If take cannot be fully avoided, CDFW recommends the Project seek a CESA section 2081 (b) ITP to authorize

incidental take during Project construction and over the life of the Project (**Recommendation 4**).

Fully Protected Avian Species

Bald eagle (*Haliaeetus leucocephalus*, State Endangered), golden eagle (*Aquila chrysaetos*), greater sandhill crane (*Antigone canadensis tabida,* State Threatened), white-tailed kite (*Elanus leucurus*) and American peregrine falcon (*Falco peregrinus anatum*) are all Fully Protected species pursuant to Fish and Game Code. All of these species have been detected in the Project area or have potential to occur within the Project Site.

Pursuant to Fish and Game Code section 3511, Fully Protected species may not be taken or possessed at any time, except in accordance with the Natural Community Conservation Planning Act. The Fish and Game Code includes no other specific authorization for take of Fully Protected 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 discussed the need for operational avoidance measures such as "informed curtailment" (rapid shutdown of turbines when raptors are seen approaching) and additional biological monitoring. These type of measures should be included to avoid take and impacts to these species. If take of Fully Protected species is unavoidable, CDFW recommends the Project develop a Natural Community Conservation Plan (NCCP) that would authorize this take (**Recommendation 5**).

Based on the DEIR analysis, the Project may result in significant and unavoidable impacts to bald eagle, golden eagle and other raptors. If significant impacts cannot be avoided, the DEIR should include additional mitigation, including compensatory measures (**Recommendation 6**).

Significant and Unavoidable Impacts

The DEIR recognizes that operational impacts to bald and golden eagle, raptors (including goshawk), and bats are significant and unavoidable and concludes that: "*Because no additional reasonable, feasible mitigation measures are available that, if implemented, would reduce the Project's contribution below the established level of significance, the Project's contribution to this impact would remain significant and unavoidable*." CDFW concurs that impacts to these species will be significant; however, CDFW does not agree that the full range of options for mitigation of significant impacts have been analyzed in the DEIR or that no additional reasonable, feasible mitigation measures are available to further reduce impacts. The WEG outlines actions to avoid or compensate for impacts such as altering locations of turbines or turbine arrays, operational changes, and/or compensatory mitigation through protection, enhancement, or restoration of nearby habitat that could mitigate impacts to these species. In addition, CEC Guidelines provide that compensatory mitigation for mortality at wind farms could

include onsite or offsite conservation, protection, restoration, or enhancement of essential habitat, or some combination of these. As stated in the WEG: "*The general terms and funding commitments for future mitigation and the triggers or thresholds for implementing such compensation should be developed at the earliest possible stage in project development. Any mitigation implemented after a project is operational should be well defined, bounded, technically feasible, and commensurate with the project effects*." CDFW recommends that other mitigation schemes and compensatory mitigation options, including ongoing monitoring of project impacts, and a suite of adaptive management strategies, be included in the DEIR as discussed further below (**Recommendation 7**).

Cumulative Impacts Analysis

Section 3.4.4 of the DEIR concludes with the statement: "*When considered in combination with the impacts of other projects in the cumulative scenario, the Project's incremental contribution to avian and bat mortality and impacts to sensitive natural communities would not be cumulatively considerable because implementation of Project's mitigation measures would reduce the impacts to less than significant under CEQA*." This conclusion is inconsistent with other findings in the DEIR. Multiple statements in the DEIR reference that impacts to eagles, raptors, and bats are significant and unavoidable, even with implementation of the proposed mitigation measures. For example, DEIR Section 3.4.4 also states that Project-level impacts resulting from raptor and bat collisions with Project infrastructure are "*considered a significant cumulative impact to these bird and bat species because the impacts have the potential to limit the populations of the species within the cumulative impacts analysis area*. *For this reason, the cumulative impact is considered significant.*"

Further, this section states: "*As discussed below, the Project's incremental contribution to this significant cumulative effect would not be cumulatively considerable*", but goes on to state: "*the Project could have a cumulatively considerable (significant) contribution to a significant cumulative effect to eagles, other raptors and bat species based on the uncertainty associated with mortality estimates and the potential for unexpectedly high mortality rates and the uncertainty regarding whether cumulative impacts could result in population-level declines in these species*." The inconsistency between these two statements would indicate that the impact should be considered potentially cumulatively significant unless additional monitoring and/or modeling of fatality estimates occur that would assist in an evidence based decision, as discussed elsewhere in this letter.

Additionally, Section 3.4.4.2 discusses existing cumulative impacts towards avian species, but does not include a discussion of existing impacts to bat species. The existing impacts to bat species from operations at the Hatchet Ridge Wind Project should be included in this section.

Based on the inconsistent analysis presented in this section, CDFW recommends revising and clarifying this section to reflect the analysis throughout the DEIR that impacts may be cumulatively significant (**Recommendation 8)**.

Migratory Birds

Songbirds

The DEIR does not identify and mitigate for impacts to songbirds (which includes other descriptors used interchangeably in the DEIR, this letter, and references, such as passerines, landbirds, and small birds) as a result of Project operations, nor does it include estimates of take over the life of the Project. The only analysis of impacts to songbirds is in regard to impacts to nesting birds. The DEIR concludes that construction and decommissioning of the Project will result in a less than significant impact to nesting songbirds, including special status species. DEIR page 3.4-14 states: "*the Project Site contains stopover habitat for songbirds, waterfowl, and shorebirds in the form of conifer forest, scrub-shrub, and riparian and wetland habitats*", and correctly recognizes that the Project site is located within the Pacific Flyway and numerous birds migrate through the region. Additionally, the DEIR concludes that songbird "*use is moderate and relatively consistent across seasons and across the Project site*."

Willow flycatcher breeding habitat exists within the Project site in the form of "*dense deciduous riparian shrub and willow thickets*" as acknowledge in the DEIR. Additionally, the DEIR recognizes that the Project site "*could be used as stop-over and foraging habitat for migrating willow flycatchers during spring and fall*". The DEIR concludes that potential for the species to occur onsite is low based on no detections during avian point count surveys and one year of protocol-level surveys; however 2 unidentified *Empidonax* species, 5 unidentified flycatcher, and 74 unidentified passerines were documented during the first year of avian point count surveys. In year two of avian point count surveys 7 additional passerines were unidentified. The DEIR also states that the nearest known occupied territories are located approximately 20 miles to the northeast of the Project site. However, CDFW is aware of two occurrences of willow flycatcher territories less than 0.5 miles and approximately 4 miles to the east of the Project site. This information was previously provided to the Project Team.

In addition to willow flycatcher, several Species of Special Concern and USFWS Birds of Conservation Concern were observed on the Project site. These include yellow warbler (*Setophaga petechia*), olive-sided flycatcher (*Contopus cooperi*), Vaux's swift (*Chaetura vauxi*), Cassin's finch (*Haemorhous cassinii*), and Lewis' woodpecker (*Melanerpes lewis*). Both yellow warbler and Vaux's swift were documented in post-construction mortality monitoring studies at the Hatchet Ridge Wind Project. Species are designated as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. CDFW considers impacts to Species of Special Concern to be potentially significant. Species on the USFWS Bird Species of Conservation Concern list represent species

beyond those already designated as Federally Threatened or Endangered with the highest conservation priorities and species in need of conservation action.

Olive-sided flycatcher, Cassin's finch, and Lewis' woodpecker are identified in the 2016 Partners in Flight Landbird Conservation Plan (Rosenberg et al. 2016) as "*D Yellow Watch List*" species, a designation for species of highest conservation concern. The purpose of the Partner's in Flight (PIF) Watch List is to foster proactive attention to the conservation needs of the continent's most vulnerable landbird species. Species on the "D" Yellow Watch List have declining populations. Many of the species on this list lost 50-90 percent of their population in the 44 years between 1970 and 2014. Olive-sided flycatcher lost over 78 percent of its population, while Lewis' woodpecker and Cassin's finch populations declined by 72 percent and 69 percent, respectively. While not on the Watch List, PIF documents that willow flycatcher and yellow warbler populations have declined by 46 and 20 percent, respectively. Further, PIF estimates that olive-sided flycatcher populations could decline an additional 50 percent in the next 24 years if current population trends continue.

Many songbird species migrate at night, including warblers, flycatchers, vireos, and thrushes. The DEIR does not address Project impacts on nocturnal migrants. Due to the lack of nocturnal bird surveys for this Project, it is unclear what the full impacts to migrating songbirds will be due to Project operations. If turbines are to be operated at night, CDFW recommends continued survey and analysis of the impact of nighttime operations of nocturnal migrants to determine the magnitude of nocturnal migration in the Project area, the altitude of migration, environmental factors, such as weather, that influence nocturnal migration in the area and help inform flight paths in the vicinity (**Recommendation 9**).

Uncertainties exist regarding operational impacts to songbirds due to larger turbine sizes and rotor-swept areas of the proposed Project when compared to the Hatchet Ridge Wind Project. In order to address this uncertainty as it relates to the above referenced special status species, CDFW recommends that the DEIR quantify potential fatality estimates for the Project using robust bird and bat fatality monitoring above and beyond what was conducted at the Hatchet Ridge Wind Project using an approach such as the Golden Hills Wind Energy Center monitoring study (**Recommendation 10**). The first-year results of this 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 of all turbines using scent-detection dogs, 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 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 855.36 birds (95 percent confidence interval of 565.2 – 1306), or 34,214 birds (95 percent confidence interval 22,608 – 52,243) killed over the 40-year life of the project. This estimate indicates a significant impact to special status bird species. CDFW recognizes that the Hatchet Ridge Wind Project detected lower fatality rates than those in the example above. However, carcass searches at Hatchet Ridge were conducted at two-week intervals without the use of scent detection dogs and based on conversations with researchers involved in additional studies at Hatchet Ridge, higher mortalities were detected during additional monitoring involving more frequent searches. Additionally, as stated in the DEIR, the Fountain Wind Project covers a much larger and varied topographic area than the Hatchet Ridge Wind Project and proposes turbines up to 62 percent taller with 70 percent larger blade diameters spaced over a much larger area.

In discussing impacts to yellow warbler, the DEIR states that the loss of 115.2 acres of riparian habitat on the Project site could adversely affect migratory populations of yellow warbler. However, the DEIR goes on to state: "*because there is an abundance of riparian habitat in the region, the loss of 115.2 acres of riparian habitat would not result in a decline in yellow warbler populations*." The DEIR lacks additional analysis to support this conclusion and should provide an analysis of riparian habitat quality, location, or occupancy within the region in order to support this conclusion. Many songbirds, including yellow warbler, establish territories and actively defend those territories against intruders. Species evicted by the loss of 115.2 acres of suitable riparian nesting habitat may not necessarily be able to move into adjacent riparian areas if they are already occupied, which would result in a net decline in breeding success for the species. CDFW recommends that the final Project siting and design seek to maximize the avoidance of riparian habitat, and when riparian habitat cannot be avoided, the loss be mitigated at an appropriate ratio through riparian habitat acquisition, conservation, and/or enhancement and restoration (**Recommendation 11**).

Based on the limited and incomplete impact analysis, and the lack of detailed mitigation measures, the determination of less than significant for impacts to songbirds would be conclusory. Evidence suggests that operational impacts to songbirds warrant additional analysis and mitigation. CDFW recommends the development of a threshold for small birds in Mitigation Measure 3.4-3b as well as the development of further mitigation alternatives (**Recommendation 12**). These mitigation measures should 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)).

Given the uncertainties regarding the magnitude of mortality of songbirds, CDFW recommends the inclusion of small birds in a in robust TAC/CDFW-approved post-construction bird and bat fatality monitoring plan incorporating scent detection dogs and utilizing the best available science, as a requirement of the Lead Agency's conditional use permit for this Project (**Recommendation 13**). A well-designed and effectively

implemented TAC could assist the Lead Agency in developing performance standards and feasible measures to meet those standards.

Proposed Conservation Measures for Nesting Songbirds

The DEIR concludes that construction and decommissioning of the Project will result in a less than significant impact to nesting songbirds, including special status species. For the reasons discussed above and in order further reduce impacts and to comply with Fish and Game Code sections 3503 and 3513, CDFW recommends the inclusion of the DEIR proposed Conservation Measure for Nesting Songbirds, Conservation Measure for Vaux's Swift, and Conservation Measure for Willow Flycatcher and Yellow Warbler as mitigation measures for the Project, with the following changes.

CDFW recommends utilizing an alternate version of the proposed Conservation Measure for Nesting Songbirds. The proposed measure reads:

> **"*Conservation Measure for Nesting Songbirds:*** *Avoid and minimize construction related impacts to nesting songbirds.*
>
> *Prior to any disturbance of nesting habitat during breeding season (March 1 to August 15), a qualified biologist will survey the area to be impacted to locate any active bird nests. Active nests will be avoided by a suitable buffer distance (e.g., 100 to 250 feet).*"

CDFW recommends the use of the following measure instead (**Recommendation 14**):

> In order to avoid impacts to nesting migratory birds protected under the federal Migratory Bird Treaty Act and California Fish and Game Code section 3503, including their nests and eggs, one of the following shall be implemented:
>
> a. Vegetation removal and other ground-disturbance activities associated with construction shall occur between September 1 and January 31 when birds are not nesting; or
>
> b. If vegetation removal or ground disturbance activities occur during the nesting season (February 1 through August 31), a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area. Surveys shall begin prior to sunrise and continue until vegetation and nests have been sufficiently observed. The survey shall take into account acoustic impacts and line-of sight disturbances occurring as a result of the project in order to determine a sufficient survey radius to avoid nesting birds. At a minimum, the survey report shall include a description of the area surveyed, date and time of the survey, ambient conditions, bird species observed in the area, a description of any active nests observed, any evidence of breeding behaviors (e.g., courtship, carrying nest materials or food, etc.), and a description

> of any outstanding conditions that may have impacted the survey results (e.g., weather conditions, excess noise, the presence of predators, etc.).
>
> The results of the survey shall be submitted to the CDFW upon completion. The surveyshall be conducted no more than one week prior to the initiation of construction. If construction activities are delayed or suspended for more than one week after the preconstruction survey, the site shall be resurveyed.
>
> If active nests are found, the applicant shall consult with CDFW and the USFWS regarding appropriate action to comply with the Migratory Bird Treaty Act and California Fish and Game Code section 3503. Compliance measures may include, but are not limited to, exclusion buffers, sound-attenuation measures, seasonal work closures based on the known biology and life history of the species identified in the survey, as well as ongoing monitoring by biologists.

Conservation Measure for Vaux's Swift 2d states: "*As an alternative to implementing the above listed measures, all highly suitable roost habitat may be surveyed and assessed, and the qualified biologist can make the determination that survey approaches and results are sufficient to indicate an absence of roosting Vaux's swift in the Project Site*." This section should include a statement that the determination of sufficiency of survey approaches and results will be based on coordination with CDFW and USFWS.

Conservation Measure for Willow Flycatcher and Yellow Warbler should reference yellow warbler habitat in addition to willow flycatcher habitat and include clarification as to the areas subject to protocol-level preconstruction surveys. The measure states: "*For all willow flycatcher habitat identified to be impacted within the final Project Site, conduct pre-construction protocol surveys during the breeding season (June 15 to August 15) using the most recent CDFW survey guidelines (Bombay et al., 2003). Survey results will be provided to the Shasta County Department of Resource Management Planning Division and CDFW. If additional areas of potentially suitable habitat than those already surveyed will not be directly impacted during Project construction, then no further willow flycatcher surveys will be required.*" Based on the last sentence, it is unclear whether or not additional surveys will be required and where. Surveys for willow flycatcher must be conducted in any area where adverse impacts, including indirect impacts such as visual disturbance and noise, to the species could occur. If take could occur, including through nest abandonment due to indirect impacts, an ITP would be necessary, as discussed above. Additionally, the measure states: "*Any active nest sites shall be monitored periodically throughout the nesting season to identify any sign of disturbance and to document nest status*." Monitoring of nest sites with potential for disturbance due to construction activities, especially for willow flycatcher, must occur regularly in order to ensure direct and indirect impacts to not occur.

Eagles

Several occurrences of bald eagle and golden eagle were documented during avian use surveys and eagle nest surveys conducted for this Project. The DEIR incorrectly states

that golden eagle observations occurred during the spring migration season; detections of golden eagles in March are actually during the early egg laying and courtship period, indicating the possibility of a breeding territory near the Project.

The DEIR correctly recognizes that direct impacts to bald and golden eagles "*through collision with power lines or operating wind turbine generators, or electrocution from energized components*" could occur during operation of the Project. The DEIR concludes that impacts to bald and golden eagles due to operation of the Project are significant and unavoidable and that uncertainty exists regarding impacts due to larger turbine sizes and rotor-swept areas as compared to the Hatchet Ridge Wind Project. Mitigation Measure 3.4-3a, 3-4-3b, and 3.4-3c are proposed to reduce impacts to eagles, raptors, and bats. Mitigation Measure 3.4-3a requires coordination with the USFWS and demonstration of compliance with the Bald and Golden Eagle Protection Act and USFWS Eagle Conservation Plan Guidance. CDFW recommends close coordination with the USFWS and the development of an Eagle Conservation Plan that outlines the project development process and includes conservation and monitoring plans, as recommended in the USFWS's Eagle Conservation Plan Guidance (USFWS 2013) and WEG. As part of this process a Bird and Bat Conservation Strategy should also be developed (**Recommendation 15**). A Bird and Bat Conservation Strategy is a life-of-a-project framework for identifying and implementing actions to conserve birds and bats during wind energy project planning, construction, operation, maintenance, and decommissioning.

California Spotted Owl

The DEIR proposes additional conservation measures to further reduce potential impacts of construction, operation, and decommissioning to California spotted owl (*Strix occidentalis occidentalis*). CDFW recommends the inclusion of these measures as mitigation in the DEIR along with a schedule for when pre-construction presence/absence surveys for California spotted owl will occur (**Recommendation 16**). The one-year survey should be conducted within two years prior to the initiation of construction activities.

Section 3.4.3.2 and Appendix C15, California Spotted Owl Risk Assessment, both state that approximately 995 acres of suitable spotted owl habitat exists within the southeast portion of the Project area, and that only a portion of this may be removed via Project-related operations. However, without having an accurate estimate of the expected loss of habitat, it is difficult to assess how this Project may impact California spotted owl and its habitat long-term. An approximate numerical amount of suitable habitat both pre- and post-construction for the Project area should be discussed in the DEIR.

Appendix C15 states that areas of high suitability are present in very small, isolated patches within the Project area that may limit the potential for occurrences of California spotted owl. This is typically not the case on managed timberlands in the North Interior of California. Several California spotted owl breeding pairs have been documented

nesting in small patches of high-quality nesting/roosting habitat, surrounded by nesting and/or foraging habitat.

Raptors (Excluding Eagles)

Significant and Unavoidable Impacts

The DEIR estimates on-going Project operations would kill between 4.3 and 53 raptors per year; an estimated potential of 2,210 raptor fatalities over the Project's 40 year life. The DEIR concludes that operational impacts on raptors are significant and unavoidable and proposed mitigation measures would "*reduce operations-related impacts to the maximum extent practicable*." CDFW does not concur that a full suite of feasible measures to avoid and minimize impacts to raptors are proposed in the DEIR. As discussed above, additional options including altering turbine locations, operational changes, compensatory mitigation, and ongoing monitoring of project impacts should be considered with a full suite of adaptive management strategies (**Recommendation 17**).

Nesting Season

Mitigation measure 3.4-6(a) states that tree and vegetation removal activities shall be avoided, when feasible, within potential raptor nesting habitat from March 1 – August 15 during each year of construction. CDFW recommends utilizing a raptor nesting season (excluding eagles) of February 1 through September 15 to correspond with the California spotted owl nesting season and encompass other nesting raptors that begin or end their nesting seasons before or after the proposed March 1 through August 15 dates (**Recommendation 18**).

Pre-construction Survey Methods

Mitigation measure 3.4-6(b) requires pre-construction surveys for construction activities occurring during the nesting season; however, the measure does not provide an outline for raptor survey methods. CDFW requests the inclusion of raptor survey method outline/proposed protocol in the DEIR.

Protection Buffers

Mitigation measure 3.4-6(d) provides a protection buffer of 500 feet for active nest sites until the young have fledged the nest site. Typically, a protection buffer of approximately 1,320 feet (0.25 mile) is a general minimum protection distance for nesting raptors. CDFW recommends utilizing an initial protection buffer of 1,320 feet (**Recommendation 19**). Subsequent consultation with CDFW may occur if the buffer needs to be decreased in size for operational purposes and if the breeding pair shows a level of tolerance towards the existing operational disturbance. As discussed below, larger buffers may be required during blasting activities.

Northern Goshawk

Mitigation measures 3.4-7(a-b) and 3.4-8 provide mitigation for construction and operational impacts to northern goshawk (*Accipiter gentilis*); however, the DEIR does not provide an analysis for the potential loss of northern goshawk habitat from construction activities associated with the project. An estimate of the total acreage of suitable northern goshawk habitat currently existing within the project area, and subsequently the amount of suitable habitat post-construction should be included in the DEIR.

Blasting

The Project may require blasting prior to trenching in rocky areas; however, a discussion of impacts of blasting on wildlife species is not included in the DEIR. CDFW recommends including this analysis in the DEIR. In order to avoid impacting nesting birds, CDFW recommends conducting blasting activities outside of avian breeding seasons (**Recommendation 20**). Depending on the timing and location of the blasting and the sensitivity of potentially impacted species to disturbance, even the 1,320-foot protection buffer proposed above may not be sufficient to avoid impacting nesting birds. For example, the USFWS National Bald Eagle Management Guidelines (USFWS 2007) recommends avoiding blasting and other activities that produce extremely loud noises within 0.5 miles (2,640 feet) of active bald eagle nests, unless greater tolerance has been demonstrated by eagles in the nesting area. If blasting activities must occur during the breeding season, larger buffers than those proposed in the DEIR should be required and determined in consultation with CDFW and the USFWS.

Proposed Reduction of Prey Species Numbers

Mitigation measure 3.4-3a proposes to:

> *"Discourage raptor use of immediate vicinity of wind turbine generators by taking steps to reduce prey species' numbers, such as minimizing creation of prey habitat such as rock piles."*

Additional information is needed about how the Project proposes to reduce availability of prey species beyond the minimization of prey habitat. This mitigation measure could have potentially significant impacts on other non-target species. CDFW is unaware of a feasible prey reduction 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 Species of Special Concern such as the American badger (*Taxidea taxus*) and the fisher West Coast Distinct Population Segment (*Pekania pennanti)*. 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 prey reduction actions and any potentially significant impact that may result from mitigation measure 3.4-3a.

Bats

The DEIR concludes that impacts to bats from Project operation and maintenance will be significant and unavoidable and anticipates that "*operation of the Project would result in adverse effects on bats, potentially affecting bat populations*."

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*), silver-haired bat (*Lasionycteris noctivagans*), and the western red bat (*Lasiurus blossevillii*, Species of Special Concern), all of which occur at the Project site. The pallid bat (*Antrozous pallidus*, Species of Special Concern), Townsend's big-eared bat (*Corynorhinus townsendii*, Species of Special Concern), spotted bat (*Euderma maculatum*), and western mastiff bat (*Eumops perotis californicus*) also have potential to occur onsite.

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). The DEIR recognizes the uncertainty associated with bat mortalities and that the potential for unexpectedly high mortality rates exists. As discussed above, the DEIR concludes that impacts to bats from Project operation and maintenance will be significant and unavoidable and states that "*no additional, feasible mitigation measures are available that, if implemented, would reduce the Project's contribution below the established level of significance*." CDFW does not concur that the DEIR has analyzed all potentially feasible mitigation measures. For example, habitat acquisition and preservation or restoration of habitat for specific species impacted by the Project may be a feasible mitigation option. However, the DEIR does not describe or analyze these actions. CDFW recommends analysis of additional mitigation options, including compensatory mitigation that is roughly proportional and fully enforceable, should be included in the DEIR along with enforceable mitigation performance standards (**Recommendation 21**).

CDFW supports the use of operational modifications proposed in Mitigation Measures 3.4-13 and 3.4-3b, such as curtailment of turbine speed, the use of low-intensity ultraviolet light, and ultrasonic deterrence systems and recommends operational modifications be implemented upon commencement of Project operations. Curtailment of operations during high risk periods for bats (low wind nights) has been shown to reduce bat mortality by up to 93 percent without significant power loss (Arnett et al. 2011). CDFW recommends detailed outline or description of the types of methods that would potentially be utilized for curtailment and deterrence should be included in the DEIR (**Recommendation 22**). Considering that these mitigation measures are

proposed to decrease the level of take post-operations, additional details are important to disclose.

Additional operational modifications to consider include demand sensitive curtailment systems or altering the timing of turbine operations by operating turbines during daylight hours only, and then shut off at night. This process would remove the wind turbine impact during the nocturnal period when bats are most active. To decrease the potential for take, curtailment and deterrence methods could be focused during the breeding and migration periods for bat species. During the breeding period, several bat species are attracted to the humming sound of wind turbines, increasing the potential for significant mortality rates. In addition, bats will use ridges, forests, riparian zones, etc. as stop over sites during migration. Considering that habitats within the Project area could potentially serve as migration stop over sites, higher rates of bat mortality from wind turbines could be observed during that period. Using curtailment and deterrence techniques during these two temporal periods when bat activity is highest would serve to minimize take of bat species. This would serve to decrease mortality of breeding and migrating avian species as well.

Based on fatality estimates discussed in the DEIR and from the Hatchet Ridge Wind Project it is highly likely that bat fatalities will exceed proposed thresholds. Therefore, operational curtailment or additional operational modifications should be implemented immediately upon commencement of operations.

Based on the evidence that the Project as proposed will result in significant impacts to bats, CDFW recommends the development of a robust TAC/CDFW-approved post-construction bird and bat fatality monitoring plan incorporating scent detection dogs and utilizing the best available science (**Recommendation 23**).

Impacts to Roosting Bats

The DEIR recognizes that the Project site contains "*ample forest that could provide roosting habitat for bats*"; however, the DEIR does not to analyze impacts of Project construction and habitat removal on bat species, including the impact resulting from the possible loss of maternity roosts and hibernacula. The availability of suitable roosting habitat is often posited as a limiting factor for western bat populations. For example, Pierson (1998) stated "*considerable evidence suggests that roosts are limiting for many bat species*." Hayes (2003) cites several authors that "*hypothesized [roosts] to be the primary factor*" limiting bat populations. That roosts may limit bat populations is a reasonable conclusion, given bats may use multiple roosts sites with different characteristics during the year; that roost site suitability may be based on a narrow range of suitable temperatures, relative humidity, physical dimensions, and so on; and that such sites may occur in low numbers on the landscape. Evidence from long-term studies such as at the Randall House in Marin County (Fellers and Halstead 2015) support this hypothesis – the population there has shown an increase since protections were enacted for the roost site (and while no other factor is thought to have contributed

to the increase in colony size). Removal of an occupied maternity roost could result in the fatality of an entire colony and could result in population level impacts to local species.

Significance criteria proposed in the DEIR states that "*a project would result in a significant impact to a biological resource if it would …interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites*." CDFW recognizes maternity roosts as wildlife nursery sites and impacts that would result in mortality or injury of bats, particularly to maternity roosts or hibernacula as a significant impact.

CDFW recommends the DEIR be revised to include a full analysis of Project impacts on bats and provide feasible mitigation measures to reduce impacts to roosting bat species, including avoiding impacts during maternity and hibernacula seasons (**Recommendation 24**). For tree removal occurring outside of these seasons, a two-step tree removal process should be utilized under the direction of a qualified bat biologist, as follows:

- Day 1: Remove non-habitat vegetation including shrubs and small diameter trees as well as specific limbs and branches of habitat trees.

- Day 2: Remove the remaining branches on the habitat tree followed by final removal of the main tree trunk.

This process alters the thermal properties of the habitat to be removed and allows for bats to leave roost locations on their own, prior to complete removal of the roost.

Western Bat Working Group Species List Correction

Fatality thresholds for bats proposed in Mitigation Measure 3.4-3b, utilize Western Bat Working Group (WBWG) priority rankings in determining fatality thresholds. The threshold correctly lists pallid bat, Townsend's bat, spotted bat, western red bat, and western mastiff bat as high priority (red) species. The WBWG medium priority (yellow) species list correctly includes hoary bat, but incorrectly includes spotted bat again. CDFW believes that spotted bat in this list should be replaced with silver-haired bat, another medium priority species known to occur in the Project area.

Post-construction Mortality Monitoring

Mitigation Measure 3.4-3b requires the applicant to design and implement a post-construction mortality monitoring (PCMM) study to assess operational impacts on avian species and bats and ensure the effectiveness of avian protection measures.

The measure describes elements required in the PCMM study including the detection of bald and golden eagles and the completion of searcher efficiency trials and carcass persistence trials "*using large raptor carcasses or an appropriate, commercially available proxy*" to "*calculate overall detection probabilities of eagle carcasses.*" Although fatality thresholds are proposed for bats, the PCMM focuses on large birds and eagles, and it is unclear how fatality numbers will be determined for small birds and bats as the measure lacks thresholds for small birds and discussion of bat and small bird fatality monitoring or detection.

In order to determine if Project impacts meet or exceed the proposed fatality thresholds for bats and the to be determined threshold for small birds, PCMM surveys must be scientifically rigorous and designed specifically to find bats and small birds and account for carcass removal by scavengers. Carcass persistence time is significantly lower for bats and small birds than it is for the raptor carcasses proposed for use in the searcher efficiency trials and carcass persistence trials. Bias trials must utilize correctly sized carcasses and be designed to allow for the estimation of searcher efficiency and carcass persistence for small birds and bats.

Smallwood 2020 states: "*More frequent searches for fatalities greatly improves the likelihood of detecting bat fatalities, by more competently competing against vertebrate scavengers at being the first to find carcasses. More frequent searches also allows searchers more opportunities to find bat carcasses before they deteriorate to obscurity*." Smallwood found that search intervals of less than 10 days were, on average, eight times higher than estimates based on longer search intervals. CDFW recommends that carcass searches be conducted at a frequency and spacing to allow for a credible estimate for bat and small bird fatalities (**Recommendation 25**).

PCMM surveys should use the most current and scientifically rigorous estimators for determining accurate and precise estimates of fatality, including estimators that address rare or infrequently detected species. Examples of these estimators include the U.S. Geological Survey Evidence of Absence tool which can be found here: https://www.usgs.gov/centers/fresc/science/statistical-tools-wind-and-solar-energy-development-and-operations?qt-science_center_objects=0#qt-science_center_objects.

In order to improve detection probability, CDFW strongly recommends the use of scent detection dogs as part of the PCMM studies for both bats and birds (**Recommendation 26**). The use of dogs in monitoring has been shown to greatly improve the accuracy of searches, particularly for small-bodied animals (Arnett 2006, Paula et al. 2011). In a blind trial, scent detection dogs located 73 percent of bat carcasses, whereas human searchers detected only 20 percent (Mathews et al. 2013).

Given the 40-year length of the Project term and the expected changes in habitat conditions over the life of the Project due to forest maturation, ongoing timber operations, and associated vegetation changes, CDFW recommends additional monitoring beyond the proposed initial 3 years (**Recommendation 27**). Monitoring

could occur at 5-year intervals or more frequently, based on recommendations from a TAC. These additional monitoring periods would enable capture of changing species composition and habitat use as surrounding forest habitat matures or changes occur due to timber harvest operations and would ensure that unexpected fatalities are addressed or avoided.

Additionally, the CEC Guidelines recommend that wind projects located in areas where mortality of protected species is expected due to turbine collisions should include at least one year of bird use counts during project operation. This additional monitoring will serve to provide a context for interpretation of fatality data, to provide insight into turbine-specific fatality patterns and to understand effects of turbines on bird behavior and distribution. CDFW recommends requiring avian use surveys within the first 3-years of full Project operations (**Recommendation 28**).

Overhead Electrical Transmission Lines

The DEIR acknowledges that overhead electrical transmission lines located within the Project may increase the likelihood of collision fatalities or electrocution to eagles, other raptors, including northern goshawk, and sandhill cranes. Mitigation Measure 3.4-3a proposes following the Avian Power Line Interaction Committee (APLIC) Guidelines to minimize electrocution or collision with transmission lines. However, the DEIR lacks further discussion of how these guidelines will be followed and how it will be determined that this measure will reduce impacts to a less than significant level for the purposes of CEQA review. CDFW recommends the DEIR provide specifics regarding guideline implementation and provide an assessment of this measures effectiveness in reducing mortality (**Recommendation 29**).

Western Pond Turtle

The habitat description for western pond turtle (*Actinemys marmorata*) in Biological Resources Section 3.4, does not include terrestrial habitat use or breeding/reproductive period. Additionally, it appears terrestrial habitat use and breeding/reproductive period for western pond turtle was not considered in the project's biological impacts analysis.

Considered to be predominantly aquatic, habitat for western pond turtle consists of both aquatic and terrestrial environments and time spent on land may be considerable (Bury and Germano 2008). To endure excessive temperatures or in response to short-term drought, *A. marmorata* may aestivate in upland habitat under leaf litter, logs, or soil up to 500 meters from water (Hayes et al 1999). In perennial lentic habitat, they may hibernate under water in the benthic layer; and in lotic habitat, dependent on stream flow conditions, may hibernate on land, migrating upland in fall and winter months and returning to water in spring (Holland 1994). Nesting occurs on land, five to 400 meters or more from water (Jennings and Hayes 1994). Gravid females leave the water in the months of May through July for nest development and oviposition, typically establishing nests on south or west facing aspects ranging from 0 to 25 degrees in slope (Bury et al

2012). Nests are excavated below ground in thermally optimal locations for egg incubation in relatively dry soils, as moisture can induce egg damage, preventing development and successful hatching (Jennings and Hayes 1994). Nests are sealed and camouflaged with surrounding vegetation and are undetectable visually (Geist et al 2015). Egg incubation can range from 73 to 80 days (Feldman 1982). Following incubation, hatchlings may remain (overwinter) in the nest, emerging to migrate to water the subsequent spring (Holland 1994).

For adequate disclosure in the DEIR, CDFW requests a complete habitat description for western pond turtle in the Biological Resources Section 3.4 of the DEIR, along with inclusion of the terrestrial component of their habitat and breeding period in the Project biological impacts analysis (**Recommendation 30**).

According to the Biogeographic Information and Observation System (BIOS) North American Herpetological Education and Research Project (HERP) - Gov [ds1127] layer, there are occurrences of western pond turtle in Willow Creek (Township 34N Range 01W Section 2, Mt. Diablo baseline and meridian) within the project evaluation area depicted in Appendix C1 Site Characterization Study Report. For an accurate account of species occurrences within the project evaluation area, please revise the state sensitive wildlife species map (Figure 11) of Appendix C1 and the DEIR Biological Resources Section 3.4 to include this data.

Special Status Mammals

Several special status mammal species have been documented on the Project site, including gray wolfand Oregon snowshoe hare ((*Lepus americanus klamathensis*, Species of Special Concern). DEIR Table 3.4-3 concludes there is low potential for occurrence of gray wolf, moderate potential of occurrence for Oregon snowshoe hare, but doesn't acknowledge that evidence of gray wolf has been documented on the Project site or that photographic evidence of Oregon snowshoe hare within the Project site were provided to the Project Team. The DEIR acknowledges that site preparation and construction activities may result in adverse impacts to Oregon snowshoe hare and concludes that impacts to these species are less than significant, while also including suggested conservation measures that provide best management practices to reduce impacts to terrestrial mammals. General wildlife and focused mammal surveys were not conducted as part of this Project. Without focused species-specific surveys, an accurate analysis of impacts cannot be conducted and there is not enough evidence to support the finding of less than significant impact. Additionally, impacts to CESA-listed species and Species of Special Concern are considered potentially significant by CDFW. Species of Special Concern status applies to animals generally not listed under the federal Endangered Species Act (ESA) or CESA, but which nonetheless are declining at a rate that could result in listing, or historically occurred at low numbers and known threats to their persistence currently exist.

CDFW does not concur with the determination that impacts are less than significant without the inclusion of additional analysis and mitigation measures. The conservation measures proposed in the DEIR should be included as required mitigation measures. In addition, CDFW recommends the following measures to reduce impacts to special status mammal species (**Recommendation 31**):

Gray Wolf

The gray wolf is listed as an endangered species pursuant to both the Federal ESA and CESA. The *Year 1 Avian Use Study Report and Risk Assessment for the Fountain Wind Project* report documents evidence of gray wolf in Project area. To avoid take of gray wolf, if an active den or rendezvous site for this species is observed, all operations within a 0.25-mile radius shall be suspended until CDFW is contacted for further consultation. Incidental gray wolf sightings or evidence shall continue to be reported to CDFW. Information on reporting gray wolf sightings can be found here: https://www.wildlife.ca.gov/Conservation/Mammals/Gray-Wolf/Sighting-Report.

Oregon Snowshoe Hare

Mitigation of impacts to Rocky Mountain Maple Riparian Scrub habitat may be adequate for restoring habitat lost during construction operations that would be utilized by Oregon snowshoe hare. However, CDFW recommends including a discussion in the DEIR regarding Oregon snowshoe hare as a key species that would be negatively impacted by the removal of riparian scrub habitat. Additional discussion should be included regarding how this species will be protected long-term via riparian restoration activities.

Conservation Measures

The DEIR identifies several additional conservation measures that would serve to further reduce impacts to sensitive species. The DEIR states that "*the County may elect to include additional conservation measures, as follows, as a condition of permit approval*." CDFW concurs with the inclusion of these additional measures and recommends that measures proposed for California spotted owl, sandhill crane, nesting songbirds, Vaux's swift, willow flycatcher and yellow warbler, and terrestrial species be included as mitigation for the Project (**Recommendation 32**), including the changes addressed above.

Environmental Awareness Training Program

CDFW recommends the preparation of an environmental awareness training program be provided to all personnel working on the Project site during construction and operation (**Recommendation 33**). This program should be reviewed by the TAC, CDFW and the USFWS.

Special Status Plants

According to rare plant surveys conducted for the Project, Tracy's eriastrum has the potential to occur on the Project site. Tracy's eriastrum is listed in the *2019 Rare Plant Surveys and Natural Vegetation Community Mapping* report as a California Rare Plant Rank 3.2 species. While this is correct, this species is also a State-listed Rare plant under the Native Plant Protection Act (NPPA) (Fish & G. Code § 1900 et seq).

The NPPA was enacted in 1977 and established the listing categories *rare* and *endangered*. CESA, enacted in 1984, established the listing categories *threatened* and *endangered*. When CESA was implemented, all plants which had previously been listed as endangered under NPPA were automatically listed as endangered under the newer law. However, plants listed as rare under NPPA were not automatically listed as threatened under CESA. Thus, there are currently three listing categories for plants under California law – rare, threatened, and endangered. Although no plants have been listed pursuant to NPPA since 1988, it remains a part of the Fish and Game Code. Plants determined to be endangered, threatened, or rare are listed at 14 CCR section 670.2. CEQA Guidelines section 15380(b) define the terms "rare" and "endangered" for the purposes of CEQA. These definitions are separate from, and not contingent upon, the definitions provided in CESA, NPPA, or the federal ESA. Adverse impacts to rare and endangered plants are among the impacts defined in the CEQA Guidelines that *"may have a significant effect on the environment"* (CEQA § 15065). All plants listed under CESA, NPPA, or ESA should be treated as rare and endangered for CEQA purposes (CEQA §§ 15065(a) and 15380). While most species State-listed pursuant to CESA or NPPA are California Rare Plant Rank 1 or 2, there are a few exceptions. *Eriastrum tracyi* is California Rare Plant Rank 3.2 (i.e. "list 3") and is one of these unusual exceptions of a State-listed species that is not California Rare Plant Rank list 1 or 2.

Shasta snow-wreath is documented as having potential to occur on the Project site according to the *2019 Rare Plant Surveys and Natural Vegetation Community Mapping* report. Based on findings published in the California Regulatory Notice Register by the Office of Administrative Law on May 1, 2020, Shasta snow-wreath was designated as a State Candidate for listing as endangered under CESA, and the preparation of a Status Review has been initiated to determine whether listing is warranted. During the Status Review period, Fish and Game Code section 2085 confers full legal protection of an endangered or threatened species on a candidate species. This includes the general prohibition on "take" of the species, as defined in Fish and Game Code section 86 as to "hunt, pursue, catch, capture or kill" or to attempt to engage in any of these activities unless authorized by CDFW as discussed above. Take authorization pursuant to CESA requires Project- and species-specific avoidance and minimization measures, as well as full mitigation for Project related impacts. Species subject to CESA take authorizations require robust surveys, often with multiple years of survey effort.

As currently written, Mitigation Measure 3.4-1 may not be sufficient to protect these species from adverse impacts, including the proposed potential transplantation. CDFW generally does not support the use of relocation, salvage, and/or transplantation as mitigation for most impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful. If considered, these types of mitigation measures must be discussed with CDFW as described in the DEIR. If impacts to these species cannot be avoided, an ITP will be required, as discussed above.

The DEIR states that rare plant surveys are typically valid for up to five years per CDFW protocol. While footnote 14 of the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* does reference that surveys at intervals of five years may be adequate in forested areas, it also discusses that habitats with annual and short-lived perennial plants as a major floristic component may require annual surveys. Due to the potential for many sensitive plant species to occupy the Project area, including the State Rare Tracy's eriastrum and CESA candidate Shasta snow-wreath, CDFW recommends the completion of additional pre-construction surveys prior to the five year time window discussed in Mitigation Measure 3.4-1 with focus on habitats with potential for sensitive species to occur (**Recommendation 34**).

In Appendix B (Plant Species Encountered within the Fountain Wind Project) of the *2018 Rare Plant Surveys and Natural Vegetation Community Mapping* report, *Carex comosa* (bristly sedge) is listed as observed. This species is also mentioned in the discussion of Wet Montane Meadow in Appendix C and is listed in the scoping list in Appendix A. As discussed in previous comments, *Carex comosa* is a California Rare Plant Rank 2B.1 species. CDFW previously requested documentation of the occurrence locations for this species, along with the numbers of plants observed, and a discussion on the proximity of occurrences to the Project footprint/areas of disturbance. No additional discussion of the species was included in the DEIR. This information is essential for determining if a significant impact will occur to this species. CDFW requests clarification regarding impacts to *Carex comosa*.

The *2019 Rare Plant Surveys and Natural Vegetation Community Mapping* report Plant Species Encountered list (Appendix C) includes *Carex* species and *Castilleja* species. Both of these genera include sensitive species; however, no further discussion is included regarding whether or not the species observed have potential to be sensitive species. CDFW requests clarification regarding the status of these two species.

In a discussion regarding California Rare Plant Ranks, the DEIR states that "*CDFW recommends and local governments may require that CEQA review of proposed projects address plants on Lists 1A, 1B, and 2.*" California Rare Plant Ranked plants either meet the definitions of CESA and are eligible for state listing (Rank 1, and 2 species) or may be declining or significant locally (Rank 3 and 4 species). Impacts to species listed as California Rare Plant Rank 1, and 2 or their habitat must be analyzed

during preparation of environmental documents relating to CEQA, as they meet the definition of rare or endangered under CEQA Guidelines section 15125 (c) and/or section 15380. Impacts to species listed as California Rare Plant Ranks 3 and 4 should be analyzed when impacts will occur to populations at the periphery of a species' range, in areas where the taxon is uncommon or has sustained heavy losses, in populations with declining trends, in areas where populations exhibit unusual morphology or occur on unusual substrates, or at the type locality for the population. CDFW emphasizes that impacts to California Rare Plant Rank List 3 and 4 species warrant analysis during environmental review as evidenced by the discussion regarding Tracy's eriastrum above.

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 Sensitive Natural Communities (SNC) to be addressed during the CEQA environmental review processes.

Page 3.4-15 of the DEIR incorrectly states: "*sensitive natural communities do not occur on the Project site*". Project surveys identified the Rocky Mountain Maple Provisional Shrubland Alliance/Rocky Mountain Riparian Maple Riparian Scrub Habitat (State rarity rank S3?) SNC within the Project site and the DEIR recognizes that up to 107.2 acres could be permanently affected by the Project. In addition to construction impacts, the DEIR recognizes that "*ongoing operations and maintenance impacts to sensitive vegetation communities and riparian habitats could occur through edge effect degradation or introduction of weeds*." The DEIR concludes that edge effect degradation would be unlikely to result in a substantial reduction in the Rocky Mountain Maple Riparian Scrub community but does not analyze impacts related to the introduction of weeds or invasive species. As discussed below, CDFW recommends the inclusion of invasive weed control measures in the DEIR and the development of an Invasive Species Management Plan prior to Project construction as discussed in the DEIR (**Recommendation 35**). This plan should be reviewed by CDFW to ensure adequate protection measures are in place to avoid and minimize impacts to sensitive habitats.

Project surveys identified Beaked Sedge Meadows Herbaceous Alliance as occurring within seasonally or permanently saturated emergent wetland areas adjacent to streams and ponds. Although the Beaked Sedge Meadows Herbaceous Alliance is ranked S4, it is a vegetation type associated with wetland habitats which, along with riparian communities, are considered state sensitive due to their rarity, loss throughout the state, and biological importance. The DEIR determined approximately 3.44 acres of wetlands and other waters would be permanently removed or filled and 1.48 acres of wetland and 0.64 acres of other waters would be temporarily affected.

CDFW maintains responsibility for wetland and riparian habitats and considers impacts to these habitats as significant. It is the policy of CDFW to strongly discourage development in wetlands or conversion of wetlands to uplands. We oppose any development or conversion which would result in a reduction of wetland acreage or wetland habitat values, unless, at a minimum, Project mitigation assures there will be "no net loss" of either wetland habitat values or acreage.

In 1993, Executive Order W-59-93 established a comprehensive wetlands policy for the State that sought no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values. The Fish and Game Commission also adopted a Wetlands Resources Policy, which recognizes the habitat values of wetlands and the damage to fish and wildlife resources from projects resulting from net loss of wetland acreage or habitat values. The Policy states:

> "*it is the policy for the Fish and Game Commission to seek to provide for the protection, preservation, restoration, enhancement and expansion of wetland habitat in California. Further, it is the policy of the Fish and Game Commission to strongly discourage development in or conversion of wetlands. It opposes, consistent with its legal authority, any development or conversion which would result in a reduction of wetland acreage or wetland habitat values. To that end, the Commission opposes wetland development proposals unless, at a minimum, project mitigation assures there will be "no net loss" of either wetland habitat values or acreage. The Commission strongly prefers mitigation which would achieve expansion of wetland acreage and enhancement of wetland habitat values*."

According to CDFW's Wetland Technical Memorandum (CDFW 2014), numerous studies have shown that wetland mitigation projects often do not meet their required ecological performance standards. Along with the risk of mitigation underperformance or failure, the temporal loss of wetland function from the time of impact to the time a mitigation site is fully functional is also a factor in potentially diminishing the value of compensatory restored wetlands. Such temporal loss may vary depending on habitat type and other factors. Mitigation should account for temporal losses of ecosystem functions and the likelihood of recreating or restoring disturbed habitats to the naturally functioning ecosystem they are meant to replace and propose appropriate mitigation ratios.

Although Mitigation Measures 3.4-15b (Compensate for Impacts to Rocky Mountain Riparian Scrub Habitat) and 3.4-16c (Compensate for Impacts to Wetlands and other Waters) state "*the standard for mitigation shall be no net loss*", the proposed 1:1 mitigation ratio for compensation to permanently removed habitat would require a 100 percent success criteria to not be considered failed mitigation. Therefore, CDFW does not believe that a 1:1 ratio is adequate to successfully comply with no net loss standards. Because these are sensitive communities, with potential to support sensitive species, mitigation for impacts to wetlands and riparian areas will need to be mitigated

at a ratio greater than the proposed 1:1. California has lost much of its original wetland and riparian habitat, with acreage and values continuing to decline (CDFW 2014). A minimum ratio of 3:1 would be more appropriate for the loss of wetland and riparian habitats associated with this Project; out-of-kind mitigation ratios should be greater than 3:1. The DEIR should demonstrate that the Project will not result in a net loss of wetland habitat values or acreage.

Mitigation Measures 3.4-15b (Compensate for Impacts to Rocky Mountain Riparian Scrub Habitat) and 3.4-16c (Compensate for Impacts to Wetlands and other Waters) discuss the development of a reclamation and revegetation plan, riparian mitigation and monitoring plan, and wetland mitigation and monitoring plan, with review and approval oversight given to the Shasta County Department of Resource Management (County). The mitigation measures state that the County "may" consult with CDFW (for riparian impacts) and USACE (for impacts to wetlands) about the adequacy of the plan. CDFW requests that "may" be replaced with "shall" and that CDFW be consulted on the adequacy of both plans as wetland habitats associated with streams fall under CDFW's jurisdiction. Additionally, these mitigation measures should include a timeline for completion of mitigation requirements, require 85 percent success criteria after at least 5 years of monitoring, and maintenance.

Discrepancies exist between summary tables of potentially jurisdictional aquatic resources in DEIR Table 3.4-2 and Appendix C2 - Aquatic Resources Survey Report Table 4. Across all features mapped, acreage and linear feet totals are lower in DEIR Table 3.4-2 than totals reported in Aquatic Resources Survey Report Table 4, in many cases the differences are significant. Discrepancies also exist in the text of the DEIR in relation to reporting of mapped acreage and linear feet. For example, the DEIR Aquatic Resources section pages 3.4-7 and 3.4-8 reference acreage and linear feet totals from Table 4 of the Aquatic Resources Survey Report; however, the DEIR Wildlife section on page 3.4-9 references perennial stream acreage and linear feet totals from Table 3.4-2 of the DEIR. These discrepancies cause uncertainty in the accuracy of analysis conducted in sections of the DEIR relating to aquatic resources. In order to allow for an accurate analysis of Project impacts to aquatic resources, CDFW recommends correcting these discrepancies throughout the DEIR (**Recommendation 36**).

Invasive Species

Project surveys documented numerous non-native invasive species on the Project site including California Invasive Plant Council (CAL-IPC) designated High, Moderate, and Limited species. The *2019 Rare Plant Surveys and Natural Vegetation Community Mapping* report concludes: "*While Project construction will create some additional disturbance to the landscape, once construction is complete, the Project will have minimal influence on the future distribution of invasive species relative to the influence of ongoing timber operations*." However, the DEIR discusses significant impacts to Rocky Mountain Maple Riparian Scrub habitat through creation of cleared areas, which could facilitate invasion of invasive species, and indirect impacts to wetlands and other waters as a result of introduction of invasive species. Further, the DEIR discusses ongoing operations and

maintenance impacts to sensitive vegetation communities and riparian habitat through the introduction of weeds and discusses construction activities including clearing and grubbing, topsoil stripping, grading, compaction, and utility trenching that may result in the colonization of invasive plant species.

The Hatchet Ridge Wind Project required the development and implementation of an invasive species control plan. A baseline noxious and invasive weed species survey was conducted in 2009 prior to construction. Construction was completed in 2010 and post-construction invasive species monitoring commenced in 2011; however, invasive species control measures were delayed until 2013. During this time, a considerable increase in the abundance and distribution of invasive species occurred on the Project site, including colonization by new species (West, Inc 2011 and 2012). For example, invasive species detections increased from three species during baseline surveys to seven species during the 2012 surveys. As a further example, baseline surveys detected low numbers of individual bull thistle (*Cirsium vulgare*) plants, which were subsequently documented to number in the thousands during the 2012 survey. Based on experiences at the Hatchet Ridge Wind Project, CDFW does not concur with the assertation that the Project will have minimal influence on invasive species distributions.

Page 2-14 of the DEIR discusses the development of an Invasive Species Management Plan in relation to site restoration activities; however, this plan is not discussed elsewhere in the DEIR, nor are invasive species control measures proposed. CDFW is concerned that invasive species infestations could impact sensitive species and habitats and hinder revegetation and restoration efforts.

Additional information should be included in the DEIR to assist in determining if impacts from invasive species will not cause a significant impact. Because of the presence of non-native invasive species on the Project site and the difficulties with controlling infestations at the Hatchet Ridge Wind Project, CDFW recommends the development of an Invasive Species Management Plan as discussed on page 2-14 of the DEIR (**Recommendation 35**). Best management practices (BMPs) found in the Cal-IPC *Best Management Practices for Transportation and Utility Corridors* publication should be implemented. This resource is available, free of charge at the following website https://www.cal-ipc.org/resources/library/publications/#BMPs and includes a variety of BMPs that can be adapted to this Project. An example of a measure is included below:

> Invasive Weed Prevention and Management Program. Prior to start of construction an Invasive Weed Prevention and Management Program shall be developed by a qualified biologist to prevent invasion of native habitat by non-native plant species, especially sensitive natural communities. A list of target species shall be included, along with measures for early detection and eradication. The contractor shall wash all equipment before and after use with every new section of wind turbine installation to help prevent the spread of invasive and noxious weeds within the Project footprint. All disturbed areas shall be hydroseeded with a mix of locally native species upon completion of work in those areas. In

areas where construction is ongoing, hydroseeding shall occur where no construction activities have occurred within six (6) weeks since ground disturbing activities ceased. If exotic species invade these areas prior to hydroseeding, weed removal shall occur in consultation with a qualified biologist and in accordance with the restoration plan. The Project area will be monitored for a minimum of five years annually or until new infestations have been controlled. The Project should conduct annual visual surveys after the initial monitoring to ensure no new infestations or that pre-project infestations are under control and not spreading.

Invasive Species Prevention. Prior to the start of construction, contractor vehicles and equipment will be cleaned inside and out at the start of mobilization.

- Exterior cleaning will consist of washing vehicles and equipment, with attention paid to the tracks, feet, and/or tires and undercarriage, with special emphasis on axles, frame, cross members, motor mounts, and on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be cleaned, and refuse disposed of in waste receptacles to be disposed of at an approved off-site location. The Contractor will inspect vehicles and equipment to ensure they are free of soil, seeds, and plant parts before entering the Project site.
- Contractors and employees will avoid or minimize all types of off-road travel that may result in the collection and dispersion of non-native vegetation by construction vehicles and equipment.
- Staging and parking areas shall have clear boundaries and will avoid known noxious or invasive plant infestations.
- Equipment/machinery shall be cleaned prior to leaving infested areas to operate in another non-contiguous area of the Project site.
- Erosion control materials shall originate from a certified weed-free source. If not available, extra precautions will need to be implemented to prevent invasive or noxious weeds from investing a new area.

CDFW requests the opportunity to review and provide comments for inclusion in the Invasive Species Management Plan.

Temporary Impacts and Restoration

The DEIR discusses temporary habitat loss due to construction activities and restoration of temporarily disturbed portions of the Project site to preconstruction conditions "*in accordance with applicable plans, such as a Habitat Restoration Plan, Vegetation Management Plan, and Invasive Species Management Plan*." The DEIR further states that these plans "*would be developed by the Applicant prior to initiating onsite activities and*

would outline the procedures to be implemented upon the completion of construction to restore and revegetate areas of temporary disturbance and performance standards to measure revegetation success." Discussion of the above-mentioned plans occurs in the Project Description section of the DEIR and is lacking elsewhere in the document.

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 defers creation of performance standards to future plans, lacks specific information on what habitat will be created or restored, how much and where. It is not possible to determine whether potentially significant impacts will occur or if the formulation of the proposed plans will reduce significant impacts to a less than significant level. Without any information about the mitigation strategies, such as identification of responsibility for oversight and corrective action, or triggers for adaptive management, there is no way to determine whether the development of these plans is feasible, enforceable, or would reduce the impacts related to temporary impacts to a less than significant level. CDFW recommends the DEIR include a thorough discussion of restoration of temporary impacts from construction-related impacts (**Recommendation 37**). Additionally, CDFW requests the opportunity to review these plans due to their strong nexus to fish and wildlife resources.

Plans for restoration and revegetation should be prepared by persons with expertise in northern California ecosystems and native plant revegetation techniques. Each plan should include, at a minimum: (a) the location of the mitigation site; (b) the plant species to be used, container sizes, and/or seeding rates; (c) a schematic depicting the mitigation area; (d) planting/seeding schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for long-term conservation of the mitigation site.

Clearing for the overhead collector system would require an approximately 80-foot-wide corridor to be maintained during operation of the Project. According to the DEIR, this area "*would be kept clear of taller woody vegetation to provide for safe operations and allow access for equipment inspections, vegetation control, and maintenance*." However, the DIER concludes that the permanent impacts associated with the overhead collector system would be limited to individual pole locations. This change in the vegetation community and continued vegetation control and maintenance activities would require this impact to be considered and analyzed as a permanent impact.

Site Restoration and Decommissioning

Decommissioning of existing facilities and infrastructure, and subsequent restoration of the project site is proposed to occur at the end of the 40-year Project term. The DEIR states: "*some roads no longer needed to access turbines, e.g.,*

once turbines have been dismantled and removed, would be allowed to naturally revegetate." The extensive initial grading, subsequent regrading and recontouring of the Project site will likely result in impacts to soils that preclude natural revegetation, while facilitating infestation by invasive species. 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).

According to the DEIR, site restoration activities would be coordinated with the land owner and have the goal of developing a "*vegetation cover, composition, and diversity similar to the area's ecological setting and consistent with the landowner's current and future land use practices*." CDFW concurs with the goals of returning the site to conditions consistent with the area's ecological setting; however, any areas that are converted based on landowner needs may not meet this goal. As discussed above, changes to vegetation communities should be analyzed as permanent impacts.

Additionally, the DEIR relies on the preparation of a Draft Decommissioning Plan prior to operation of the Project, which would be revised and finalized prior to Project operations based on review by the Shasta County Director of Resource Management. CDFW requests the opportunity to review the Decommissioning Plan prior to finalization in order to ensure impacts to sensitive species and sensitive natural communities are fully addressed and mitigated.

The Decommissioning Plan should include details regarding road decommissioning, removal of turbine pads and associated infrastructure, minimization of additional disturbance, native plant re-establishment, invasive species management, retention and restoration of topsoil, restoration of natural site hydrology, removal of stream crossings, stream protection measures, and sediment and erosion control measures. Specific performance standards, monitoring, and contingency measures should be discussed. Additionally, best management practices discussed in the USFWS WEG should be followed.

Fuel Modification

The DEIR states: "*tree removal and maintenance of fire breaks would be disclosed in the CAL FIRE TCP and THP*." Fuel modification impacts on vegetation should be included in the biological resources section of the DEIR, and disclosure of impacts should not be delayed until development of a Timberland Conversion Permit (TCP) or Timber Harvesting Plan (THP).

The DEIR appears to assume that because timber removal will occur for Project activities, that the permanent and potentially significant impacts associated fuel break maintenance 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."

All impacts of fuel modification associated with this Project, including future maintenance, should be quantified and described and measures should be included to reduce impacts to sensitive natural communities and species.

Species Status Corrections

The status of several species listed in Table 3.4-3 and elsewhere in the DEIR and appendices are incorrect. These include the following:

- Northern spotted owl – this species is State Threatened, not a Species of Special Concern.
- Foothill yellow-legged frog (*Rana boylii*): this species is no longer a Candidate species. On March 10, 2020, the California Fish and Game Commission published the finding that listing the Northwest/North Coast genetic clade is not warranted at this time. The species retains its Species of Special Concern status.
- American peregrine falcon –species is Fully Protected and not State Endangered.
- Lewis's woodpecker – this species is not a State Species of Special Concern.
- Shasta snow-wreath – designated as a State Candidate for listing as Endangered as of May 1, 2020.
- Tracy's eriastrum – this species is State Rare in addition to being California Rare Plant Rank 3.2.
- Thread-leaved beardtongue (*Penstemon filiformis*) - status has changed from California Rare Plant Rank 1B.3 to 4.3.
- Northern clarkia (*Clarkia borealis* ssp. *borealis*) – status has changed from California Rare Plant Rank 1B.3 to 4.3.

Additionally, page 3.4-22 of the DEIR incorrectly states that "In 2018, the willow flycatcher was designated as State Endangered." The willow flycatcher, including all subspecies, was listed as State Endangered in 1991.

Information on the current listing status for animal and plant species listed above can be found on the Fish and Game Commission website at: https://fgc.ca.gov/CESA. Information on the current status of California Rare Plant Rank plant species listed above can be found on the California Native Plant Society Inventory of Rare and Endangered Plants in California website at: https://docs.google.com/spreadsheets/d/1_YOCUbeH_JAA5XrL93rvzrUO0hZTpOUgwIevfUFp7MU/edit?pli=1#gid=893664348.

Turbine and Facility Lighting

The DEIR specifies that flashing red lights will be installed on turbines and meteorological towers to improve nighttime visibility for aviation and comply with Federal Aviation Administration standards. In order to minimize impacts to birds moving

across the landscape at night, CDFW recommends following USFWS WEG and Communication Tower Guidance (USFWS 2016) for tower lighting by utilizing the minimum number of lights required (**Recommendation 38**), at the minimum intensity, and the minimum number of flashes per minute (i.e., longest duration between flashes and "dark phase"), with all lights synchronized to flash simultaneously.

CDFW recognizes the effects of artificial lighting on birds and other nocturnal species. The adverse ecological effects of artificial night lighting on terrestrial and aquatic resources such as fish, birds, mammals, and plants are well documented (Johnson and Klemens, 2005; Rich and Longcore, 2006). Some of these effects include altered migration patterns, navigation behavior, and reproductive and development rates; changes in foraging behavior and predator-prey interactions; changes in singing behavior; altered natural community assemblages; and phototaxis (attraction and movement towards light). H. T. Harvey & Associates (2019) articulates the potential for direct or indirect artificial lighting to degrade or eliminate roosts or potential roosting habitat.

To minimize adverse effects of artificial light on wildlife and wildlife habitats, CDFW recommends that exterior lighting fixtures associated with Project construction and operations be downward facing, fully-shielded, and designed and installed to minimize backscatter, reflection, skyward illumination, and illumination of areas outside of the O&M facility or substation (**Recommendation 39**).

Dust Abatement

Mitigation Measure 3.3-2c refers to the application of dust palliatives for the stabilization of dust emissions. In order to avoid impacts to sensitive natural communities or sensitive species inhabiting onsite waterways, CDFW recommends against applying dust palliatives in any location where transmission to a waterway or sensitive habitat could occur (**Recommendation 40**). Many dust palliatives are toxic to fish and wildlife and have adverse effects on the environment. If dust palliatives will be utilized, impacts to fish, wildlife, and sensitive habitats should be addressed and measures proposed to reduce impacts to less than significant.

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 (CNDDB). The online submission and PDF CNDDB field survey forms, as well as information on which species are tracked by the CNDDB, can be found under their corresponding tabs at the following link: https://www.wildlife.ca.gov/Data/CNDDB/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 future wind energy projects, 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.

SUMMARY OF RECOMMENDATIONS

1. The County should form a TAC prior to Project implementation. The TAC should serve to assist with reviewing the design of PCMM studies, reviewing and interpreting post-construction fatality data, and identifying operational minimization measures that will most efficiently minimize impacts on bird and bat populations..
2. The Project should implement the considerations outlined in the CEC Guidelines and WEG in determining final Project designs.
3. In order to decrease potential impacts to raptors, final siting considerations should include the removal of turbines M03 and M04 located in the vicinity of Survey Point 30.
4. If take of CESA-listed or CESA candidate species cannot be fully avoided, the Project must obtain a CESA section 2081(b) ITP to authorize incidental take during Project construction and over the life of the Project.
5. If take of Fully Protected species is unavoidable, the CDFW recommends the Project develop a Natural Community Conservation Plan that would authorize this take.
6. The DEIR should include additional mitigation for impacts to Bald eagle, golden eagle, greater sandhill crane, white-tailed kite and American peregrine falcon.
7. The DEIR should include a full suite of mitigation options, including ongoing monitoring of project impacts, and a suite of adaptive management strategies.
8. The Cumulative Analysis section 3.4.4 should be revised and clarified to reflect the analysis throughout the DEIR that impacts may be cumulatively considerable and to include impacts to bat species.
9. Surveys and analysis of the impact of nighttime operations of nocturnal migrants should occur to determine the magnitude of nocturnal migration in the Project area, the altitude of migration, environmental factors, such as weather, that influence nocturnal migration in the area and help inform flight paths in the vicinity.
10. The DEIR should quantify potential fatality estimates for the Project using robust bird and bat fatality monitoring.
11. The final Project siting and design should seek to maximize the avoidance of riparian habitat, and when riparian habitat cannot be avoided, the loss should be mitigated at an appropriate ratio through riparian habitat acquisition, conservation, and/or enhancement and restoration.

12. The DEIR should include the development of a threshold for small birds in Mitigation Measure 3.4-3b, as well as the development of further mitigation alternatives.
13. Small birds should be included in a robust TAC/CDFW-approved post-construction bird and bat fatality monitoring plan incorporating scent detection dogs and utilizing best available science.
14. The proposed Conservation Measure for nesting songbirds should be replaced with the CDFW suggested measure.
15. An Eagle Conservation Plan and Bird and Bat Conservation Strategy should be prepared in coordination with the USFWS.
16. A schedule for California spotted owl pre-construction presence/absence surveys should be included in the DEIR.
17. The DEIR should include additional options, including operational changes, compensatory mitigation, and ongoing monitoring of project impacts, along with a full suite of adaptive management strategies to further reduce impacts determined to be significant and unavoidable to raptors.
18. The raptor nesting season (excluding eagles) should be changed to February 1 through September 15.
19. An initial protection buffer of 1,320 feet should be utilized for nesting raptors.
20. The DEIR should include an analysis of blasting activities on wildlife. Blasting activities should occur outside of avian breeding seasons.
21. The DEIR should include an analysis of additional mitigation options for bats, including compensatory mitigation that is roughly proportional and fully enforceable, along with enforceable mitigation performance standards.
22. A detailed outline or description of the types of methods that would potentially be utilized for curtailment and deterrence should be included in the DEIR. Operational modifications should be implemented upon commencement of Project operations to avoid impact to birds and bats.
23. A robust TAC/CDFW-approved post-construction bird and bat fatality monitoring plan incorporating scent detection dogs and utilizing the best available science should be developed.
24. The DEIR should include a full analysis of Project impacts on bats and provide mitigation measures to reduce impacts to roosting bat species, including avoiding impacts during maternity and hibernacula seasons.
25. Carcass searches should be conducted at a frequency and spacing to allow for a credible estimate for bat and small bird fatalities.
26. Scent detection dogs should be utilized as part of the PCMM studies for both bats and birds.
27. Additional post-construction monitoring beyond the proposed initial 3 years is recommended..
28. Avian use surveys should be conducted within the first 3-years of full Project operations.
29. The DEIR should provide specifics regarding APLIC Guideline implementation and provide an assessment of the effectiveness of Mitigation Measure 3.4-3a in reducing mortality.

30. A complete habitat description, including the use of terrestrial habitat and inclusion of breeding period for western pond turtle should be included in the DEIR along with additional occurrence data.
31. The DEIR should include additional measures and discussion regarding gray wolf, and Oregon snowshoe hare.
32. Additional conservation measures proposed for California spotted owl, sandhill crane, nesting songbirds, Vaux's swift, willow flycatcher and yellow warbler, and terrestrial species should be included as mitigation for the Project.
33. An environmental awareness training program should be developed and provided to all personnel working on the Project site during construction and operation.
34. Additional pre-construction surveys for special status plant species are recommended due to the presence of State Rare and CESA candidate species.
35. Invasive weed control measures should be included in the DEIR. The Invasive Species Management Plan should be developed prior to Project construction as discussed in the DEIR.
36. Correct discrepancies relating to aquatic resources in the DEIR.
37. The DEIR should include a thorough discussion of restoration of temporary impacts along with the development of the Habitat Restoration Plan and Vegetation Management Plan mentioned in the DEIR.
38. The USFWS WEG and Communication Tower Guidance (USFWS 2016) should be followed for tower lighting.
39. Exterior lighting fixtures associated with Project construction and operations should be downward facing, fully-shielded, and designed and installed to minimize backscatter, reflection, skyward illumination, and illumination of areas outside of the O&M facility or substation.
40. Dust palliatives should not be applied in any location where transmission to a waterway or sensitive habitat could occur.

CDFW appreciates the opportunity to provide comments to the County on the DEIR for the Project. CDFW staff are available to meet to ensure that potential impacts to sensitive species area avoided, minimized, or mitigated. Questions regarding this letter should be directed to Environmental Scientist Kristin Hubbard at (530) 225-2138 or kristin.hubbard@wildlife.ca.gov.

Sincerely,

DocuSigned by:
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