Letter O15

ENVIRONMENTAL & STATISTICAL CONSULTANTS

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June 3, 2019

To: Mr. Cliff Johnson, Senior Planner
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cjohnson@co.humboldt.ca.us

Subject: Humboldt Wind Energy Project Draft Environmental Impact Report (DEIR) SCH No. 201872076

Dear Mr. Johnson:

This document was prepared by Western EcoSystems Technology, Inc. (WEST), on behalf of Humboldt Wind, LLC (Humboldt Wind), to provide comments and recommendations on the Draft Environmental Impact Report (DEIR) prepared for the Humboldt Wind Energy Project (Project). WEST has reviewed sections of the DEIR pertaining specifically to raptors and bats, as well as the associated technical reports prepared by Stantec Consulting Services, Inc. (Stantec), and provided feedback based on our professional expertise and long history of studying the impacts of wind energy development on wildlife. Specific comments and recommendations are presented below. O15-1

Section 3.5.1 – Environmental Setting

Birds

- First paragraph of this section on page 3.5-8: The US Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance (ECPG) is incorrectly cited as "USFWS (2016)". This citation should be USFWS (2013). O15-2
- Second paragraph on page 3.5-9: The phrase "usage at 75.59 percent" is unclear. The term "usage" should be defined. O15-3

Northern Spotted Owl

- In the first sentence of this section on page 3.5-34, the northern spotted owl is incorrectly identified as a federal endangered species. O15-4

Golden Eagle

- First paragraph on page 3.5-37: The information presented in this section is somewhat disorganized and confusing. We recommend restructuring this section. There appears to be some discrepancy between HRC nest data and Stantec's 2018 surveys. In reading O15-5

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Stantec's raptor nest survey technical report (Stantec 2018c), it does not appear that they had access to the HRC data, only the CNDDB historical nest data. This should be made clear in the text. Also some indication of Stantec's survey effort, which was substantial, would be helpful and perhaps a qualifying statement regarding the difficulty in finding eagle nests in densely forested landscapes such as those present in the survey area. O15-5 (Cont.)

- The first paragraph on page 3.5-34 states that in 2018, "monitoring was conducted in four of these territories. All were determined to be occupied and nesting behavior was observed in three territories; however, no active nests were located." It is unclear who conducted this monitoring and the distance of "nesting behavior" to the proposed project should be indicated as this suggests there were eagle nests near those locations but that they just weren't located during surveys. O15-6
- Golden eagle-specific results from the bird use counts and eagle use counts should be presented in a separate paragraph and should include total survey effort (hours of survey). Additionally, to be consistent with the ECPG, number of eagle minutes (minutes eagles were recorded flying within 800-m survey plots and below 200 meters in height) should be included along with number of eagle observations. Stantec's eagle use technical report (Stantec 2018d) does not differentiate between bald and golden eagle use minutes, rather they are combined into one metric of total eagle minutes per study period (27 minutes). Use minutes for bald and golden eagles should be calculated separately. The only apparent inconsistency with the ECPG was that only a single year of surveys was conducted, rather than the 2 years recommended in the ECPG (USFWS 2013). O15-7

Bald Eagles

- Third paragraph on page 3.5-37: As with golden eagle section, total survey effort for eagle use surveys should be indicated (130 hours). Also, it should be indicated that survey methods were consistent with ECPG (800-m plot, monthly 1-hr surveys, etc), and the total number of bald eagle minutes (not just the number of observations) should be noted. O15-8
- In the fourth paragraph on page 3.5-37, golden and bald eagle observations are lumped together. Only bald eagle results should be presented in this section. O15-9
- In the fourth paragraph on page 3.5-37, there is no citation for the 2017 HRC raptor surveys and no mention of where or how these surveys were conducted. O15-10

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Section 3.5.3 – Environmental Impacts and Mitigation Measures

IMPACT 3.5-3: Construction Impacts on Bald and Golden Eagle Nesting Activity.

- The first paragraph of the Bald Eagle subsection on page 3.5-86 states that "there are no documented bald eagle nest sites near the project site". Alternatively, page 3.5-37 of the DEIR, states that the most recent historical bald eagle nest site is approximately 5.5 miles from the nearest WTG.

O15-11

IMPACT 3.5-4: Construction Impacts on Bald and Golden Eagle Foraging and Nesting Habitat.

- This impact calls out "Foraging and Nesting Habitat" in the header; however, nesting habitat is addressed in the section above. We recommend limiting this discussion to foraging habitat.

O15-12

- The first paragraph of this section (page 3.5-88) states: "Construction could directly affect bald and golden eagles"; however, this is the last mention of bald eagles in this discussion. Is this section only for golden eagles? If so, this should be stated. If not, we suggest using headings to mirror section above on nesting impacts.

O15-13

Mitigation Measure 3.5-5b: Conduct Post-construction Mortality Monitoring for Eagles

- Page 3.5-91: This section lacks a few key details, particularly concerning how Evidence of Absence (EoA) modeling will be used. Specifically, the 4th bullet point states that mortality estimates using the EoA and PCMM data "can be used as triggers for potential adaptive management or to evaluate effectiveness of mitigation". We recommend caution in using EoA mortality estimates as trigger for adaptive management or to determine compensatory mitigation, particularly considering the minimum g-value specified in the document (0.3 for first three years and 0.08 for all subsequent years of monitoring). With a g-value of 0.08, one eagle found could equate to an estimated take of 18 or more eagles in a given year depending on data quality and precision. Given the potential variability and uncertainty in EoA in any given year, it is recommended that multiple years of data be used in the EoA framework when using EoA estimates as triggers. Also, this bullet references adaptive management; however, none is listed in this DEIR. Perhaps this will be addressed in an Eagle Conservation Plan/Habitat Conservation Plan, but this is not indicated in the document (as it is for the northern spotted owl and marbled murrelet).

O15-14

Mitigation Measure 3.5-5c: Implement Compensatory Mitigation to Offset Operational Impacts on Eagles

- On page 3.5-92, the initial bullet point states that "the project applicant shall compensate for the loss of any golden or bald eagles injured or killed as a result of project operation by paying for the retrofitting of electrical utility poles…". It is unclear whether this refers

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to observed mortality (birds in hand) or mortality estimated using EoA. If the latter, no eagles found in a year of monitoring, and assuming g=0.1, will result in 2 eagle fatalities at 50% Credibility Level (CL). At 90% CL, this increases to as many as 19 eagle fatalities pending the precision of some input parameters. We recommend caution in using EoA to trigger adaptive management or determine amount of compensatory mitigation and especially if triggers are to be assessed on an annual basis. O15-15 (Cont.)

- If compensatory mitigation is to be based on an EoA analysis, a timeframe should be specified (e.g., fatality rate assessed every 5 years), as is typical under an eagle take permit. If using EoA, zero eagles found in one year results in estimate of 2 eagles (assuming g=0.1), while zero eagles found in 10 years also results in an estimate of 2 eagle fatalities for that 10-year time period. O15-16
- Another alternative would be to run the USFWS Bayesian Collision Risk Model (USFWS 2013) using the golden eagle minutes collected during Stantec's eagle use surveys to calculate a take prediction for the proposed project and use that estimate as the basis for upfront compensatory mitigation, as prescribed in the ECPG. O15-17

Mitigation Measure 3.5-7: Avoid, Minimize, and Compensate for Construction Impacts on Northern Spotted Owl

- On page 3.5-101 of the DEIR, the 3:1 mitigation ratio specified to compensate for loss of spotted owl foraging, nesting, and roosting cover types seems out of line with HRC's HCP requirements (Pacific Lumber Company [PALCO] 1998). The preceding section discusses the temporary and permanent loss of owl habitat expected from development of the proposed project and concludes that the impacted acreages are within the total harvesting limits evaluated in HRC's EIS/EIR and, therefore, fall within the limits of the existing HCP. If impacts to habitat resulting from this project are being considered separately from HRC's existing HCP, why does the above section go to lengths to demonstrate consistency of the project's anticipated impacts with those in the HCP? Is it standard practice for a project to mitigate for habitat loss above and beyond that already accounted for in an existing HCP covering similar activities for the same area? If not, the 3:1 compensatory mitigation for habitat loss seems inappropriate. O15-18
- Also on page 3.5-101 (third bulleted paragraph), it is indicated that the compensatory mitigation for habitat permanently lost may be composed of one or more of the following options, and shall be developed in consultation with CDFW and USFWS. However, the remainder of the bulleted paragraph seems to present only one option (i.e., permanent protection of habitat at 3:1 ratio). It may be that barred owl management may also be an option, but it is unclear given the formatting and bulleting sequence that barred owl management is one of the options for compensatory mitigation. Given that the implementation piece goes on to formalize the habitat protection (in fee title or O15-19

easement) it does not appear that there are in fact any options other than habitat protection. We suggest clarifying the language in this paragraph. O15-19 (Cont.)

Mitigation Measure 3.5-8: Avoid, Minimize, and Compensate for Operational Impacts on Northern Spotted Owls

- On page 3.5-104 in the second bullet point, it is stated that "For each northern spotted owl mortality, the project applicant shall develop and implement compensatory mitigation in consultation with CDFW and USFWS". This statement needs clarification. Is this for each spotted owl found, or, given the fatality monitoring specified above, would EoA be used to estimate mortality? We recommend being more specific as to how spotted owl take will be established for compensatory mitigation purposes (observed fatalities versus take estimated via EoA). This may be referenced elsewhere in a Habitat Conservation Plan, but should be stated here as well. O15-20

Raptors – Operational Impacts (IMPACT 3.5-11)

- On page 3.5-109, the DEIR provides a summary of fatality rates from wind projects in the Pacific Northwest. Citing a review conducted by Stantec (2018b) of data from 21 facilities between 1999 and 2013, fatality rates in the region ranged from 0.06 to 10.44 birds per wind turbine generator (WTG) per study period. Presenting fatality rates on a per WTG-basis is an inappropriate unit of measurement, particularly given the range of turbine types and sizes. We recommending using fatalities per megawatt (MW) per year as a more meaningful comparison when evaluating impacts over a range of projects and turbine sizes. O15-21
- The concluding sentence of the second paragraph states: "Thus, a reasonable estimate of the avian mortality rate for the proposed project is about three to six avian mortalities per WTG per year." We believe this is an inappropriate conclusion given the wide geographic range, vegetative and topographic characteristics, and turbine size of the wind energy facilities evaluated. In the Stantec (2018b) review, the facilities evaluated comprised turbine capacities ranging from 0.66 to 2.3 MW. The project proposes installation of WTGs with a maximum capacity of 5.0 MW. Thus, an estimate of fatalities per turbine at the proposed project based on data from much smaller turbines at facilities throughout the Pacific Northwest is not appropriate. O15-22
- The third paragraph on page 3.5-109 is not clear as written. The authors state that "at the 16 facilities in the region for which Stantec (2018g) summarized mortalities, diurnal raptors, owls, and vultures composed 227 mortalities, while common species accounted for at least 84 percent of mortalities, including American kestrel (103 individuals), red-tailed hawk (61 individuals), barn owl (15 individuals), and turkey vulture (12 individuals)." This contradicts the above paragraph which states that Stantec reviewed data from 21 (not 16) regional facilities. Additionally, the authors fail to mention the total O15-23

number of avian fatalities in those studies, and therefore, the proportion of mortality represented by the 227 diurnal raptor, owl, and vulture fatalities documented. Finally, were the "common species" documented in addition to the 227 raptor, owl, and vulture fatalities? This is not clear in the text as written. We recommend revising this paragraph for clarity and context. O15-23 (Cont.)

- The first paragraph on page 3.5-110 of the DEIR summarizes avian fatality data from the American Wind Wildlife Institute (AWWI; 2019). Not included in the discussion, but worth noting is that diurnal raptors composed 22.3% of all birds fatalities found during standardized carcass searches in the Pacific biome, while diurnals raptors represented only 1.4% to 5.3% of all avian fatalities in the other five biomes (AWWI 2019). O15-24

- The second paragraph on page 3.5-110 of the DEIR presents data from two years of fatality monitoring the Hatchet Ridge Wind Project in Shasta County. A third year of data were collected (Tetra Tech 2014) and should be incorporated into this discussion. Hatchet Ridge is the only other modern wind energy facility constructed on forested ridgetops in the Pacific Northwest and, therefore, may be the most relevant source of information to inform potential risk to birds and bats at the proposed project. Additionally, fatality rates from Hatchet Ridge are presented as raptors per WTG per year in this discussion. However, Tetra Tech (2013) also presents Hatchet Ridge fatality data as raptors per MW per year and we suggest using this metric to be consistent with the AWWI (2019) data presented in the paragraph above. O15-25

- In that same paragraph on page 3.5-110, the authors postulate higher winter raptor abundance in the proposed project due to milder winters than at the inland and higher elevation Hatchet Ridge site. Pre-construction raptor use data are available for both of these sites. Annual mean diurnal raptor use was considerably higher at the proposed project (0.57 raptors/20-min survey; Stantec 2018b) than at Hatchet Ridge (0.35 raptors/20-min survey; Young et al. 2007); however, winter use was more similar between the two sites (0.19 at the project versus 0.14 at Hatchet Ridge). We recommend basing inference on the site-specific raptor use data collected at both sites, which was similar, and not speculating on possible use based on average winter severity. O15-26

- The same paragraphs cites Tetra Tech (2013) who compared raptor fatality rates at two other wind energy facilities in Oregon and Washington which ranged from 0.06 to 0.49 raptors/WTG/year. This is an outdated comparison and is superseded by the AWWI (2019) data, which also includes data from these two facilities and presents fatality rates on a per MW basis. We suggest removing the discussion of these two facilities in Oregon and Washington (which the AWWI data already include) from the comparison and limiting the discussion to the more contemporary and comparable Hatchet Ridge. O15-27

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- The final sentence of the same paragraph presents two estimates for potential mortality at the project: 4-29 raptors/year and 114 raptors/year. The 4-29 raptors/year was generated from fatality rates from only three facilities in Oregon, Washington, and California and using the metric fatalities/WTG/year (from the above-referenced Stantec [2018b] review). The estimate of 114 raptors/year was extrapolated from a more recent and geographically relevant dataset and using the more meaningful metric of fatalities/MW/year. Because these two estimates were generated from different metrics, they are not appropriate for comparison. We suggest revising this paragraph to present the range (highest and lowest) and mean of diurnal raptor fatality rates, represented as raptors/MW/year, from the AWWI dataset for the Pacific avifaunal biome to characterize the range of raptor mortality that may occur at the proposed project. O15-28

Bats – IMPACT 3.5-18: Operational Impacts on Bats

- The first paragraph of this section on page 3.5-134 states that the highest mortality rates for bats at wind farms in North America have been "documented along forested ridgelines." This statement should be revised to read: "along forested ridgeline in the Northeast and Appalachian Mountain Regions". There are currently no data to indicate whether or not these results apply to the western U.S. O15-29
- The final sentence of that same paragraph states that "researchers concluded that even with no increase in wind energy generation beyond that available in 2014, the hoary bat population is expected to decline by as much as 90 percent in the next 50 years as a result of wind energy-related fatalities, with the possibility of near or total extinction (Frick et al. 2017)". It should be noted that this was mentioned in the study as the "most likely" scenario but it was only one of dozens of scenarios that all had an essentially undefined probability of occurrence. Significant population declines are expected but the magnitude of those declines is conjecture. O15-30
- The first paragraph on page 3.5-135 of the DEIR presents bat fatality data from the first two years of fatality monitoring (2011 and 2012) at the Hatchet Ridge project. A third year of data (2013) is available (Tetra Tech 2014) and should be included in the discussion, particularly given the relevance of those data. Additionally, bat mortality rates should be reported in bats per MW per year as a means of comparing to fatality rates at other sites/regions. O15-31
- The second paragraph on page 3.5-135 states that "acoustic monitoring for the proposed project documented the presence of 12 of the 13 bat species potentially occurring in Humboldt County". Acoustic studies often "document" all or most species that potentially occur in the study area. This is often due to false positives being accepted as proof of presence. The acoustic results should be viewed with some scrutiny and other types of data (e.g., mist-net data) should be used to determine if the acoustic results are likely or not. In particular, Townsend's big-eared bats are difficult to O15-32

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record due to low call intensity. Therefore, their presence at multiple detectors deserves scrutiny and calls should be reviewed manually to ensure these are not false positives. O15-32 (Cont.)

- This same paragraph states that "overall bat activity in the project area may be relatively high". What is the justification for this statement? The activity rate should be cited so the reader can evaluate the statement. O15-33

- The first paragraph on page 3.5-136 of the DEIR states the following: "…the high bat mortality rates associated with wind farms and the exceptionally high number of hoary bats documented near the project site provide substantial evidence that the project could cause a large number of hoary bat fatalities on an annual basis…". This statement is not supported by the Solick and Howlin (2018) study discussed in the two paragraphs above, which concludes that bat activity is not predictive of bat mortality. We suggest making the following wording change to that sentence: "the high hoary bat mortality rates associated with wind farms and the known occurrence of concentrations of hoary bats in the project vicinity, suggest potentially high levels of hoary bat fatalities at the project." It may also be worth noting that while concentrations of hoary bats are known in the project vicinity, only 2% of total bat passes recorded during the acoustic bat activity study conducted at the project were classified as hoary bats (Stantec 2018a). This finding suggests that hoary bats in the surrounding area (e.g., bull creek) were either not using the project site in high numbers, were not echolocating within the project site, or were echolocating at heights greater than what the primarily ground-based detectors could detect. O15-34

- The final paragraph on page 3.5-135 makes a number of statements that require justification more substantial that a personal communication. A personal communication is not sufficient to back up these types of statements. There is no doubt hoary bats are caught in large numbers nearby, but the rest is conjecture, unless supporting evidence is provided. Additionally, supporting evidence is not provided for statements such as "unique concentration of hoary bats" and "exceptionally high numbers of hoary bats documented near the project site". Such statements are also not supported by the acoustic data collected at the project site. O15-35

- The third and fourth paragraphs on page 3.5-136 discuss potential operational minimization measures. It should be noted that there are no commercially available and reliable smart curtailment systems available at this time. If this were implemented at the project it would be experimental and would require a research project to determine its effectiveness. Additionally, there is insufficient evidence at this time to tout ultraviolet deterrent systems. No system is available and experimental results are only somewhat promising. O15-36

Mitigation Measure 3.5-18b: Conduct Bat Surveys and Mortality Monitoring

- The first paragraph on page 3.5-137 describes surveys to assess and monitor bat use across the project site to determine whether, when, and where bats, particularly hoary bats, move through the project site. Mortality monitoring will answer these questions to a large extent. We suggest collecting baseline fatality data to determine actual impacts to bats at the project before designing and implementing bat use studies. Once the level of impact to various bat species is estimated, then additional field studies, if warranted, can be tailored to a particular species and/or research need and in consultation with the TAC.

O15-37

Conclusions

In conclusion, we believe the DEIR presents a fairly complete and accurate analysis of potential impacts to raptors and bats; however, there are several items which deserve additional attention particularly:

1. The discussion of eagle fatality monitoring and how/if EoA will be used to determine compensatory mitigation and adaptive management triggers,
2. The discussion of potential direct (operational) impacts to raptors based on results of regional fatality monitoring; and
3. The discussion of potential operational impacts to hoary bats.

O15-38

WEST appreciates the opportunity to comment on the DEIR. If you should have any questions regarding the comments provided in this document, please contact:

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