From:	Ted Weller
To:	PlanningBuilding; CEQAResponses
Cc:	Madrone, Steve
Subject:	Comments on Humboldt Wind FEIR
Date:	Thursday, November 21, 2019 8:06:55 AM
Attachments:	Humboldt Wind Project .pdf

Please see attached document that contains my comments.

Please also acknowledge receipt of them.

Thank you,
Ted Weller

November 21, 2019

County of Humboldt
Planning and Building Department,
Planning Division
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Dear Planning Commission:;

This letter is submitted as public comment on the Final Environmental Impact Report (FEIR) for the Humboldt Wind LLC Project (hereafter Project) located west of Fortuna and Rio Dell, California.

I am writing as a private citizen of Humboldt County though I have significant experience in the field of wildlife and wind energy, in particular bats. All of the information I share in this letter is publicly available. I have conducted research on bats in Humboldt County since 1996 and have been working at my principal study site in Humboldt Redwoods State Park (HRSP), just south of the proposed project, since 2010. I have been involved in issues surrounding bats and wind energy since 2006 having conducted research at two separate wind energy developments in southern California.

The reason for conducting pre-construction surveys for wildlife is to help predict impacts to local species. The premise of this is that developers can avoid areas known to be of high value to wildlife. Typically, surveys for bats at proposed wind energy facilities are particularly important because, in most cases, there is little pre-existing information available on bats in the open, windy habitats favored for development. The Humboldt Wind Project is unique because we have been conducting surveys and research on hoary bats in close proximity to the project for multiple years. Probably the most important and foundational finding from this work is that HRSP is a hot spot of activity for hoary bats (*Lasiurus cinereus*) particularly during the autumn. Hoary bats are the most frequently killed species at wind energy developments across North American and their fatalities peak during the autumn. In addition, silver-haired bats (*Lasionycteris noctivagans*), a species also frequently killed at wind energy facilities and western red bats (*Lasiurus blossevillii*) are captured and detected during autumn-spring at HRSP. The developers acknowledge these facts and the proximity of the Project to HRSP in the FEIR. The knowledge base that has been assembled based on both capture and acoustic surveys for bats at HRSP and at other locations throughout Humboldt County far exceeds what is typically available for a developer to base its decisions on avoidance of wildlife impacts.

The Project has compiled a limited, acoustic-only dataset within project boundaries that is not entirely consistent with pre-existing information from the area. There are several methodological and ecological explanations possible to explain these differences. However, it is likely that

individuals, particularly of the 3 species named above, would use areas within both HRSP and the Project. Bats are known to move long distances particularly during the fall and, indeed we have obtained examples of an individual hoary bat making long-distance (~1000 km roundtrip) movements during autumn, as well as others that would regularly commute between HRSP and another site 70km away. These data are particularly hard-won for bats and we are in our infancy of understanding seasonal movements of bats and individual variation associated with those movements. However, a conservative approach would be to assume similarities in the bat community and their seasonal changes between both HRSP and the Project and to assume that some individual animals would use both areas both within and among seasons.

As to the minimization strategies suggested in the FEIR, I would suggest that it is not using the best available science and that the suggested strategies are not conservative enough given the prospect of locating the Project in close proximity to the only known hoary bat aggregation site in the world. The most-studied minimization strategy for bats is to curtail turbines during periods of low wind speeds. This strategy has been employed at least a dozen cases to date and has always resulted in reduced fatality rates of bats. In each of the studies to date, the costs in terms of lost annual energy output, have been low. In addition, no modifications to the turbines themselves are required for curtailment. By contrast, deterrents have been studied in only a few situations. While there have been promising results from these early studies they simply do not have the academic track record of consistent decreases of bat fatalities that curtailment studies have shown. Indeed, some recent studies have shown that fatalities of some species were actually higher at turbines using deterrents compared to control turbines within the same wind energy development. We do not yet know if this is a trend or a finding specific to a particular project, so more study is required. Hence use of deterrents as a minimization strategy still requires further research. In addition, attachment of deterrent devices to wind turbines requires extensive consultation with engineers to ensure that they do not impact the operational efficiency, safety, or longevity of the turbine. I believe it is simply logical to employ the better-vetted technology of curtailment before moving to relatively under-tested deterrent technologies. The other advantage of curtailment is that it is reversible without costs. There is no capital investment associated with it. If conditions suggest that curtailment is no longer necessary it can be reversed in a matter of hours.

Importantly, if the project is built and becomes operational, it is imperative that the fatality monitoring program be particularly robust. There will be one chance to design the study of first-year fatalities and that will come prior to the first day of operation of the facility. I recommend that the fatality monitoring study design is peer-reviewed well in advance of its implementation. Having conducted such studies myself, I can attest to the complexities and challenges of doing this well. In particular, if a particular number of fatalities per turbine, per year, is specified as a trigger for minimization activities it is imperative that the fatality monitoring program be designed such that all parties can agree on whether or not that target has been exceeded. The final result of such studies are a statistical range of values for number of fatalities and it is important that the precise criteria for when to determine it has been exceeded be clear and transparent to all parties before the study is conducted. In addition, because of the

possibility that fatality rates may trigger some form of curtailment, it will be important to determine the weather conditions that are correlated with high and low numbers of fatalities. This can help improve the efficiency of curtailment and can be most practically achieved via daily searches of at least a subset of turbines. Nighttime surveys to determine with greater resolution the weather conditions associated with fatalities are likely not practical. Consultation with a statistician and outside review of the study design that includes the proportion of turbines that should be searched daily, and for what duration, will lead to a more robust and efficient study.

Thank you for consideration of my comments and your work for the County. If you have questions or require clarification of any of these points, please feel free to contact me.

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