Letter #1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Southwest Region
Migratory Bird Permit Office
2800 Cottage Way, Suite W-1916
Sacramento, California 95825

In Response Reply To:
FWS/R8/MB

Mr. Andrew Young
County of Alameda
244 W. Winton Avenue, Room 111
Hayward, CA 94544

Dear Mr. Young,

1-1

The U.S. Fish and Wildlife Service (Service) is providing comments on the Mulqueeney Ranch Wind Repowering Project draft Subsequent Environmental Impact Report (SEIR). The mission of Service is to work with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. As part of our mission, we are charged with implementing various statutes, including the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; Eagle Act) and the Migratory Bird Treaty Act (16 U.S.C. § 703 *et seq*.; MBTA). Our review and comments focus on our legal mandate and trust responsibility to maintain healthy bird populations for the benefit of the American public pursuant to the Eagle Act and MBTA. Our comments are consistent with Alameda County's (County) request that the Service provide technical assistance as a member of the Alameda County Altamont Pass Wind Resource Area (APWRA) Technical Assistance Committee (TAC), helping the County to address wind turbine impacts to eagles, birds, and bats.

The draft SEIR analyzes the anticipated approval by the County of a new Conditional Use Permit (CUP) to allow the proposed wind facility to construct and operate wind generation turbines in the APWRA. Your applicant, Mulqueeney Wind Energy, LLC, has also applied for an Eagle Act incidental take permit for golden eagles in association with proposed Mulqueeney Ranch Wind Repowering Project (Project).

The Service appreciates the County's inclusion of the Conservation Measure which provides the applicant with an option that, should the Project obtain an eagle incidental take permit, that permit's avoidance, minimization, and compensatory mitigation measures may also serve to meet the County's CUP's needs for eagles. The Conservation Measure similarly recognizes a Bird and Bat Conservation Strategy submitted to, and found acceptable by, the Service as we process the eagle incidental take permit request. Our review and comments are attentive to elements of the draft SEIR relative to our Eagle Act take permit regulations, guidance, population assessments and related analyses.

We acknowledge that the County's regulatory authorities and requirements under the California Environmental Quality Act (CEQA) differ from our eagle permit regulations and National Environmental Quality Act (NEPA), even so, CEQA and NEPA are similar, both in intent and in the review process[1]. The County and the Service also share similar goals when working with wind proponents and operators in the APWRA: to minimize impacts to eagles, birds and bats. Our intent is to provide technical assistance such that your analysis is as consistent with our policy, process, and our forthcoming National Environmental Protection Act (NEPA) analysis of Mulqueeney Wind Energy, LLC's eagle incidental take permit application as is practicable.

1 http://opr.ca.gov/docs/NEPA_CEQA_Handbook_Feb2014.pdf

Below are the draft SEIR topics for which we are providing comments. Please see the attachment to this letter for our detailed comments and recommendations: 1-1 cont'd

- Golden eagle impact avoidance and minimization measures
- Golden eagle population status and cumulative impacts
- Avian impact avoidance and minimization measures
- Bat impact avoidance and minimization measures

Please be advised, due to workload constraints at this time, we were unable to review the Project's draft SIER and its appendices thoroughly. Our comments are focused primarily on eagles, Birds of Conservation Concern and bats. Our comments and recommendations for this Project are consistent with those we provided to you in our October 9, 2019 comment letter for the Sand Hill Wind Project's draft SEIR and coordination meetings.

We look forward to working with your Planning Department on the Project. If you have any questions regarding this letter, the Service's Eagle Act permitting regulations or processes, please contact Heather Beeler, Eagle Permits Coordinator, at heather_beeler@fws.gov or by phone at 916-414-6651. Ms. Beeler is available to provide technical assistance to the County as needed.

Sincerely,

Thomas Leeman
Deputy Chief, Migratory Birds

cc: Sandra Rivera, Alameda County Planning Department

Attachment

Attachment 1: U.S. Fish and Wildlife Service Draft SEIR Comments 1-2

1. Project Objectives

In Section ES.2, the Project's secondary objective number two, sub-bullet two is defined as:

> *Improving understanding by the wind industry, regulators, and the scientific community of the effects of new generation turbines on birds and bats by applying an avian mortality monitoring protocol that is based on the latest science and monitoring results.*

We recommend this objective be redrafted to focus on assessing the Project's impacts and ensuring those impacts are within the limits established by the PEIR. While scientific methods would be utilized, and publications may result and contribute to the scientific community, we believe that the primary objective should be to evaluate avian mortality to determine whether the Project-level and Altamont Pass Wind Resource Area (APWRA) thresholds are exceeded, and to implement adaptive management, if needed, to reduce mortality to below the thresholds.

2. Golden Eagle 1-3

Draft SEIR discussion of Cumulative Effects to Golden Eagle Populations

Local area population

Regarding the ongoing population level impacts to golden eagles in the Altamont Pass WRA vicinity, the SEIR draws conclusions that are inconsistent with the methods that will be used when considering an Eagle Take Permit. The SEIR calculations do not align with the Service's method for conducting our local area population cumulative effects analysis as described in our Eagle Conservation Plan Guidance (Service 2013). In addition, information from publications and calculations over the years indicate that the APWRA's golden eagle populations cannot be sustained by local breeders alone (Hunt et al.1998, Hunt 2002, Hunt and Hunt 2006, Hunt et al. 2017, Wiens et al. 2017, Wiens et al. 2018, Wiens and Kolar 2019).

Our range-wide analysis of golden eagle populations indicates that, on average, 10% of the population is lost each year from unauthorized human-caused mortality (Service 2016b). However, Hunt et al. (2019) conservatively concluded that anthropogenic caused mortality in the APWRA area was responsible for at least 67% of the fatalities of the telemetered eagles (257 radio tagged eagles, 88 total mortalities) in their study. The majority, 40.9%, of radio-tagged eagle deaths were caused by wind turbine blade strikes. This, and other lines of evidence described in the following sections, indicate the average unauthorized human-caused mortality rate of golden eagles in the APWRA area is much greater than our range-wide estimate.

Breeding pairs with a subadult member 1-4

Hunt et al. (1998) investigated the effects to the breeding golden eagle population from wind turbine blade strike in the APWRA. The authors state that if floaters (adult eagles without a breeding territory) immigrating from other subpopulations are available, they may buffer the local breeding population against decline. During the 1990's, the authors observed 100% annual territorial re-occupancy rate and at that time, a low incidence (3%) of subadults as members of breeding pairs. The authors conclude this was an indication that a reserve of adult floaters continued to exist. Hunt and Hunt (2006) reported no apparent upward trend in the proportion of subadult eagles as pair members from a sample of 58 territories monitored in 2000 and again in 2005. Hunt et al. (2017) updated and expanded upon their previous analyses with the addition of the 2013 monitoring year's data. In 2013, the authors reported

1-4 cont'd

the proportion of breeding pairs with a subadult member as 3.6%. territories that contained one subadult member increased each year (23%, 27%, 36% respectively). In 2018, 35% of the pairs within 1.3 km of the APWRA contained a subadult member (Wiens et al. 2018, Wiens and Kolar 2019).

It should be noted that the historical surveys completed by Hunt et al. did not include monitoring of pairs within APWRA as the cited Wiens et al. surveys did. This makes some comparisons difficult because the Hunt et al. survey areas specifically excluded land within the APWRA and surveyed areas surrounding the APWRA, within 30 km. The Wiens et al. study design also monitored pairs within the same 30 km Diablo Range area, but in addition, they included monitoring of pairs within APWRA. Some of the Wiens et al. study reports focused on territorial pairs within 1.3 km of the APWRA (Wiens 2017, Kolar and Wiens 2017, Wiens 2019). Areas inside of the APWRA, and within 1.3 km of the APWRA or the Pacheco Pass WRA are where the Wiens et al. study identified and monitored pairs with subadult members (Wiens et al. 2018, and unpublished data). Wiens et al. estimates of the proportion of pairs with a subadult member would still be greater than the Hunt et al. studies if they included all pairs within 30 km of the APWRA (Dave Wiens, written communication). In addition, the pairs monitored by Wiens et al. have documented a high rate of pair member turnover amongst most breeding territories in the APWRA area (e.g., an adult male and subadult female one year, followed by a subadult male and adult female the next year) (Kolar and Wiens 2017, USGS unpublished data). The high incidence of subadults as territorial breeding pair members, and high turnover rates of individual pair members, indicates the APWRA is an ecological sink, continually attracting golden eagles into prime foraging and nesting habitat that is of high risk to eagles, and for which survivorship is low.

1-5

Productivity

Below we summarize the annual and average productivity of golden eagles in the larger study area (30 km around the APWRA) as reported in Hunt et al. 2017 (Table 1) and the more recent Wiens et al. 2018 study (Table 2).

Table 1. Productivity per monitoring year, and average over five-year study.

Hunt et al. 2017

	1996	1997	1998	1999	2000	average
Study Area	0.66	0.59	0.58	0.9	0.46	0.64

Table 2. Productivity per monitoring year, and average over four-year study.

Wiens et al. 2018

	2014	2015	2016	2018	average
Study Area	0.25	0.21	0.34	0.48	0.32
APWRA	0.23	0	0.08	0.15	0.13

Golden eagle productivity (average number of young fledged per breeding territories) was much higher, twice as high on average, during the Hunt et al. monitoring period compared to the recent Wiens et al. 2018 results (Tables 1 and 2). Severe drought conditions during 2014 – 2016 had a strong, negative effect on reproductive success (Wiens et al. 2018), especially compared to the relief from drought conditions in

2018. The Wiens USGS-lead study was not funded during 2017, and so data is not available from that year. While the USGS monitoring results from the 2019 season are not yet available, early analysis suggests productivity was also low, in part due to heavy rains late in the breeding season (P. Kolar personal communication, unpublished data). In conclusion, due to drought and other abnormal weather patterns possibly related to climate change, recent average annual golden eagle productivity is lower in the local area population than previously estimated. 1-5 cont'd

The draft SEIR contains an estimation of the Project area's local area population, drawing from recent scientific literature. The County's discussion references Hunt et al.'s 2017 estimation that the annual reproductive output of 216–255 breeding pairs would be necessary to support published estimates of 55–65 turbine blade-strike fatalities per year. Considering that annual average productivity in recent years (Table 2) is half of that reported in Hunt et al.'s 2017 estimations (Table 1), it is likely that twice as many pairs (432-510) would be needed to sustain the same level of ongoing take from wind turbines collisions. The draft SEIR also cites Wiens et al.'s 2015 estimation that there could be as many as 280 territorial pairs of golden eagles in their larger Diablo Range study area. Next, the SEIR conducts a coarse estimation of the possible golden eagle population in the Bird Conservation Region (BCR) and the Project's local area population utilizing the Wiens et al. 2015 estimations. The draft SEIR discussion implies there are no population level impacts from take of eagles at the APWRA. The Service disagrees with this assertion. As we explained here, the Service has determined there are multiple lines of evidence indicating take of golden eagles from wind turbine collisions is having an ongoing negative effect to the APWRA local area population of golden eagles.

Recent Fires 1-6

The 2020 California wildfire season was characterized by a record-setting year of wildfires that burned across the state. Several large fires burned within the local area eagle population's available habitats, including CSU Lighting Complex, SZU Lighting Complex, the August Complex as well as multiple smaller fires. Eighty known golden eagle territories located within approximately one third of the Wiens et al. USGS study area burned in the CSU Lighting Complex Fire. The 2020 fire season likely impacted golden eagle territories and populations within the local area and within the larger Pacific Flyway Eagle Management Unit, contributing to our cumulative impact concerns and considerations.

Conclusion 1-7

The Service's analysis of eagle take associated with the project and potential cumulative effects will follow the approach in our Incidental Take Regulations and supporting documents which differs from the approach presented in the draft SEIR. However, we agree with the significant and unavoidable impacts presented in ES 3.2 as related to golden eagles

We will take all applicable data and information into consideration as we process the Project's eagle incidental take permit application.

Please be advised that eagle nests are also protected under BGEPA, and we recommend against removal of nesting tree habitat.

1-8

Draft SEIR Golden Eagle Avoidance and Minimization Measures

We appreciate the Project's efforts to minimize impacts through micrositing studies and proposing a Project layout avoiding placing turbines within 0.5 miles of known eagle nest sites. There are approximately six to seven golden eagle breeding territories within and proximate to the Project site; please clarify or correct discrepancies between draft SEIR and its Appendices. We acknowledge that predicting where golden eagle pairs may nest year to year is difficult. Even so, we recommend that turbine micrositing considerations include appropriate buffers between turbine locations and nesting substrate. The Service also advises the wind operators to survey for golden eagle nests annually within 2 miles of turbine locations to inform appropriate eagle take avoidance and minimization measures, such as curtailment of turbines near nesting eagles (i.e., within one mile). We recommend nesting surveys begin in December when pairs are most active and detectable, following the protocol employed by recent USGS studies (Wiens et al. 2015, Wiens et al. 2017, Wiens et al. 2018).

The Service appreciates the County's inclusion of PEIR Mitigation Measure BIO-11h, which provides the applicant with an option that, should they obtain an eagle incidental take permit under the Eagle Act, requirements under the permit may also serve to meet the County CUP's needs for eagles, birds and bats.

1-9

3. Burrowing Owl

Burrowing Owls are a U.S. Fish and Wildlife Service Bird of Conservation Concern (Service 2008). The 1988 amendment to the Fish and Wildlife Conservation Act mandates the Service to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973." Birds of Conservation Concern 2008 is our most recent effort to carry out this mandate, although an updated list is under development.

Studies have shown declining trends for burrowing owls within the coastal Bay Area and its interior (Wilkerson and Siegel 2010). Although Altamont has been described as one area of the state with a potentially stable population, data are lacking on the number of breeding pairs in the area, and local trend estimates are uncertain (Townsend and Lenihan 2007; Wilkerson and Siegel 2010). However, recent declines have also been reported in Imperial Valley, where the highest concentrations of burrowing owls in the state are located (AECOM 2012), and where effects on the species would be most impactful to the statewide population. The Alameda County avian monitoring team, with approval of the Scientific Review Committee, began a study of background fatality of burrowing owls (ICF 2016) after the Alameda County APWRA Repowering Program Environmental Impact Report (PEIR) was published. The authors of the study noted that California was in its fourth year of a historic drought, and anecdotal information suggested that the burrowing owl population was rapidly declining. Owl movement and migration is irruptive by nature and makes trends difficult to determine. This may be one reason why Breeding Bird Survey data for the species is insufficient to report a statewide trend (USGS 2020a). However, all available data indicate a statewide decline for the species.

1-10

The DSEIR identifies construction and operational impacts of the Project as significant and after proposed mitigation measures as less then significant (LTS) (see Table 3.4-3 of draft SEIR and Appendix C). We have concerns with the LTS determination for several reasons. Although no burrowing owl surveys were performed to assess populations in the vicinity of the Project and resulting impacts, the DSEIR describes the likelihood to occur on the Project site as:

High—species observed at several locations throughout the Project site during Project surveys; suitable nesting, wintering, and foraging habitat present; seven CNDDB records for occurrences in the Project site and numerous additional records within 5 miles of the Project site 1-10 cont'd

In addition, several burrowing owl mitigation and conservation lands are located within and near the Project site as illustrated in Figure 3.4-1 and described on page 3.4-13 of the draft SEIR. The Two Sisters Burrowing Owl Preserve is located within the Project. The Haera Wildlife Conservation Bank and Jess Ranch Mitigation Site are located adjacent and proximate to, respectively, the proposed Project site. Siting the Project turbines in close proximity to lands set aside and managed for burrowing owl may negate the intended purpose of the mitigation lands and could result in higher than anticipated impacts to burrowing owls, and potentially other bird species.

Finally, as explained in the preceding paragraphs, we are concerned about declining burrowing owl populations in California. We believe that impacts to burrowing owl, including cumulative impacts, are likely greater then presented in this draft analysis. Burrowing owl surveys were not conducted as part of the Project's initial bird studies. We recommend surveys of burrowing owls be conducted to inform the Project's potential impacts and minimization measures for this species.

4. Tricolored blackbird 1-11

Tri-colored blackbird is also a U.S. Fish and Wildlife Bird of Conservation Concern. The draft SEIR notes the presence of three to four known nesting colonies and large patches of freshwater marsh nesting habitat within the Project site. Appendix D of the draft SEIR states that the 2019 surveys of tricolored blackbirds conducted by ICF occurred later in the breeding season (May and June). This may explain the lack of detections during the June survey. If that breeding site had dried up, or if the previous nesting attempt had failed, tricolored blackbirds would leave the location. We recommend a protocol level breeding survey be conducted to evaluate the importance of the Project site to tricolored blackbirds (see Appendix I of Meese 2017).

We recommend the Final SEIR also include a full analysis of the Project's impacts, from both Project construction and operations activities, to this species and its populations. The draft SEIR's construction impact discussion states tricolored blackbird habitat along Paterson Creek would be impacted, but that no trees would be removed, therefore concluding impacts to tricolored blackbirds would be temporary. As this species is not a tree nesting species, this does not adequately characterize risk to tricolored blackbirds. Their nesting habitat, e.g., freshwater marshlands, may be impacted by construction and could take several years or more to recover. In addition, classification of eight of the twelve Project site habitat features as wetland-related indicates habitat for tricolored blackbird may be abundant across the site.

Additionally, the proposed mitigation measures for this species focus on restoring grassland habitats. While that may provide some benefit to tricolored blackbirds, we recommend focusing on measures that would protect or create breeding habitats for this species. Additional operational minimization measures may also be warranted; a task we recommend for the TAC to consider as we are currently striving to understand more about impacts to this species at operational wind facilities in the APWRA. 1-12

Please clarify and correct the draft SEIR's analysis and conclusions on impacts to tricolored blackbirds.

5. California Condor 1-13

The draft SEIR describes an observation of an unmarked, untagged California condor within the Project site on August 12, 2019. The draft SEIR then concludes that California condors are not expected to occupy or frequent the Project site, and California condors are not discussed further. 1-13 cont'd

Pinnacles National Park manages a California condor release site and continuously monitors the condors released from the site to assist in the condors' protection and survival. Currently, approximately 38% of the California condor population carry GPS satellite transmitter, which are used to monitor the condors' movements and survival. Data from GPS-tagged condors have shown Pinnacles National Park-managed condors have flown within two miles of the proposed Project. Condors regularly fly over 100 miles in a single day. Their range has expanded in all directions as their population has grown to nearly 100 birds in central California. Continued range expansion is expected as condors continue to be released into the wild (Punzalan, 2020, unpubl data; Bakker et al., 2017). Recent habitat modeling has predicted that the area would likely provide foraging habitat for condors (D'Elia et al 2015). Exploratory flights, such as those documented in and near the Project site, may be indicative of future range expansion areas (J. Brandt, pers. Comm., 2021). The available data indicates California condor use of the Project area is likely to occur and increase within the next 5-10 years, and more so over the life of the Project. As condors may be injured or killed if struck by wind turbines or they collide with associated power lines, we recommend updating the Draft SEIR to include an analysis of these potential impacts.

6. Bats 1-14

Increased fatalities because of wind energy development is a concern for bats generally. Given their low reproductive rate—generally just one birth per year and a single pup for most species—bats cannot simply bounce back from a population decline as can many other taxa. Although hoary bats have been historically difficult to study and assess their population status, there is widespread concern that wind energy development may be pushing this bat towards extinction. As the DEIR states, a 2017 study that modeled population impacts from existing wind energy generation found that the cumulative effects of wind energy (at 2014 levels) could result in a 90% species decline in the next 50 years. (Frick et al. 2017) A multi-year field survey of bat populations in the Pacific Northwest published in 2019 likewise shows a decline of hoary bat populations in the Pacific Northwest consistent with previously modeled predictions. (Rodhouse et al 2019).

Although Mexican free-tailed bats are not considered a species of concern, they have the highest fatality rates at other projects in the Altamont, with hoary bats the second highest (Golden Hills and Golden Hills North reports). Acoustic deterrence and curtailment have both been required by other wind projects prior to operation to avoid impacts to unlisted bat species, such as the smart curtailment at the Spring Valley Wind Project and acoustic deterrent devices have been employed at 255 wind turbines at Los Vientos III, IV and V owned by Duke Energy Renewables. Initial results from the Los Vientos projects show that deterrents may work for some species, including hoary bats and Mexican free-tailed bats (Weaver et al 2020).

Curtailment is known to significantly reduce bat mortalities around the country, including in California (Smallwood and Bell 2020), therefore, we support the inclusion of nighttime curtailment from the start of operations as a minimization measure for impacts to bats pages 3.4-126 and 127, PEIR Mitigation Measure BIO-14d and ADMM-7: Seasonal Turbine Cut-in Speed Increase which states (in part):

"Cut-in speed increases will be implemented as outlined below, with effectiveness assessed annually.

- Beginning with initial project operations, the project proponent will observe a cut-in speed of 5.0 m/s from sunset to sunrise from August 1 through October 31, which corresponds to peak bat migration season in the APWRA. This measure shall apply for the first three years of project operations.

1-14 cont'd

- At any time following the end of the first three full years of project operations, the project proponent may request modifications to the initial operational requirements, including the cut-in speed or a change in the date of curtailment. The project proponent must present evidence in support of such changes…. Should resource agencies and the TAC find there is sufficient evidence to authorize the proposed changes, the supporting evidence will be documented for the public record and the revised operational requirements may be implemented."

However, based on data from other projects in the Altamont, a shorter period in the spring around May should be considered as a curtailment period if there is a spike of fatalities that persists after the first two years of monitoring.

We also support including ADMM-8: Emerging Technology as Mitigation, which states (in part) "The project proponent may request, with consultation and approval from agencies, replacement or augmentation of cut-in speed increases with developing technology or another mitigation approach that has been proven to achieve similar bat fatality reductions." and goes on to list several areas of emerging technology including acoustic deterrents and monitoring at-risk behavior.

Operational smart curtailment offers the best currently available opportunity to significantly reduce bat mortality while preserving maximum energy generation, but because it requires location specific information, we suggest that the strict statement that changes can be requested only after the first three years of the August to October nightly curtailment be adjusted to include the possibility of changes to the curtailment after the first year of operations. This would only be if TAC and agency approval is reached, and only in order to test smart curtailment or to test deterrence or other emerging technology that has been shown to have better or equal fatality results with the same or better energy production.

7. Avian impact avoidance and minimization measures 1-15

Adjacent Conservation Lands

As discussed in our comments for burrowing owl, siting the Project turbines in close proximity to lands managed for burrowing owl and other birds may negate the intended purpose of the mitigation lands and could result in higher than anticipated impacts to these species, and potentially other raptors, including golden eagles. We support California Department of Fish and Wildlife burrowing owl experts who recommend a 0.3 mile turbine set back buffer as a measure that may reduce impacts to burrowing owls and a 0.5 mile set back or curtailment of turbines from active nest burrows (B. Blinn and M. Grefsrud, pers. Comm., 2021).

1-16

Project Layout and Design Features

Multiple transmission lines with supporting lattice towers are located within the proposed Project site (draft SEIR Appendix F, Figure 5). Constructing turbines proximate to lattice towers, which provide hunting perches and nesting substrate for raptors, increases the risk of collision with wind turbines for eagles and other raptors (ICF 2016). Table 7 of the draft SEIR Appendix D documents that 10 of the 18 raptor nests ICF found during the Project's surveys were located on transmission towers. The abundance of lattice tower perch sites was considered a major risk factor within the old generation wind Projects in the APWRA. We recommend serious consideration be given regarding qualitive risk presented by the abundance of perch and nest sites to eagles, raptors and other birds within the proposed Project site.

1-16 cont'd

The Service also recommends that any permanent meteorological towers be of a monopole design rather than a lattice tower. Doing so could be considered as impact avoidance and minimization measures in the Project's turbine micrositing considerations.

Micrositing 1-17

We recognize that the County has included the applicant's alternatives for Project layout, design and micrositing reports aimed primarily at minimizing the proposed Project's risk to golden eagles and raptors. We will continue to review these reports and coordinate with the County as a member of your APWRA Technical Advisory Committee (TAC).

8. Reduced Project Alternative 1-18

There are some important discrepancies in the descriptions of the Reduced Project Alternative throughout the Draft SEIR that need to be clarified. This Alternative, as described in ES.4.3 states:

…the cut-in speed would be increased to 5 m/s during all daylight hours, curtailing generation output in order to reduce potential impacts on golden eagles.

This minimization measure is explained further in Section 4.2.3.4, the analysis of biological impacts which states:

The Reduced Project Alternative would also increase turbine cut-in speeds to 5 m/s during all daylight hours. Based on wind speed data provided by the Applicant, this operational measure would reduce operational daylight hours by approximately 50%, resulting in a commensurate decrease in expected eagle fatalities.

Whereas Section 4.1.5.3's description of the Reduced Project Alternative indicates the 5 m/s would only occur during the fall as a bat impact minimization measure rather than an eagle and bird impact minimization measure. It states:

…the cut-in speed during the fall migration for bats would increase to 5 meters/second (m/s). This would occur for an eight-week period from August 1 to September 30, from sunset to sunrise.

The Service supports the Reduced Project Alternative and proposed curtailment strategy, which could reduce impacts to eagles and birds. We also support the appropriate curtailment regime that would reduce bat impacts. If helpful, we are available to meet with the County and our shared Applicant to discuss this Alternative prior to finalization of this Draft SEIR.

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Letter #2

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
(707) 428-2002
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

January 8, 2021

Mr. Andrew Young, Project Planner
Alameda County Planning Department
244 W. Winton Avenue, Room 111
Hayward, CA 94544
andrew.young@acgov.org

Subject: Mulqueeny Wind Repowering Project, PLN2019-00226, Draft Subsequent Environmental Impact Report, SCH No. 2010082063, Alameda County

Dear Mr. Young:

2-1

The California Department of Fish and Wildlife (CDFW) received a Notice of Availability from the Alameda County Planning Department (County), as the Lead Agency, for the Draft Subsequent Environmental Impact Report (DSEIR) for the Mulqueeney Wind Repowering Project (Project). pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.; hereafter CEQA; Cal. Code Regs., § 15000 et seq.; hereafter CEQA Guidelines). The Project is tiered under the Altamont Pass Wind Resource Area (APWRA) Repowering Program Environmental Impact Report (PEIR; SCH No. 2010082063) certified by the East County Board of Zoning Adjustments on November 12, 2014. The Project is an application for a Conditional Use Permit (CUP) to repower (i.e., replace) an estimated 518 existing or previously existing wind energy turbine sites with up to 36 new turbines. The Project is proposed on 29 nearly contiguous parcels extending over approximately 4,589 acres within the southeastern quadrant of the Alameda County portion of the APWRA in northern California. The purpose of the DSEIR is to evaluate the specific environmental effects of the Project as proposed by Mulqueeney Wind, LLC, a subsidiary of Brookfield Renewable.

CDFW provided comments on the Notice of Preparation (NOP) for the DSEIR in a letter dated May 4, 2020. CDFW is also a member of the Alameda County Wind Repowering/ Avian Protection Technical Advisory Committee (TAC) and has participated in meetings hosted by the County to discuss the proposed Project. CDFW is providing comments and recommendations on the DSEIR regarding those activities involved in the Project that are within CDFW's area of expertise and relevant to its statutory responsibilities (Fish and Game Code, § 1802), and/or which are required to be approved by CDFW (CEQA Guidelines, §§ 15086, 15096 and 15204). The County provided an extension to the deadline for submitting comments on the DSEIR to January 8, 2021.

CDFW ROLE

CDFW is a **Trustee Agency** with responsibility under CEQA (Pub. Resources Code, § 21000 et seq.) pursuant to CEQA Guidelines section 15386 for commenting on projects that could impact fish, plant, and wildlife resources. CDFW is also considered a **Responsible Agency** if a project would require discretionary approval, such as a California Endangered Species Act (CESA) Incidental Take Permit (ITP), a Lake and Streambed Alteration (LSA) Agreement, or other provisions of the Fish and Game Code that afford protection to the state's fish and wildlife trust resources. CDFW is also a participating member of the Altamont Pass Wind Resource Area TAC to provide scientific and permitting guidance to Alameda County on wind turbine projects. 2-1 cont'd

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 the 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

CDFW requires an LSA Notification, pursuant to Fish and Game Code section1600 et. seq., 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 a 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 ITP) until it has complied with CEQA as a Responsible Agency.

PROJECT DESCRIPTION SUMMARY 2-2

Proponent: Mulqueeney Wind, LLC

2-2 cont'd

Description and Location: The Project is located at 170257 Patterson Pass Road (address for one of 29 nearly contiguous parcels) extending over approximately 4,589 acres in the eastern Altamont Pass area of Alameda County. The Project is located north and south of Patterson Pass Road between one and two miles north of Tesla Road, and approximately one mile south of Interstate 580. The Project will allow repowering of an estimated 518 previously existing wind energy turbine sites with up to 36 new turbines with a maximum production capacity of 80 megawatts (MW), using turbines rated between 2.2 and 4.2 MW per turbine. The DSEIR identifies the Environmentally Superior Alternative as the Reduced Project Alternative.

The main differences with the Reduced Project Alternative are a reduction of the total number of turbines (24 versus 36 turbines), individual turbine capacity (2.2 versus 3.465 MW) and total rotor swept area (RSA) (32.8 versus 40.7 hectares). With the Reduced Project Alternative, 18 turbines would be located at nearly the same locations as the proposed Project (but with minor relocations due to the micro-siting process) and 6 turbines would be located at a substantial distance (hundreds of feet) away. The Reduced Project Alternative has a nameplate capacity of 83.16 MW but would be limited to 80 MW operational capacity; its RSA would be 32.8 ha, a 19% reduction compared to the proposed Project.

However, it is not clear if the Reduced Project Alternative is the actual proposed Project which forms the basis of the impacts analysis and the avoidance and minimization measures. For example, although the DSEIR Section 2-1, Project Description, describes the proposed Project as installing up to 36 new wind turbines with a maximum capacity of 80 MW, the *Supplemental Assessment of Revised Mulqueeney Ranch Wind Repowering Project to Minimize Raptor Collisions in the Altamont Pass Wind Resource Area*, Appendix G, p. states "the final turbine layout for the project has been reduced to 24 turbines and includes further relocation of turbines to minimize raptor collisions and to accommodate construction constraints, set-back requirements, and wind conditions." It is therefore difficult for CDFW to fully understand the full extent of the impacts of the Project; therefore, the SEIR should be clear on the proposed Project description and design, and the biological impacts associated with each Project alternative.

Therefore, CDFW provides the following comments on both the "proposed Project" and the "Reduced Project Alternative" presented in Appendix G.

ENVIRONMENTAL SETTING 2-3

The Project site is known to provide habitat for multiple state and federally listed species and other special-status species including, but not limited to the federally and State threatened California tiger salamander (*Ambystoma californiense*), federally threatened and State Species of Special Concern California red-legged frog (*Rana draytonii*), State Species of Special Concern western burrowing owl (*Athene cunicularia*), federally

2-3 cont'd

endangered and State threatened San Joaquin kit fox (*Vulpes macrotis mutica*), golden eagle (*Aquila chrysaetos*) a State Fully Protected Species (Fish and Game Code, § 3511, the State threatened tricolored blackbird (*Agelaius tricolor*) and the State threatened Swainson's hawk (*Buteo swainsoni*). The site also provides habitat for four native bats including little brown bat (*Myotis lucifugus*), western red bat (*Lasiurus blossevillii*), hoary bat (*L. cinereus*) and State Species of Special Concern Pallid bat (*Antrozous pallidus*).

Adjacent Lands

As noted in the CDFW NOP comment letter, the Project site abuts protected land or potentially future protected land on all four boundaries, including the Contra Costa Water District's Jess Ranch conservation easement and Haera Wildlife Conservation Bank to the north, Two Sisters Burrowing Owl Preserve (near the center of the proposed Project), Lawrence Livermore National Laboratory's Site 300 to the south and east, a proposed conservation easement to the south and west. Figure 3.4-1 in the DSEIR incorrectly depicts the Jess Ranch conservation easement southern boundary as the railroad tracks. According to CDFW records, the southern boundary extends past the railroad tracks and abuts the northern property line of the Project.

A portion of the western boundary of the Project area is located adjacent to the Golden Hills Wind Energy Project (Golden Hills), also located within the APWRA, which is known to provide habitat for western burrowing owl, California tiger salamander, California red-legged frog, and San Joaquin kit fox. Over the required three years of post-construction fatality monitoring under the PEIR, the Golden Hills project has documented mortality of significant numbers of birds and bats, including species such as, golden eagle, red-tailed hawks, burrowing owl, tricolored blackbird, and hoary bat which is on the CDFW Watch List (those with restricted distributions and warranting monitoring of potential threats).

2-4

Section 3.4.2 BIOLOGICAL RESOURCES

There is substantial evidence indicating that the proposed Project will have additional or more severe environmental effects on birds and bats, and other adverse effects on biological resources, than were previously analyzed in the PEIR. The DSEIR provides for additional or updated mitigation measures for some impacts; however, CDFW continues to be greatly concerned with golden eagle fatalities documented within the APWRA due to turbine collisions. Monitoring programs at existing wind energy facilities also report high mortality rates for the other raptors considered focal species under the PEIR, namely red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*) and burrowing owl. Monitoring data also show high fatality of other birds as well as bats. As stated in this letter above, golden eagles are designated as Fully Protected under Fish and Game Code section 3511 which states that a fully protected bird cannot be

2-4 cont'd

taken at any time. It is also unlawful to take, possess or destroy any birds in the order Falconiformes or Stringiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code. It is also unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act (Fish and Game Code, § 3513). CDFW therefore recommends that the County work with Project proponents in coordination with state and federal wildlife agencies such as the U.S. Fish and Wildlife Service to develop feasible and effective methods to curtail avian fatalities within the APWRA.

2-5

3.4.1.1 Regulatory Setting

California Fish and Game Code

On p. 3.4-3, CDFW recommends including Fish and Game Code, § 3800(a) which makes it unlawful to take any nongame bird except as provided in the code or in accordance with regulations of the commission. All birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, are nongame birds.

2-6

Section 3.4.1.2 Environmental Setting

Tricolored blackbird

On page 3.4-27, the DSEIR and p. 3-12 of the *Avian Survey Report for the Mulqueeney Ranch Wind Repowering Project*, Appendix D states CDFW conducted tricolored blackbird surveys in 2018 and 2019. CDFW did not conduct the surveys but has records describing where and when the surveys were conducted; records were sent to CDFW California Natural Diversity Database in 2020.

As noted in our NOP comment letter, CDFW recommended the DSEIR include Project-specific impact analyses on tricolored blackbird and Swainson's hawk, two species listed under CESA as threatened. The DSEIR must include detailed habitat assessments for these species and a thorough analysis of potential impacts of the Project on nesting, foraging and roosting habitats on the Project site during construction, *as well impacts to the species from ongoing turbine operations.*

2-7

Section 3.4.2.3 Impacts and Mitigation Measures

2020 Updated PEIR Mitigation Measure BIO-1d: Compensate for impacts on special-status plant species, p. 3.4-72 proposes that, "Where avoidance of impacts on a special-status plant species is infeasible, loss of individuals or occupied habitat of a special-status plant species occurrence will be compensated for through the acquisition, protection, and subsequent management in perpetuity of other existing occurrences at a 2:1 ratio (occurrences impacted: occurrences preserved)."

The “2:1 ratio (occurrences impacted: occurrences preserved)” is insufficient to mitigate for the loss of special-status plants. The Project is located within the East Alameda County Conservation Strategy (EACCS) so where impacts cannot be avoided or minimized, compensatory mitigation should be undertaken in accordance with mitigation ratios and requirements developed under EACCS, Table 3-12 for focal plant species. 2-7 cont'd

Impact BIO-8a: Potential construction-related disturbance or mortality of special-status and non–special-status non-raptor migratory birds, p. 3.4-86 The DSEIR describes tricolored blackbird nesting habitat as “freshwater marsh within the project site that support large areas of dense vegetation such as cattails, tules, willows, blackberries, thistles, or nettles.” 2-8

CDFW recommends the DSEIR identify *all* the potential nesting habitat on the Project site and within 0.5 mile from the Project site. The Status Review for Tricolored Blackbird (CDFW 2018) identifies three resources required for successful breeding: 1) secure nesting substrate, 2) a source of water, and 3) foraging habitat that provides sufficient food resources. The majority of tricolored blackbird breeding colonies have occurred in one of five nesting substrate types: 1) wetland vegetation [either cattail (*Typha* sp.) or bulrush (*Schoenoplectus* sp.)], 2) Himalayan blackberry, 3) thistle, usually milk thistle (*Silybum marianum*) or bull thistle (*Cirsium vulgare*), 4) stinging nettle (*Urtica* sp.), or 5) agricultural grain fields.

2020 Updated PEIR Mitigation Measure BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non–special-status nesting birds and raptors: Remove suitable nesting habitat (shrubs and trees) during the non-breeding season (September 1–January 31) for nesting birds. 2-9

CDFW considers that potentially significant impacts may result from Project activities that cause nest abandonment, loss of nest trees, loss of foraging habitat that would reduce nesting success (loss or reduced health or vigor of eggs or young), or direct mortality of a State listed or special status species. CDFW recommends that the DSEIR clarify that impacts to suitable nesting habitat will be avoided. Suitable nesting habitat should only be removed if absolutely necessary during construction. CDFW also recommends that the DSEIR require compensation for the permanent loss of nesting habitat, as well as all types of tricolored blackbird habitat noted above. Compensation should include restoration and/or creation and conservation of nesting habitat along with suitable foraging habitat.

Impact BIO-9a: Permanent and temporary loss of occupied habitat for western burrowing owl, p. 3.4-90 and **PEIR Mitigation Measure BIO-9a**: Compensate for the permanent loss of occupied habitat for western burrowing owl p. 3.4-91. 2-10

2-10 cont'd

CDFW recommend the DSEIR include compensation for loss of temporary habitat as well as loss of permanent habitat. This compensation is often combined with the compensation required for loss of habitat for California tiger salamander and San Joaquin kit fox.

2-11

Impact BIO-9b: Permanent and temporary loss of foraging habitat for tricolored blackbird and other special-status and non-special-status birds. CDFW recommends the DSEIR include compensation for loss of permanent and temporary foraging and nesting habitat for tricolored blackbird and other special-status and non-special-status birds.

2-12

Impact BIO-11: Avian mortality resulting from interaction with wind energy facilities, p. 3.4-95. The DSEIR states, "For nearly all projects and all species, predicted fatalities are low compared to the non-repowered baseline condition. The exceptions are burrowing owl, red-tailed hawk, golden eagle, prairie falcon, and native non-raptors." This statement should be clarified because the data are either lacking or incomplete for almost half the species listed in Table 3.4-8a, and no wind energy project in the APWRA has a complete set of data for all avian species. The measure should be revised to accurately depict the current avian mortalities in the APWRA.

2-13

Burrowing owl. The DSEIR, p. 3.4-102, states there is a growing body of circumstantial evidence that indicates that many of the burrowing owl fatalities found during fatality surveys are due to predation rather than turbine collision based on location of carcasses and status of wind turbine operations. However, Smallwood et.al. (2006) noted, in their experience, the number of owl carcasses found in environments lacking wind turbines was not nearly the number of owl carcasses found around APWRA wind turbines. CDFW recommends the DSEIR require annual surveys for breeding and non-breeding burrowing owls and other raptors that may be nesting in or near the Project site. Smallwood et.al. (2007) recommends that minimization of burrowing owl collisions in the APWRA, should include curtailment, siting new wind turbines *as close together as feasible* and outside canyons, ravines, and valleys, and where rodent and owl burrows are relatively scarce. In addition, grazing practices should be modified to prevent accumulations of dung around wind turbines. The current proposed micrositing, Figure 3.1-2 and Figure 4-2, show the wind turbines spaced far apart so additional mitigation measures should be required, including curtailment. Turbines located within 0.3 mile from breeding owls or within 0.3 mile from the property lines of all protected or proposed to be protected land (described in Environmental Setting above) that provides habitat for western burrowing owls should be curtailed during periods when owls are more frequently away from the nest site and during seasonal variation in movement.

2-14

Swainson's hawk, p.3.4-105. The DSEIR concludes there is "only one recorded Swainson's hawk fatality in the APWRA, in an area of nonrepowered turbines; no other fatalities of this species have ever been recorded in the APWRA, consequently there is very little evidence on which to base any quantitative estimate of fatality risk. Accordingly, it is expected that the mortality rate for Swainson's hawk would remain at or near zero for the project." 2-14 cont'd

CDFW acknowledges there is little evidence on which to base a quantitative estimate of fatality risk. However, the DSEIR does not provide any details such as known nest sites, foraging observations, etc., of Swainson's hawk use in any of the repowered sites within the APWRA. The DSEIR acknowledges that there is a potential for future mortalities based on the three Swainson's hawk observations recorded in the 2020 avian use surveys which seemingly contradicts the statement above.

DSEIR Figure 3.4-2a, p. 3.4-10 shows a hatched temporary construction area in the same location as the Swainson's hawk nest shown in Appendix D, Figure 10. The DSEIR fails to analyze the potential impacts to the known Swainson's hawk nest that could result from the Project's plans to construct a temporary construction area on or near the active nest site. Swainson's hawks are known to have high nest site fidelity, meaning they return to the same site year after year (Estep 1989, Woodbridge et al. 1995). Removal of this nest tree would be a potentially significant impact. As noted above, potentially significant impacts may result from activities that cause nest abandonment, loss of nest trees, loss of foraging habitat that would reduce nesting success (loss or reduced health or vigor of eggs or young), or direct mortality of a State-listed or special-status species. As stated in the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (California Energy Commission and Department of Fish and Wildlife, June 2, 2010), CDFW considers a nest site to be active if it was used at least once during the past five years. Impacts to suitable habitat or individual birds within a five-mile radius of an active nest will be considered significant and to have the potential to "take" Swainson's hawks as that term is defined in §86 of the Fish and Game Code. CDFW recommends the Project avoid known or potential Swainson's hawk nest trees.

CDFW also recommends the Project proponent obtain an ITP for tricolored blackbird and Swainson's hawk for both construction activities and operations.

PEIR Mitigation Measure BIO-11a: Prepare a project-specific avian protection plan. 2-15
As stated in the NOP comment letter, CDFW recommends a qualified biologist approved by CDFW should conduct annual surveys for the four focal raptor species as well as other raptors, and tricolored blackbird, in all suitable nesting habitat within a minimum of one mile of the turbine locations and within two miles of turbine locations for golden eagle and Swainson's hawk. Surveys should be conducted from December 15 to July 15 for golden eagles, typically from early March to early-mid September for other raptors, and March 1 to August 15 for tricolored blackbird. In addition to nesting season surveys, overwintering surveys should also be conducted for burrowing owl from December 1 to

2-15 cont'd

January 31. Annual surveys for bat maternity or roosting colonies should also be conducted. Protocol-level survey methodologies should be used, and guidance on survey methodologies for golden eagle, burrowing owl and other species can be found on our website at https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds. CDFW staff is also available to provide additional guidance on appropriate and effective survey protocols. These annual surveys should be conducted during the entire operational term of the Project. CDFW recommends the DSEIR require focused surveys for burrowing owl to estimate burrowing owl nesting density and productivity, so that burrowing owl mortality can be related to the population size.

All turbines located within one mile of a golden eagle or Swainson's hawk nest or communal roosting area, and within 0.5 mile of any other raptor nest or tricolored blackbird colony, should be curtailed. Curtailment should occur each year that active nests are detected during surveys. Curtailment of turbines located near raptor nests and tricolored blackbird colonies should be implemented during daylight and crepuscular hours during the entire nesting season or until young have fledged or the nests have been determined by a qualified biologist to be unsuccessful.

2-16

PEIR Mitigation Measure BIO-11b: Site turbines to minimize potential mortality of birds, p. 3.4-108. CDFW has reviewed the micro-siting analyses and Project design layouts and does not consider any of these alternatives as sufficient to significantly reducing the avian fatality rate to the fullest extent possible. CDFW recommends that further consideration be given to other feasible alternatives for reducing avian and bat fatalities resulting from the proposed Project, including serious consideration of the no-project alternative, reduction in Project size (number and size of turbines), and various turbine micro-siting arrays to avoid and minimize impacts to avian species, especially the four focal raptor species described in the PEIR, namely golden eagle, red-tailed hawk, American kestrel and burrowing owl as well as other birds and bats.

CDFW recommends more stringent micro-siting requirements: i) turbine locations determined to be at high risk should be relocated or avoided; ii) turbines found to be at a moderate-high risk should be avoided or curtailed during all appropriate raptor nesting and communal roosting seasons. The Reduced Project Alternative would replace 36 2.2 MW capacity turbines proposed under the project with 24 micro-sited 3.465 MW turbines. However, even in the Reduced Project Alternative there still are 11 turbines ranked as Moderate-High Risk and two ranked High Risk, as well as two replacements that have not been analyzed.

2-17

2020 Updated PEIR Mitigation Measure BIO-11i: Implement an avian adaptive management program. CDFW recommends implementing some of the Adaptive Management Measures (ADMM), such as blade painting, during construction to preemptively reduce avian impacts due to collision and to reduce cost of implementation after construction. For example, the Norwegian study cited in the DSEIR recommended

2-17 cont'd

painting the blades prior to construction to reduce costs. The ADMMs should be in conjunction with a TAC approved study.

2-18

Impact BIO-14: Turbine-related fatalities of special-status and other bats and 2020 Updated PEIR Mitigation Measure BIO-14a: Site and select turbines to minimize potential mortality of bats, p. 3.4-124. The measure states that the updated PEIR Mitigation Measure BIO-14a requires the project proponent to use the best information available to site turbines and to select from turbine models in such a manner as to reduce bat collision risk. The generated site specific "best information" will inform turbine siting and operation decisions, and a bat habitat assessment and roost survey will be conducted in the project area to identify and map habitat of potential significance to bats, such as potential roost sites (trees and shrubs, significant rock formations, artificial structures) and water sources. Turbine siting decisions will incorporate relevant bat use survey data and bat fatality records published by other projects in the APWRA.

The two micrositing assessments, Appendix F and Appendix G, provide no assessment for bats or turbine siting to reduce bat fatalities. Appendix F, p. 8 states "there is little information that would suggest micrositing of turbines in an otherwise monotypic landscape, even one with complex topography like the APWRA, would influence potential bat mortality."

If micrositing is not an effective way to reduce bat mortality then the DSEIR should provide alternative mitigation measures that are known to be effective, such as increasing cut-in speeds, reduced lighting, and Project-wide curtailment during Spring and Fall migration periods. The DSEIR should provide an analysis of effects of operation of turbines and effects of nighttime lighting on bats based on best available scientific information and monitoring reports.

2-19

FILING FEES

Filling fees for CEQA documents are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs., tit. 14, § 753.5; Fish and Game Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the proposed Project to assist the County in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Marcia Grefsrud, Environmental Scientist, at (707) 644-2812 or Marcia.Grefsrud@wildlife.ca.gov; or Ms. Brenda Blinn, Senior Environmental Scientist (Supervisory), at (707) 944-5541 or Brenda.Blinn@wildlife.ca.gov. 2-19 cont'd

Sincerely,

DocuSigned by:
Gregg Erickson
BE74D4C93C604EA...

Gregg Erickson
Regional Manager
Bay Delta Region

cc: State Clearinghouse (2017042032)
Heather Beeler, U.S. Fish and Wildlife Service – Heather_Beeler@fws.gov
Ryan Olah, U.S. Fish and Wildlife Service – Ryan_Olah@fws.gov

REFERENCES

California Department of Fish and Wildlife (CDFW). 2018. A status review of tricolored blackbird (*Agelaius tricolo*) in California. A Report to the Fish and Game Commission, Nongame Wildlife Program Report 2018, California Department of Fish and Game, Sacramento, CA, USA.

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Letter #3

East Bay Regional Park District
Healthy Parks Healthy People

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January 8, 2021

Andrew Young
Alameda County Planning Department/Community Development Agency
Community Development Agency
224 West Winton Ave. Rm. 111
Hayward, CA 94544-1215

RE: Notice of Availability of Draft Subsequent Environmental Impact Report (DSEIR) for the Mulqueeney Ranch Wind Repowering Project, County Planning Application PLN2019-00226, and comments

Dear Mr. Young:

The East Bay Regional Park District ('District') appreciates the opportunity to comment on the County of Alameda's (County's) Notice of Availability (NOA) of a Draft Subsequent Environmental Impact Report (DSEIR) for the proposed Mulqueeney Ranch Wind Repowering Project (Project), tiered under the Altamont Pass Wind Resource Area Repowering Final (APWRA) Program Environmental Impact Report (PEIR, State Clearing House #2010082063), certified November 12, 2014, County Planning Application PLN2017-00201. 3-1

The Project proposes replacement of approximately 518 former turbine sites with up to 36 new generation turbines with a nameplate capacity of between 2.3 and 4.2 megawatts (MW) per turbine, and an overall maximum production capacity of up to 80 MW. The Project will be located on 29 parcels of privately-owned land encompassing nearly 4,589 acres within Alameda County, located both north and south of Patterson Pass Road within the eastern portion of the APWRA. The Project proponent is Mulqueeney Wind Energy, LLC, a wholly-owned subsidiary of Brookfield Renewable.

The District supports repowering of the Altamont Pass Wind Resource Area (APWRA) in a responsible manner that balances need for wind energy production with the protection of natural, cultural, and visual resources in the Altamont region. District Staff have an extensive record of conducting research with collaborators aimed at reducing the impacts of wind energy generation on volant animals (birds and bats), including but not limited to changing grazing practices to redistribute raptor prey species, conducting avian and bat flight behavior observations and satellite tracking of golden eagles to inform collision hazard maps (risk maps) that inform micro-siting of wind turbines, and numerous carcass searcher and scavenger removal studies to better estimate avian and bat fatality rates in wind farms. Risk maps have been produced for the four focal species of raptors (golden eagle, red-tailed hawk, American Kestrel and burrowing owl) that were identified as the standard by which to achieve a 50% reduction in their respective fatality rates through implementation of various mitigation measures, (2007 Settlement Agreement between Alameda County, Audubon, Californians for Renewable Energy (CARE) and several wind energy companies).

The District has a long-standing record of monitoring populations of raptors, especially golden eagle, burrowing owl and prairie falcon, species whose local populations are at risk due to the additive mortality rates caused by wind energy generation in the APWRA. District Staff serve on the Technical Advisory Committee for wind energy development for the Contra Costa County Conservation and Development Agency, We agree with and encourage consideration be accorded all aspects of the "Proposed Scope of the Subsequent EIR" as outlined in the NOP. We provide some additional comments for consideration: 3-1 cont'd

There are three Project Alternatives:

1. No Project Alternative
2. Micro-Sited Alternative: This alternative relocates 31 of the Projects 36 turbines via micro-siting to reduce bird strikes while maintaining operational capacity at 80 MW with a Rotor Swept Area (RSA) of 40.7 ha.
3. Reduced Project Alternative: This alternative eliminates approximately12 turbines while maintaining an operational capacity of 80 MW and a RSA of 32.8 ha. This would leave 7 turbines within 1.0 mi of golden eagle nests and activity centers and reduce the number of High Risk turbines to 2 based on micro-siting. It proposes to increase cut-in speed to 5m/s during daylight hours to reduce potential impacts to golden eagles.

We provide the following comments regarding the Project and its Alternatives:

3-2

1. Turbine Micro-siting and Mitigation Measures.

Micro-siting. Turbine micro-siting using quantitative, predictive collision hazard models has been employed to inform turbine placement during project planning and design in the APWRA to reduce risk to the four focal raptor species: golden eagle, red-tailed hawk, American kestrel and Western burrowing owl (Smallwood et al. 2009, 2017). So far, six versions of collision hazard models for each species have been developed, with latter versions of the models performing better at predicting collisions, especially for golden eagle, red-tailed hawk and America kestrel (Smallwood and Neher 2017). On-going research on raptor flight behavior, associated terrain elements, and satellite telemetry data from golden eagles has been instrumental for improving model performance. Quantitative micro-siting using collision hazard models provides a verifiable and repeatable method for assessing and predicting risk based on topographical and other parameters. The DSEIR includes two micro-siting studies (see App. G and F of the DSEIR) that are qualitative. Although based on expert opinion, the process by which risk is assessed and the turbines were micro-sited in the DSEIR are not entirely clear. For example, under Field Methods (p. 9, App. F, DSEIR), it states that site evaluation involved collecting multiple data points including Percent Slope, Position on Slope, etc., but there is no clarification as to how these variables were evaluated relative to each other, to the proposed turbine locations, or to the level of assigned risk to raptors. Similarly, in the Avian Survey Report (App. D, DSEIR) Fig. 6 presents multiple Golden Eagle flight paths based on behavior observations at stations located throughout the Project's footprint, and Fig. 7 presents an analysis of eagle use data, but little connection is made between the flight paths or use data and turbine locations for evaluating collision hazard. In sum, although the Project layout has been micro-sited by expert opinion, evaluation of turbine locations and relative risk of collision hazard retains a high element of uncertainty. The DEIR should clarify the methods and approach to the micro-siting in App. G and F. Ideally, to increase confidence in the results of turbine micro-siting, a quantitative approach such as performed by Smallwood et al. (2009, 2017) would be warranted.

Appendix G presents micro-siting results for the Reduced Project Alternative, which comprises 24 turbines. 3-3
Grading required for roads and the 58 ft diameter turbine pads will create new notches, benches or saddles for 10 of these turbine locations. Although some "New Alternative Sites" had their risk ratings reduced, some retained their original risk ratings. It remains unclear how grading will influence ultimate risk without additional information such as blade height above ground relative to the altered terrain. The range of turbine specifications presented in Table 2-6 (p. 2-9, DSEIR) and Table 7 (p. 2-28, DSEIR) should be included to evaluate the change in collision hazard risk due to proposed grading. In addition, turbine size, especially rotor diameter

3-3 cont'd

(ranging from 120-136 m) and rotor swept area (RSA), need to be assessed as changes to these may eliminate any benefit accrued through micro-siting. For example, 18 of the 24 turbines in the Reduced Project Alternative "would be located at nearly the same locations as under the project (but with minor relocations due to the micro-siting process)…" (p. 4-19; DEIR).

The Reduced Project Alternative includes 2 high risk (Turbines 16, 21) and 11 moderate-high risk turbines (Turbines 2, 3, 4, 12, 14, 20, 32, 34, 36, 5-C, 17-C) within the footprint (Table 1, App. G, DSEIR). Qualitative assessment of satellite telemetry locations of 17 non-territorial golden eagles suggests some turbines may be high risk for golden eagles, such as turbines 2, 3, 4, 5C, 6, 12, 14 (see Map 1, below; see also Fig 6, App. D, DSEIR). Serious consideration should be given to removing additional turbine sites from the Project, as it is becoming abundantly clear from recent monitoring reports in the APWRA that the number of wind turbines and their relative density is likely defeating the gains achieved through micro-siting (see below). In addition, Smallwood et al. (2008) showed that raptors tend to forage and use areas of turbine-free habitat more often than ridges with turbines. Thus, the most effective mitigation measure to reduce overall impacts to volant animals, which are significant and unavoidable, would be to employ quantitative collision hazard modelling with micro-siting to identify high risk turbine sites for the four focal species, golden eagle, red-tailed hawk, American kestrel, and burrowing owl, and remove them from the Project's footprint. In addition to reducing collision hazards, this would provide "islands" of turbine free areas within a project.

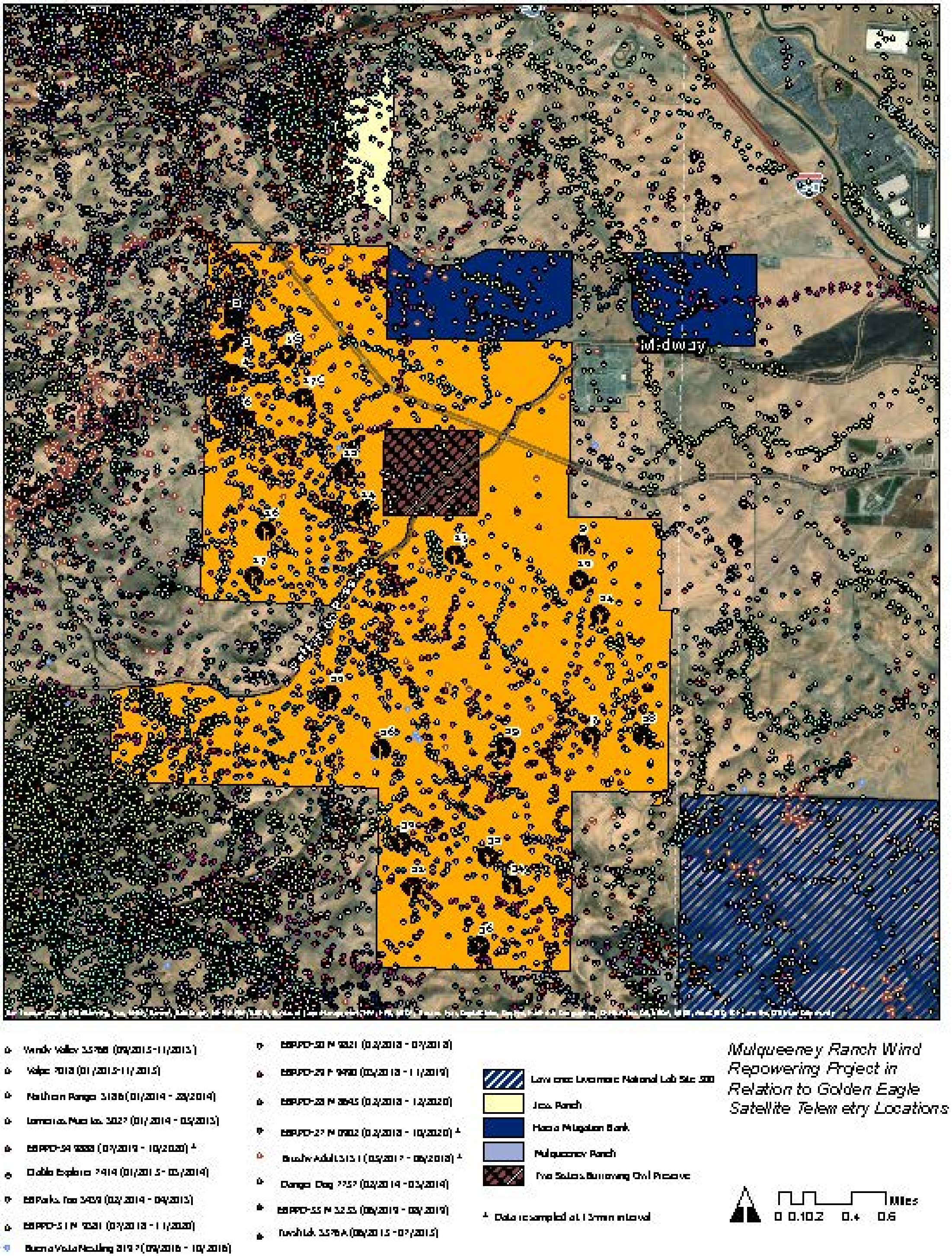
3-4

2. Volant Animal Impacts and Mitigation Measures

Golden Eagle (*Aquila chrysaetos*). The population of Golden Eagles in the Northern Diablo Range is subjected to many stressors. These can be direct, such as outright mortality through wind turbine blade strikes in the APWRA (Smallwood and Karas 2009) or indirect, such as through drought affecting productivity (Wiens et al. 2018). The United States Geological Survey (USGS) has produced several reports and papers on golden eagle territory occupancy and breeding success in the Northern Diablo Range (Wiens et al. 2015, Wiens et al. 2018), including new information on golden eagle nesting territories within the APWRA (Kolar and Wiens, 2017). The direct and indirect impacts of repowering projects on nesting golden eagles within the APWRA has received little attention in previous Wind Project SEIRs and needs to be comprehensively addressed in the current and future SEIRs. Qualitative assessment of movement data of Golden Eagles outfitted with satellite transmitters suggests that pre-reproductive age classes (juveniles and subadults) from throughout the Diablo Range regularly use the APWRA, and that eagle use of the APWRA remains intense (Bell 2017a,b). Estimates on the extent to which the APWRA represents a population sink to the local golden eagle population have been revised (Hunt et al. 2017). Hunt et al. (2017) calculated that the reproductive output of 216-255 breeding pairs of Golden Eagles would be required to offset an estimated 55-65 wind turbine blade-strike mortalities in the APWRA each year to maintain population sustainability. Although Wiens et al. (2015) estimated a population of 280 territorial pairs for the Northern Diablo Range, this may still not be a sufficient number of breeding adults, given the low productivity caused by multi-year droughts and other factors such as the SCU Lightning Complex in Fall of 2020 which burned over 393,624 acres in the Northern Diablo Range. In estimating the Local Area Population (LAP) of golden eagles in relation to the APWRA, the DSEIR (p. 3.4-103) uses the entire area of the LAP extent, excluding the ocean and SF Bay, and concludes that the Diablo Range population represents only 7% of the Project LAP. However, the LAP includes the Central Valley, a region which does not represent breeding habitat for the golden eagle. Thus, the DSEIR overestimates the LAP of golden eagles.

3-4 cont'd

Map 1. Golden Eagle telemetry locations of 17 Golden Eagles superimposed on the Project footprint, compiled 2013-2020. Raw data, eagles marked with Asterix were subsampled at 15-minute locations (EBRPD, unpublished data).



3-5

Other Focal Raptor Species. Red-tailed hawk (*Buteo jamaicensis*), Western burrowing owl (*Athena cunicularia*) and American kestrel (*Falco sparvarius*), forage and nest on the Project site. Both direct impacts (morality from turbine strikes, disturbance to nest sites and loss of productivity) and indirect impacts (loss of nesting habitat) should be considered for mitigation. The DSEIR should compare regional population trends, such as may be gleaned from publications or eBird data, with existing APWRA mortality reports to highlight those species undergoing declining trends that may warrant additional mitigation measures or options. For example, American kestrel nest box occupancy in the eastern United States declined by 3% /year from 1984-2007 (Smallwood et al. 2009). In another example about the relevance of population trends, Dr. Shawn Smallwood has been censusing random plots throughout the APRWA for burrowing owl since 2011 (see also Smallwood et l. 2006, 2013). Smallwood states "In my assessment, the Altamont's population of burrowing owls is in trouble. Wind turbines can certainly contribute cumulatively to a decline of burrowing owls. The newer turbines are not killing burrowing owls at the same rates as had the old turbines, but even the fewer numbers killed going forward could contribute significantly to the species' decline and eventual extirpation. Burrowing owls are close to extirpation throughout the Bay Area west of the Altamont, and last I checked there were only 3 recent eBird records between Solano and Yolo Counties (east and north of the Altamont). In short, burrowing owls are declining regionally, and not only in the Altamont" (Smallwood, personal communication). In addition, burrowing owls are closely tied to California ground squirrel (*Otospermophilus beecheyi*) colonies, and according to Smallwood "The overall ground squirrel decline [in the APWRA] was 64%... from 2011 to 2019. I also found that where there are no squirrels, there are no nesting attempts by burrowing owls" (Smallwood, personal communication). These observations highlight possible mitigation options, such as measures that would promote coexistence of ground squirrel colonies in well-managed rangelands.

3-6

Prairie Falcon (*Falco mexicanus*). This species is on the California Department of Fish and Wildlife "Special Animals List" https://www.dfg.ca.gov/wildlife/nongame/list.html. The District remains concerned about the status of this species, which may be experiencing local declines in portions of the Diablo Range (Bell, unpublished data). Pairs that nest both within and outside of the APWRA forage within its boundaries in overlapping home ranges (Solomon 2012). Although fatality estimates of prairie falcons in the APWRA are low relative to the four focal species of raptor listed in the PEIR (2014), they may represent a significant impact to the sparse, local breeding population of prairie falcons. Both breeding adults and locally-fledged prairie falcons have been recovered as fatalities in the APWRA (USGS Bird Banding Laboratory Reports, Patuxent Wildlife Research Center, MD). In 2019, a prairie falcon fatality was recorded at Golden Hills North (GHN) on 8 May (H.T. Harvey & Associates and Great Basin Bird Observatory 2020), on 23 May 2019 two dead prairie falcon chicks were recovered from the nearest nest site, and no adults were observed in the vicinity, suggesting that the fatality at GHN may have led to the nest failure. This raises a cumulative impact not previously considered in fatality estimates, namely, wind project fatalities of adult birds during the nesting season which impact nest productivity. Although estimating this impact requires detailed information on species-specific population dynamic parameters, an important research topic for any species impacted by the APWRA, it nonetheless illustrates that most avian fatality estimates are likely underestimates which in turn underestimate population-level impacts. 3-7

California condor (*Gymnogyps californianus*). Appendix D of the DSEIR cites an observation of a California condor on the Project site. In addition, "Condor GPS data has shown condors flying within 5 miles of the project area in the last 5 years" (Joseph Brandt, USFWS, pers. Communication). This highlights the fact that as condor recovery progresses, it can be anticipated that incidences of California condors entering the APWRA will increase. Certainly over the life of the Project, we can expect this and mitigation options should be anticipated. 3-8

Small Birds and Bats. A recent assessment of avian guilds shows that 74% of grassland bird species in North America are in decline (Roseburg et al. 2019). This includes species such as Western Meadowlark (*Sturnella neglecta*) and horned lark (*Eremophila alpestris*), two species that are rising to the top of the list of passerine birds impacted by repowered projects in the APWRA (e.g. see H.T. Harvey & Associates and Great Basin Bird 3-9

Observatory 2020). Recent use of dog search teams in fatality monitoring studies in the APWRA have shown that the mortality rates for small birds (e.g. passerines < 100g) and bats are several times to orders of magnitude higher, respectively, than previously assumed (Smallwood et al. 2020, H.T. Harvey & Associates, 2017, 2018, 2020, H.T. Harvey & Associates and Great Basin Bird Observatory, 2020). The DEIR should compare nation-wide or regional trends of species groups with existing APWRA mortality reports to highlight those species undergoing declining trends that may warrant additional mitigation options. For example, Hoary Bat (*Aeorestes cinereus*), which registers the second highest fatality rate among bats in the APWRA (e.g. H.T. Harvey & Associates 2020), is experiencing regional population declines in the Pacific Northwest (Rodhouse et al. 2019). Fortunately, for bats at least, it appears that increasing turbine cut-in speeds, and more importantly, curtailment of turbines during high risk periods such as peak bat migration in fall and spring, may offer effective mitigation measures to reduce bat fatalities (Smallwood and Bell 2020a). More research on bat flight behavior in relation to turbine operations (e.g. Smallwood and Bell 2020b) would improve the development of operational mitigation strategies to reduce impacts with little effect on energy production. Furthermore, research on fatality monitoring that incorporates the use of dogs and optimizes search intervals would improve the precision of fatality estimates (Smallwood et al 2020, Smallwood 2020). 3-9 cont'd

Other Listed Avian Species. Swainson's hawk (*Buteo swainsoni*) and Tri-colored blackbird (*Agelaius tricolor*) nest and forge in the APWRA. Both direct impacts (morality from turbine strikes, disturbance to nest sites and loss of productivity) and indirect impacts (loss of nesting habitat) should be considered in mitigation options. 3-10

3. Other Mitigation Options. 3-11

Other mitigation options should include landscape-level approaches, such as supporting ecosystem services through the East Bay Regional Conservation Investment Strategy (https://scc.ca.gov/2019/03/25/east-bay-regional-conservation-investment-strategy-draft-released/). Ecosystem services could include those provided by ground squirrel colonies in well-managed rangelands that in turn would provide revenue for private ranching operations. Being a keystone species, the California ground squirrel supports a host of rangeland species by providing burrow habitat and serving as a prey source.

4. Cumulative Impacts 3-12

The Project will add to the existing cumulative APWRA-wide impacts to the four focal raptor species (golden eagle, red-tailed hawk, American kestrel, Western burrowing owl) in terms of fatality rates that are at, or close to, exceeding those set forth in the PEIR (2014) or will affect population sustainability. Given the trends of golden eagle fatalities presented in monitoring reports of repowered projects in the APWRA (e.g. H.T. Harvey & Associates, 2017, 2018, 2020, H.T. Harvey & Associates and Great Basin Bird Observatory, 2020), the APWRA is exceeding the level of mortality set for golden eagles in the PEIR (2014). In addition, at anticipated build-out of the APWRA, one can expect the mortality rate to equal or exceed the pre-repowered mortality rate (Smallwood and Karas 2008) if all permitted and planned projects are completed.

The County needs to address and evaluate the APWRA certified capacity of 450MW with the cumulative APWRA-wide impacts of existing, permitted and planned wind projects on the focal raptor species (golden eagle, red-tailed hawk, American kestrel, that will result in respective fatality levels that will exceed those set forth in the PEIR (2014). In addition, significant and unavoidable cumulative impacts to burrowing owls, other birds and bats need to be addressed moving forward. The APWRA is at a turning point. All evidence points to the likelihood that volant animal fatality rates caused by existing and planned repowering projects will rise to unsustainable levels for multiple species and reach or exceed pre-repowered conditions. At this point, the County should consider two non-exclusive options to stave this trend:

i. Employ verifiable, quantitative collision hazard modelling with micro-siting to identify high risk turbine sites and remove them from each proposed project to reduce the project's footprint and thereby reduce overall project impacts. 3-12 cont'd

ii. Impose a moratorium on planned wind projects until monitoring of existing repowered projects is completed along with studies to verify the effectiveness of mitigation options.

3-13

Thank you for this opportunity to comment on the County's Notice of Availability of the Draft Subsequent Environmental Impact Report (DSEIR) for the Mulqueeney Ranch Wind Repowering Project, County Planning Application PLN2019-00226.

Sincerely yours,

Douglas A. Bell

Douglas A. Bell, Ph.D.
Wildlife Program Manager

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Letter #4

EAST BAY COMMUNITY ENERGY

January 8, 2021

ATTN: Andrew Young, Senior Planner
County of Alameda Planning Department
224 W. Winton Avenue, Room 111
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RE*:* East Bay Community Energy support for approval of the Alameda County Planning Application PLN2019-00226 (Conditional Use Permit) for the Draft Subsequent Environmental Impact Report (DSEIR) for the Mulqueeney Ranch Wind Repowering Project

Dear Mr. Young,

As you may know, East Bay Community Energy (EBCE) is a not-for-profit public agency that operates a Community Choice Energy program for Alameda County and eleven incorporated cities, serving more than 550,000 residential and commercial customers throughout the county. EBCE initiated service in June 2018 and will expand to the cities of Pleasanton, Newark, and Tracy in 2021. As one of 19 community choice aggregation (CCA) programs operating in California, EBCE is part of the movement to expedite the climate action goals of their communities and those of California. EBCE is committed to providing clean power at competitive rates while reinvesting in our local communities. 4-1

To fulfill its mission, EBCE has put in place an exclusivity agreement for energy procurement from the Mulqueeney Ranch Wind Repowering project and is currently in negotiations for a long-term power purchase agreement that will help us fulfill our mission to our County and to help California meet its Renewables Portfolio Standard of 60% energy from renewable sources by 2030 and to be carbon neutral by 2045. EBCE supports this local clean energy project. 4-2

Thank you for your time and effort in advancing the Mulqueeney Ranch Wind Repowering Project forward. Please contact us if you have any additional questions for EBCE. 4-3

Best regards,

Nick Chaset
EBCE CEO

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Letter #5

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January 8, 2021

Via Email and Overnight Mail

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Albert Lopez, Planning Director
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Re: Comments on the Draft Subsequent Environmental Impact Report for the Mulqueeney Ranch Wind Repowering Project (SCH No. 2010082063), CUP Application No. PLN2019-00226

Dear Mr. Young and Mr. Lopez:

5-1

We write on behalf of Alameda Citizens for Responsible Wind Development ("Citizens") to provide comments on the Draft Subsequent Environmental Impact Report[1] ("DSEIR") (SCH No. 2010082063), prepared by Alameda County, pursuant to the California Environmental Quality Act ("CEQA"),[2] for the Mulqueeney Ranch Wind Repowering Project ("Project") proposed by Mulqueeney Wind, LLC, a subsidiary of Brookfield Renewable ("Applicant").

I. INTRODUCTION

The Applicant proposes to construct up to 36 new wind turbine generators on 29 privately owned parcels in the Altamont Pass Wind Resource Area ("APWRA") in eastern Alameda County, replacing the 518 old generation turbines that were

[1] Alameda County Planning Department, Mulqueeney Ranch Wind Repowering Project: Subsequent Environmental Impact Report (Nov. 20, 2020) (*hereinafter* "DSEIR"), *available at* https://acgov.org/cda/planning/landuseprojects/documents/MulqueeneyRanch/MulqueeneyDraftSEIRasposted.pdf.
[2] Pub. Resources Code §§ 21000 *et seq.*

removed from the site in 2016.[3] The Project is comprised of the following components: installation of up to 36 turbines rated between 2.2 and 4.2 MW per turbine, with a maximum generating capacity of 80 MW; development of access roads (including upgrades to existing roads); installation of a temporary staging area; installation of up to three permanent meteorological towers; installation of an underground power collection system; and construction of a new substation.[4] 5-1 cont'd

The DSEIR tiers from the APWRA Repowering Program Environmental Impact Report[5] ("PEIR") certified by the County in November 2014.[6] The County prepared the DSEIR based on the specific characteristics of the proposed Project, which would include turbines with a larger rotor swept area and with shorter ground-to-rotor height than those analyzed in the PEIR, factors which the DSEIR acknowledges may result in different or more severe impacts than identified in the PEIR.[7] The DSEIR focuses on differences in information and specific distinction of the proposed Project compared with the anticipated characteristics of repowering projects as described in the PEIR.[8]

We reviewed the DSEIR and PEIR, as well as each document's respective technical appendices and reference documents, with the assistance from biological expert, Shawn Smallwood, Ph.D, and hazardous materials expert, Matt Hagemann, P.G, C.Hg., and air quality expert, Paul Rosenfeld, Ph.D, whose comments and qualifications are included as Attachment A[9] and Attachment B,[10] respectively. Dr. Smallwood, Mr. Hagemann, and Dr. Rosenfeld provide substantial evidence of potentially significant impacts that have not been adequately disclosed, analyzed, or

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[3] DSEIR at p. 1-1, 2-6.
[4] *Id.* at p. 2-6.
[5] Alameda County Community Development Agency, Altamont Pass Wind Resource Area Repowering: Final Program Environmental Impact Report (Oct. 2014) (hereinafter "PEIR"), *available at* https://www.acgov.org/cda/planning/landuseprojects/documents/apwra/Complete_Final_Program_EIR.pdf.
[6] DSEIR at p. 1-5.
[7] *Ibid.*
[8] *Ibid.*
[9] **Attachment A**, Letter to Andrew Young, Senior Planner, Alameda County Planning Department from Shawn Smallwood, Ph.D. re: Mulqueeney Ranch Repowering Project DSEIR (Jan. 8, 2021) (*hereinafter* "Smallwood Comments").
[10] **Attachment B**, Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from M. Hagemann, P.G, C.Hg., and Paul Rosenfeld, Ph.D, Soil Water Air Protection Enterprise re: Comments on the Mulqueeney Ranch Wind Repowering Project (SCH No. 2010082063) (Jan. 8, 2021) (*hereinafter* "SWAPE Comments").

mitigated. The County must address and respond to their comments separately and fully.[11] 5-1 cont'd

II. Statement of Interest

Alameda Citizens for Responsible Wind Development is an unincorporated association of individuals and labor organizations with members who may be adversely affected by the potential public and worker health and safety hazards and environmental and public service impacts of the Project. The association includes Alameda County residents Brandon Evans, Robert Croley, and David Nelson and California Unions for Reliable Energy and its members and their families and other individuals that live, recreate and/or work in Alameda County.

Citizens supports the development of clean, renewable energy technology, including the use of wind power generation, where properly analyzed and carefully planned to minimize impacts on public health and the environment. Wind energy projects should avoid impacts to sensitive species and habitats, water resources, and public health, and should take all feasible steps to ensure unavoidable impacts are mitigated to the maximum extent feasible. Only by maintaining the highest standards can energy supply development truly be sustainable.

The individual members of Citizens and the members of the affiliated labor organizations live, work, recreate and raise their families in the County. They would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work constructing the Project itself. They would be the first in line to be exposed to any health and safety hazards which may be present on the Project site. They each have a personal interest in protecting the Project area from unnecessary, adverse environmental and public health impacts.

Citizens and its members also have an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for the members they represent. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for industry to expand in the County, and by making it less desirable for businesses to locate and people to live and recreate in the County, including the Project vicinity. Continued degradation can, and has, caused construction moratoriums

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[11] 14 Cal. Code Regs. ("CEQA Guidelines) §§ 15088(a), (c).

5-1 cont'd

and other restrictions on growth that, in turn, reduces future employment opportunities.

Finally, Citizens is concerned with projects that can result in serious environmental harm without providing countervailing economic benefits. CEQA provides a balancing process whereby economic benefits are weighed against significant impacts to the environment.[12] It is in this spirit we offer these comments.

III. Legal Background

CEQA requires public agencies to analyze the potential environmental impacts of their proposed actions in an EIR.[13] The EIR is a critical informational document, the "heart of CEQA."[14] "The foremost principle under CEQA is that the Legislature intended the act to be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[15]

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[16] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'"[17] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have

[12] Pub. Resources Code § 21081(a)(3); *Citizens for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 171.
[13] Pub. Resources Code § 21100.
[14] CEQA Guidelines § 15003(a); *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564; *Laurel Heights Improvement Assn. v. Regents of University of Cal.* (1988) 47 Cal.3d 376, 392, ("*Laurel Heights*").
[15] *Laurel Heights,* 47 Cal.3d at 390 (internal quotations omitted).
[16] Pub. Resources Code § 21061; CEQA Guidelines §§ 15002(a)(1); 15003(b)-(e); *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 517 ("[T]he basic purpose of an EIR is to provide public agencies and the public in general with detailed information about the effect [that] a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.").
[17] *Citizens of Goleta Valley,* 52 Cal.3d at p. 564 (quoting *Laurel Heights*, 47 Cal.3d at 392).

5-1 cont'd

reached ecological points of no return."[18] As the CEQA Guidelines explain, "[t]he EIR serves not only to protect the environment but also to demonstrate to the public that it is being protected."[19]

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring consideration of environmentally superior alternatives and adoption of all feasible mitigation measures.[20] The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced."[21] If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment" to the greatest extent feasible and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns."[22]

While courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A clearly inadequate or unsupported study is entitled to no judicial deference."[23] As the courts have explained, a prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process."[24] "The ultimate inquiry, as case

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[18] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810; *see also Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs*. (2001) 91 Cal.App.4th 1344, 1354 ("*Berkeley Jets*") (purpose of EIR is to inform the public and officials of environmental consequences of their decisions *before* they are made).
[19] CEQA Guidelines § 15003(b).
[20] CEQA Guidelines § 15002(a)(2), (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at p. 564.
[21] CEQA Guidelines § 15002(a)(2).
[22] Pub. Resources Code § 21081(a)(3), (b); CEQA Guidelines §§ 15090(a), 15091(a), 15092(b)(2)(A), (B); *Covington v. Great Basin Unified Air Pollution Control Dist*. (2019) 43 Cal.App.5th 867, 883.
[23] *Berkeley Jets*, 91 Cal.App.4th at p. 1355 (emphasis added) (quoting *Laurel Heights*, 47 Cal.3d at 391, 409, fn. 12).
[24] *Berkeley Jets*, 91 Cal.App.4th at p. 1355; *see also San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722 (error is prejudicial if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process); *Galante Vineyards v. Monterey Peninsula Water Management Dist*. (1997) 60 Cal.App.4th 1109, 1117 (decision to approve a project is a nullity if based upon an EIR that does not provide decision-makers and the public with information about the project as required by CEQA); *County of Amador v. El Dorado County Water Agency* (1999) 76

law and the CEQA guidelines make clear, is whether the EIR includes enough detail 'to enable who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.'"[25] 5-1 cont'd

IV. THE DSEIR FAILS TO INCLUDE A COMPLETE AND ACCURATE PROJECT DESCRIPTION 5-2

The DSEIR does not meet CEQA requirements because it fails to include a complete and accurate project description, rendering the entire impact analysis unreliable. An accurate and complete project description is necessary to perform an evaluation of the potential environmental effects of a proposed project.[26] Without a complete project description, the environmental analysis will be impermissibly narrow, thus minimizing the project's impacts and undercutting public review.[27] The courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."[28] "Only through an accurate view of the project may affected outsiders and public decision makers balance the proposal's benefit against its environmental costs."[29]

CEQA Guidelines § 15378 defines "project" to mean "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."[30] "The term 'project' refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval."[31] Courts have explained that for a project description to be complete, it must address not only the immediate environmental consequences of going forward with the project, but also all "*reasonably foreseeable* consequence[s] of the initial project."[32] Accordingly, CEQA requires that the project description contain a brief statement of the intended uses of an EIR, including a list of agencies which will use the EIR,

Cal.App.4th 931, 946 (prejudicial abuse of discretion results where agency fails to comply with information disclosure provisions of CEQA).
[25] *Sierra Club,* 6 Cal.5th at p. 516 (quoting *Laurel Heights*, 47 Cal.3d at 405).
[26] *See, e.g.*, *Laurel Heights,* 47 Cal.3d 376.
[27] *See ibid.*
[28] *County of Inyo,* 71 Cal.App.3d at p. 193.
[29] *Id.* at 192-193.
[30] CEQA Guidelines § 15378.
[31] *Id.* § 15378(c).
[32] *Laurel Heights*, 47 Cal.3d at p. 396 (emphasis added); *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449-50.

along with the permits and approvals required for implementation of a proposed project.[33] 5-2 cont'd

The DSEIR fails to comply with CEQA's requirement of an accurate project description in two ways. First, the DSEIR fails to adequately describe the Project's potential utilization of horizontal directional drilling ("HDD"). Second, the DSEIR fails describe reasonably foreseeable decommissioning activities.

A. The DSEIR Fails to Adequately Describe the Installation of the Underground Power Collection System 5-3

The DSEIR proposes two methods for installing the Project's power collection system. In most cases, the 35 kilovolt power lines would be installed using the cut-and-cover method.[34] To avoid surface disturbance within wetlands and streams, collection lines may be installed under wetlands and other waters using HDD techniques, where feasible.[35] But the DSEIR fails to identify where HDD will be utilized during Project construction despite possessing the information needed to make such a determination.

For example, the DSEIR includes a detailed examination the land cover types within the Project, including identification of riparian habitats, wetlands and streams.[36] As such, the DSEIR is fully capable of identifying the specific locations where HDD will be utilized because it possess all the information necessary to make such a determination.[37] The DSEIR must then analyze whether HDD is feasible at the proposed location, which would include a geotechnical investigation to identify subsurface conditions along the proposed HDD path. If HDD is not feasible, then the impacts to riparian habitat, wetlands and other streams would be significant and additional feasible mitigation is required.

Because the DSEIR fails to describe where HDD will occur, it lacks a complete and accurate project description. The DSEIR must be revised to identify the specific locations where HDD may occur and determine whether the proposed method is feasible for those locations so the significant environmental impacts are disclosed, analyzed and mitigated.

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[33] CEQA Guidelines § 15124(d).
[34] DSEIR at p. 2-13.
[35] *Ibid.*
[36] *Id.* at p. 3.4-9.
[37] *Id.* at p. 3.4-128, 3.4-130.

5-4

B. The DSEIR Fails to Adequately Describe Project Decommissioning and Site Reclamation

The DSEIR fails to adequately describe the full scope of the Project being approved, and thus fails to disclose the full range and severity of the Project's environmental impacts. A project description must include all relevant parts of a project, including later phases that will foreseeably result from project approval.[38] CEQA contemplates consideration of environmental consequences at the earliest possible stage, even though more detailed environmental review may be necessary later.[39] These requirements cannot be avoided by chopping the project into many small parts or excluding reasonably foreseeable future activities that may become part of the project.[40] The DSEIR must supply enough information so that the decisionmakers and the public can fully understand the scope of the Project.[41]

The DSEIR acknowledges the specific activities that would be undertaken to decommission the Project after its 35 year lifespan, which include "removing the turbines, transformers, and related infrastructure in accordance with landowner agreements. Substations and meteorological (met) towers may be removed and the sites reclaimed; alternatively, the sites could be retained for continued use."[42] But the DSEIR does not disclose any further information because it claims the details are "unknown at this time and would be speculative."[43] While decommissioning and reclamation would occur at the end of the Project lifespan, the fact that the activities are temporally remote does not relieve the agency of its obligation to meaningfully investigate the potential impacts of future activities which are undoubtedly part of the Project.

Furthermore, the DSEIR cannot claim the details of Project decommissioning are unknown when the removal of turbines, transformers, and related infrastructure are required by landowner agreements.[44] The DSEIR sidesteps full disclosure of these activities in order avoid analyzing and mitigating the potentially significant environmental impacts. The reasonably foreseeable activities and

[38] *Laurel Heights,* 47 Cal.3d 376; *see also* CEQA Guidelines § 15126 (EIR's impact analysis must consider all phases of the project).
[39] *Rio Vista Farm Bureau Ctr. v. County of Solano* (1992) 5 Cal.App.4th 351, 370.
[40] *Ibid.;* Pub. Resources Code § 21159.27 (prohibiting piecemealing).
[41] *Dry Creek Citizens Coalition v. County of Tulare* (1990) 70 Cal.App.4th 20, 26.
[42] DSEIR at pp. 2-23 to 2-24.
[43] *Id.* at p. 2-24.
[44] *Ibid.*

environmental impacts of the decommissioning and reclamation phase must be described and analyzed in a revised and recirculated DSEIR, with the fullest degree of detail available, to provide the public with sufficient information to permit "an intelligent evaluation of the potential environmental effects of [the] proposed activity."[45] 5-4 cont'd

V. The DSEIR Fails to Disclose and Meaningfully Describe the Existing Environmental Setting 5-5

The existing environmental setting is the starting point from which the lead agency must measure whether a proposed Project may cause a significant environmental impact.[46] CEQA defines the environmental setting as the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, from both a local and regional perspective.[47] An accurate and complete description of the setting for each environmental condition in the vicinity of the Project is critical to an accurate and meaningful evaluation of environmental impacts. Courts have made it clear that "[b]efore the impacts of a Project can be assessed, and mitigation measures considered, an [EIR] must describe the existing environment. It is only against this baseline that any significant environmental effects can be determined."[48]

A. The DSEIR Fails to Disclose and Meaningfully Analyze the Presence of Multiple Special-Status Wildlife Species 5-6

The DSEIR defines "special-status species" as "plants and animals that are legal protected under the federal Endangered Species Act ("ESA"), California Endangered Species Act ("CESA"), or other regulations, or species that are considered sufficiently rare by the scientific community to qualify for such listing."[49] The DSEIR identifies 39 special-status wildlife species with potential to occur in the project vicinity.[50] However, the DSEIR neglects to disclose and analyze 59 special-status wildlife species with documented occurrences within 5 miles of the Project

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[45] *San Joaquin Raptor,* 27 Cal.App.4th at p. 730.
[46] *See, e.g.*, *Communities for a Better Environment v. S. Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 316; *Fat v. City of Sacramento* (2002) 97 Cal.App.4th 1270, 1278 (citing Remy, et al.; Guide to the Calif. Environmental Quality Act (1999) p. 165).
[47] CEQA Guidelines §15125(a)(1); *Riverwatch v. City of San Diego* (1999) 76 Cal.App.4th 1428, 1453.
[48] *City of Amador,* 76 Cal.App.4th at p. 952.
[49] DSEIR at p. 3.4-14.
[50] *Id.* at p. 3.4-18.

5-6 cont'd

site, the same "project vicinity" used by the DSEIR to define baseline biological conditions.[51]

A prime example of the DSEIR's failure to provide an accurate baseline for special-status wildlife species is the peregrine falcon. This species is fully protected species in California,[52] and therefore considered a special-status species. The peregrine falcon has been observed at the Project site during avian use count surveys.[53] This species has also been observed by Dr. Smallwood, has documented fatalities with turbines in the APWRA, and has suitable aerospace habitat in the Project site.[54]

Other notable omissions from the DSEIR's baseline discussion include several raptors. Raptors are protected under California Fish and Game Code § 3503.5, which prohibits the taking, possession, or destruction of any birds in the orders *Falconiformes* or *Strigiformes* (birds of prey) and the taking, possession, or destruction of the nests or eggs of any such birds except as otherwise provided by the Fish and Game Code or other regulation implementing the code. As such, these species qualify for special-status species under CEQA. Yet, despite documented observations on the Project site and in the APWRA, the DSEIR fails to disclose or meaningfully discuss these raptors.[55]

The DSEIR also fails to disclose or meaningfully discuss several species identified by the United States Fish and Wildlife Service ("USFWS") as a Bird of Conservation Concern ("BCC") with potential to occur in the APWRA.[56] The BCC is an effort by the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act."[57] Species

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[51] *Id.* at pp. 3.4-14, 3.4-16 to 3.4-18, 3.4-20, 3.4-21 to 3.4-31, Table 3.4-3 (Special-Status Wildlife Species Known to Occur or with Potential to Occur in or within 5 Miles of the Mulqueeney Ranch Repowering Project Site).
[52] California Department of Fish and Wildlife, Special Animal List (Nov. 2020), *available at* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline.
[53] DSEIR, appen. D at p. 3-2.
[54] Smallwood Comments at p. 14.
[55] *Id.* at pp. 9-12 (i.e., turkey vulture, osprey, ferruginous hawk, rough-legged hawk, red-shouldered hawk, sharp-skinned hawk, Cooper's hawk, America kestrel, merlin, prairie falcon, great-horned owl, long-eared owl, barn owl, western screech-owl).
[56] U.S. Fish and Wildlife Service, Birds of Conservation Concern 2008 (Dec. 2008), *available at* https://www.fws.gov/migratorybirds/pdf/management/BCC2008.pdf.
[57] 16 U.S.C § 2912(a)(3)

identified as BCC qualify for special-status under CEQA Guidelines § 15380(b)(2)(B), which permits a species to be designated as "rare" if the "species is likely to become endangered within the foreseeable portion throughout all or a significant portion of its range and may be consider 'threatened' as that term is used in the ESA."[58] Therefore, the DSEIR should have disclosed species designated by the USFWS as BCC with the potential to occur in the Project vicinity. However, the DSEIR entirely omits discussion of a multitude of BCC-designated species identified by Dr. Smallwood, in violation of CEQA.[59] 5-6 cont'd

Finally, the DSEIR erroneously excludes from its baseline discussion "[o]ther special-status birds [that] may migrate through or forage in the project site but are not expected to nest within the project site" even though it acknowledges these unidentified species are relevant to and part of the operational impact analysis, and addressed only to the extent they have been identified through postconstruction mortality studies in the APWRA.[60] These omissions must be corrected in a revised and recirculated DSEIR.

B. The DSEIR's Determination that Only 39 Special-Status Are Likely to Be Present in the Project Vicinity Is Not Supported by Substantial Evidence 5-7

In support of its conclusion that only 39 special-status species were identified as having potential to occur in the Project vicinity, the DSEIR relies on information obtained from the California Natural Diversity Database,[61] the unofficial USFWS species list,[62] the PEIR,[63] the East Alameda County Conservation Strategy,[64] and other environmental documents for recent repowering projects near the project site.[65] However, a review of those sources reveals considerable deficiencies in the DSEIR's conclusion.

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58 CEQA Guidelines § 15380(b)(2)(B).
59 Smallwood Comments at pp. 9-11 (i.e., as having potential to occur in the APWRA: whimbrel, long-billed curlew, marbled godwit, mountain plover, Caspian tern, red-tailed hawk, ferruginous hawk, prairie falcon, peregrine falcon, Allen's hummingbird, Rufous hummingbird, Costa's hummingbird, Nuttall's woodpecker, Lewis's woodpecker, willow flycatcher, olive-sided flycatcher, oak titmouse, yellow-billed magpie, yellow warbler, Oregon vesper sparrow, and Lawrence's goldfinch).
60 DSEIR at p. 3.4-19.
61 *Id.* at p. 3.4-18 (California Department of Fish and Wildlife 2020b).
62 *Ibid.* (U.S. Fish and Wildlife Service 2020a).
63 *Ibid.* (Alameda County Community Development Agency 2014).
64 *Ibid.* (ICF International 2010).
65 *Ibid.*

5-7 cont'd

For example, the DSEIR claims it consulted the unofficial USFWS species list to determine whether a special-status species had the potential to occur the project vicinity;[66] however, the cited reference document shows that the USFWS list did not include any information regarding BCC in the project area because the data source for that specific information was offline.[67] And there is no other evidence in the record that the County attempted to obtain this data when the source was back online. This is a critical omission because, as discussed above, multiple species designated as BCC are likely to occur within the APWRA.[68] Indeed, several BCC-designated species have documented fatalities with wind turbines in the APWRA.[69] Yet, the DSEIR fails to analyze the Project's impacts on most of these species.

Notably absent from the DSEIR's list of resources utilized to determine the potential presence of special-status species at the Project site was readily available data obtained during site-specific avian surveys. For example, the ferruginous hawk, merlin, Nuttall's woodpecker, peregrine falcon, Rufous hummingbird, and the turkey vulture were each observed at the Project site, but not disclosed or analyzed in the DSEIR.[70] Because the DSEIR's description of the environmental setting fails to accurately investigate and discuss special-status birds and bats, it understates the significance of the Project's impacts to these species in violation of CEQA.

5-8

C. The DSEIR's Conclusion that Certain Special-Status Species Are Unlikely to Occur in the Project Vicinity Is Not Supported by Substantial Evidence

For the 39 special-status species identified as having potential to occur in the Project vicinity, the DSEIR delineates how likely each species is to occur within the Project site by defining the occurrence as high, moderate, low, or none.[71] The DSEIR's occurrence conclusions for several special-status avian species are not supported by substantial evidence. Specifically, the DSEIR erroneously concludes that the California condor, bald eagle, and sandhill crane have low or no potential to occur in the Project area. As a result, the DSEIR fails to meaningfully analyze or

[66] *Ibid.*
[67] U.S. Fish and Wildlife Service 2020a at p. 5 ("MIGRATORY BIRD INFORMATION IS NOT AVAILABE AT THIS TIME").
[68] Smallwood Comments at p. 9-11.
[69] *Ibid.*
[70] DSEIR, appen. D at pp. 3-2 to 3-6.
[71] *Id.* at p. 3.4-47.

mitigate the Project's impacts to these species, especially with respect to fatalities caused by collisions with turbines.[72] 5-8 cont'd

5-9

1. California condor

The DSEIR concludes that the California condor, a state and federally listed endangered species with fully protected status,[73] has "low" potential to occur on the Project site because only one individual was observed during field surveys and no suitable nesting habitat is present.[74] This conclusion is not supported by substantial evidence for two reasons.

First, a single observation of the condor is significant because there are only about 300 individuals in the wild.[75] Condors have naturally low productivity, meaning that the loss of single individual can have substantial repercussions on the survival of the species.[76] Moreover, the individual condor observed during project surveys was flying at a height of approximately 25 to 30 meters,[77] which would be within the proposed turbine's rotor swept area.[78] Condors are not as agile as other birds given their significant size and wingspans, and are therefore at greater risk of colliding with a turbine.[79]

Second, the DSEIR neglects to discuss other reasonably foreseeable and scientifically supported explanations for why condors could occur in the Project area beyond suitable nesting habitat. As condors recover from near extinction, experts are confident that this species will visit the APWRA (including the Project site) more often because the location is on the northern edge of the species range and contains suitable foraging habitat,[80] which the DSEIR acknowledges but summarily dismisses without supporting evidence.[81]

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[72] *Sierra Club,* 6 Cal.5th 502.
[73] DSEIR at p. 3.4-19.
[74] *Id.* at pp. 3.4-25 to 3.4-26, 3.4-41.
[75] Smallwood Comments at 14, 25-26; U.S. Fish and Wildlife Service, California Condor Recovery Program: 2019 Annual Population Status (2019), *available at*
https://www.fws.gov/cno/es/calcondor/PDF_files/2020/2019_California_Condor_Population_Status.pdf
CEQA Guidelines § 15380(a).
[76] Smallwood Comments at 25.
[77] DSEIR, appen. D at p. 3-14.
[78] Smallwood Comments at p. 26.
[79] *Ibid.*
[80] *Ibid.*
[81] DSEIR at p. 3.4-26.

5-10

2. Bald eagle

The DSEIR concludes that bald eagles have low potential to occur in the Project area because no suitable nesting habitat is present on the site and only one individual was observed during avian surveys for the Project.[82] This conclusion is facially erroneous and not supported by substantial evidence for two reasons. First, the DSEIR erroneously claims that only one bald eagle was observed during project field surveys.[83] While only one bald eagle was observed during eagle use surveys,[84] 7 additional bald eagles were observed during avian use surveys.[85]

Second, bald eagles have been documented many times in the APWRA, including to breed and forage.[86] Indeed, several bald eagle fatalities have been recorded in the APWRA, including one documented by Dr. Smallwood.[87] Therefore, the DSEIR inappropriately discounts the presence of bald eagles based solely on the lack of suitable nesting habitat.

Bald eagles are listed as endangered under the CESA and are fully protected under CESA and the federal Bald and Golden Eagle Protection Act.[88] Take of a single individual eagle or their habitat is a significant impact which requires mitigation under these laws, as well as CEQA.[89] The DSEIR's failure to disclose the potential presence of bald eagles in the vicinity of the Project site resulted in an inaccurate description of baseline conditions and a corresponding failure to disclose the Project's potentially significant impacts on this critical species. These omissions precluded the County from accurately assessing the extent of the Project's impacts in the DSEIR and thwart the public's ability to meaningfully participate in the CEQA process.[90]

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[82] *Id.* at pp. 3.4-25, 3.4-41.
[83] *Id.* at p. 3.4-41
[84] *Id.*, appen. D at pp. 3-1, D-4.
[85] *Id.*, appen. D at pp. 3-2, 3-5.
[86] Smallwood Comments at p. 6-8, 13.
[87] *Ibid.*
[88] DSEIR, p. 3.4-19.
[89] Fish & Game Code § 2081(b)(2) (CESA compels applicants to "fully mitigate[ ]" the take of threatened or endangered species); Pub. Resources Code § 21002.1(c) (lead agency may not approve project with significant unavoidable impacts unless it is "otherwise permissible under applicable laws and regulations."); CEQA Guidelines, Appendix G, § IV(a).
[90] *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48; *Envt'l Prot. Info. Ctr. v. Cal. Dep't of Forestry & Fire Prot.* (2008) 44 Cal.4th 459, 485 ("We conclude that where that

3. Greater sandhill crane 5-10

The DSEIR concludes that greater sandhill crane has no potential to occur in the Project area because the site is not located within the breeding range and does not support suitable foraging habitat.[91] This conclusion is facially erroneous given the that a sandhill crane was documented during avian surveys for the proposed Project.[92] Sandhill cranes have been observed elsewhere in the APWRA. For example, a sandhill crane fatality was found while monitoring the wind turbines immediately adjacent to the project site.[93] Dr. Smallwood has also personally documented sandhill cranes in AWPRA during nocturnal surveys.[94]

CEQA prohibits the court from upholding agency conclusions, like this one, that are clearly erroneous. In such instances, the court is required to find that "argument, speculation, unsubstantiated opinion or narrative, [or] evidence which is clearly inaccurate or erroneous," is not substantial evidence,[95] and must invalidate agency conclusions, like this one, that "a reasonable person could not reach" based on the evidence before the agency.[96]

D. The Project Fails to Disclose Compliance with the Rivers and Harbors Act of 1899 5-11

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the U.S. Army Corps of Engineers ("USACE") for the construction of any structure in or affecting navigable waters of the United States.[97] For example, utility lines that are routed under Section 10 waters without a discharge of dredged or fill material require a Section 10 permit.[98] Because the Project proposes to utilize HDD to avoid permanent and temporary impacts to wetlands, and special-status species that may occupy this habitat, a Section 10 permit would be required. The DSEIR fails to disclose this requirement.

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failure to comply with the law results in a subversion of the purposes of CEQA by omitting information from the environmental review process, the error is prejudicial.").
[91] DSEIR at p. 3.4-25.
[92] *Ibid.* ("One sandhill crane was detected flying over the project site during field surveys conducted in May 2020.").
[93] PEIR at p. 3.4-108.
[94] Smallwood Comments at pp. 6, 13.
[95] Pub. Resources Code § 21082.2(c); CEQA Guidelines § 15384(b).
[96] *Harris v. City of Costa Mesa* (1994) 25 Cal. App. 4th 963, 969.
[97] 33 U.S.C. § 403.
[98] 82 FR 1860, 1986.

5-11 cont'd

The USACE utilizes three types of general permits: nationwide permits ("NWP"), regional general permits and programmatic general permits. In cases where the proposed activity cannot be designed to meet the terms and conditions of the general permit, an individual permit is required.

NWP 12 authorizes activities required for construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than a half-acre of waters of the United States for each single and complete project.[99] NWP 12 also authorizes utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material.[100] With respect to HDD, the permit "authorizes, to the extent that Department of Army authorization is required, temporary structures, fills, and work necessary for remediation of inadvertent returns of drilling fluids to the waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines."[101]

NWP 12 requires that the remediation activities "be done as soon as practicable, to restore the affected waterbody."[102] The District Engineer may "add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines."[103]

5-12

VI. The DSEIR Fails to Disclose and Meaningfully Analyze All Significant Project Impacts

CEQA requires an analysis of the potential environmental impacts an agency's proposed actions may have in an EIR (except in certain limited circumstances).[104] "The foremost principle in interpreting CEQA is that the

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[99] *Id.* at 1985-86; *see also* U.S. Army Corps of Engineers, 2017 Nationwide Permits, General Conditions, District Engineer's Decision, Further Information, and Definitions (2017) pp. 7-10, *available at* https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/8593.
[100] 33 C.F.R. part 322.
[101] 82 FR 1860, 1986.
[102] *Ibid.*
[103] *Ibid.*
[104] *See, e.g.*, Pub. Resources Code § 21100.

5-12 cont'd

Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[105]

"[T]he adequacy of an EIR's discussion of environmental impacts is an issue distinct from the extent to which the agency is correct in its determination whether the impacts are significant."[106] "An adequate description of adverse environmental effects is necessary to inform the critical discussion of mitigation measures and project alternatives at the core of the EIR."[107] "[W]hether a description of an environmental impact is insufficient because it lacks analysis or omits the magnitude of the impact is not a substantial evidence question."[108] Indeed, "[a] conclusory discussion of an environmental impact that an EIR deems significant can be determined by a court to be inadequate as an informational document without reference to substantial evidence."[109] The ultimate inquiry is whether the EIR includes enough detail to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.[110]

5-13

A. The DSEIR Fails to Analyze the Nature or Severity of Project's Impacts on 59 Special-Status Species

As discussed in Section V.A., the DSEIR failed to disclose or meaningfully discuss 59 special-status species which are likely to occur within the Project vicinity during implementation. Because the DSEIR failed to provide the baseline data necessary to accurately assess the Project's impacts on the 59 special status species omitted from the environmental setting discussion, the DSEIR's conclusion that impacts to biological resources are less than significant is entirely unsupported. Moreover, the DSEIR cannot rely on the premise that less than significant impacts require less detailed analysis because, in this case, the DSEIR failed to conduct an analysis in the first place to accurately assess the significance of the impact.

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105 *Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal. App.4th 98, 109.
106 *Sierra Club,* 6 Cal.5th at p. 514.
107 *Ibid.*
108 *Ibid.*
109 *Ibid.*
110 *Id.* at p. 516.

5-13 cont'd

B. The DSEIR Erroneously Omits Special-Status Species with Low Occurrence Potential from Its Impact Analysis

The DSEIR fails to analyze any wildlife species with low potential to occur at the project site.[111] It attempts to explain the omission by stating that "[w]ildlife species listed in Table 3.4-3 as having low potential to occur at the project site were identified as such because there is very limited suitable habitat for the species or there is no suitable nesting/breeding habitat at the project site. Based on the small amount (6%) of the project site that would be disturbed, the potential for these species to be affected is considered negligible."[112] The DSEIR's explanation falls short for two reasons.

First, the DSEIR's reference to small disturbance at the Project site only accounts for impacts caused by Project construction. The impact assumption entirely disregards the potential for species to be affected by Project operation. As the DSEIR acknowledges, turbine operation could result in the direct mortality of a significant number of special-status due to collisions with turbines.[113]

Second, even assuming the DSEIR correctly categorized the special-status species as having "low" potential to occur onsite during Project implementation, the Project's impacts on the species could still be significant. Take, for example, potential impacts to the California condor. As emphasized by Dr. Smallwood, even single death would be a significant setback for the survival of the species.[114] A single take would also violate CESA and federal ESA protections, requiring a take permit. Thus, the Project's potential impact on the California condor could hardly be characterized as "negligible" given the species' extremely low population and legally protected status.

Moreover, as discussed in Section V.C., the DSEIR's occurrence determination for several species, including the condor, bald eagle, sandhill crane, and all special-status species erroneously omitted from the environmental setting

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[111] DSEIR at p. 3.4-60 ("Therefore, wildlife species with low potential to occur at the project site are not discussed in this impact analysis.").
[112] *Ibid.*
[113] *See e.g.*, *id.* at pp. 3.4-95 to 3.4-128 (discussing impacts to avian and bat species due to collisions with turbines).
[114] Smallwood Comments at pp. 25-26.

discuss, identified as having low or no potential is not supported by substantial evidence.[115] 5-13 cont'd

5-14

C. The DSEIR Failed to Conduct a Micrositing Analysis for Bats, as Required by PEIR MM BIO-11b and PEIR MM BIO-14a

"Mitigation conditions are not mere expressions of hope."[116] Once incorporated, mitigation measures cannot be defeated by ignoring them or "attempting to render them meaningless by moving ahead with the project in spite of them."[117] When it adopted the PEIR, the County promised to reduce avian and bat mortality by siting turbines in a manner that minimizes impacts to birds and bats. To ensure that each project approved under the PEIR achieved this goal, the PEIR included several mitigation measures requiring project proponents to utilize the best available science and methods to collect the necessary data to perform a micrositing analysis.

PEIR Mitigation Measure ("MM") BIO-11b mandates that all project proponents "conduct a siting process and prepare a siting analysis to select turbines to minimize potential impacts on bird ***and bat species***."[118] The analysis must utilize the best available scientific information to inform a site-specific field analysis that considers of the local topography and pre-construction surveys of bird and bat use, behavior and disturbing in the project site.[119] Proponents must "utilize methods (i.e., computer models) to identify dangerous locations for birds and bats based on site-specific risk factors."[120]

Similarly, PEIR MM BIO-14a requires that project proponents to utilize "the best available information to site turbines and select from turbine models in such a manner as to reduce bat collision risk."[121] The PEIR reiterates that the siting and selection process must "take into account bat use of the area and landscape features known to increase collision risk."[122] To facilitate the analysis, the proponent must "generate site-specific 'best information' to inform turbine siting and operation

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[115] *Id.* at pp. 9-11.
[116] *Lincoln Place Tenants Assn. v. City of Los Angeles* (2005) 1330 Cal.App.4th 1491, 1508.
[117] *Lincoln Place Tenants Assn. v. City of Los Angeles* (2007) 155 Cal.App.4th 425, 450.
[118] PEIR at p. 3.4-109.
[119] *Ibid.*
[120] *Id.* at p. 3.4-110.
[121] *Id.* at p. 3.4-133.
[122] *Ibid.*

decisions" by performing a bat habitat assessment and roost survey in the project area.[123] Turbine siting decisions must incorporate relevant bat use survey data and bat fatality records published by other projects in the APWRA.[124] Despite these clear requirements, the DSEIR failed to perform a micrositing analysis which considered bats. 5-14 cont'd

The DSEIR's failure to comply with the PEIR's mitigation measures suffers from the same flaws identified in *Sierra Club v. County of San Diego*.[125] In that case, San Diego County prepared a PEIR for its general plan adopting several mitigation measures aimed at reducing GHG impacts.[126] One of the mitigation measures required the preparation of a Climate Action Plan ("CAP") that would include the baseline inventory of greenhouse gas emissions from all sources and more detailed greenhouse gas emissions reduction targets and deadlines.[127] The CAP also needed to achieve comprehensive and enforceable GHG emissions reduction of 17% from county operations from 2006 by 2020 and a 9% reduction in community emissions from 2006 by 2020.[128] The court held that San Diego County failed to adopt a CAP because the CAP did not include measures to ensure that the expressly required GHG emissions reductions targets would be achieved and did not contain any detailed deadlines, as required by the PEIR.[129]

Here, the DSEIR performed two micrositing assessments, neither of which applies to bats.[130] In fact, the initial micrositing assessment, without any supporting evidence, claims that "there is little information that would suggest micrositing of turbines in an otherwise monotypic landscape, even one with complex topography like the APRWA, would influence potential bat mortality."[131] And the supplemental micrositing assessment entirely omits bats from its discussion.[132]

The County cannot rely on its failure to conduct a required analysis to conclude that there is inadequate information to analyze impacts because, as

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[123] *Ibid.*
[124] *Ibid.*
[125] *Sierra Club v. County of San Diego* (2014) 231 Cal.App.4th 1152.
[126] *Id.* at p. 1159.
[127] *Ibid.*
[128] *Ibid.*
[129] *Id.* at p. 1167-76.
[130] *See generally* DSEIR, appen. F (micrositing assessment), appen. G (supplemental micrositing assessment).
[131] *Id.*, appen F. at p. 8.
[132] *See generally id.*, appen. G.

5-14 cont'd

discussed in Section VI.D., the PEIR required that the project proponent perform bat roost surveys "[p]rior to development of any repowering project."[133] Furthermore, the relevant data necessary to perform such an analysis is readily a available from experts who work in the APRWA.[134]

Lastly, the DSEIR cannot rely on the 2020 Updated PEIR MM BIO-14a to cure this defect. The updated mitigation measure requires that the proponent utilize procedures followed with guidance provided by the California guidelines for reducing impacts on birds and bats from wind development, and deletes discussion of measures requiring siting turbines the greatest distance feasible up to 500 feet from still or flowing bodies of water, riparian habitat, known roosts, and tree stands.[135] However, the DSEIR should have already conducted site-specific bat surveys in order to conduct a micrositing analysis.

The DSEIR's failure to perform a micrositing analysis for bats renders its conclusion that Impact BIO-11, BIO-14, and BIO-19 unsupported by substantial evidence.[136] In addition, the DSEIR's conclusion that MM BIO-20 is less than significant is not supported by substantial evidence.[137]

5-15

D. The DSEIR Failed to Conduct Bat Roost Surveys, as Required by PEIR MM BIO-12a

PEIR MM BIO-12a mandates that "[***p*]*rior to development of any repowering project***,"[138] the project proponent must conduct a roost habitat assessment to identify potential colonial roost sites of special-status and common bat species within 750 feet of the construction area.[139] The measure then identifies specific performance standards that must be followed in implementing the surveys, including several separate survey visits, at different times of the day and year, if necessary, employing appropriate field methods and best practices.[140] After completion of the roost surveys, the proponent must prepare a report documenting

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133 PEIR at p. 3.4-127; *Berkeley Jets,* 91 Cal.App.4th at p. 1355 (unsupported studies are entitled to no deference); *Laurel Heights,* 47 Cal.3d at pp. 391 409, fn. 12.
134 Smallwood Comments at p. 65.
135 *Compare* DSEIR at p. 3.4-124 *with* PEIR at p. 3.4-133.
136 DSEIR at p. 3.4-131 to 3.4-132
137 *Id.* at p. 3.4-132 to 3.4-134.
138 PEIR at p. 3.4-127
139 *Ibid.*
140 *Ibid.*

5-15 cont'd

areas surveyed, methods, results, and mapping of high-quality habitat or confirmed roost locations.[141] The DSEIR failed to comply with this requirement.

While the County prepared a biological resources report, included with the DSEIR as Appendix C, that report does not meet requirements established by PEIR MM BIO-12a. The field surveys describe in Appendix C were conducted for a variety of reasons, including delineation of aquatic resources, land cover mapping, and habitat assessment for a handful of special-status species.[142] They did not focus on the requirements of MM BIO-12a. Indeed, Appendix C does not include a report documenting areas surveyed, methods, results, and mapping of high-quality habitat or confirmed roost locations.

Moreover, a mitigation measure cannot be "interpreted" contrary to its express terms.[143] There can be no reasonable dispute that the PEIR requires bat roost surveys to be performed as part of a subsequent CEQA analysis for proposed repowering projects in the APWRA because the measure expressly states that such surveys are to be performed "[p]rior to the development of any repowering project."[144] Indeed, the County conducted avian use surveys and performed avian micrositing assessments prior to release of the DSEIR based on an equivalent mitigation measure for birds.[145] The same is required for bats.

Because the County failed to perform the requisite bat surveys, the DSEIR's conclusion that Impact BIO-12 is less than significant is not supported by substantial evidence.[146] In addition, the DSEIR's conclusion that all feasible mitigation measures to reduce the significant impacts of BIO-19 have been implemented is equally unsupported.[147]

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141 *Ibid*.
142 DSEIR, appen. C at p. 2-1 to 2-4.
143 *Sierra Club*, 231 Cal.App.4th at p. 1172; *see Southern Cal. Edison Co. v. Public Utilities Co.* (2008) 85 Cal.App.4th 1086, 1105 ("an agency's interpretation of a regulation or statute does not control if an alternative reading is compelled by the plain language of the provision"); *Santa Clarita Organization for Planning the Environment v. City of Santa Clarita* (2011) 197 Cal.App.4th 1042, 1062 (agency's "view of the meaning of the scope of its own ordinance" does not enjoy deference when it is " 'clearly erroneous or unauthorized' ").
144 Compare PEIR at p. 3.4-127 to
145 *See generally* DSEIR, appen. C (avian use surveys), appen. F (micrositing assessment), appen. G (supplemental micrositing assessment).
146 DSEIR at p. 3.4-118 to 3.4-120.
147 *Id*. at p. 3.4-131 to 3.4-132.

5-16

E. The DSEIR's Avian Micrositing Assessment Fails to Comply with PEIR MM BIO-11b

PEIR MM BIO-11b mandates that all project proponent "conduct a siting process and prepare a siting analysis to select turbines to minimize potential impacts on bird and bat species."[148] The analysis must utilize the best available scientific information to inform a site-specific field analysis that considers of the local topography and pre-construction surveys of bird and bat use, behavior and disturbing in the project site.[149] Proponents must "utilize methods (i.e., ***computer models***) to identify dangerous locations for birds and bats based on site-specific risk factors."[150]

The micrositing assessment relied upon by the DSEIR utilized computer modeling to perform the analysis because the DSEIR claims there is little evidence showing that the collision risk models correspond to higher certainty regarding potential reduction in fatalities of targeted species when compared with field assessment.[151] But this is simply not accurate. The efficacy of the collision risk models was tested through peer-review publications.[152]

Moreover, these models are not intended to replace field assessment as implied by the DSEIR,[153] but rather meant to be a complementary approach to mitigating potential fatalities to birds and bats that are caused collisions with wind turbines.[154] The collision risk model represents the best available scientific method for evaluating and mitigating impacts to bird and species, particularly for golden eagles in the APWRA and is required by the MM BIO-11b.[155] Its use is therefore supported by the PEIR,[156] and the DSEIR's refusal to use the best available micrositing modeling is not supported by substantial evidence. The County's failure to conduct an micrositing assessment consistent with the MM BIO-11b renders its micro-sited alternative analysis unsupported by substantial evidence.[157]

[148] PEIR at p. 3.4-109.
[149] *Ibid.*; CEQA Guidelines § 15064(b)(1) (determination of whether a project may have a significant effect on the environment must be based to the extent possible on scientific and factual data).
[150] *Id.* at p. 3.4-110 (emphasis added).
[151] DSEIR, appen. D at p. 7.
[152] Smallwood Comments at p. 65.
[153] DSEIR, appen D at p. 7.
[154] Smallwood Comments at p. 65.
[155] PEIR at p. 3.4-109 to 3.4-110.
[156] *Ibid.*
[157] DSEIR at pp. 4-4 to 4-6, 4-13 to 4-18.

5-16 cont'd

Dr. Smallwood performed a micrositing assessment for the safest wind turbine layout consistent with the MM BIO-11b.[158] Based on the modeling data, Dr. Smallwood recommend against 26 of the proposed sites after the relocations identified in the DSEIR's micrositing assessment.[159] In fact, he recommended at least 50% of the sites be removed from the project, and the remainder laid out more safely.[160] His analysis and recommendations must be considered in a revised and recirculated DSEIR.

5-17

F. The DSEIR Fails to Analyze Indirect Impacts to Wildlife Resulting from Wildfires Caused by Wind Facilities

The proposed Project encompasses an area which includes moderate to high fire hazard severity zones.[161] The DSEIR acknowledges that fire hazards pose considerable risk to vegetation and wildlife habitats throughout the APWRA, including the Project site, which primarily consists of grasslands.[162] The increased severity and frequency of wildfires occurring in the APWRA has caused wind operators to take measures to prevent wind-energy caused wildfires, including repeat disking of firebreaks around wind turbines.[163] The DSEIR fails to analyze the additional permanent impacts to grasslands that may be caused by repeat disking to prevent wildfires. This analysis should be included in a revised and recirculated DSEIR.

5-18

G. The DSEIR Fails to Analyze the Nature or Severity of Hazardous Materials Present on the Project Site

A Phase I Environmental Site Assessment ("ESA") was conducted to identify historical and current land use, operations, and environmental conditions associated with the Project and surrounding area.[164] The Phase 1 ESA identified several recognized environmental conditions ("RECs") on the Project site.[165] The Phase I ESA found, among other things:

[158] Smallwood Comments at pp. 52-64.
[159] *Id.* at pp. 58.
[160] *Ibid.*
[161] *Id.* at p. 3.19-4.
[162] *Id.* at p. 3.19-6.
[163] Smallwood Comments at pp. 86-87.
[164] DSEIR, appen. E.
[165] *Id.* at p. 3.9-11; appen. E at p. 4-1. An REC are those conditions where the presence of any hazardous substances or petroleum products in, on, or at the property: (1) due to the release to the

5-18 cont'd

> A burn pit is located adjacent to the access road, and north of the barn, on APN # 99B-7925-2-4 and remnants of wood and metal were observed within the burn pit;[166]
>
> Multiple chemical storage containers (i.e., tanks, drums) were observed near the main residence on APN# 99B-7925-2-1, though no identifying markers were present on the containers, and no secondary containment was observed under the containers;[167]
>
> Residual staining was observed in the immediate vicinity of the hazardous material storage tanks and treated poles located south of the main residence (approximately 500 feet south of the railroad) on APN# 99B-7925-2-4.[168]

The Phase 1 ESA concluded that (1) "contamination may be present ***beneath the observed burn pit*** due to historical and continued use," (2) "spills may have occurred during movement of the storage containers," and (3) "residual petroleum products may be ***present in the underlying soil*** near the tanks, and chemical preservatives from the treated poles may be ***present in the underlying soil***."[169]

Despite potential presence of potential environmental hazards at the Project site, the DSEIR fails to analyze the nature or severity of the contaminants. Instead, the DSEIR conclusively asserts that a "Phase II investigation would not be warranted" because "the identified environmental conditions are typical conditions that would be addressed through standard construction BMPs and compliance with regulations."[170] As a result, the DSEIR concludes that construction and operation of the project would result in a less than significant impact related to the creation of a significant hazard to the public or the environment.[171]

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environment, (2) under conditions indicative of a release to the environment, or (3) under conditions that pose a material threat of future release to the environment. *Ibid.*

[166] *Id.* at p. 3.9-11; appen. E at p. 4-1.

[167] *Ibid.*

[168] *Ibid.*

[169] *Id.*, appen. E at p. 5-1 (emphasis added).

[170] DSEIR at p. 3.9-12.

[171] *Ibid.*

5-18 cont'd

Mr. Hagemann explains that the presence of a burn pit, tanks and drums are not "typical conditions" as asserted by the DSEIR.[172] As the Phase 1 ESA acknowledges, and Mr. Hagemann confirms, contamination may be present underneath burn pit and petroleum products or other chemicals may have leaked into the underlying soil.[173] Confirmation of these conditions would not have been discovered during a Phase 1 ESA because Phase I ESA's do not include any soil sampling.[174] That is the function of a Phase II ESA. Further environmental analysis is necessary to determine the extent of chemical release and the need for any regulatory agency notification or environmental cleanup activities.[175] Because the DSEIR failed to analyze the nature or severity of the contaminants present on the Project site, it cannot conclude that Impact HAZ-4 is less than significant.

5-19

H. The DSEIR Fails to Conduct a Quantified Health Risk Analysis

Project operation and construction would result in the release of diesel particulate matter ("DPM") by the use of diesel-fueled equipment and vehicles.[176] Short-term exposure to DPM can cause acute irritation, neuropsychological symptoms, and respiratory symptoms.[177] In addition, diesel engine exhaust has been classified as "carcinogenic to humans, based on sufficient evidence that exposure is associated with an increased risk for lung cancer."[178]

The DSEIR concludes that operation and construction of the Project would not result in a significant impact due to localized DPM emissions.[179] However, the DSEIR reached this conclusion without conducting any quantified analysis or health risk assessment (collectively, "HRA") for either phase of the Project. An EIR must analyze the impacts from human exposure to toxic substances.[180] The EIR cannot label an effect "less than significant" without accompanying analysis of the project's impacts.[181]

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[172] SWAPE Comments at p. 2.
[173] DSEIR, appen. B at p. 5-1; SWAPE Comments at p. 2.
[174] SWAPE Comments at p. 2.
[175] *Ibid.*
[176] DSEIR at p. 3.3-12.
[177] *Ibid.*
[178] *Ibid.*
[179] *Id.* at pp. 3.3-27 to 3.3-28.
[180] *Berkeley Jets*, 91 Cal.App.4th at p. 1369.
[181] *Sierra Club,* Cal.5th at p. 514; *Kings County Farm Bureau*, 221 Cal.App.3d at 732 (agency cannot conclude that impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding).

5-19 cont'd

With respect to DPM emissions during operation, the DSEIR states: "Long-term operation of the proposed project would not result in a significant new source of DPM emissions."[182] The DSEIR failed to evaluate whether any of the diesel-fueled equipment proposed for use during Project operation could result in a significant source of DPM emissions.[183] Indeed, operation and maintenance of the Project will generate 16 daily worker trips, require 5 pieces of off-road equipment, and utilize 2 generators.[184] Therefore, the DSEIR cannot conclude DPM emissions from Project operation are less than significant without first conducting a health risk assessment.

With respect to Project construction, the DSEIR acknowledges that construction activities within 1,000 feet from a sensitive receptor pose a significant health risk.[185] It further admits that the Mulqueeney Ranch "may be exposed to increased health risks during construction that could exceed [Bay Area Air Quality Management District] thresholds."[186] The BAAQMD recommends that all receptors located within a 1,000 foot radius of a Project's fence line be assessed for potentially significant impacts from the incremental increase in risks or hazards from the proposed new source, including projects like this one which utilize off-road diesel equipment on site.[187] Yet, despite these admissions and clear regulatory guidance, the DSEIR failed to quantify the health risk to residents on the Mulqueeney Ranch.[188] As a result, the DSEIR cannot conclude the PEIR mitigation measures would reduce DPM emissions and associated health risks to a level of insignificance.

The DSEIR also concedes that on-site construction activities would generate DPM, but then discounts these emissions because Project construction will occur over a 7-month period, as opposed to the 30-year duration typically associated with chronic cancer risks identified by the Office of Environmental Health and Hazard Assessment ("OEHHA") .[189] In doing so, the DSEIR misstates and ignores

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[182] DSEIR at p. 3.3-27.
[183] SWAPE Comments at p. 4.
[184] DSEIR, appen. B at p. 4.
[185] *Id*. at p. 3.3-28.
[186] *Ibid*. at p. 3.3-28.
[187] See Bay Area Air Quality Management District, California Environmental Quality Act: Air Quality Guidelines (May 2017) pp. 5-7 to 5-8 (Section 5.2.4, Sources Not Requiring a BAAQMD Permit), *available at* https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.
[188] DSEIR at p. 3.3-28; SWAPE Comments at pp. 4-5.
[189] DSEIR at p. 3.3-27 to 3.3-28.

OEHHA's recommendations regarding cancer risk evaluation for short-term projects such as construction.[190] 5-19 cont'd

VII. THE DSEIR'S IMPACT ANALYSIS AND CONCLUSIONS ARE NOT SUPPORTED BY SUBSTANTIAL EVIDENCE 5-20

An agency's conclusions must be supported by substantial evidence.[191] Substantial evidence is defined as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached."[192] It includes "facts, reasonable assumption predicated upon facts, and expert opinion supported by facts,"[193] but does not include "[a]rgument, speculation, unsubstantiated opinion or narrative, [or] evidence which is clearly erroneous or inaccurate."[194]

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A clearly inadequate or unsupported study is entitled to no judicial deference.'"[195] As courts have explained, "a prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process."[196]

A. The DSEIR Significantly Underestimates the Permanent Impacts to Potential Habitat Caused by Project Construction. 5-21

The DSEIR estimates construction of the Project would permanently disturb only 26.02 acres, but temporarily disturb 263.68 acres.[197] However, these estimates are inconsistent with disturbance levels seen at similar projects in the APRWA.[198] Dr. Smallwood estimates that ground disturbance caused by the Project would

[190] SWAPE Comments at pp. 5-6.
[191] Sierra Club, 6 Cal.5th at p. XX.
[192] CEQA Guidelines § 15384(a).
[193] *Id.* § 15384(b).
[194] *Id.* § 15384(a).
[195] *Berkeley Jets*, 91 Cal.App.4th at p. 1355 (quoting *Laurel Heights*, 47 Cal.3d at pp. 391, 409, fn. 12).
[196] *Ibid.*; *San Joaquin Raptor*, 27 Cal.App.4th at p. 722; *Galante Vineyards,* 60 Cal.App.4th at p. 1117; *County of Amador,* 76 Cal.App.4th at p. 946.
[197] DSEIR at p. 2-15.
[198] Smallwood Comments at pp. 17-22.

likely damage 9% of plant and wildlife habitat on the site as opposed to the 1% estimated by the DSEIR because re-vegetation lags on graded surfaces and can be further impacted by gully erosion.[199] The DSEIR's failure to accurately disclose permanent grading impacts directly affect the DSEIR's conclusions regarding potential impacts to wildlife. 5-21 cont'd

For example, the loss of grassland habitat on the Project site would result in significant impacts to special-status species nesting at the Project site.[200] Based on data collected at a nearby site, Dr. Smallwood estimates that the 30-year impact to species, including burrowing owl, northern harrier, and red-tailed hawk, which rely on grassland habitat at the Project site, would result in a lost capacity of breeders and annual chick production by approximately 45,144 individual birds.[201] However, this impact is not disclosed or adequacy analyzed because the DSEIR underestimates the Project's construction impacts.[202]

B. The DSEIR's Baseline Avian Mortality Thresholds Are Not Supported by Substantial Evidence 5-22

The CEQA Guidelines authorize agencies to publish the "thresholds of significance" to assist in determining whether a project's effect will be deemed significant.[203] Selection of a threshold of significance must be supported by substantial evidence.[204] When an impact exceeds a CEQA significance threshold, the agency must disclose in the EIR that the impact is significant.[205] The EIR must then analyze mitigation measures and alternatives to reduce the impact.[206]

2020 Updated PEIR MM BIO-11 and BIO-14d require the project proponent to implement adaptive management strategies for avian and bat species, respectively, if postconstruction fatality monitoring exceeds the preconstruction

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[199] *Id.* at p. 18.
[200] Smallwood Comments at p. 19.
[201] *Ibid.*
[202] *Ibid.*
[203] CEQA Guidelines § 15064.7(a).
[204] *Id.* § 15064(b).
[205] *Communities for a Better Environment,* 103 Cal.App.4th at pp. 110-11; *Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 960 (County applies BAAQMD's "published CEQA quantitative criteria" and "threshold level of cumulative significance"); *Communities for a Better Environment*, 48 Cal.4th at p. 327 (impact is significant because it exceeds "established significance threshold for NOx … constitue[ing] substantial evidence supporting a fair argument for a significant adverse impact").
[206] *Id.*

baseline fatality estimates. These thresholds are derived from the non-repowered mortality rates under the 450 MW program described in the PEIR and continue to be relied upon by the DSEIR.[207] The DSEIR's thresholds are not supported by substantial evidence because the thresholds were developed utilizing outdated data from older generation turbines. Significant new information regarding avian mortality in the APWRA is available since the publication of the PEIR.[208] 5-22 cont'd

Moreover, the historical data relied upon by the PEIR and DSEIR suffers several critical defects. For example, underlying data relied upon to establish the thresholds utilized methods that significantly underestimated avian fatalities in the APWRA.[209] In addition, monitoring methods implemented were inefficient and at times unreliable.[210] The County's reliance on an outdated, unsupported threshold of significance results is likely to result in a failure to disclose and mitigate potentially significant avian mortality impacts

To be comparable, the baseline fatality estimates should represent the specific turbines to be implemented at the Proposed project as opposed to utilizing averages.[211] In addition, the baseline should also be interpreted with respect to inter-annual variation in fatalities.[212] Species-specific fatality rates often cycle, so fatality rates match the same portion of the cycle in the repowered period.[213] Dr. Smallwood provides site-specific analysis of several special status species that should be utilized to establish appropriate thresholds.[214]

C. The DSEIR's Conclusion that Impact HAZ-4 Is Less Than Significant Is Not Supported by Substantial Evidence 5-23

The DSEIR's conclusion that the Project would result in a is less than significant impact because of a reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment is not supported by substantial evidence.[215] While the Phase I ESA does not recommend a Phase 2

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207 DSEIR at p. 3.4-61.
208 *Id.* at p 3.4-48 to 3.4-50; s*ee also* Smallwood Comments at pp. 27-52.
209 *Id.* at p. 73.
210 *Ibid.*
211 *Ibid.*
212 *Ibid.*
213 *Ibid.*
214 *See generally id.* at pp. 27-52.
215 DSEIR at pp. 3.9-10 to 3.9-12.

ESA, this recommendation is conclusory and contrary to the Phase I ESA findings. Unsubstantiated opinion or narrative, and evidence which is clearly "inaccurate or erroneous," is not substantial evidence.[216] 5-23 cont'd

The Phase I ESA identified several RECs on the Project site and concluded that (1) contamination is may present beneath the burn pit, (2) spills may have occurred during the transport of storage containers, and (3) residual petroleum or other chemicals may be present in the underlying soil.[217] As Mr. Hagemann emphasizes, the hazards identified in the Phase I ESA are not "typical conditions" that can be addressed through standard construction BMPs and compliance with regulations.[218] They are conditions which must be fully disclosed and analyzed in the DSEIR.

The DSEIR explains that the project would involve soil disturbance, thus potentially disturbing residual contaminants.[219] The disturbance of toxic soil contamination at a project site is potentially significant impact requiring CEQA review and mitigation.[220] Because the Project involves soil disturbance in the areas where known environmental hazards exist, the Project could result in the creation of a significant hazard to the public or environment through a reasonably foreseeable upset or accident involving the release of hazardous materials. Therefore, the DSEIR's conclusion that the Impact HAZ-4 is less than significant is not supported by substantial evidence. The DSEIR must analyze the magnitude and severity of the potential hazards identified in the Phase I ESA and include feasible mitigation measures to reduce this impact to less than significant levels.[221]

VIII. THE DSEIR FAILS TO INCLUDE ALL FEASIBLE MITIGATION MEASURES TO REDUCE THE PROJECT'S SIGNIFICANT IMPACTS TO THE GREATEST EXTENT FEASIBLE 5-24

A public agency cannot approve a project if there are feasible alternatives or mitigation measures available that would substantially lessen any significant

[216] Pub. Resources Code § 21082.2(c); CEQA Guidelines § 15384(b).
[217] DSEIR at p. 3.9-11.
[218] SWAPE Comments at p. 2.
[219] DSEIR at p. 3.9-10.
[220] *Cal. Build. Indust. Ass'n v. BAAQMD* (2015) 62 Cal.4th 369, 388-90.
[221] *Id.*; CEQA Guidelines §§ 15143, 15162.2(a) (severity of project's impacts and the probability of their occurrence must be disclosed in CEQA document before project can be approved).

5-24 cont'd

effects that the project would have on the environment.[222] CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors."[223] "In deciding whether changes in a project are feasible, an agency may consider specific, economic, environmental, legal, social, and technological factors."[224]

The duty to prevent or minimize environmental damage is implemented through the findings required by Public Resources Code § 21081 and CEQA Guidelines § 15091.[225] These sections prohibit a lead agency from approving a project with significant impacts unless it makes one or more of three findings:

(1) Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.[226]
(2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.[227]
(3) Specific economic, legal, social, technological, or other considerations make infeasible the mitigation measures or project alternatives identified in the environmental impact report.[228]

These findings must be supported by substantial evidence.[229]

Rejected alternatives and mitigation measures must be "truly infeasible."[230] When an agency finds a specific alternative or mitigation measure to be infeasible, "its analysis must explain in meaningful detail the reasons and facts supporting the conclusion. The analysis must be sufficiently specific to permit informed decision-making and public

[222] CEQA Guidelines § 15021(a)(2).
[223] Pub. Resources Code § 21061.1; CEQA Guidelines § 15364.
[224] CEQA Guidelines § 15021(b).
[225] Pub. Resources Code § 21081(a); CEQA Guidelines § 15091(a).
[226] Pub. Resources Code § 21081(a)(1); CEQA Guidelines § 15091(a)(1).
[227] Pub. Resources Code § 21081(a)(2); CEQA Guidelines § 15091(a)(2).
[228] Pub. Resources Code § 21081(a)(3); CEQA Guidelines § 15091(a)(3).
[229] Pub. Resources Code § 21081.5; CEQA Guidelines § 15091(b).
[230] *City of Marina v. Bd. of Trustees of Cal. State Univ.* (2006) 39 Cal.4th 341, 369.

5-24 cont'd

participation."[231] Conclusory statements are inadequate.[232] As the Supreme Court recently explained in *Sierra Club v. County of Fresno*:

> When reviewing whether a discussion is sufficient to satisfy CEQA, a court must be satisfied that the EIR (1) includes sufficient detail to enable those who did not participate in its preparation to understand and to consider meaningfully the issues the proposed project raises, and (2) makes a reasonable effort to substantively connect a project's air quality impacts to likely ... consequences.[233]

This holding applies equally to an EIR's discussion of impacts and of the adequacy of mitigation measures, and restates the well-established rule that an EIR is inadequate as a matter of law where (1) it omits information required by law and (2) the omission precludes informed decision making by the lead agency or informed participation by the public.[234]

If significant effects still exist after all feasible mitigation measures and alternatives have been implemented, a project may still be approved if the "unmitigated effects are outweighed by the project's benefits."[235] However, the Supreme Court clarified that, "[e]ven when a project's benefits outweigh its unmitigated effects, agencies are still required to implement all mitigation measures unless those measures are truly infeasible."[236] "The lead agency must adopt feasible mitigation measures or project alternatives to reduce the effect to insignificance; to the extent significant impacts remain after mitigation, the agency may still approve the project with a statement of overriding considerations."[237]

A statement of overriding considerations is not a substitute for the required findings on the feasibility of mitigation measures.[238] The statement must also be supported by substantial evidence in the record.[239]

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[231] *Marin Mun. Water Dist. V. KG Land California Corp.* (1991) 235 Cal. App.3d 1652, 1664.
[232] *Village Laguna of Laguna Beach v. Bd. of Supervisors* (1982) 134 Cal.App.3d 1022, 1034-35.
[233] *Sierra Club,* 6 Cal.5th at p. 516 (citing *Laurel Heights,* 47 Cal.3d at p. 405.
[234] *Id.*; *Madera Oversight Coalition, Inc.,* 199 Cal.App.4th at pp. 76-77.
[235] *Sierra Club,* 6 Cal. 5th at p. 524, citing *Laurel Heights*, 47 Cal.3d at p. 391.
[236] *Sierra Club,* 6 Cal. 5th at pp. 524-25.
[237] *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 231.
[238] CEQA Guidelines § 15091(f).
[239] *Id.* § 15093(b).

5-25

A. The DSEIR Fails to Adequately Mitigate Significant Impacts to Wetlands, and Special-Status Species that Rely on Wetland Habitat

The Project propose to utilize HDD to minimize surface disturbance within wetlands and streams.[240] The HDD bore machine uses a drilling fluid in the process that is typically a mixture of fine clay (such as bentonite) and fresh water.[241] An inadvertent return may occur if drilling fluids are released through fractures in the bedrock and flow to the surface, and possibly into a river, stream, wetland or other type of waterbody.[242] The drilling fluids are not a toxic or hazardous substance, but can adversely affect aquatic organisms if released into bodies of water.[243] While the drilling fluids are not "fill material" subject to regulation under Section 404 of the Clean Water Act, activities necessary to contain and clean up the drilling fluids may require temporary fills in the waters of the United States or fills to repair a fracture in a stream bed.[244]

The DSEIR acknowledges that a spill of drilling fluid containing bentonite could cause mortality of vernal pool brachiopods, curved-foot hygrotus diving beetle, California tiger salamander, western spadefoot, and California red-legged frog, western pond turtle or contaminate habitat.[245] In addition, the DSEIR recognizes the indirect impacts of installing the power collection system (such as an inadvertent return) could adversely impact riparian habitat and wetlands and streams.[246]

However, the DSEIR's mitigation measures do not reduce the potentially significant impacts of an inadvertent return. For example, the DSEIR does not require any site-specific drill plan, contingency plan, spill detection plan, or other remediation measures prior to commencement of HDD activities. Nor does the DSEIR require any mitigation for potential impacts to special-status species from inadvertent returns.

[240] DSEIR at p. 2-13.
[241] *Ibid.*
[242] *Ibid.*
[243] 82 FR 1860, 1886; *see also* U.S. Army Corps of Engineers, Decision Document: Nationwide Permit 12 (2017) (hereinafter "NWP 12") p. 13, *available at* https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/6725.
[244] *Ibid.*
[245] DSEIR at pp. 3.4-75; 3.4-79, 3.4-82.
[246] *Id.* at pp. 3.4-128 to 3.4-129.

Instead, the DSEIR only requires after-the-fact compensation and restoration of riparian habitat if it is "filled or removed" or to wetlands or streams if it is "filled or disturbed."[247] These measures are wholly inadequate to ensure the impacts of an inadvertent return are less than significant. At a minimum, the DSEIR should require the preparation of an inadvertent return plan that (1) minimizes the potential for inadvertent release of drilling fluids associated with HDD activities, (2) provides for timely detection of inadvertent returns, (3) protects environmentally sensitive areas while responding to an inadvertent returned, (4) ensures a timely and minimum impact response to an inadvertent return and releases of drilling fluids, and (5) ensures that all appropriate notifications are immediately made. 5-25 cont'd

Because the DSEIR fails to adequately mitigate significant impacts to wetlands, and special-status species which occupy wetland habitat, the DSEIR's conclusion that Impacts BIO-3, BIO-5, BIO-6, BIO-16, and BIO-18 are less than significant is not supported by substantial evidence.

B. The DSEIR Fails to Adopt All Feasible Mitigation Measures to Reduce the Project's Significant and Unavoidable Cumulative Air Quality Impacts 5-26

The DSEIR concludes the Project's construction related emissions of ROG and NOx would be substantial, resulting in a significant and unavoidable cumulative impact after mitigation.[248] However, the DSEIR fails to adopt all feasible mitigation measures to reduce ROG and NOx emissions. Dr. Rosenfeld identified several feasible mitigation measures available to reduce the Project's ROG and NOx emissions.[249] The DSEIR must adopt the recommended mitigation measures or explain why, based on substantial evidence, the proposed measures are infeasible before it can approve the Project.[250]

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[247] *Id.* at pp. 3.4-129 to 3.4-131 (PEIR Mitigation Measure BIO-16 and BIO-18).
[248] DSEIR at p. 5-5.
[249] SWAPE Comments at pp. 7-10.
[250] *Covington,* 43 Cal.App.5th at p. 883.

5-27

C. The DSEIR Fails to Include Mitigation Measures to Ensure the Project's Long-Term Land Use Impacts Remain Less Than Significant

The DSEIR fails to include any mitigation measures to ensure that the long-term impacts to land uses within the Project area remain less than significant. The American Wind Energy Association, a national trade association for the U.S. wind energy, recommends that developers create a plan for removing equipment and restoring landowners' property to its previous condition when the project is no longer operational **before the project is built.**[251] The National Research Council makes similar recommendations in its publication *Environmental Impacts of Wind-Energy Projects*.[252]

To ensure long term environmental impacts caused by the proposed Project remain less than significant, the DSEIR should include mitigation measure requiring the submission of a decommissioning and reclamation plan. Core elements of decommissioning include (1) development of a decommissioning plan, (2) identification of decommissioning requirements, (3) assessment of estimated costs, (4) financial assurances, and (5) decommissioning implementation timeline.[253]

5-28

IX. The DSEIR's Cumulative Impact Analysis for Biological Resources Is Not Supported by Substantial Evidence

Because significant new information was obtained since certification of the PEIR, the DSEIR updated PEIR's cumulative impact analysis for biological resources.[254] Specifically, the DSEIR relied on new data to revise estimated avian and bat fatality rates in the APWRA and redefine the geographic scope for its analysis of most avian special-status species.[255] The DSEIR's selected methods are not supported by substantial evidence.

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[251] American Wind Energy Association, Wind Project Decommissioning: Industry Recommendations (Sept. 2020), *available at* https://www.awea.org/Awea/media/Public-Affairs/Decommissioning-Fact-Sheet-FINAL.pdf.
[252] National Research Council, Environmental Impacts of Wind-Energy Projects (2007) p. 10, 153, 183, *available at* https://www.nap.edu/read/11935/chapter/1.
[253] *Ibid.*
[254] DSEIR at p. 5-6 to 5-9.
[255] *Id.* at p. 5-5 to 5-6.

5-28 cont'd

The DSEIR updated the PEIR's cumulative impact analysis by extrapolating currently available fatality rate data to the 450 MW repowered capacity originally contemplated by the PEIR.[256] The DSEIR claims that the proposed Project represents approximately 18% of the approved increases in the capacity in the entire APWRA, and thus represents approximately 18% of the contribution to the fatalities anticipated by the PEIR.[257] But this assumption is disproven by the DSEIR's own data.[258]

Repowered wind projects cannot be assumed to contribute proportionally equivalent impacts to birds and bats because each project has unique interactions with these species based on their location relative to animal activity patterns, density of generation capacity, turbine size, construction impacts, and micro-siting efficacy.[259] As presented, the DSEIR's updated analysis fails to adequately disclose the cumulative impacts on avian and bat mortality and is unsupported by substantial evidence.

The DSEIR also updated the PEIR's geographic scope for analysis of cumulative impacts associated with avian and bat fatalities through turbine collisions in the APWRA and Montezuma Hills Wind Resource Area in Solano County.[260] For avian species other than golden eagles, the DSEIR relied on population status and trends established by Partners in Flight ("PIF").[261] However, the PIF estimator suffers three critical defects rendering it unreliable for purposes of evaluating cumulative impacts.

First, it mischaracterizes the population concept as a term of convenience, not a biologically determined unit of demography.[262] Second, the spatial scale relied upon by the PIF estimator far exceeds the local population directly affected by collision mortality.[263] Third, the PIF relies too heavily on extrapolation from roadside bird counts, which leads to overestimated population counts.[264] As a

[256] *Id.* at p. 5-5.
[257] *Ibid.*
[258] Smallwood Comments at p. 88.
[259] *Ibid.*
[260] DSEIR at p. 5-5 to 5-6.
[261] *Id.* at p. 5-5.
[262] Smallwood Comments at p. 88.
[263] *Id.*
[264] *Id.* at p. 89.

result, the DSEIR fails to meaningfully analyze the cumulative impacts to avian species other than golden eagles. 5-28 cont'd

X. CONCLUSION 5-29

We urge the County to fulfill its responsibilities under CEQA by revising the DSEIR and preparing a legally adequate document rectifying the legal errors and addressing the potentially significant impacts described in this comment letter, the attached letters from Dr. Smallwood, Mr. Hagemann, Dr. Rosenfeld, and the other public comments in the record. This is the only way the County and the public will be able to ensure that the Project's potentially significant environmental and public health impacts are mitigated to less than significant levels.

Sincerely,

Andrew J. Graf

AJG:acp
Attachments

4838-013acp

ATTACHMENT A

Shawn Smallwood, PhD
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Davis, CA 95616

Andrew Young, Senior Planner
Alameda County Planning Department
Community Development Agency
224 West Winton Ave. Rm. 111
Hayward, CA 94544-1215

8 January 2021

Re: Mulqueeney Ranch Wind Repowering Project DSEIR

Dear Mr. Young,

5-30

I write to comment on the Draft Subsequent Environmental Impact Report ("DSEIR") that was prepared for the Mulqueeney Ranch Wind Repowering Project (County of Alameda 2020), which I understand would repower 518 old-generation wind turbines that totaled 54.5 MW (501 KCS56 100-KW turbines, 16 250-KW WEG turbines, and 1 400-KW KVS-33 turbine) with 36 2.2-MW to 4.2-MW modern wind turbines totaling 80 MW for an 47% increase in installed capacity on 4,600 acres in the Altamont Pass Wind Resource Area ("APWRA").

My qualifications for preparing these comments as expert comments are the following. I earned a Ph.D. degree in Ecology from the University of California at Davis in 1990. My research has been on animal density and distribution, habitat selection, interactions between wildlife and human infrastructure and activities, and conservation of rare and endangered species. I have performed research and monitoring on renewable energy projects for 21 years, and I have authored many peer-reviewed reports, papers, and book chapters on animal behaviors around wind turbines, fatality monitoring, fatality estimation, mitigation, micro-siting, and other issues related to biological impacts of wind energy generation. I served for five years on the Alameda County Scientific Review Committee ("SRC") that was charged with overseeing the fatality monitoring and mitigation measures in the APWRA. I collaborate with colleagues worldwide on the underlying science and policy issues related to renewable energy impacts on wildlife.

Most of my wind energy work has been in the APWRA, which is where much of the nation's research funding had been directed to understand factors related to wind turbine collisions and to find solutions. The APWRA is the longest-monitored wind resource area in the world for collision fatalities and relative abundance and behaviors of affected species. Wind turbines of the APWRA have caused the largest number of documented golden eagle fatalities in the world. There is no other place where more could have been learned about how and why eagles collide with wind turbines and what can be done to mitigate the impacts. In the APWRA, and on the site of the proposed project, I performed research on behavior, relative abundance (use rates), fatality rates, fatality detection trials, nocturnal activities of bats, owls and other wildlife, and research on spatial patterns of raptor prey species. For 8 years I have participated with a GPS/GSM telemetry study of golden eagles within and beyond the APWRA. I have manipulated livestock grazing as a mitigation measure, and I have participated with mitigation involving power pole retrofits, hazardous turbine removals, winter shutdowns of wind turbines, and repowering of wind projects based on careful siting. I have also opportunistically documented wildlife responses to wildfires in the APWRA. I have personally discovered many golden eagle fatalities and one bald eagle fatality in the APWRA, including mortally wounded eagles that were later euthanized. I personally witnessed hundreds of wind turbine near-misses of golden eagles and other raptor species, as well as many near-misses with meteorological towers, transmission lines and electric distribution lines in the APWRA. I have been involved with renewable energy impacts on all fronts – study design, fieldwork on fatalities and use and behavior and ecological relationships, study administration, hypothesis-testing, report writing, presentations at meetings, formulation of mitigation, micro-siting, study review, policy review and decision-making, and public outreach. My CV is attached. 5-30 cont'd

HABITAT LOSS AND COLLISION MORTALITY OF BIRDS AND BATS

The DEIR insufficiently identifies the suite of special-status species that uses the project area and which would become vulnerable to habitat loss and collision mortality caused by wind turbines. 5-31 On the impacts of habitat loss, the DEIR mischaracterizes most of the grading impacts as temporary when they will actually be permanent. 5-32 It also neglects habitat loss caused by gully erosion starting from turbine pads, access roads and culverts. 5-33 As for the species that would be vulnerable to habitat loss, no surveys were performed for bats or their roosts even through the PEIR required them, and the DSEIR entirely neglected aerohabitat. 5-34 In a wind project, where one of the largest impacts consists of collision mortality of volant wildlife, potential impacts to aerohabitat warrants the most careful analysis. And yet it was given very little attention despite the large data sets that grew from thousands of use and behavior surveys in the APWRA since 1989 – data that inform of how a wide variety of wildlife species use their aerohabitats day and night.

The DSEIR presents a flawed analysis of potential wind turbine-caused collision mortality, again starting with the list of species likely to be made vulnerable to collisions. 5-35 Species such as California condor and bald eagle, even though they were seen by ICF biologists on the project site, are erroneously assigned low likelihoods of occurrence. Various species are said to have no wind turbine collision history, when in fact they do – species such as bald eagle, Swanson's hawk and sandhill crane. Particular species are said to have lower collision risk at repowered projects because they supposedly lack a collision fatality history at modern turbines, when in fact they have been found as collision victims at these turbines. Wrong conclusions are made about which wind projects pose more or less risk to particular species because the DSEIR was wrong about where these species are more or less abundant, such as golden eagle, red-tailed hawk and burrowing owl. For example, red-tailed hawks and golden eagles are said to be unusually abundant at Golden Hills where fatality rates are unexpectedly high, but as I will show in my comments, the data paint different pictures for these species – that their abundances have been low to moderate at Golden Hills relative to other parts of the APWRA. In another example, the DSEIR claims that burrowing owls in the APWRA are most abundant in the Diablo Winds project, where their fatality rates are high, but this is not true. Nor is it appropriate of the DSEIR to draw conclusions of burrowing owl abundance from the use surveys, which were not designed nor suitable for measuring burrowing owl abundance and spatial distribution. 5-36

Wind turbine mortality is also misrepresented in estimates that are attributed to old-generation turbines that operated before repowering, and to modern turbines in repowered projects. Fatality estimates are presented for only the first year of fatality monitoring at Vasco Winds (see Table 3.4-10), as if estimates from the last two years of monitoring were never reported. Comparisons between pre-repowered and post-repowered projects are wrong because the pre-repowered fatality estimates have not been updated based on what has more recently been learned about carcass detection rates and because the basis of each comparison is APWRA-wide instead of specific to the project. Differences are said to exist between MW and rotor-swept area as bases for fatality rates, but no estimates of uncertainty are used to judge whether the differences are significant. 5-37

Nothing is reported of what was learned in 3 years of monitoring with a shorter search interval at Sand Hill (Smallwood 2017, Smallwood et al. 2018, Smallwood and Bell 2020a) nor with scent-detection dogs in a curtailment study between Golden Hills and Buena Vista (Smallwood et al. 2018, Smallwood and Bell 2020a, b). None of the fatality estimates in the DSEIR are adjusted based on what we learned in these other studies, such as the increase in species represented by fatalities after carcass detection rates increased with better methods, or the increase in fatality estimates of bats and small birds after a wide range of species that vary in body mass are used in integrated detection trials to estimate overall detection rates. We have a decade of studies that vastly changed how fatalities should be estimated for greater accuracy and for what they mean at the population level, but the DSEIR makes use of none of what we learned and for the most part does not report that these studies happened.

Fatality estimates for particular species are erroneously interpreted relative to population-level impacts. Golden eagle, for example is characterized as stable or at numerical equilibrium (see page 3.4-103), but as the data and my comments will show herein, golden eagles in the APWRA are in rapid decline. The DSEIR is silent on the ongoing substantial decline of burrowing owls in the APWRA, and erroneously attributes most of the recorded burrowing owl fatalities to predation rather than to wind turbines. 5-38

The DSEIR inaccurately predicts fatality rates that would be caused by the proposed project. For golden eagle, for example, the DSEIR predicts 0.8 to 10.4 fatalities annually, a range that swamps any alleged difference in the mean annual fatalities of 4.6 to 6.6 whether based on MW or rotor-swept area as the bases of the fatality metric. A more precise prediction would be 8.0 to 12.24 golden eagle fatalities per year, as I will show in my comments that follow. The DSEIR also under-predicts mortality of red-tailed hawk, Swanson's hawk and other species. For all birds together, the DSEIR predicts 508 fatalities per year, but this prediction is too low based on what has been learned about carcass detection rates of small birds. The DSEIR does not predict bat fatality rates, which is a significant shortfall.

The DSEIR bases conclusions of potential cumulative impacts on flawed analyses, especially its comparison of APWRA fatalities as percentages of Partners-In-Flight estimates of abundance across a vast region. In my comments, I address the published criticisms of the estimates and I test APWRA data for evidence of bias in the regional estimates. The biases are substantial, as exemplified by the burrowing owl estimate, which when projected to the area of the APWRA on a per-acre basis would predict 10 burrowing owls where an intense scientific effort estimated 1,074 breeding adults in 2011 (Smallwood et al. 2013). An estimate that is inaccurate by two orders of magnitude warrants examination. 5-39

The DSEIR is also flawed in its micro-siting to minimize collision impacts to raptors. Instead of using the best available information or the latest models of how raptors use terrain-influenced winds, as required by the PEIR, the DSEIR relies on an ad-hoc rating of turbine sites. In the case of golden eagles, and based on my latest collision hazard model extended to the project area, and based on thousands of positions of telemetered golden eagles, most of the proposed turbine sites would be very hazardous to golden eagles, contrary to the findings in the DSEIR. 5-40

The potential efficacies of other candidate mitigation measures are mischaracterized. Adaptive management is mis-portrayed as a process that can be unilaterally implemented by the County. And nothing is said of the last adaptive management plan that was implemented in the APWRA over a 10-year period. Measures such as operational curtailment blade-painting are listed without any discussion of the latest tests of efficacy or of experience with the measures in the APWRA. Proven effective measures such as smart curtailment and hazardous turbine removals are not discussed at all. 5-41

In my comments that follow, I discuss in more detail my concerns with the DSEIR's baseline assessment, its analyses of impacts from habitat loss and collision mortality, its inappropriate cumulative impacts analysis, and its flawed micro-siting analysis. Wildlife in the APWRA have been through a lot since wind turbines were brought to this windy pass four decades ago; they deserve comprehensive, accurate analyses of potential project impacts and whether and to what degree mitigation can minimize, reduce and compensate for impacts. I begin with comments on the DSEIR's project description, which I assert can better clarify the project's intended size and turbine layout, as well as the impacts of such a low blade sweep. 5-42

PROJECT DESCRIPTION

5-43

The DSEIR's Table 2-2 reports that the blade-sweep at the rotor's 6:00 position would be 20 to 25 m above ground. However, assuming maximum values are implemented among the ranges of turbine attributes in Table 2-7 of the DSEIR, a turbine with a blade length of 68 m mounted on an 86-m tower would sweep airspace as low as 18 m above ground. Whichever version is accurate, such low reaches of the blade sweep would substantially increase the project's collision hazards to wildlife. Observed height domains of flying raptors in the APWRA led to the recommendation that 29 m serve as the lowest allowable height of the low sweep of APWRA turbine rotors (Smallwood and Thelander 2004). Until the Final Draft of the 2014 PEIR removed 29 m as the minimum allowable height, p. 45 of the Avian Protection Program, attached as App. F to the PEIR, had it right: "The distance of the lowest point of the turbine rotor (i.e., the tip of any blade at the 6:00 26 position), will be no less than 29 meters (95 feet) from the ground surface." Low blade reaches of 18 to 25 m would excessively endanger many volant species, including to golden eagle, burrowing owl, and bats of the genus Myotis. 5-43 cont'd

The DSEIR should be more forthcoming about the nature of the project, and what would be replaced. The proposed project is more than a repowering project. By installing 48% additional capacity over what operated on the project site until 2014, nearly half of the capacity would qualify as a new project. The DSEIR should also include a map of the turbines being replaced, and it should add a Table that identifies the numbers of turbines of each model and their annual capacity factors over the last decade of operations. The DSEIR should report how many turbine addresses had been vacant or inoperative prior to decommissioning, and for how many years. It has been longer than 6 years since any of the old-generation turbines operated on the project site, and even longer for those turbines that were already inoperable, marginally operable, or removed by the time of project shutdown in 2014. 5-44

The DSEIR should also more clearly disclose the turbine layout. The DSEIR presents one layout, as does the Biological Resources Report, but Estep (2020a,b) presents two revised layouts. The reader needs to know which layout is the intended. 5-45

BASELINE ASSESSMENT 5-46

County of Alameda and ICF could put in more work toward preparation of the DSEIR. Multiple years of avian and bat use data and fatality data are available, but are little used and only poorly used. SRC recommendations are rarely cited, nor are many peer-reviewed reports of research on wind and wildlife interactions in the AWRA. ICF (2020) committed a mere 24 hours of avian use surveys on the project site, a level of effort insufficient for characterizing species occurrences and risk of habitat impacts and turbine collision. The DSEIR makes no use of eBird or iNaturalist or any other data source other than California Natural Diversity Data Base (CNDDB). Finally, I see little effort to interview experts on the project area's special-status species or on the topic of wind and wildlife interactions.

The DSEIR only vaguely describes the environmental setting, especially those aspects of the setting most relevant to a proposed wind project. The DSEIR does not describe wind conditions on the project site. Wind speeds and wind directions are central to any consideration of a wind energy project. No wind rose appears in the DSEIR, so the reader cannot discern which direction is the prevailing wind direction, nor what time of year winds come from the northwest or from the northeast. Wind conditions are also central to understanding the aerohabitat occupied by birds and bats. After all many of the birds and bats at risk of wind turbine collision must be aloft in their aerohabitat to collide with a wind turbine. Yet the DSEIR includes no analysis of wildlife use of aerohabitat such as which species use it for migration and which for foraging or socializing. Nor does the DSEIR analyze potential wind turbine impacts to aerohabitat, such as barrier effects and wake turbulence. There is no analysis of wildlife use of aerohabitat during the daytime versus night, and none of seasonal variation in use. The DSEIR treats wind as if it is irrelevant to the wind project, and aerohabitat as if it does not exist to wildlife at the project site. 5-46 cont'd

Reinforcing the County's misperception of what habitat means to volant species, the DSEIR (p. 3.4-97) concludes, "Several special-status avian species, including California condor, bald eagle, and sandhill crane have been observed flying over or near to the proposed project and/or within the APWRA but only once or infrequently and have not had recorded fatalities in any monitoring within the APWRA." That these species were observed flying over the project site is portrayed by the County as evidence of an ephemeral or fleeting visit. In truth, these species were observed using their habitat just as their evolutionary morphology prepared them; they were in their habitat. 5-47

Before commenting further, I must also respond to the remainder of the DSEIR conclusion, quoted above, that bald eagles and sandhill cranes occur infrequently in the APWRA and have not been recorded as wind turbine fatalities. In fact, bald eagles have been seen many times in the APWRA, and they even breed in the APWRA (Photos 1 and 2). At least one was recorded as a wind turbine fatality. I found this bald eagle fatality right after it happened (Photos 3 and 4), which at the time was the first involving a bald eagle at a wind turbine in the USA. It has happened multiple times since in the USA. A sandhill crane was found dead during routine fatality monitoring at a Patterson Pass wind turbine on 19 March 2007. I will discuss sandhill crane observations below.

The DSEIR neglects to disclose the occurrences and documented wind turbine-caused fatalities of many special-status species of wildlife in the APWRA (Table 1). Of the 85 special-status species I identified as likely to use the site at one time or another, the DSEIR neglects to assess the occurrence likelihoods of 59 (69%). Likelihood of occurrence is certain for 46 special-status species in Table 1, because they were documented within the APWRA or on site and suitable habitat is present within the project area. And of these species documented on site, 27 (59%) are known to have been killed by wind turbines in the APWRA. Both County of Alameda and ICF have access to fatality records that would identify most or all of the species occurring within the AWPRA's airspace and specifically within the airspace of the project site. The County must utilize the available data. The DSEIR needs to be revised to more comprehensively characterize the species occurring at and near the project site and analyze the project's impacts given their vulnerability to wind turbine mortality. 5-48

5-49

Photos 1 and 2. At right, an adult bald eagle brings a ground squirrel to its mate in the APWRA on 11 March 2019. Below, on the south side of the same hill depicted at right, one of the adult bald eagles trains its fledgling to forage on 16 May 2019. The common raven in the photo assisted with teaching the fledgling to hunt from fence posts, copying the behaviors of the adult bald eagle.

5-49 cont'd

Photos 3 and 4. Bald eagle juvenile killed by a wind turbine in the APWRA on 5 September 2013. I found it right after it happened when I observed a golden eagle fly over it repeatedly, once passing through the rotor of the same wind turbine that killed this bald eagle.

5-50

Table 1. Occurrence likelihoods of special-status species in the APWRA ("site"), where bold font identifies species also documented as wind turbine fatalities in the APWRA.

Species	Scientific name	Status[1]	Occurrence likelihood	
			DSEIR	eBird, iNaturalist or onsite researchers
Aleutian cackling goose	*Branta hutchinsonii leucopareia*	TWL		Nearby
American white pelican	*Pelecanus erythrorhynchos*	SSC1		On site
California brown pelican	*Pelacanus occicentalis californicus*	CFP		On site
Double-crested cormorant	*Phalacrocorax auritus*	TWL		On site
White-faced ibis	*Plegadis chihi*	TWL		Nearby
Greater sandhill crane	*Grus c. canadensis*	CT, CFP, SSC3	None	On site
Whimbrel	*Numenius phaeopus*	BCC		On site
Long-billed curlew	*Numenius americanus*	BCC, TWL		On site
Marbled godwit	*Limosa fedua*	BCC		Nearby
Western snowy plover	*Charadrius alexandrines nivosus*	FT, SSC3		Nearby
Mountain plover	*Charadrius montanus*	BCC, SSC2		On site
Caspian tern	*Hydroprogne caspia*	BCC		On site
Black tern	*Chlidonias niger*	SSC2		Nearby
California gull	*Larus californicus*	TWL		On site
California condor	*Gymnogyps californianus*	FE, CE, CFP	Low	On site
Turkey vulture	*Cathartes aura*	FGC 3503.5		On site
Osprey	*Pandion haliaetus*	TWL, FGC 3503.5		On site
Bald eagle	*Haliaeetus leucocephalus*	BGEPA, BCC, CE, CFP	Low	On site
Golden eagle	*Aquila chrysaetos*	BGEPA, BCC, CFP	High	On site
Red-tailed hawk	*Buteo jamaicensis*	FGC 3503.5		On site
Ferruginous hawk	*Buteo regalis*	BCC, FGC 3503.5, TWL		On site
Swainson's hawk	*Buteo swainsoni*	BCC, CT	High	On site
Rough-legged hawk	*Buteo regalis*	FGC 3503.5		On site
Red-shouldered hawk	*Buteo lineatus*	FGC 3503.5		On site
Sharp-shinned hawk	*Accipiter striatus*	FGC 3503.5, TWL		On site
Cooper's hawk	*Accipiter cooperi*	FGC 3503.5, TWL		On site
Northern harrier	*Circus cyaneus*	SSC3, FGC 3503.5	High	On site

5-50 cont'd

Species	Scientific name	Status[1]	Occurrence likelihood	
			DSEIR	eBird, iNaturalist or onsite researchers
White-tailed kite	*Elanus leucurus*	CFP	High	On site
American kestrel	*Falco sparverius*	FGC 3503.5		On site
Merlin	*Falco columbarius*	FGC 3503.5, TWL		On site
Prairie falcon	*Falco mexicanus*	BCC, FGC 3503.5, TWL		On site
Peregrine falcon	*Falco peregrinus*	BCC, CFP		On site
Burrowing owl	*Athene cunicularia*	BCC, SSC2	High	On site
Great-horned owl	*Bubo virginianus*	FGC 3503.5		On site
Short-eared owl	*Asio flammeus*	SSC3, FGC 3503.5	High	On site
Long-eared owl	*Asio otus*	SSC3, FGC 3503.5		On site
Barn owl	*Tyto alba*	FGC 3503.5		On site
Western screech-owl	*Megascops kennicotti*	FGC 3503.5		On site
Allen's hummingbird	*Selasphorus sasin*	BCC		Nearby
Rufous hummingbird	*Selasphorus rufus*	BCC		Nearby
Costa's hummingbird	*Calypte costae*	BCC		Nearby
Nuttall's woodpecker	*Picoides nuttallii*	BCC		On site
Lewis's woodpecker	*Melanerpes lewis*	BCC		On site
Vaux's swift	*Chaetura vauxi*	SSC2		On site
Willow flycatcher	*Epidomax trailii*	CE, BCC		On site
Olive-sided flycatcher	*Contopus cooperi*	BCC, SSC2		On site
Oak titmouse	*Baeolophus inornatus*	BCC		On site
Horned lark	*Eremophila alpestris*	TWL		On site
Loggerhead shrike	*Lanius ludovicianus*	BCC, SSC2	High	On site
Yellow-billed magpie	*Pica nuttalli*	BCC		On site
Purple martin	*Progne subis*	SSC2		Nearby
Bank swallow	*Riparia riparia*	CT		Nearby
Common yellowthroat	*Geothlypis trichas sinuosa*	SSC3		On site
Yellow warbler	*Setophaga petechia*	BCC, SSC2		On site
Yellow-breasted chat	*Icteria virens*	SSC3		On site
Oregon vesper sparrow	*Pooecetes gramineus affinis*	BCC, SSC2		Nearby

5-50 cont'd

Species	Scientific name	Status[1]	Occurrence likelihood	
			DSEIR	eBird, iNaturalist or onsite researchers
Grasshopper sparrow	*Ammodramus savannarum*	SSC2	High	On site
Summer tanager	*Piranga rubra*	SSC1		In region
Tricolored blackbird	*Agelaius tricolor*	CT, BCC	High	On site
Yellow-headed blackbird	*X. xanthocephalus*	SSC3		On site
Lawrence's goldfinch	*Spinus lawrencei*	BCC		On site
Pallid bat	*Antrozous pallidus*	SSC, WBWG H	High	On site
Townsend's big-eared bat	*Plecotus t. townsendii*	SSC, WBWG H	Low	Nearby
Western mastiff bat	*Eumops perotis*	SSC, WBWG H		On site
Silver-haired bat	*Lasionycteris noctivagans*	WBWG:M		On site
Western red bat	*Lasiurus blossevillii*	SSC, WBWG H	High	On site
Little brown bat	*Myotis lucifugus*	WBWG:M	High	On site
Big brown bat	*Episticus fuscus*	WBWG:L		On site
California myotis	*Myotis californicus*	WBWG:L		On site
Canyon bat	*Parastrellus hesperus*	WBWG:M		On site
Small-footed myotis	*Myotis cililabrum*	WBWG M		On site
Long-eared myotis	*Myotis evotis*	WBWG M		On site
Fringed myotis	*Myotis thysanodes*	WBWG H		On site
Long-legged myotis	*Myotis volans*	WBWG H		In range
Yuma myotis	*Myotis yumanensis*	WBWG LM		On site
Hoary bat	*Lasiurus cinereus*	WBWG LM	High	On site
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, CT	Low	In range
American badger	*Taxidea taxus*	SSC	High	On site
California tiger salamander	*Ambystoma californiense*	FT, CT	High	On site[2]
California red-legged frog	*Rana draytonii*	FT, SSC	High	On site
Western spadefoot	*Scaphiopus hammondii*	SSC	High	On site
Blainville's horned lizard	*Phrynosoma blainvillii*	SSC	High	Nearby
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	SSC	High	Nearby
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, CT	Low	In APWRA
California glossy snake	*Arizona elegans occidentalis*	SSC	High	On site

5-50 cont'd

Species	Scientific name	Status[1]	Occurrence likelihood	
			DSEIR	eBird, iNaturalist or onsite researchers
Western pond turtle	*Actinemys marmorata*	SSC	High	On site

[1] Listed as FT or FE = federally Threatened or Endangered, BGEPA = Bald and Golden Eagle Protection Act, BCC = US Fish and Wildlife Service's Bird Species of Conservation Concern, CT or CE = California Threatened or Endangered, CFP = California Fully Protected (CDFG Code 3511), FGC 3503.5 = California Fish and Game Code 3503.5 (Birds of prey), and SSC1, SSC2 and SSC3 = California Bird Species of Special Concern priorities 1, 2 and 3 (Shuford and Gardali 2008), TWL = Taxa to Watch List (Shuford and Gardali 2008), WBWG = Western Bat Working Group with low, medium and high conservation priorities.
[2] Killed during construction of repowering wind projects.

The DSEIR classifies species into categories of low, medium and high occurrence likelihood, largely based on whether CNDDB or other documents include records of the species within 5 miles of the project site and whether suitable habitat is present on the project site. I disagree with the way the standard was applied in the DSEIR for several reasons. One of my reasons is the standard focuses primarily on nesting and foraging habitat, but neglects aerohabitat used by volant species. The airspace is no less important to volant species than whatever occurs on the ground, but the DSEIR's standard includes only that portion of habitat described by what occurs on the ground. In fact, many species killed by APWRA wind turbines likely had little relationship with conditions on the ground because they were simply passing through the airspace above it, including such species as California brown pelican, double-crested cormorant, Virginia rail and yellow warbler. The standard would more realistically classify occurrence likelihoods by considering the airspace through which volant species fly. 5-51

Another reason I disagree with the way the DSEIR's standard was used to classify occurrence likelihoods is the fact that CNDDB acquires relatively few records from private lands such as those at and around the project site. Few people have access to private lands, so species occurrences on private lands are underreported. In the case of the proposed project, CNDDB records are nearly irrelevant, and more appropriate documentation can be found amid the data and reports of which the DSEIR makes little use. These data and reports were generated from the decades of wildlife fatality monitoring and research performed onsite and across the AWPRA.

Recognizing aerohabitat as habitat of volant species, and relying on data and reports from APWRA monitoring and research, the DSEIR's standard should be re-applied. Doing so, I concur with the high occurrence likelihoods assigned to most of the special-status species analyzed in the DSEIR. But applied to sandhill crane, for example, the DSEIR's occurrence likelihood of None warrants reclassification. The DSEIR itself documents a greater sandhill crane through its aerohabitat on the project site. Sandhill cranes also often occur in the APWRA. In addition, sandhill cranes have been documented elsewhere in the APWRA. On 19 March 2007, a sandhill crane was found dead by ICF employees during routine fatality monitoring at a wind turbine of the Patterson Pass turbine field located immediately adjacent to the project site. While performing nocturnal surveys over 7 years, I heard sandhill cranes flying through the Altamont Pass at night on multiple occasions. I even used my FLIR T620 thermal-imaging camera fitted with an 88.9 mm telephoto lens to video-record a large, V-shaped flock of sandhill cranes flying over the APWRA on 26 September 2013. Based on the foregoing evidence, application of the DSEIR's standard requires the reclassification of greater sandhill crane as having a moderate to high likelihood of occurrence.

The DSEIR determines bald eagle to have a low likelihood of occurrence. However, considering that at least one bald eagle was killed in the APWRA and live bald eagles are routinely observed in the APWRA, including 7 sightings in the avian use surveys performed by ICF (2020) on the project site, the DSEIR's standard requires reclassification. Bald eagles are certainly present, and they are certainly vulnerable to wind turbine mortality. 5-52

5-53

The DSEIR also mischaracterizes the California condor, which it assigns a low likelihood of occurrence. The DSEIR itself documents an occurrence of the species on the project site, based on a survey performed by ICF (2020). This documented record was in an area that exemplifies the primary habitat description appearing for the species in multiple reports – foothill grassland. Given that the vegetation cover and terrain is consistent with ground conditions described as California condor habitat (Kiff et al. 1996, U.S. Fish and Wildlife Service 2013, Brandt et al. 2017), and given that the aerohabitat of California condor occurs at the project site, and given the available forage of large ungulate carrion at the project site, and given the documented occurrence of California condor on the project site, application of the DSEIR standard justifies a high likelihood of occurrence be assigned to California condor.

5-54

The DSEIR fails to discuss the occurrence likelihood for 59 special-status species in Table 1. As discussed above, documentation exists of occurrences of all these species within 5 miles of the project site and suitable nesting or aerohabitat for each of these species is present in the area. For example, the DSEIR does not analyze the occurrence potential of peregrine falcon, perhaps for lack of CNDDB records. The peregrine falcon, which is a California Fully Protected species, has been found as wind turbine fatalities in the APWRA, so its presence is documented in the fatality data bases in the possession of ICF, County of Alameda, NextEra, and myself. It has been seen in use and behavior surveys (Photo 5). And I saw the species on the project site, where in August 2019 a peregrine falcon briefly captured a burrowing owl until the owl raked the peregrine's abdomen with its talons to compel the falcon to drop it. Because peregrine falcons are documented within the project area and suitable aerohabitat exists, the species has a high likelihood of occurrence.

Photo 5. Peregrine falcon foraging in the APWRA on 17 December 2019. At this same rock formation, I observed a peregrine falcon capture and consume a cliff swallow the previous year. Peregrine falcons are not uncommon in the APWRA, and sightings of them increased over the 21 years I worked there.

5-54 cont'd

All 27 species in Table 1 that have been recorded as APWRA fatalities but assigned no classification for occurrence likelihood need to be classified with a moderate to high likelihood of occurrence. All of these 27 species were documented in the fatality data base as present in the APWRA, and all were killed by wind turbines because the turbines intercepted the birds' progress through their aerohabitat. All are documented on site, and these very documentations prove that suitable habitat occurs in the project area. Examples include California brown pelican, oak titmouse, yellow-breasted chat, and California horned lark. Some of these 27 species have also been seen in ground-based habitat in the APWRA, including California horned lark long-eared owl (Photos 6 and 7). Other species in Table 1 have yet to be recorded as wind turbine fatalities, but are routinely seen in aerohabitat of the APWRA, including such species as American white pelican (Photo 8). These species have at minimum a moderate likelihood to occur.

Photos 6 and 7. California horned lark and long-eared owl in the APWRA. Chris Lyell took the long-eared owl photo.

Photo 8. American white pelicans flying over the APWRA at rotor height in October 2019.

Of the 76 special-status species in Table 1 that are volant, 41 (54%) have been documented as wind turbine fatalities in the APWRA. This number of special-status species known killed by APWRA wind turbines is larger than the number of special-status species that occur at most places where I work as an ecologist. It reflects both the large number of special-status species residing in the APWRA, but also the large number migrating through their aerohabitat on an annual basis. The list of special-status species killed by APWRA wind turbines will undoubtedly lengthen as its turbines continue to operate and fatality monitors continue to visit the turbines. Wind energy's impacts are extensive. They warrant much more analysis in the DSEIR. 5-54 cont'd

The DSEIR could improve its disclosure of the latest findings of APWRA's impacts and how to measure them more accurately. Readers of the DSEIR need to know of the improvements to fatality monitoring methods and fatality estimation brought by integrated detection trials (Warren-Hicks et al. 2013, Brown et al. 2016) and overall detection rates predicted by body mass (Brown et al. 2016, Smallwood 2017a, Smallwood et al. 2018) and use of leashed scent-detection dogs (Smallwood et al. 2020). They need to know of the fatality trends and of the mechanisms and factors contributing to fatalities (Smallwood 2016a, b; Smallwood and Neher 2017; Smallwood and Bell 2020a,b), and they need to know of advances in behavior surveys (Smallwood 2017b) and the science of micro-siting to minimize collision fatalities (Smallwood et al. 2017). All but one of the papers and reports cited in this paragraph were peer-reviewed and published, yet the DSEIR (p. 2-29) cites a series of non-peer reviewed, unpublished reports as the "Latest Science and Monitoring Results Regarding Avian and Bat Fatalities." The DSEIR neglects to summarize what was learned from the reports it cites. 5-55

The DSEIR continues the County's SEIR-by-SEIR drift from standards that were certified in the PEIR. For example, whereas the Diablo Winds project is acknowledged as a repowering project that composed 20.46 MW of installed capacity in the APWRA, the DSEIR (p. 2-26) also claims, "Because it [Diablo Winds] existed at the time of preparation of the PEIR, it was not included in the 450 MW evaluated in the PEIR under Alternative 2." This excuse to not count Diablo Winds as part of the APWRA's installed capacity is unacceptable, because the project was approved as a repowering project, it generates electricity just like the other projects do, and it kills birds and bats just like the other projects do. In fact, the DSEIR attempts to have it both ways by exempting the project from the APWRA's installed capacity while repeatedly using it to make points about wind energy impacts to wildlife throughout the DSEIR. The DSEIR (p. 3.4-61) later equates Diablo Winds turbines with other repowered turbines in the APWRA because "they are all considered new-generation turbines relative to the rest of the turbines installed in the APWRA." By including Diablo Winds in calculations of average fatality rates, the APWRA's impacts lessen to golden eagle and red-tailed hawk, thereby lessening the projected impacts to these same species at Mulqueeney Ranch. 5-56

In a related example, the DSEIR's Table 2-6 redefines the APWRA as only those turbines built since 2015 in Alameda County. It not only omits Diablo Winds, but it also pretends as though Vasco Winds and Buena Vista are not part of the APWRA. These two projects are located just to the north of the Contra Costa/Alameda County line, but none of us who worked in the APWRA ever recognized Vasco Winds and Buena Vista as anything other than APWRA projects. All of the planning and monitoring documents referred to them as part of the APWRA. The Alameda County fatality monitor worked at Vasco Winds and Buena Vista prior to repowering, and the SRC oversaw monitoring and mitigation at those projects until they were repowered. Vasco Winds and Buena Vista are part of the APWRA. 5-56 cont'd

According to the DSEIR (p. 2-25), "The PEIR represented a program-level evaluation of the planned repowering of the APWRA, with focused attention on two program alternatives of total buildout or complete repowering, either 417 MW (Alternative 1, based on the peak level of production capacity in Alameda County as of 1998, when a repowering program was first adopted by Alameda County) or 450 MW (Alternative 2, based on a modest increase of less than 10% in energy production over Alternative 1)." How the PEIR actually characterized Alternative 2 was, "...a maximum capacity of 450 MW, ... in light of evidence that the current generation of wind turbines can greatly reduce avian mortality." Alternative 2 was qualified by the presumption that repowering would greatly reduce avian mortality. In fact, repowering has not done this, and the per-MW impacts have increased with each successive repowering project.

The DSEIR (p. 3.4-96) claims "For nearly all projects and all species, predicted fatalities are low compared to the non-repowered baseline condition." Again, this claim is untrue. Whereas golden eagle mortality declined at most repowered projects, micro-siting has focused on reducing golden eagle mortality, often at the expense of other wildlife (Smallwood and Neher 2017a). Modern turbines are clearly more dangerous to bats (Smallwood and Karas 2009); there's simply no question about this (Smallwood 2020). Overall, wildlife mortality is no lower at the repowered projects, and for bats and small birds the impacts appear much worse.

Section 2.2.4 of the DSEIR (p. 2-31) makes little sense. 5-57

The citation of Table 3.4-3 of the DSEIR (p. 3.4-60) is to a Table that does not appear in the DSEIR. 5-58

In the DSEIR (p. 3.4-88), the discussion under the heading, 'Impact BIO-8b: Potential construction-related disturbance or mortality of special-status and non–special-status raptors,' is based on a false premise. There is no such animal as a non-special-status species of raptor. Raptors are protected by California Fish and Game Code §3503.5, otherwise known as the 'Birds of Prey' Code. All raptors are special-status species. 5-59

CONSTRUCTION GRADING IMPACTS

5-60

The DSEIR inadequately describes the grading for roads and turbine pads, and how the grading will affect collision risk to birds and bats. It also inadequately describes the erosion problems that result from grading for wind energy infrastructure in the APWRA.

Habitat Loss

5-60 cont'd

The DSEIR's Table 3.4-6 predicts 26.02 acres would be permanently disturbed and another 263.68 acres temporarily disturbed. Having witnessed construction of five repowered wind projects in the APWRA, the predicted levels of disturbance seems low. I used Google Earth to digitize the extent of graded earth in support of 20 new turbines in the Golden Hills North project, which installed turbines that were two-thirds to half the size of those proposed in the Mulqueeney Ranch project. The Golden Hills North project graded 11.28 acres per turbine. At this rate, the Mulqueeney Ranch project would require 406.1 acres of ground disturbance, which would damage 9% of plant and wildlife habitat on the project site. However, grading at Mulqueeney Ranch would likely need to be more extensive than that needed at Golden Hills North, because it will need to support the installations of turbines up to 4.2 MW in rated capacity, per the DSEIR. Photo 9 depicts what grading impacts looked like for another project in the APWRA.

Photo 9. Construction grading for a repowered wind project destroyed every ground squirrel burrow complex encountered, which also diminished breeding opportunities for burrowing owls and forage for golden eagles, September 2019. This view includes only 2 wind turbine pads; the rest of the grading was for access roads.

5-60 cont'd

The true level of grading was higher than I calculated at Golden Hills North. Grading impacts were not only lateral as I measured them from aerial imagery, but they were also vertical. Grading bisected hills to accommodate low-grade access roads (Photos 10-12). It severely cut slopes and flattened hill peaks to accommodate turbine pads. It enhanced ridge saddles and breaks in slopes for turbine pads, and it created such features where they did not previously exist. These alterations altered fine-grained wind patterns and the ways wildlife travel on ground and by air (see below).

I note, also, that what the DSEIR characterizes as temporary impacts typically turn out to be permanent because re-vegetation lags on graded surfaces where soils were scraped away (Photo 13). Even 16 years after construction grading, vegetation remains sparse where top-soils were removed. Nor do habitat impacts end after construction grading. Graded surfaces serve as starting points for gully erosion and slope failure (Photos 14-17), further degrading and diminishing wildlife habitat and livestock forage. Some gullies deepen to become hazards to livestock and wildlife. Several times I began efforts to quantify grassland lost to erosion caused by the APWRA's wind projects, but each time I stopped after becoming overwhelmed by it. In support of my comments herein I used Google Earth imagery to crudely measure the lengths and widths of 28 erosion gullies in one repowered APWRA wind project. The gullies totaled 0.0408 acres/MW of installed capacity. This rate applied to the Mulqueeney Ranch project predicts 3.3 acres of habitat loss to gully erosion, which added to the 406.1 acres I suggest are more permanent than temporary, would total 409.4 acres of grassland habitat loss.

That construction grading would remove 9% of vegetation cover bears on multiple conclusions the DSEIR makes about potential impacts to wildlife. The DSEIR repeatedly dismisses habitat loss as an impact to various species by characterizing it as <1% of the available habitat on the project site. Habitat loss would not be <1%, but rather at least 9%. A loss of 9% of vegetation cover would translate into a loss of many birds and bird nest sites.

I am unaware of any grassland bird density estimates on the project site, but I did estimate density at a nearby site in 2007. From 21 through 23 March 2007, I surveyed for grassland breeding birds along 14.047 km among 12 transects spaced 300 m apart and oriented north-south across Vasco Caves Regional Preserve. I initiated the survey from a randomly selected transect, and I recorded species, and distance and bearing and change in elevation between myself and the nest site. I recorded nest sites of burrowing owl, California scrub-jay, California towhee, grasshopper sparrow, horned lark, killdeer, mourning dove, northern harrier, red-tailed hawk, red-winged blackbird, rock wren, savannah sparrow song sparrow, and western meadowlark. Using the Haynes method, I estimated total nest density at 1.1145 nest sites/acre. This density applied to 409.4 acres of habitat loss would predict the loss of 456 nest sites and 912 breeding birds. Assuming 30 years of impacts, and assuming an average fledging of 2.9 birds/nest/year (Young 1948) and a generation time of 5 years, the lost capacity of both breeders and annual chick production would total 45,144 birds ((nests/year × chicks/nest × number of years) + (2 adults/nest × nests/year × (number of years ÷ years per generation))). This would be a substantial impact that the SDEIR fails to address.

5-60 cont'd

Photos 10-12. The top images show two slopes before and after they were cut by a road to accommodate a repowered wind project in the Altamont Pass Wind Resource Area. Images were from Google Earth. For scale, the wind turbine at the top of both frames was a 660-KW Vestas in the Diablo Winds project, a pickup truck is visible on the access road in the right frame, and the blades on the ground were 55 m long. In the lower image, the 660-KW Vestas turbine is at the left, and the southern slope visible in the top frames has been cut (indicated by red line) for an access road.

5-60
cont'd

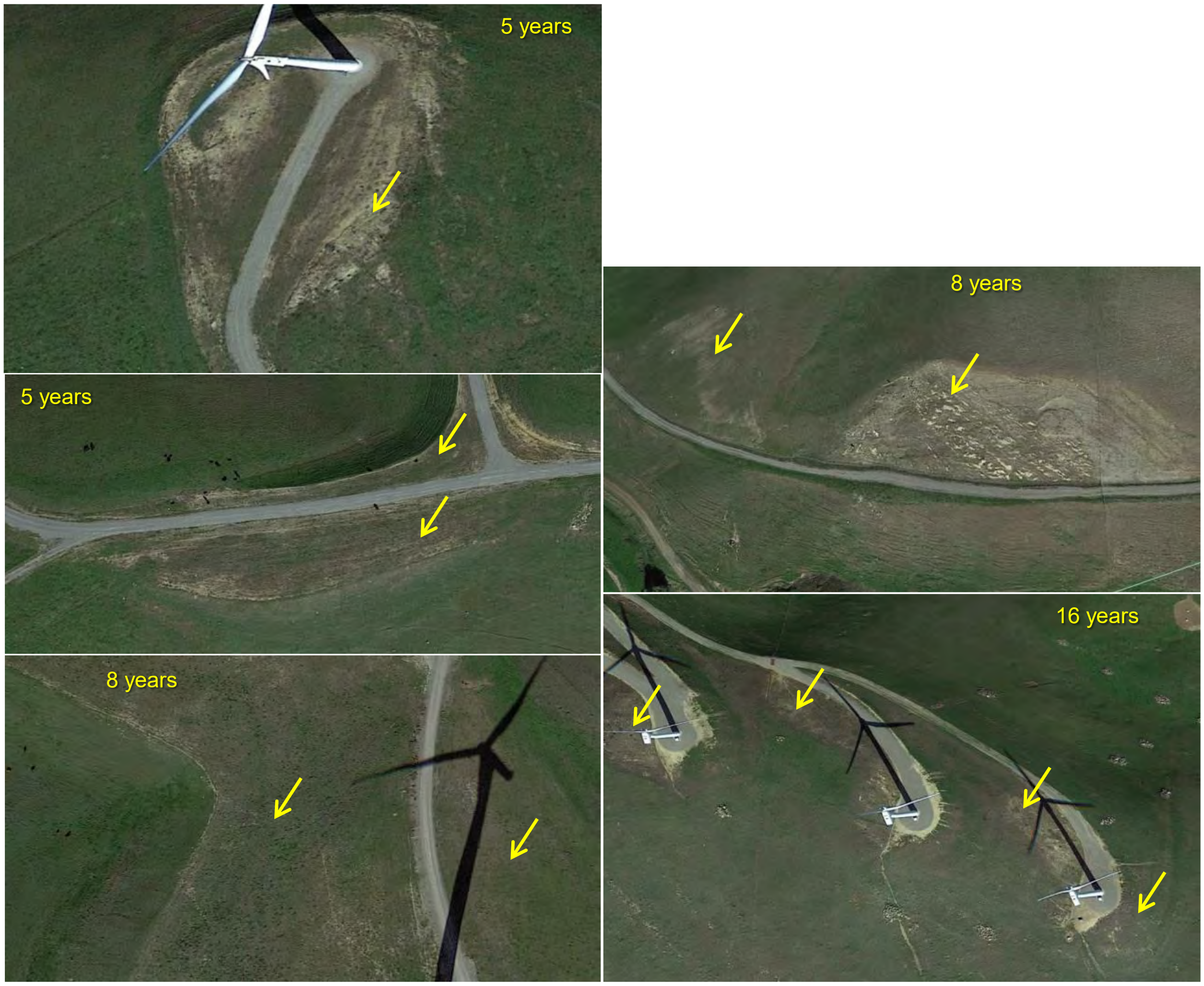


Photo 13. Effects of grading on vegetation cover in the APWRA, 5 years, 8 years, and 16 years following construction and efforts at revegetation. Yellow arrows point to some of the graded areas visible in the February 2020 Google Earth imagery, areas in which vegetation has yet to return to normal composition and density.

5-60 cont'd

Photos 14 and 15. Beginning with construction and continuing through project life, soil erosion originates from access roads, turbine pads, and pipe culverts throughout the APWRA.

Photos 16 and 17. Soil origin in wind projects often originate at the corners of turbine pads (left) or on cut slopes (right).

5-60 cont'd

Enhanced Collision Risk

The altered terrain caused by wind project construction also alters wildlife collision risk with wind turbines. A common practice has been, through construction grading, the leaving of earth just upwind of the turbine pad, and the placement of the turbine close to the remaining berm or cut slope (Photo 18). The advantage of this practice is the placement of the turbine's rotor to maximally intercept slope-deflected winds. The problem with this practice is that it surprises volant animals with sudden changes in wind speed and wind direction as they encounter the boundary of the pad (Photos 19 and 20). The changes in wind are severe enough to disrupt pedestrian travel over the transition zone from an undisturbed slope grade to the turbine pad-side of a cut-slope, or vice versa, but these changes must be far more difficult for volant animals.

Photo 18. This view is toward the prevailing wind (see broad, semi-transparent, white arrow), so the prevailing upwind slope, the crest of which is only 30 m from the wind turbine, forces any bird or bat passing over it into a vertical gap of only 16 m between the hill crest and the low reach of the blade. The wind turbine's 29 m ground clearance of the low reach of its blade-sweeps is no longer the clearance experienced by birds and bats. This turbine became the most prolific killer of red-tailed hawks in the project.

5-60 cont'd

Photos 19 and 20. Another grading-constructed pocket where a repowered wind turbine was sited nearest the cut slope where deflected winds (broad, semi-transparent, white arrows) were likely directed right into the rotor-swept area, but where ground clearance of blade sweeps was reduced to only 12-15 m. The narrower white arrows depict slower winds arriving from the opposite direction, creating turbulence and an acute vacuum within the terrain pocket of the pad, and which birds and bats entering the area must navigate. At grade-level of the slope upwind of the pad, or where the arrows are depicted in the top photo, I once measured wind speed at 55 KPH and wind direction from 232°. Where the cut-slope meets the pad, wind speed was 8-12 KPH, and directions varied from 50° to 290°. My first visit to this turbine revealed red-tailed hawk and golden eagle fatalities (right), and this turbine has been killing more golden eagles than any other turbine in the project.

5-61

CALIFORNIA CONDOR

A Critically Endangered species, California condor has been the focus of costly restoration efforts since the 1980s, only recently reaching about 300 individuals in the wild (https://www.ventanaws.org/california-condors.html). The California condor population is susceptible to anthropogenic sources of mortality because it represents an extreme of what evolutionary ecologists refer to as a k-selected strategy to grow slow and live long. Individuals can live >50 years, but to accommodate this long lifespan, productivity is naturally very low. Adult pairs typically hatch only one chick every other year, and chicks do not reach independence into one year since hatching. Age to reproduction is 6-8 years. Losing a chick to any anthropogenic source of mortality is the loss of a major parental investment. Losing an adult to such mortality qualifies as a much larger population impact. Losing any California condor is not only a significant impact to the population, but also a loss against an investment of many millions of dollars spent to recover the species.

The California condor is the largest bird in North America. A large-ungulate carrion feeder that must cover large areas using orographic and thermal lift to remain aloft, the California condor relies on visual perception for foraging, often cuing on the foraging actions of other carrion feeders such as turkey vultures shown in Photo 21. Kiff et al. (1996) characterized California condor habitat as grassland environments. Brandt et al. (2017) identify primary habitat as open terrain of foothill grassland and oak savanna. However, a recent use-and-availability analysis of condor telemetry data resulted in a more complex interpretation of ground covers used by California condor, but also a more simplified association between condors and wherever large-animal carrion happens to be available (Rivers et al. 2014).

As California condor recovers from near extinction, there is every reason to believe its members will more often visit the APWRA. The APWRA is within the historical geographic range of California condor (U.S. Fish and Wildlife Service 2013). It is only about 37 km from the northern edge of the range in 2012 (U.S. Fish and Wildlife Service 2013). The APWRA is covered by grassland, which has long been typified as California condor habitat. More importantly, given the findings of Rivers et al. (2014), the APWRA is grazed by cattle and sheep, and often provides large-animal carrion that condors require (Photo 21). The APWRA also provides ample orographic lift, but also plenty of thermal lift for large soaring birds such as California condor. Throughout my years of research in the APWRA, I expected to see a California condor in the APWRA as the species expanded its range northward. A confirmed condor sighting in the APWRA would indicate progress in the species' recovery while also exposing the species to the threat of wind turbine collision.

The DSEIR would have the reader believe that the lone sighting of a California condor represented an only visit to the APWRA, and that its visit was for "incidental foraging." However, the term *incidental foraging* was invented for the context to which County of Alameda applied it. The only appropriate use of the term would be for an animal obtaining a food item that was incidental to the targeted food. An example might be the condor alighting upon the carcass of a large mammal, but grabbing a western fence

5-61 cont'd

lizard that happened to run by too close for the condor to resist. Because the ICF observer did not know what the condor was foraging for, nor what its intention was generally, the observer lacked context in which to define the condor's behavior as an expression of incidental foraging. County of Alameda cannot know what the condor was doing in the APWRA, nor that it was the only visit made to the APWRA by a California condor.

Photo 21. Seven turkey vultures gather to consume the carcass of one of many cows that live and die in the APWRA. Livestock provide suitable forage for California condor.

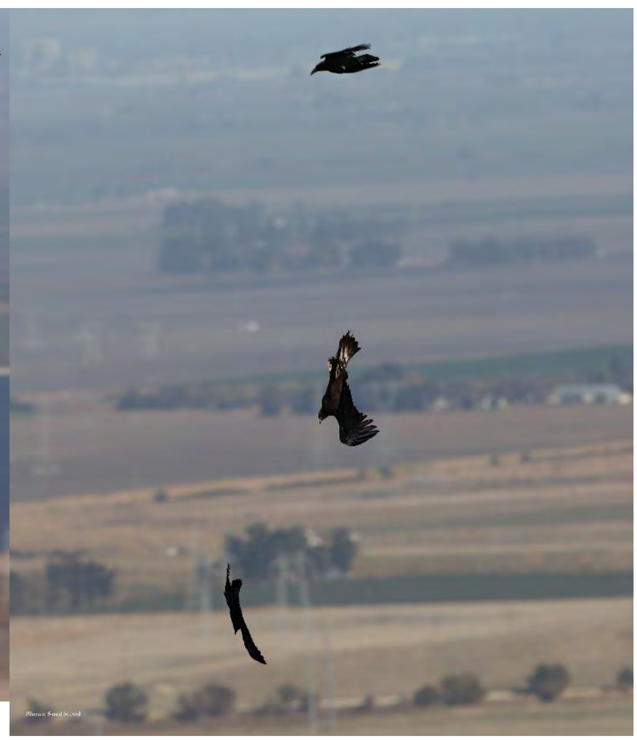
What *is* known is that a California condor spent some time flying within a height domain of airspace swept by rotors of modern wind turbines, and it did this at the site of the proposed project. The condor flew back and forth in a pattern that could be interpreted as foraging or as an effort to gain lift from a thermal or orographic deflection of winds. We also know that condors, with their large mass and long wingspans, are less maneuverable than other birds; we know that this type of morphology is susceptible to collision with moving objects. What we can expect is that eventually, as more wind turbines are built in California's Diablo Range, California condors will be killed by collisions with wind turbines. The wind turbine-caused death of even a single California condor would be significant.

5-62

GOLDEN EAGLE

Golden eagles occur throughout the APWRA, but their numbers vary spatially and temporally. They vary seasonally and inter-annually, and activity areas shift every few years. Golden eagles breed in the APWRA, but their highest breeding densities are outside the APWRA. Golden eagles train their chicks to forage in the APWRA, and portions of the APWRA serve as popular visiting sites by unaccompanied immature eagles of the year. Immatures, juveniles and subadults observe a demographic pecking order, often following at safe distances above older eagles or fleeing areas visited by the arrivals of older eagles. The social dynamic among golden eagles often contribute to golden eagle vulnerability to wind turbine collisions (Photo 22). Another contributor is inter-specific interactions such as with red-tailed hawks, ferruginous hawks which often follow golden eagles, and common ravens (Photos 23 and 24).

Photo 22. Golden eagles sparring in the skies of the APWRA.



Photos 23 and 24. A golden eagle is escorted by a group of 8 common ravens from a gathering of hundreds of common *ravens that became agitated by the eagle's intrusion (left), and performs vertical dives and ascents to shake off the common ravens (right), but to no avail and all the while near a wind turbine*. 5-62 cont'd

In collaboration with Doug Bell and Lee Neher, and funding from NextEra Energy Resources, I set out to estimate the number of golden eagles in the APWRA at a given time. The opportunity to make such an estimate arose from two concurrent studies linked by GIS. Doug Bell captured golden eagles to which he outfitted CTT telemetry units that regularly recorded positions in the airspace from satellites. In the meantime, from 2012 through 2019, wildlife biologists and behavioral ecologists, including myself, performed visual scans from observation stations throughout the APWRA. We identified those golden eagles whose positions were within the airspace under visual surveillance by observers. These golden eagles were classified as available for detection during active visual scan surveys. We also carefully crosschecked golden eagle observations during the visual scan surveys for which we knew telemetered golden eagles occurred within the survey radius. Of those golden eagles available, the proportion detected by visual scans provided us a detection rate. Detection rates enabled our estimation of the proportion of golden eagles not detected per km^2 during the timespan of the survey.

We applied detection rates *P* to all visual scan surveys for which we had data, including Orloff and Flannery's (1992) study, the CEC and NREL studies, Alameda County's monitoring effort through 2011 (ICF continued visual scan surveys through 2014, but never made the data available to the public), the Vasco Caves study of 2006-2007, which I repeated in 2017-2019, the Buena Vista monitoring study of 2008-2010, the Ogin study, surveys I performed for EDF in Patterson Pass, and the surveys performed 2012-2019 per the NextEra mitigation fund (Figure 1). We estimated the average number $\widehat{N}$ of golden eagles per hour:

$$\widehat{N}/hr = \frac{N/hr/km^2}{P},$$

where mean $N/hr/km^2$ was the number of golden eagles counted per hour per km^2 of survey plot, and *P* was the visual-scan detection rate of telemetered golden eagles (*P* = 0.571 for one hour, 0.433 for 30 minutes, and 0.333 for 10 minutes). We then plotted mean detection-adjusted golden eagle counts/km^2/hour among all the observation stations to view the spatial pattern of golden eagle density (Figure 2). We also delineated zones of relative abundance (Figure 2), which differed substantially (Figure 3). Next, we estimated the number of golden eagles in the APWRA at a given time.

5-62
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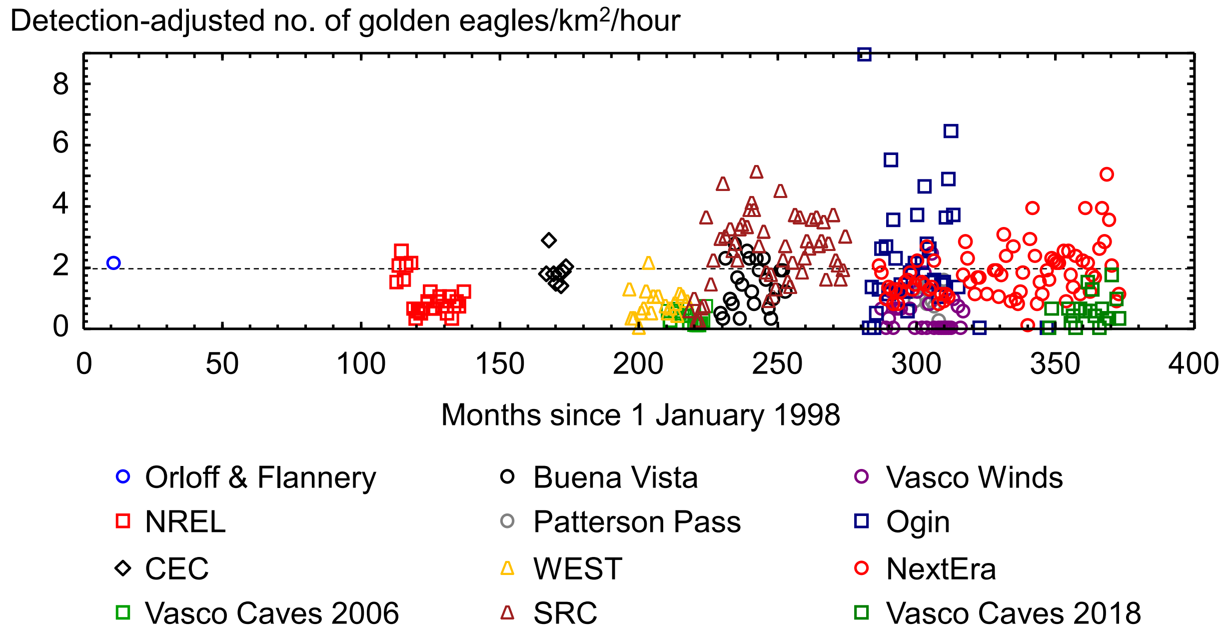


Figure 1. Counts of golden eagles/km²/hour adjusted by visual-scan detection rates of telemetered golden eagles we determined to be present in the airspaces of visual-scan surveys at the times of the surveys performed 2013-2019 in the APWRA.

5-62 cont'd

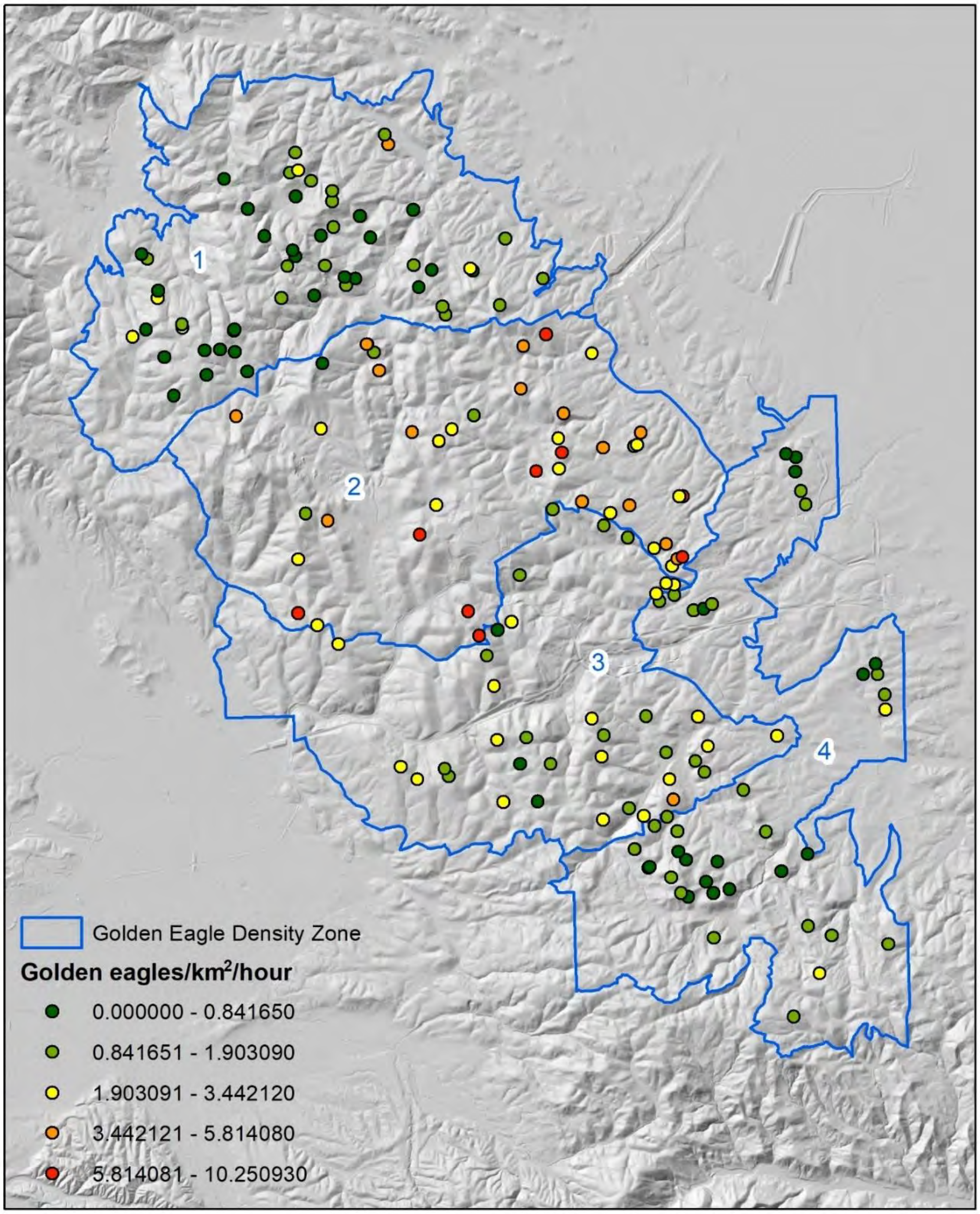
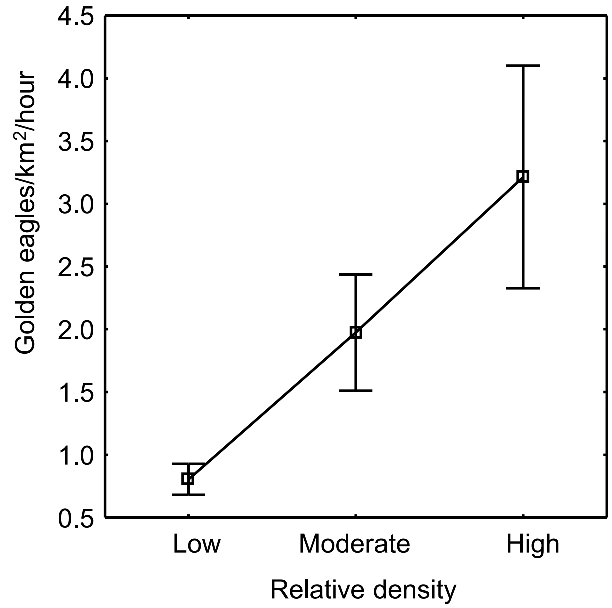


Figure 2. Mean counts of golden eagles/km²/hour among visual-scan behavior stations used in various studies including the Vasco Caves Regional Preserve studies of 2006-2007 and 2017-2019, the monitoring of Buena Vista 2008-2010, monitoring for the Alameda County SRC of 2005-2011, the Ogin study of 2012-2015, the Vasco Winds monitoring of 2012-2015, a study for EDF at Patterson Pass 2013-2014, and the NextEra mitigation study of 2012-2019. Also shown are zones of relative abundance, of which 1 and 4 represented low abundance, 3 represented moderate abundance, and 2 represented high abundance.

5-62 cont'd

Figure 3. Measured relative abundance of golden eagles by density zone in Figure 6.



My estimate of relative abundance of golden eagles in the APWRA represents the time period 2013 to 2019, which was the time period over which telemetered golden eagles provided me the opportunity to measure visual-scan detection rates. Golden eagle abundance over this time period, however, was dynamic. I applied detection rates to outcomes of visual scans of 30 minutes or longer, which began in APWRA-wide surveys in 2008, and I estimated mean annual numbers of golden eagles/km^2/hour. The trend in golden eagle abundance was distinctly negative, and it was significant (Figure 4). Between 2008 and 2019, I estimated a 45% decline of golden eagles in the APWRA. The cause of this decline could have been attributed to long-term effects on the population of wind turbine collisions, but regional impacts of wind turbine collisions might help explain the trend. A contributing factor could be the 68% decline in ground squirrels I quantified between 2011 and 2019 (see below, under BURROWING OWL). Whatever the cause, this is the first documented decline of golden eagles in the APWRA. This decline could indicate serious trouble for golden eagles.

As mentioned earlier, to represent the average capacity of golden eagles in the APWRA, we estimated the average number $\widehat{N}_0$ of golden eagles at any given time within an hour of survey:

$$\widehat{N}_0 = \frac{N \times \frac{\sum GOEA\ sec}{3{,}600\ sec} / km^2}{P},$$

where *N* was number of golden eagles counted on plot during a session, GOEA sec was the number of seconds an observed golden eagle was recorded within the area of the plot (km^2), and *P* was the visual-scan detection rate of telemetered golden eagles. We calculated $\widehat{N}_0$ per relative density zone, expanded it to the area of each zone and summed the products for an APWRA-wide estimate of 72 golden eagles at any given time during 2012-2019 (Table 2).

5-62 cont'd

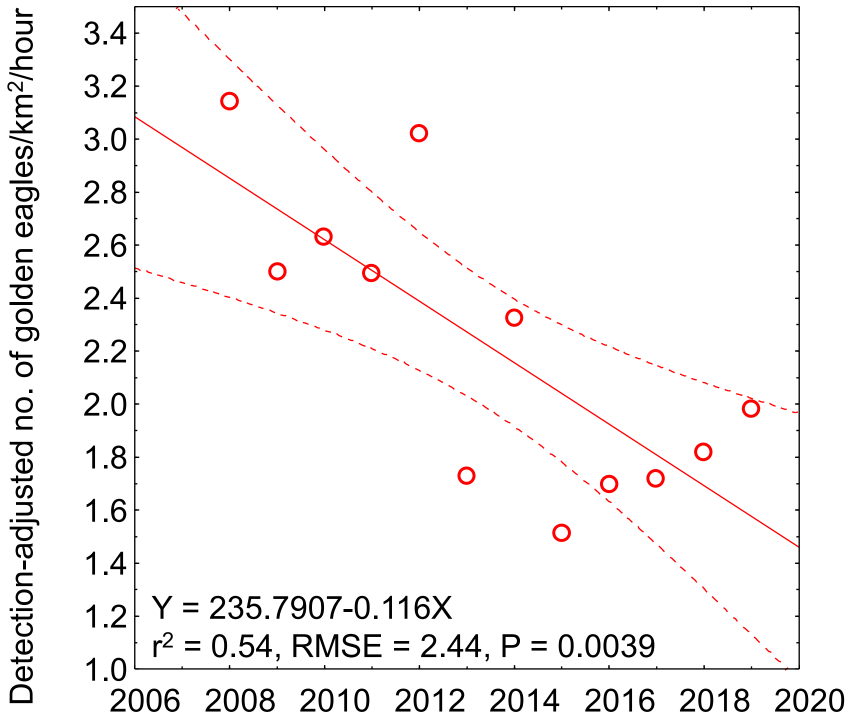


Figure 4. Mean annual detection-adjusted counts of golden eagles/km²/hour among studies in the Altamont Pass Wind Resource Area, California, from 2008 through 2019, including 30-minute visual scans performed by the Alameda County monitor for the SRC, at Buena Vista and Vasco Winds repowering projects, and in the Ogin Study, and 60-minute visual scans at Patterson Pass and APWRA-wide as part of the NextEra mitigation study.

Table 2. Estimated number of golden eagles per hour in the APWRA, based on counts during behavior surveys performed in the NextEra mitigation study 2012-2019, the Ogin study 2012-2015, Vasco Winds 2012-2015, Patterson Pass 2013-2014, and Vasco Caves 2017-2019. Counts were adjusted for the proportion of telemetered golden eagles detected during behavior surveys among those that were available to be detected at the times of the surveys, or 0.571 during one-hour surveys and 0.433 during half-hour surveys.

Relative abundance zone (map label)	Expansion area (km²)	Sessions	Golden eagles/km²		Golden eagles	
			$\bar{x}$	95% CI	$\bar{x}$	95% CI
Low (1, 4)	87.0957	2,220	0.1309	0.0937–0.1681	11.40	8.16–14.64
Moderate (3)	49.0407	647	0.4360	0.2594–0.6125	18.07	10.75–25.39
High (2)	41.4548	1,143	0.8747	0.6773–1.0722	42.90	33.21–52.58
Sum total	177.5912	4,010			72.37	52.12–92.61

The annual number of golden eagles visiting the APWRA $\hat{N}$ was estimated as:

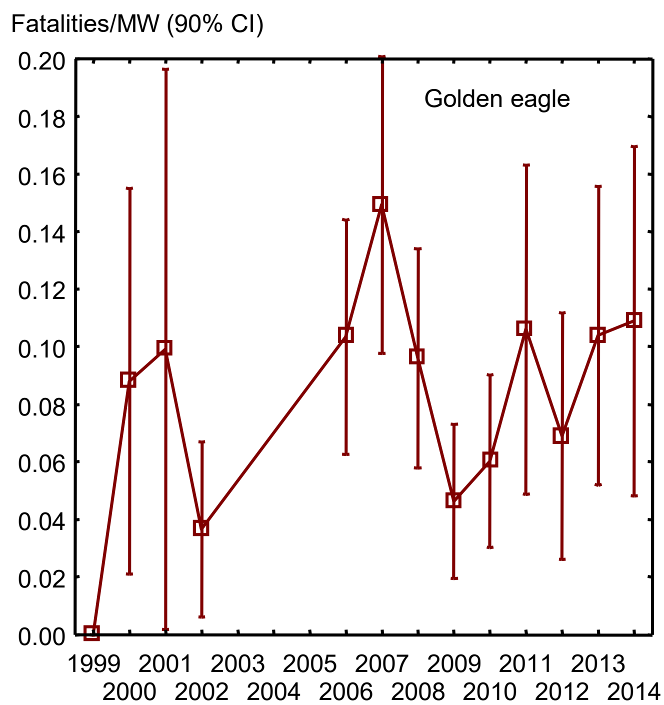
$$\hat{N} = \frac{\hat{N}_0}{t},$$

where t was the turnover rate of telemetered golden eagles measured as mean proportion of telemetry positions located within the APWRA boundary. Based on 22 telemetered golden eagles with a minimum number of positions within the boundary set at 200, t was 0.233 and $\widehat{N}$ was 309. In other words, to maintain an equilibrium 72 golden eagles at any given time in the APWRA, 309 golden eagles visit the APWRA annually. The APWRA golden eagle population is untraditional as far as the population concept goes; it probably represents a combination of breeding golden eagles and a large number of floaters visiting the AWPRA to socially learn and perhaps to select mates. 5-62 cont'd

Golden eagle mortality 5-63

Golden eagle mortality in the APWRA has long been an issue. The average was about 0.095/MW/year or about 55 golden eagle fatalities per year (Figure 5). This toll continued through 2014 despite winter shutdowns of turbines beginning in 2005 and hazardous turbine removals beginning in late 2008. Mortality continued unabated because golden eagles rarely die by turbine collision over the winter months regardless of whether turbine operations are curtailed, and because the hazardous turbine removals were too few to make any noticeable difference. Anyhow, the average toll of 55 golden eagles per year serves as the benchmark against which to measure fatality reductions going forward with repowering. (By 2016 I had estimated that nearly 2,000 golden eagles had been killed by wind turbines in the APWRA since its inception in the early 1980s.)

Figure 5. Annual estimates of golden eagle fatalities/MW (80% CI) at old-generation turbines in the APWRA from 1999 through 2014.



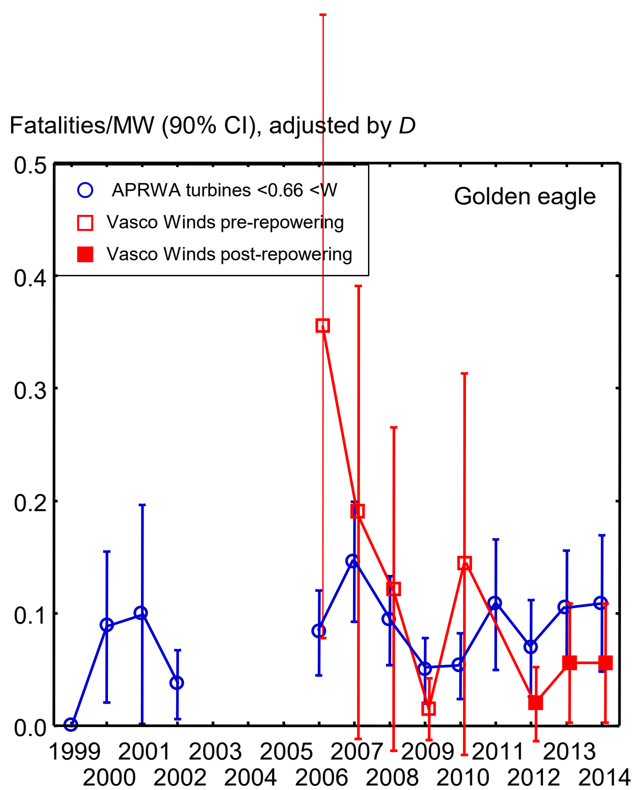
County of Alameda established a threshold for wind turbine-caused golden eagle mortality. The County's Programmatic EIR of 2014 established a threshold for initiating adaptive management of 18 golden eagle fatalities. The threshold was based on our measured 75% to 82% decrease in golden eagle fatalities in the Vasco Winds repowering project (Figure 6; source: Brown et al. 2016). To measure the change in mortality, I had

5-63 cont'd

employed an opportune before-after, control-impact (BACI) experimental design. The before phase was the several years of fatality monitoring by Alameda County's monitor preceding the removals of hazardous old-generation turbines, so 2006 through 2008. The Impact treatment in the Before phase was composed of old-generation wind turbines in the Vasco Winds project, and in the After phase it was composed of the 2.3-MW Siemens turbines of the same project. The Control treatment was composed of all the APWRA's old-generation wind turbines outside Vasco Winds. Hopeful that this repowering outcome in Contra Costa County would apply to all other repowering projects in Alameda County, the County based it's not-to-exceed threshold on our result from Vasco Winds.

However, repowering in Alameda County differed from repowering in Contra Costa County. Alameda County has allowed for more crowded repowering projects, where the number of turbines per km^2 has been higher. Construction grading has more aggressively situated turbines close to upwind slopes or berms, thereby placing the turbine's rotor closer to slope-deflected winds. And except for the developer of one project, developers have paid less attention to my siting recommendations. Compared to Vasco Winds, more of the repowered turbines in Alameda County were sited on ridge saddles, breaks in slope, on declining ridgelines near valley bottoms, and at sites where I had witnessed intense eagle activity and hence could not recommend those sites. One wind company fired me. Another hired a consultant to get competing, albeit unscientific, siting recommendations. Under these circumstances, it was therefore likely that the County's not-to-exceed threshold would either curtail wind energy repowering should the threshold be enforced or it would be ignored.

Figure 6. Estimated annual golden eagle fatalities/MW (80% CI) within and outside Vasco Winds and before and after repowering of Vasco Winds. Relative to the turbines in the control treatment (blue), golden eagle mortality in the impact treatment (red) declined substantially post-repowering.



5-63 cont'd

I assessed the likelihood of whether the County's threshold would be exceeded by estimating golden eagle fatalities based on monitoring completed to date. I calculated the weighted mean fatality rates among APWRA projects composed of modern wind turbines, and I applied them to projects yet to be operative and to undergo fatality monitoring. I also applied the weighted mean in two ways, the first based on all projects to date, and the second on the two most recent projects because they involved the types of micro-siting and construction grading that I anticipate proposed new projects will undergo. I also applied it to Summit Wind, which was carefully micro-sited but which unfortunately will operate in the portion of the APWRA most intensively used by golden eagles.

After completion of the first year of monitoring at Golden Hills North, Alameda County exceeded its PEIR threshold by nearly 3 golden eagles, or by 15.6% (Table 3). Going forward the situation appears increasingly worse, with Mulqueeney Ranch contributing another 8 to 12 golden eagle fatalities per year, Alameda County killing 51 to 66 golden eagles per year, and the APWRA taking 57 to 72 per year. At these rates, the County of Alameda will exceed its PEIR threshold by 32 to 48, or 178% to 267%. Furthermore, the level of mortality to which the County is heading will be no lower than the level of mortality caused by the old-generation turbines.

Golden Hills and Golden Hills North have already been built, and Summit Winds is likely nearly operational, so the choice in golden eagle mortality outcomes remains for projects yet to be permitted and composing about two-thirds of Alameda County's maximum allowable capacity of 450 MW. The DSEIR needs to honestly inform the public and decision-makers of the consequences of how wind energy development proceeds in terms of cumulative impacts. Careful micro-siting to minimize impacts to golden eagle can only be achieved through scientific micro-siting and wind company sacrifice of optimal wind energy generation.

Table 3 presents a stark contrast in APWRA-level impacts for golden eagle, depending on whether the remainder of Alameda County's allowable capacity is built like Vasco Winds or like Golden Hills. Wind turbines at Vasco Winds were sited to avoid model-predicted hazard classes 3 and 4 – the most hazardous class (Smallwood and Neher 2010). None of the final turbine sites caused me disproportionate concern, but I learned after construction that grading altered terrain and the risk profiles of a few turbines. I since recommended to my APWRA clients that sites should be avoided where grading would leave substantial berms or cut-slopes in the prevailing upwind directions from the wind turbine, thereby reducing the ground clearance a flying animal would need to negotiate in the short distance between the upwind terrain and the low reach of the turbine's rotor.

5-63 cont'd

Table 3. Existing golden eagle fatality rate estimates $\hat{F}$ and their projections to Alameda County's maximum allowable capacity of 450 MW and to the entire Altamont Pass Wind Resource Area (APWRA). Predicted fatality rates are indicated in red font, and are based on MW-weighted mean fatality rates among Diablo Winds, Buena Vista, Vasco Winds, Golden Hills, and Golden Hills North for the low end of the range, and on MW-weighted mean fatality rates between Golden Hills and Golden Hills North for the high end of the range. The high-end basis was projects that added collision hazards through construction grading and only partly followed micro-siting recommendations.

Project	Monitoring			Cumulative MW		$\hat{F}$/MW/Yr	$\hat{F}$/Yr	Cumulative sum $\hat{F}$/Yr	
	MW	Years	*F*	Alameda	APWRA			Alameda	APWRA
Diablo Winds[a]	20.46	5	3	20.46	20.46	0.0326	0.670	0.67	0.67
Buena Vista[a]	38.00	3	5		58.46	0.0673	2.546		3.2
Vasco Winds	78.20	3	7		136.66	0.0440	3.440		6.7
Golden Hills	85.92	3	31	106.38	222.58	0.1633	14.034	14.7	20.7
Golden Hills North[b]	46.00	1	3	152.38	268.58	0.1326	6.100	20.8	26.8
Summit Winds	57.5			209.88	326.08	0.1-0.153	5.75-8.8	26.6-29.6	32.6-35.6
Sand Hill	109.5			319.38	435.58	0.1-0.153	10.95-16.75	37.5-46.4	43.5-52.4
Rooney Ranch	25.1			344.48	460.68	0.1-0.153	2.51-3.84	40.0-50.2	46.0-56.2
Mulqueeney Ranch	80			424.48	540.68	0.1-0.153	8.0-12.24	48.0-62.4	54.0-68.4
??	25.52			450.00	566.20	0.1-0.153	2.55-3.90	50.6-66.3	56.6-72.3

[a] I independently calculated the estimates presented here, in order to comparatively adjust for factors contributing to the proportion of fatalities likely not found during monitoring.

[b] I included 2 golden eagle fatalities that the monitor had excluded from fatality estimation for having been killed prior to the beginning of monitoring. One was found 50 days after monitoring began at a turbine searched weekly, and the other was found likely on the first search. Estimating time since death is fraught with error (Smallwood et al. 2018), so I rely on it only when the evidence is obvious that the fatality preceded the initiation of monitoring backdated by mean search interval.

5-63 cont'd

Since Vasco Winds I added SRC-style[1] hazard ratings for each proposed turbine site. This step added learned experience that could not yet be captured in the model. Based on my SRC-style ratings, I sometimes over-rule model-predicted hazard classes of 3 or 4 (4 being the highest hazard class), but otherwise any site developed on or next to model-predicted hazard classes 3 or 4, or at sites I rated 8 to 10 on the SRC-style scale, or that left substantial berms or cut slopes upwind of the turbine will deviate from the PEIR's standard of using "*the best information available to site turbines to reduce avian collision risk*" (ICF 2014:3.4-104).

RED-TAILED HAWK

5-64

Red-tailed hawks occur throughout the APWRA, but their numbers vary spatially (Figures 7 and 8) and temporally. Temporal variation is both seasonal and inter-annual. Red-tailed hawks are most abundant in the Golden Hills North and Sand Hill project areas, and in the northern aspect of Buena Vista. Red-tailed hawks breed throughout the APWRA, and there is a winter influx of red-tailed hawks with many hawks in October and November. Red-tailed hawks are susceptible to wind turbine collisions due to distracting social interactions (Photo 25), to their foraging behaviors of hovering near operative turbines, and to flying through rotor planes of turbines in strong winds or to flush prey items. Many red-tailed hawks collide with inoperative turbines or nonmoving turbine parts (Smallwood and Bell 2020a).

Red-tailed hawk mortality has never received the same level of concern as that of golden eagles, but red-tailed hawks have suffered decades of very high fatality rates by collision with wind turbines in the APWRA. The average was about 0.55/MW/year or about 319 red-tailed hawk fatalities per year (Figure 9). This toll continued through 2014 despite winter shutdowns of turbines beginning in 2005 and hazardous turbine removals beginning in late 2008. Mortality continued unabated because red-tailed hawk collided with wind turbines just as often, if not more often (Smallwood and Bell 2020a), when the turbines were inoperative over the winter months. Also, the hazardous turbine removals were too few to make any noticeable difference. Anyhow, the average toll of 319 red-tailed hawks per year serves as the benchmark against which to measure fatality reductions going forward with repowering. (By 2016 I had estimated that nearly 9,000 red-tailed hawks had been killed by wind turbines in the APWRA since its inception in the early 1980s.)

The evidence to date is that repowering has reduced red-tailed hawk mortality in the APWRA, and that full build-out under current siting trends would ultimately reduce red-tailed hawk mortality by 37% (Table 4). However, the mortality reduction could have been, and still could be, better than 37%. Had repowering followed the Vasco Winds model, full build-out of repowered turbines would reduce red-tailed hawk

[1] The SRC rated old-generation wind turbine sites for collision hazards on a 0-10 scale based on turbine status, terrain, and known history of collision mortality. A few attributes that contributed to the ratings do not apply to modern turbines, but I applied as many as possible to rate turbine sites for collision hazard on the same scale.

5-64 cont'd

mortality by 62%, or twice the performance of where Alameda County is currently heading.

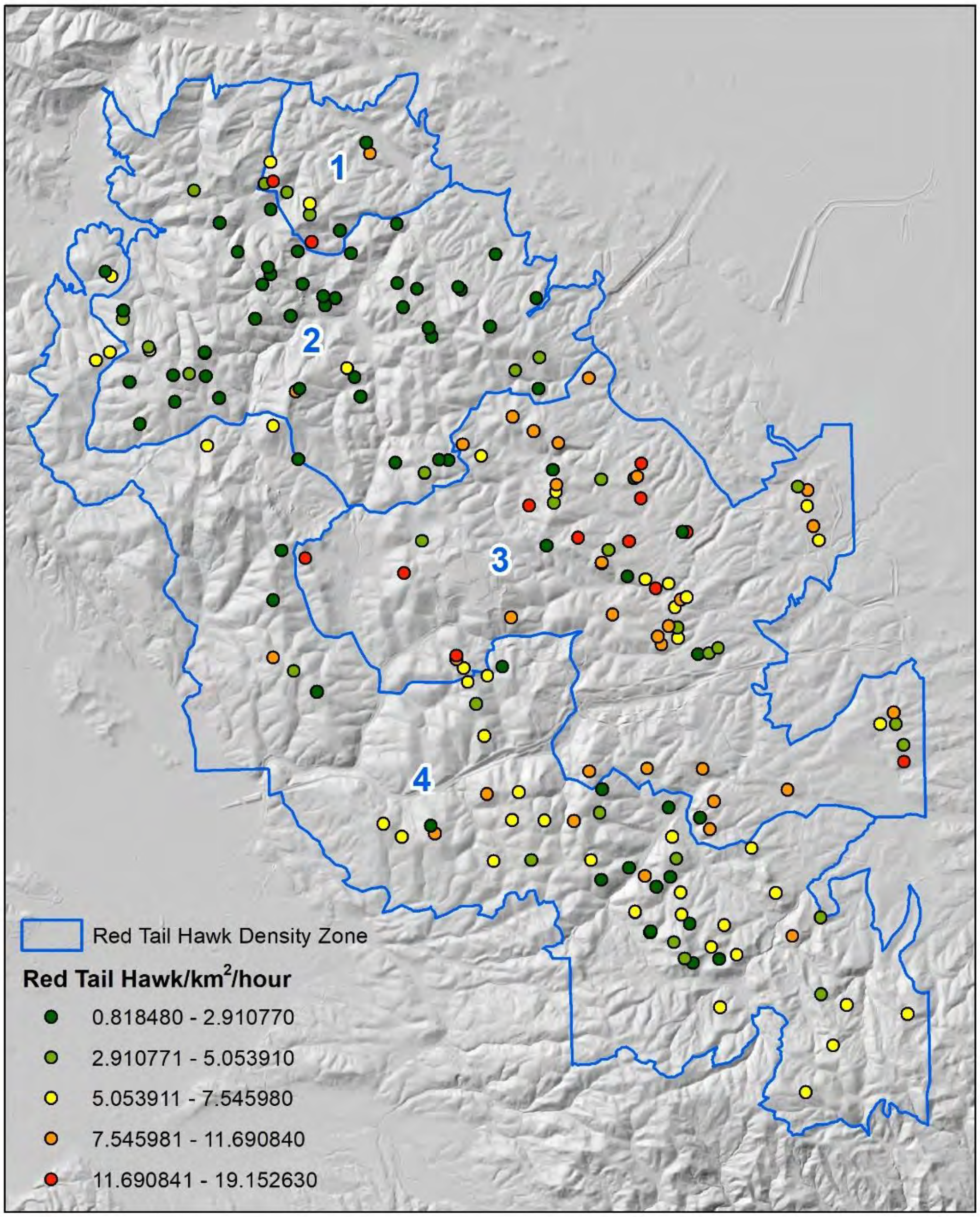


Figure 7. Mean counts of red-tailed hawks/km²/hour among visual-scan behavior stations used in various studies including the Vasco Caves Regional Preserve studies of 2006-2007 and 2017-2019, the monitoring of Buena Vista 2008-2010, monitoring for the Alameda County SRC of 2005-2011, the Ogin study of 2012-2015, the Vasco Winds monitoring of 2012-2015, a study for EDF at Patterson Pass 2013-2014, and the NextEra mitigation study of 2012-2019. Also shown are zones of relative abundance, of which 2 represented low abundance, 1 and 4 represented moderate abundance, and 3 represented high abundance. Mean red-tailed hawks/km²/hour measured in the hour-long behavior surveys were extrapolated to the areas of these zones to estimate the number of red-tailed hawks in the APWRA at a given time.

Figure 8. Measured relative abundance of red-tailed hawks by density zone in Figure 0.

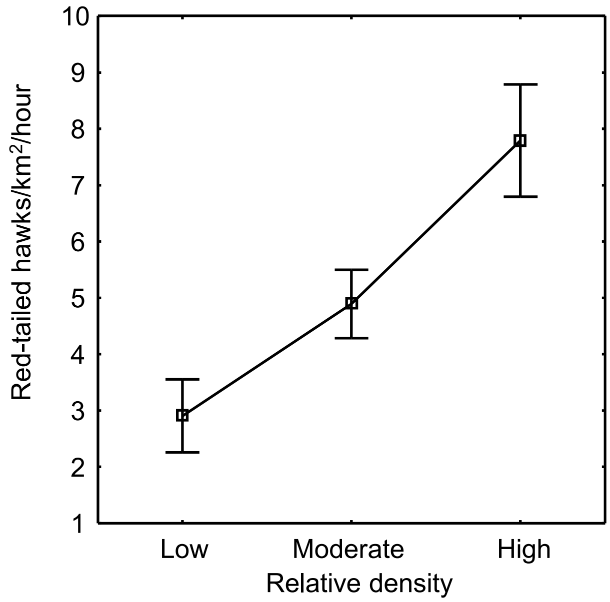
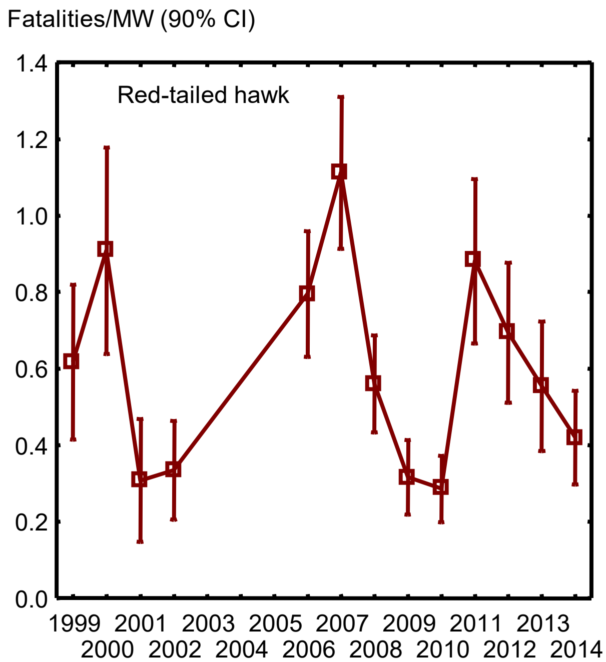


Photo 25. Red-tailed hawks interacting in the APWRA – a distracting, dangerous behavior in the vicinity of wind turbines.

Figure 9. Annual estimates of red-tailed hawk fatalities/MW (80% CI) at old-generation turbines in the APWRA from 1999 through 2014.



5-64 cont'd

Table 4. Existing red-tailed hawk fatality rate estimates $\hat{F}$ and their projections to Alameda County's maximum allowable capacity of 450 MW and to the entire Altamont Pass Wind Resource Area (APWRA). Predicted fatality rates are indicated in red font, with the low end of the range derived from MW-weighted mean fatality rates among all repowered APWRA projects already monitored, and the high end of the range consisting of the Golden Hills North fatality rate.

Project	Monitoring		$\hat{F}$/MW/Yr	$\hat{F}$/Yr	Cumulative sum $\hat{F}$/Yr	
	MW	Years			Alameda	APWRA
Diablo Winds	20.46	5	0.555	11.0	11.0	11.0
Buena Vista Insignia	38.00	3			---	---
Buena Vista KSS	38.00	0.06	0.171	6.5	---	17.5
Vasco Winds	78.20	3	0.210	16.4	---	33.9
Golden Hills	85.92	3	0.566	48.7	59.7	82.6
Golden Hills North	46.00	1	0.283	13	72.7	95.6
Summit Winds	57.5		0.356	20.5	93.2	116.1
Sand Hill	109.5		0.356	39.0	132.2	155.1
Rooney Ranch	25.1		0.356	8.9	141.1	164.0
Mulqueeney Ranch	80		0.356	28.5	169.6	192.5
??	25.52		0.356	9.1	178.7	201.6

5-65

BURROWING OWL

ICF (2020:3.4-102) reported, "The avian use surveys (ICF 2020b) did not identify any burrowing owls in the project site." This report is misleading, however, because the avian use surveys were not designed for burrowing owls. The burrowing owl is chiefly a nocturnal species – a species much more detectable at night when using a thermal-imaging camera. Otherwise, the CDFW (2012) survey guidelines are more appropriate during daytime searches than was ICF's avian use surveys, which were designed for diurnal raptors (Smallwood et al. 2004, 2005, 2009a,b). CDFW's guidelines call for surveys focused on detecting burrowing owls during the breeding season, because that is when burrowing owls are most visible during daylight hours. Anyhow, there is no question whether burrowing owls occur on the project site (Photos 26-28). Burrowing owls occupy the site in abundance, despite local efforts to abate ground squirrels, which are of critical importance to nest success and persistence of burrowing owls. Photos 26-28 depict burro0wing owls on 3 different portions of the project site, but they also occur at additional locations within the project boundary.

5-65 cont'd

Photo 26. Burrowing owl chicks emerge from a nest site in a rock formation on the project site.

Photo 27. An adult burrowing owl watches over two of her chicks at their nest site in a ground squirrel burrow on the project site.

5-65 cont'd

Photo 28. Most of a family of burrowing owls at a nest site at the northern end of the project site. Not photographed are the adult male and 2 more chicks.

According to ICF (p. 3.4-91), "If construction activities would result in the removal of occupied burrowing owl habitat (determined during preconstruction surveys described in PEIR Mitigation Measure BIO-8b), this habitat loss will be mitigated by permanently protecting mitigation land through a conservation easement or by implementing alternative mitigation determined through consultation with CDFW as described in its *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012:11–13). The project proponent will work with the CDFW to develop the compensation plan, which will be subject to County review and approval." As I commented earlier, burrowing owls occur at the site. Mitigation would be necessary.

Contrary to the DSEIR's (2020) characterization of how preconstruction surveys would be used to determine whether the project would remove occupied burrowing owl habitat, and the level of mitigation that would be needed, preconstruction surveys are not designed nor intended for these purposes. Preconstruction surveys are merely last-minute take-avoidance surveys, and as such they should never be relied upon to determine occupancy or to formulate compensatory mitigation. Doing so would be inconsistent with CDFW's (2012) guidelines.

The project would destroy burrowing owl habitat. The site is occupied by burrowing owls (Photos 26-28), and has been occupied since I first set foot on it in 1999. The information needed to assess project impacts and to formulate appropriate mitigation would include a sound estimate of the number of breeding sites, a map of where the breeding sites are located, a plan for avoiding and minimizing impacts, and a plan to compensate for those impacts that could not be avoided. To detect and map the

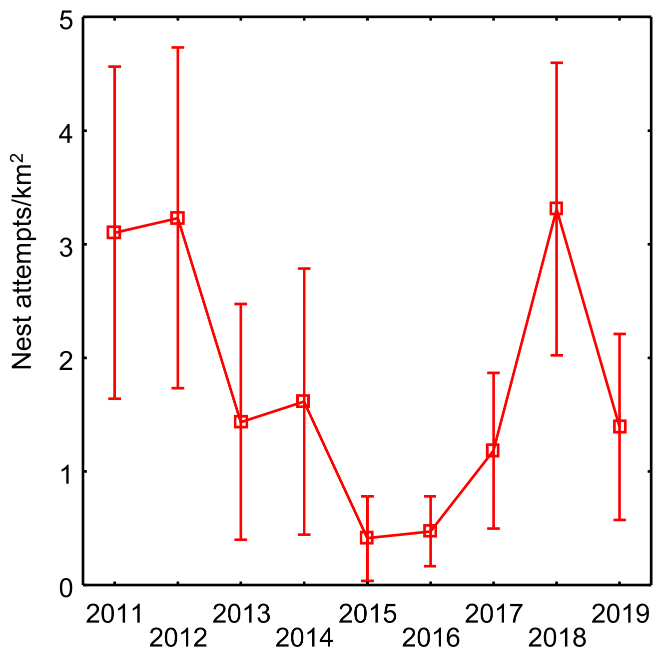
5-65 cont'd

breeding sites, qualified biologists would need to perform, at minimum, detection surveys. Detection surveys are much more rigorous than are preconstruction surveys, and are described in CDFW (2012). I maintain, however, that even more intensive survey efforts are needed than those described in CDFW (2012), because burrowing owls are cryptic and they often quit breeding sites to locate elsewhere in the same breeding season. Furthermore, burrowing owls forage far from breeding sites, and they need other areas for non-breeding season refugia.

The DSEIR also needs to analyze potential impacts to burrowing owls in the contexts of what is happening to the species across the APWRA. I studied burrowing owls for 9 years in the APWRA. Below I present some of my key findings that are relevant to the proposed project.

My colleagues and I estimated 537 breeding pairs in the APWRA in 2011 (Smallwood et al. 2013) -- a finding of which (ICF 2020) makes no mention. As I continued to study the population, I detected evidence of a population cycle, but also an overall 45% decline in abundance (Figure 10). I discovered that densities of burrowing owls shift away from breeding sites in the non-breeding seasons (Figure 11), indicating a need for larger areas than typically measured in the breeding season. Seasonal shifts in densities likely indicates the need for burrowing owls to rest forage or to escape parasite and predator loads.

Figure 10. Mean and 95% CI of burrowing owl nest attempts/km² among 46 randomized sampling plots across the APWRA.



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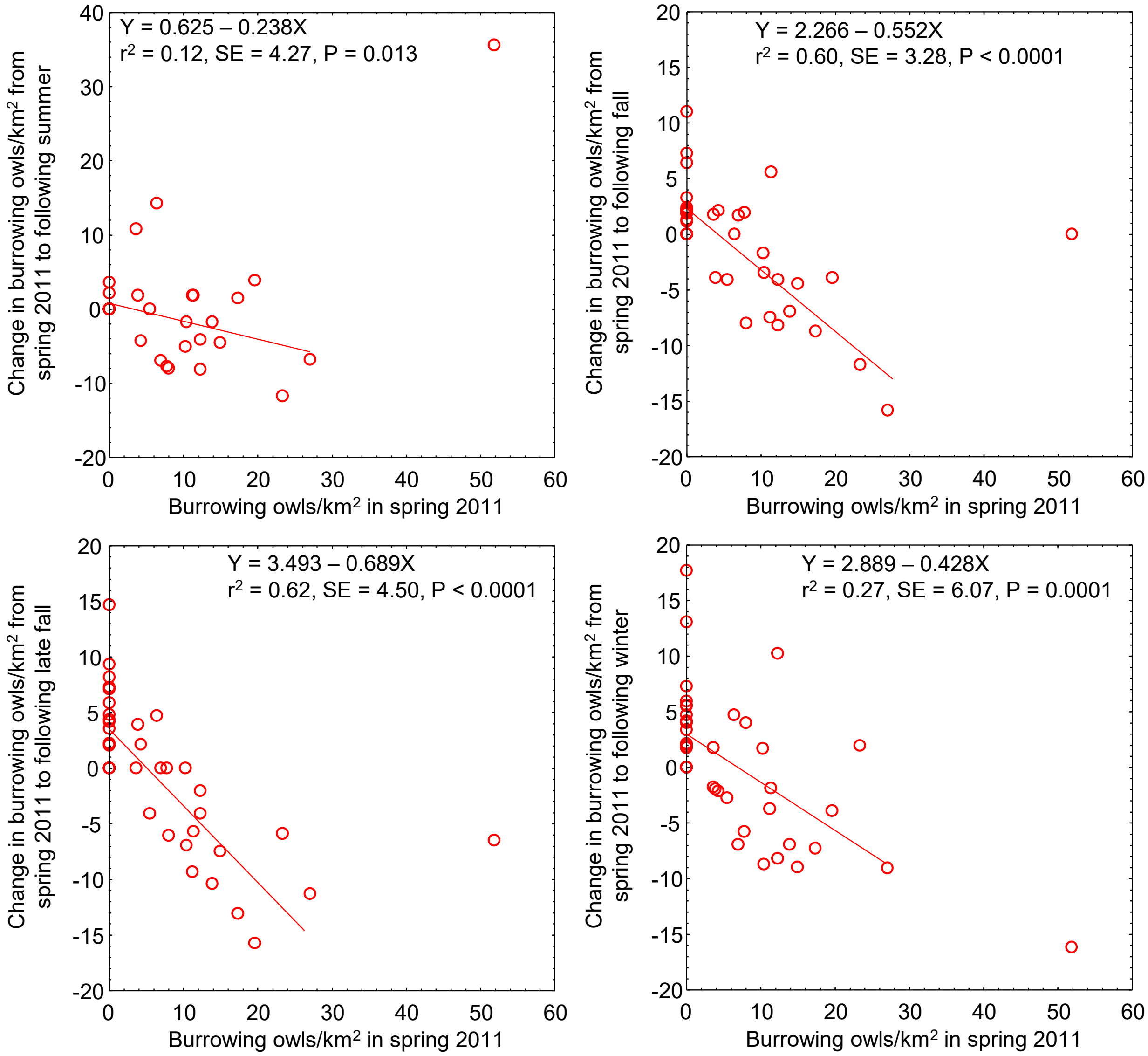


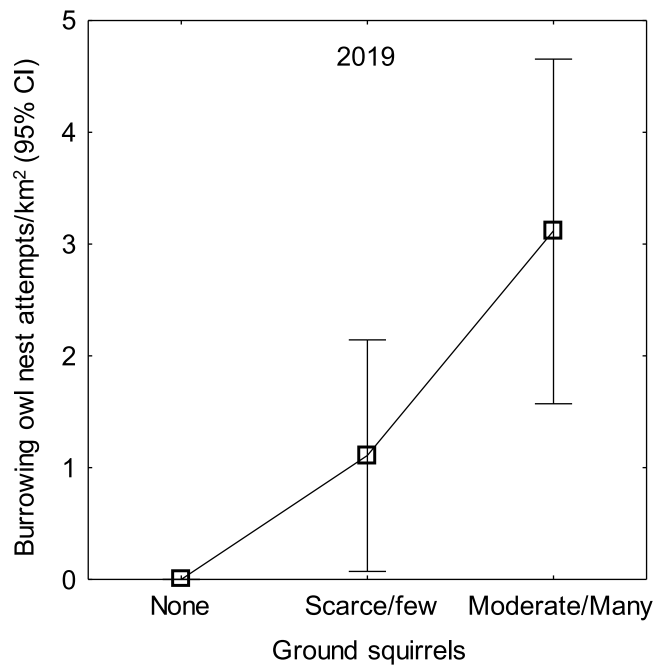
Figure 11. Density-dependent change in burrowing owl density between 2011 breeding season and subsequent summer, fall, late fall, and winter seasons. Linear regression slopes were estimated with plot 12 held out as an outlier.

I found that mean burrowing owl nest attempts/km^2 differed significantly by level of ground squirrel abundance ($F = 4.23$, df = 2, $P = 0.02$) (Figure 12). No burrowing owls attempted to nest in plots lacking ground squirrels, and nest attempts were 2.8 times more frequent in plots with moderate to many ground squirrels as compared to scarce or few ground squirrels (Figure 12). Mean counts of chicks/km^2 increased from 0 among plots with no squirrels to 2.71 among plots with scarce or few squirrels and to 4.05 among plots with moderate to many squirrels, but the difference was not significant ($F = 1.50$, df = 2, $P = 0.23$). I found that burrowing owl nest success increased where ground squirrels persisted as neighbors through the breeding season, and I found that ground squirrel numbers remained higher when among successfully

5-65 cont'd

breeding burrowing owls; the relationship is a win-win between ground squirrels and burrowing owls, which mutually alarm-call on the approach of predators.

Figure 12. Mean comparison of burrowing owl nest attempts/km² among plots with no ground squirrels, scarce or few squirrels, and moderate or many squirrels in 2019 among randomized sampling plots throughout the Altamont Pass Wind Resource Area, California.



Colonies of California ground squirrels, which construct burrows in which most burrowing owl nests were attempted in the APWRA, declined in spatial extent from 821.9 ha to 294.4 ha (64%) between 2011 and 2019 among 43 sampling plots where I was able to map the squirrel distributions in both 2011 and 2019 (Figure 13).

Among the 43 plots that were comparable between 2011 and 2019, ground squirrels in 2011 covered 35% of the land area, mostly over the lower 50% of slopes. By 2019, ground squirrels covered 12% of the land area. Between 2011 And 2019, the APWRA experienced an overall 68% reduction in total extent of squirrel colonies (Figure 14). According to dependent-samples t-test, the 2019 extent of ground squirrels was significantly smaller compared to the 2011 extent ($t = 5.01$, d.f. = 42, $P = 0.00001$).

The APWRA emerged as the site of a key population of burrowing owls in California. Numbers of burrowing owls in the APWRA are substantial, and productivity is high. There is likely also considerable movement of burrowing owls through the APWRA between the Bay Area and the Central Valley. Unfortunately, compared to the peak years of 2011 and 2012, the peak years of 2018 and 2019 averaged a 29% decline successful nests and a 49% decline in nest attempts. At a place where burrowing owl conservation could contribute to burrowing owl conservation statewide, the population is instead in decline. Across much of the APWRA, the use of anti-coagulant poisons has substantially reduced ground squirrel populations and hence burrowing owls, and wind turbine collisions have exacerbated the problem.

5-65 cont'd

Figure 13. Polygons drawn around ground squirrel colonies in 2011 (dark gray) and 2019 (off-white) within burrowing owl sampling plots in the Altamont Pass Wind Resource Area.

5-65 cont'd

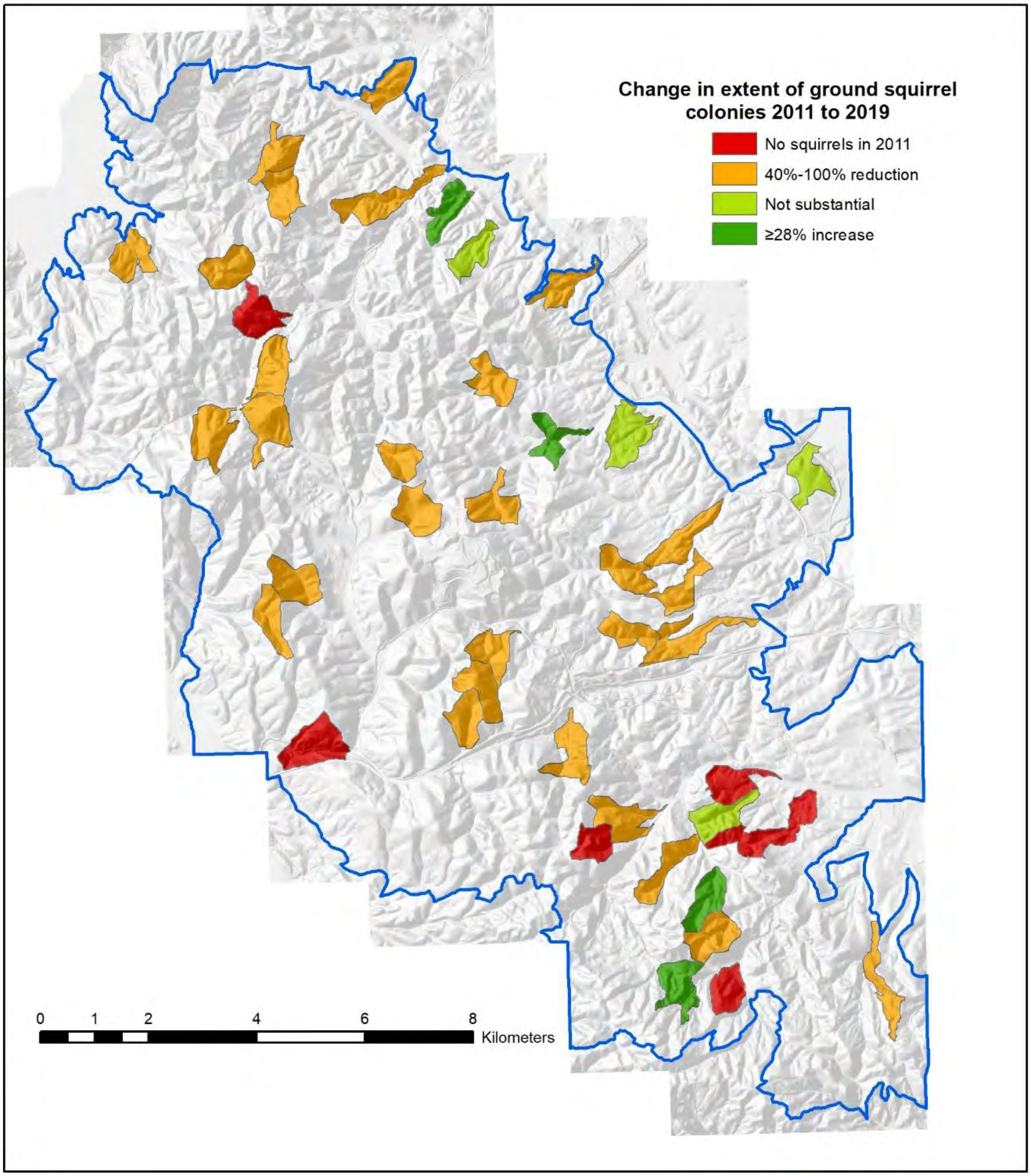
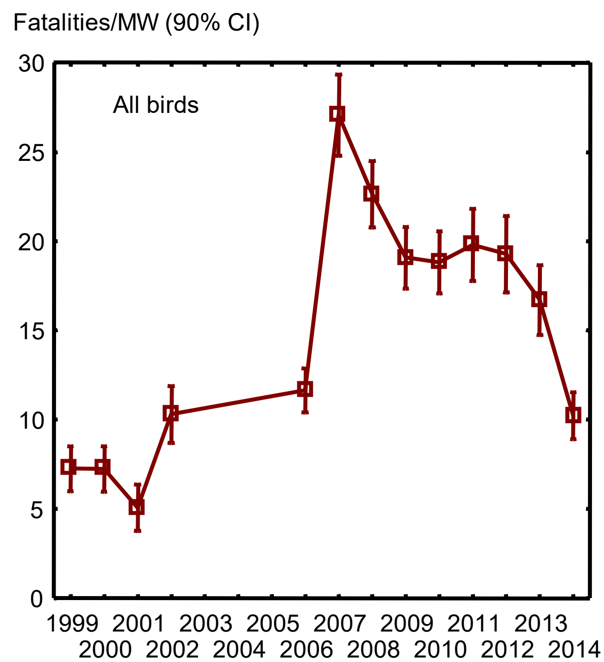


Figure 14. Change in spatial extents of ground squirrel colonies among randomized plots between 2011 and 2019, where red denotes plots without more than 0.5 ha of squirrels in both 2011 and 2019.

ALL BIRDS

Mortality of all birds as a group averaged about 16.5/MW/year or about 9,570 bird fatalities per year (Figure 15). Because most of this estimate is composed of small birds, it is likely biased low. Since I made this estimate, I learned through additional research that human searchers searching at long intervals are missing many of the small birds. I have yet to account for these biases APWRA-wide, so I will use the old low-biased estimates in the interim. The APWRA's toll on all birds as a group declined from 2007 through 2014, but it was unclear whether the decline had anything to do with mitigation measures such as the winter shutdowns of turbines beginning in 2005 and hazardous turbine removals beginning in late 2008. Most bird species remain vulnerable to wind turbine collision despite winter shutdowns (Smallwood and Bell 2020a). Also, the hazardous turbine removals were too few to make any noticeable difference. Anyhow, the average toll of about 9,570 birds per year serves as the benchmark against which to measure fatality reductions going forward with repowering.

Figure 15. Annual estimates of all bird fatalities/MW (80% CI) at old-generation turbines in the APWRA from 1999 through 2014.



Overall bird mortality probably declined since repowering, and it appears as though full repowering would result in at least a 50% reduction in avian mortality (Table 5). This is good news, though it could have been better. Had repowering followed the Vasco Winds model, full build-out of repowered turbines would reduce bird mortality by >84%, or >8,000 birds per year. That is, had Alameda County pursued repowering using the same standards at Contra Costa County applied to Vasco Winds, >8,000 birds per year would live to see the next year, or at least they would have not died prematurely in the APWRA.

5-66 cont'd

Table 5. Existing all-bird fatality rate estimates $\hat{F}$ and their projections to Alameda County's maximum allowable capacity of 450 MW and to the entire Altamont Pass Wind Resource Area (APWRA). Predicted fatality rates are indicated in red font, with the low end of the range derived from MW-weighted mean fatality rates among all repowered APWRA projects already monitored, and the high end of the range consisting of the Golden Hills North fatality rate.

Project	Monitoring		$\hat{F}$/MW/Yr	$\hat{F}$/Yr	Cumulative sum $\hat{F}$/Yr	
	MW	Years			Alameda	APWRA
Diablo Winds[a]	20.46	5	21.383	437	437	437
Buena Vista Insignia	38.00	3			---	---
Buena Vista KSS	38.00	0.06	14.211	540	---	977
Vasco Winds	78.20	3	2.680	210	---	1,187
Golden Hills	85.92	3	9.258	795	1,232	1,982
Golden Hills North	46.00	1	10.043	462	1,694	2,444
Summit Winds	57.5		9.100	523	2,217	2,967
Sand Hill	109.5		9.100	996	3,213	3,963
Rooney Ranch	25.1		9.100	228	3,441	4,191
Mulqueeney Ranch	80		9.100	728	4,169	4,919
??	25.52		9.100	232	4,401	5,151

[a] I applied the adjustment factor of 2.7 in Smallwood et al. (2020), which accounts for the difference in bird carcass detection rates between scent-detection dogs and human searchers.

5-67

BATS

A substantial impact that must be addressed is wind turbine-caused bat mortality within the APWRA (Brown et al. 2016, H.T. Harvey & Associates 2020, and Great Basin Bird Observatory and H. T. Harvey & Associates 2020), and at the national level (Smallwood 2020). Modern wind energy projects became operational in Alameda and Contra Costa Counties since 2004, most of it since 2012, and are now killing more than an estimated 1,585 (95% CI: 943-3,031) bats annually. At the national level, wind energy is killing more than an estimated 2.2 million bats annually, or many more than are killed by White Nose Syndrome (Smallwood 2020).

According to the DSEIR, the turbines proposed for the project would be 2.2 to 4.2 MW in rated capacity, with a maximum height of 505 feet (154 m). With a rotor diameter of 136 m, the low reach of the blade sweeps would be 18 m above ground. This low reach would be extremely hazardous to birds and bats, especially to golden eagles and Myotine bats. The minimum height above ground recommended by the Alameda County SRC and required per Alameda County's conditional use permits is 29 m.

Experience informs us that a fully repowered APWRA would kill thousands of bats annually, or until local bats and the migratory bats using the APWRA are extirpated. Bat fatality estimates evolved in the APWRA since fatality monitoring transitioned from

5-67 cont'd

searches at old-generation turbines to searches at repowered turbines. The older searches at old-generation wind turbines involved human searchers searching at intervals much too long for finding more than a tiny fraction of bat fatalities. The use of human searchers continued at Buena Vista post-repowering, but the average search interval was soon shortened to two weeks, thereby giving searchers many more opportunities to find available bat fatalities. Vasco Winds also made use of human searchers, but by integrating actual bat carcasses (instead of some surrogate species of bird) into routine fatality monitoring, the Vasco Winds effort documented <6% bat carcass detection rates using human searchers, which means the adjustment factor needed for the fatality estimate was >17-fold. Such a large adjustment factor invites instability in the fatality estimate, where any hidden biases could greatly affect the estimate. It also invites omissions of entire species from the all-bat fatality estimate. Nevertheless, bat fatalities were estimated using large adjustment factors to account for the undetected fatalities. Following the Vasco Winds effort, scent-detection dogs were put to work searching for fatalities at Golden Hills, and colleagues and I used scent-detection dogs in fatality monitoring at Golden Hills and Buena Vista in fall 2017 as a research study (Smallwood et al. 2020).

The scent-detection dogs that we deployed at Buena Vista found in 3 weeks nearly twice the number of bat fatalities that human searchers found over 3 years (Smallwood et al. 2020). We found this many more bats despite using the same search interval and maximum search radius as did the earlier human searchers. Because our dog study also overlapped ongoing fatality monitoring at Golden Hills, I was able to use the seasonal distribution of fatality finds by the Golden Hills' monitor (dogs only) to estimate annual fatalities at Buena Vista (see App. C in H. T. Harvey et al. 2017). I estimated annual fatalities $\hat{F}$ of bats using the following estimator:

$$\hat{F} = \frac{F}{R_C \times S \times d \times p \times \frac{F'_{60\ days}}{F'_{365\ days}}} ,$$

where most of the terms were defined earlier, F' was the number of bat fatalities found by H.T. Harvey & Associates' (2018) dogs who searched weekly at 14 Golden Hills turbines, and $\frac{F'_{60\ days}}{F'_{365\ days}}$ was the ratio of those fatalities found during the 60-day portion of the year concurrent with our study to those found throughout 2017.

As a check on this estimator, I compared our estimated bat fatalities at Golden Hills to the estimate made by the project's monitor (H. T. Harvey & Associates 2018). Based on our dog searches, we estimated 227.5 bat fatalities in 60 days in Fall 2017 at Golden Hills. Over this same period, the dogs of H.T. Harvey & Associates (2018) found 47.5% of the bat fatalities in 2017 among the 14 Golden Hills turbines they searched weekly. Applying the above estimator, our fatality estimate adjusted for this percentage (converted to the proportion 0.475) yields an annual estimate of 479 bats (5.58 bat fatalities/MW/yr), which was nearly equal to H.T. Harvey & Associates' (2018) two-year mean of 484 bat fatalities. Satisfied with the performance of our estimator, which differed from the monitor's estimate by only 1%, I applied the same approach to our bat

5-67 cont'd

fatality findings at Buena Vista to estimate an annual toll of 262 bat fatalities, or 6.89 bat fatalities/MW/yr. This estimate was almost 14 times greater than the 3-year average based on human searches at two-week intervals during 2008-2011 at the same project (Insignia 2012).

Table 6 includes available bat fatality estimates at repowered wind projects in the APWRA, including my updated, revised estimate for Buena Vista, as discussed above. Table 5 also includes predicted fatality rates for proposed new projects and for one under construction. Based on what has been learned thus far, a sound prediction for Mulqueeney Ranch is 526 to 1,167 bat fatalities per year. If the APWRA is fully built out in the same patterns as those already built, the APWRA will cause between 3,700 and 6,100 bat fatalities annually.

Table 6. Existing bat fatality rate estimates $\hat{F}$ and their projections to Alameda County's maximum allowable capacity of 450 MW and to the entire Altamont Pass Wind Resource Area (APWRA). Predicted fatality rates are indicated in red font, with the low end of the range derived from MW-weighted mean fatality rates among all repowered APWRA projects already monitored, and the high end of the range consisting of the Golden Hills North fatality rate.

Project	Monitoring		$\hat{F}$/MW/Yr	$\hat{F}$/Yr	Cumulative sum $\hat{F}$/Yr	
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Buena Vista [KSS]	38.00	0.06	6.890	262	---	363
Vasco Winds	78.20	3	3.205	251	---	612
Golden Hills	85.92	3	5.635	484	585	1,096
Golden Hills North	46.00	1	14.587	671	1,256	1,767
Summit Winds	57.5		6.579-14.587	378-839	1,634-2,095	2,145-2,606
Sand Hill	109.5		6.579-14.587	720-1,597	2,354-3,692	2,865-4,203
Rooney Ranch	25.1		6.579-14.587	165-366	2,519-4,058	3,030-4,569
Mulqueeney Ranch	80		6.579-14.587	526-1,167	3,045-5,225	3,556-5,736
??	25.52		6.579-14.587	168-372	3,213-5,597	3,724-6,108

[a] I applied the adjustment factor of 6.4 in Smallwood et al. (2020), which accounts for the difference in bat carcass detection rates between scent-detection dogs and human searchers.

Bats, due to their long lifespans and low productivity, are vulnerable to new sources of mortality. Hoary bat, as an example, is experiencing a regional decline (Rodhouse et al. 2019). Bats are particularly vulnerable to wind turbines because they are attracted to them and behave dangerously around them (Kunz et al. 2007, Horn et al. 2008, Cryan and Barclay 2009, Cryan et al. 2014, Smallwood 2016a,b). The DSEIR needs to be revised to analyze the findings of Normandeau (2011) and Brown et al. (2016) at Vasco Winds, among other data sources.

5-67 cont'd

If Alameda County loses its bats to wind energy, the ecological and economic impacts would be highly significant. Published in one of the world's premier scientific journals, Boyles et al. (2011) predicted that the loss of bats would annually cost Alameda County's agricultural industry $797,242 to offset pest control afforded by bats, and that is before considering the downstream costs of pesticide-caused losses of arthropod predators of agricultural pests and pollinators. The reported confidence range, assuming low and high crop pest survival in the absence of bats, was $130,184 to $1,855,928. Over the next century, Alameda County's agricultural industry stands to lose $80 million (in 2011 dollars) from the loss of pest control provided naturally by bats.

MICRO-SITING FOR SAFEST WIND TURBINE LAYOUT

5-68

I asked my colleague, Lee Neher, to extend our latest collision hazard model for golden eagle into the proposed project area (Figure 16). An explanation of how this model was developed is provided in the micro-siting report we prepared for the Sand Hill project (Smallwood and Neher 2018). (Its descriptions in peer reviewed publications can be found in Smallwood and Neher 2009 and Smallwood et al. 2009, 2017). I also asked Mr. Neher to overlay our data on telemetered golden eagles onto the project area including the proposed wind turbine layout (Figures 17 to 22). He selected the positions of 11 GPS-telemetered golden eagles that had crossed some portion of the Mulqueeney Ranch project area within 200 m of the ground. We chose to filter out data above 200 m because the maximum turbine height would likely be 154 m. Finally, I examined the proposed turbine locations for hazards posed by the terrain setting and by likely changes to the local terrain due to construction grading. I used Google Earth to examine proposed turbine locations, but it helped that I was personally familiar with the project area.

The white arrow in Figure 16 points to the site of Golden Hills turbine 11 – a site I advocated against during the micro-siting process (Smallwood and Neher 2015). Note the red polygon overlapping the site indicated by the white arrow. Red denoted the model-predicted hazard class of 4, where 4 was the highest hazard of the 4 classes, 1 through 4. But my micro-siting recommendations were not based entirely on the model predictions. I knew the models were limited to the spatial information we were able to quantify and use in GIS, and I had experience that just could not be input to the model. I therefore personally visited each site to assess the terrain setting, and I assembled a history of collision mortality associated with old-generation wind turbines at the site. I also relied on experience with grading effects at Vasco Winds, and on the behavior surveys I had been performing in the area at the time. I was aware of considerable social drama that takes place between golden eagles around where turbine 11 was proposed (Photo 29). I advised my client, "Pretty much the entire slope has been identified as hazardous to eagles, so this site was of concern. The site is low, near the valley, and gets a lot of eagle traffic. There is no move within 150 m that would lessen the hazard level." My client installed turbine 11 there anyway, and it soon proved hazardous to golden eagles.

5-68 cont'd

Not long after Golden Hills turbine 11 became operative, I visited its pad for its vantage to locate burrowing owls during one of my surveys on 26 April 2016. A pair of golden eagles, which I had been observing in the area for weeks, chased each other back and forth through the active rotor of turbine 11, right over my head. I observed them for about 30 minutes before I had to check on a potential burrowing owl nest site near the site of Mulqueeney Ranch proposed turbine 5 (Figure 16). As I left the pad of turbine 11, one of the pair of eagles flew overhead and to a fencepost just west of the site of Mulqueeney Ranch proposed turbine 3, where it landed alone. I wondered what happened to its partner, and grew concerned. Forty minutes later, as I was leaving the area after having checked on the burrowing owls, I found the missing golden eagle 200 m northwest of Golden Hills turbine 11 at the valley-bottom (Photo 30). Her wing was badly damaged and she suffered a broken ankle, and the blood was fresh and still flowing. She was later euthanized at a wildlife hospital.

Proposed turbine site 1 in the Mulqueeney Ranch project is on a descending ridgeline that parallels the neighboring ridge on which Golden Hills turbine 11 has been killing golden eagles. Similar to Golden Hills 11, Mulqueeney site 1 is near the same valley bottom and on the same terrain setting. It is on a wider patch of model-predicted Hazard Class 4 than was Golden Hills 11, and it encounters just as much golden eagle traffic (Figures 17 and 18). During my behavior surveys at a station just west of Mulqueeney site 3, I have many times observed golden eagles interacting with each other or passing through the valley or along the valley's bordering hills. Mulqueeney site 1 is a very popular site for golden eagles.

In fact, as is obvious in Figures 17 and 18, Mulqueeney sites 1 through 5 are heavily used by golden eagles. The traffic of our telemetered golden eagles is so densely packed along sites 1 through 5 that the pattern forms what looks like one of several 'rivers.' These rivers of activity align along valleys and along the southwest faces of ridges, often spilling over the ridges themselves (Figures 17 through 22). If the eagles were to stay within predictable lanes, micro-siting would be easier, but social demands pull them from their lanes. After watching golden eagle behaviors for hundreds of hours, it became clear to me that no eagle flight in the APWRA was random. I became more aware that unless golden eagles were contouring or hovering in obvious foraging patterns, they were flying towards targets such as a perch site or more often another golden eagle or a bald eagle or red-tailed hawk. Golden eagles can see more from the sky than any of us observers can see from stations on the ground, but I learned to search the distant areas to where eagles were headed to often see the eagle that I otherwise would not have detected. Or alternatively, I learned to backtrack to where a young golden eagle was headed from to detect the older golden eagle that had displaced it.

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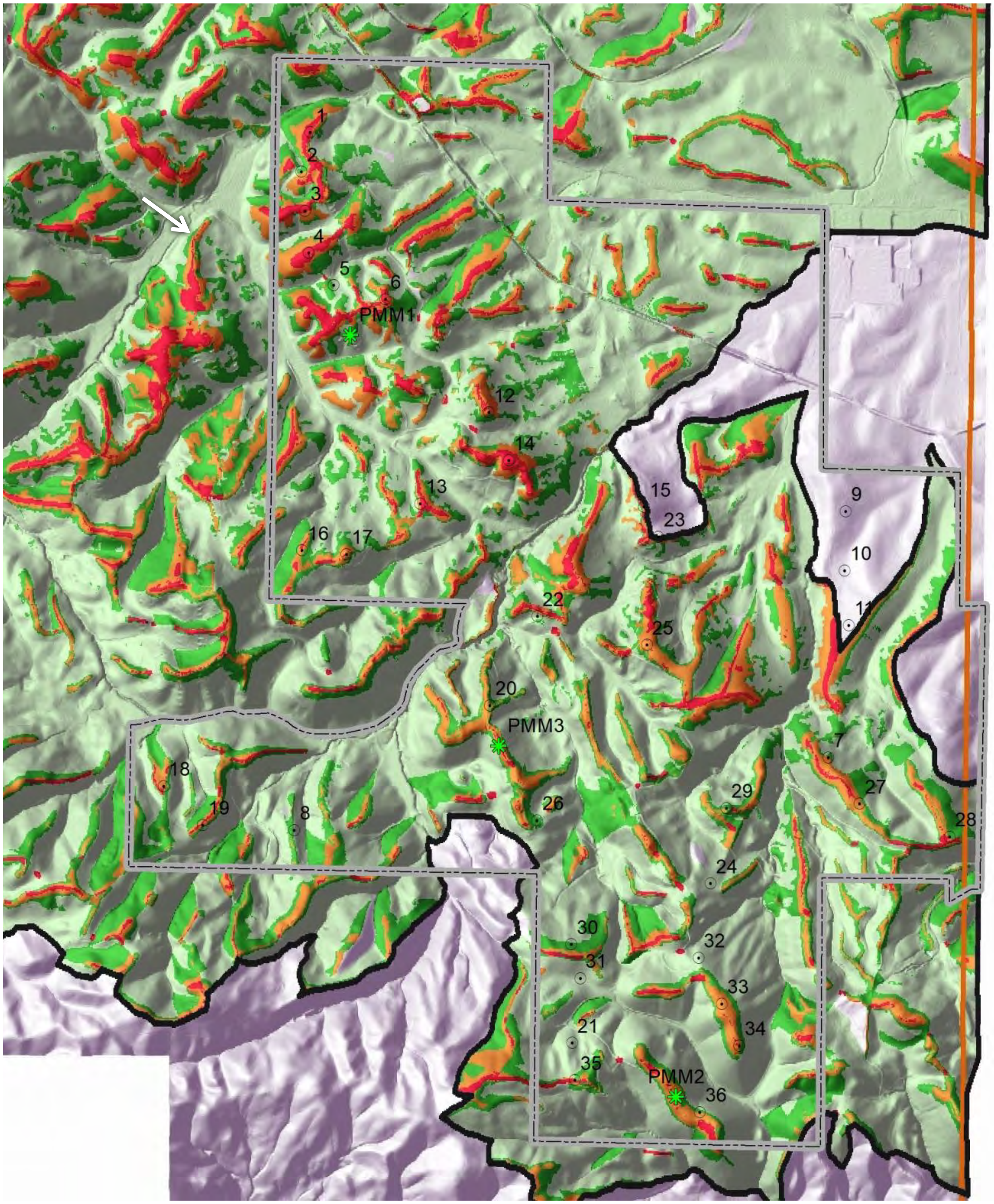

Figure 16. Fuzzy Logic likelihood surface classes of golden eagle telemetry, flight behavior and fatality locations across the Sand Hill project area, Altamont Pass Wind Resources Area, California, where red corresponds with highest likelihood of golden eagle collision, orange corresponds with second highest likelihood, yellow corresponds with third highest likelihood, and dark green corresponds with least likelihood. The white arrow points to Golden Hills turbine 11, which killed multiple golden eagles.

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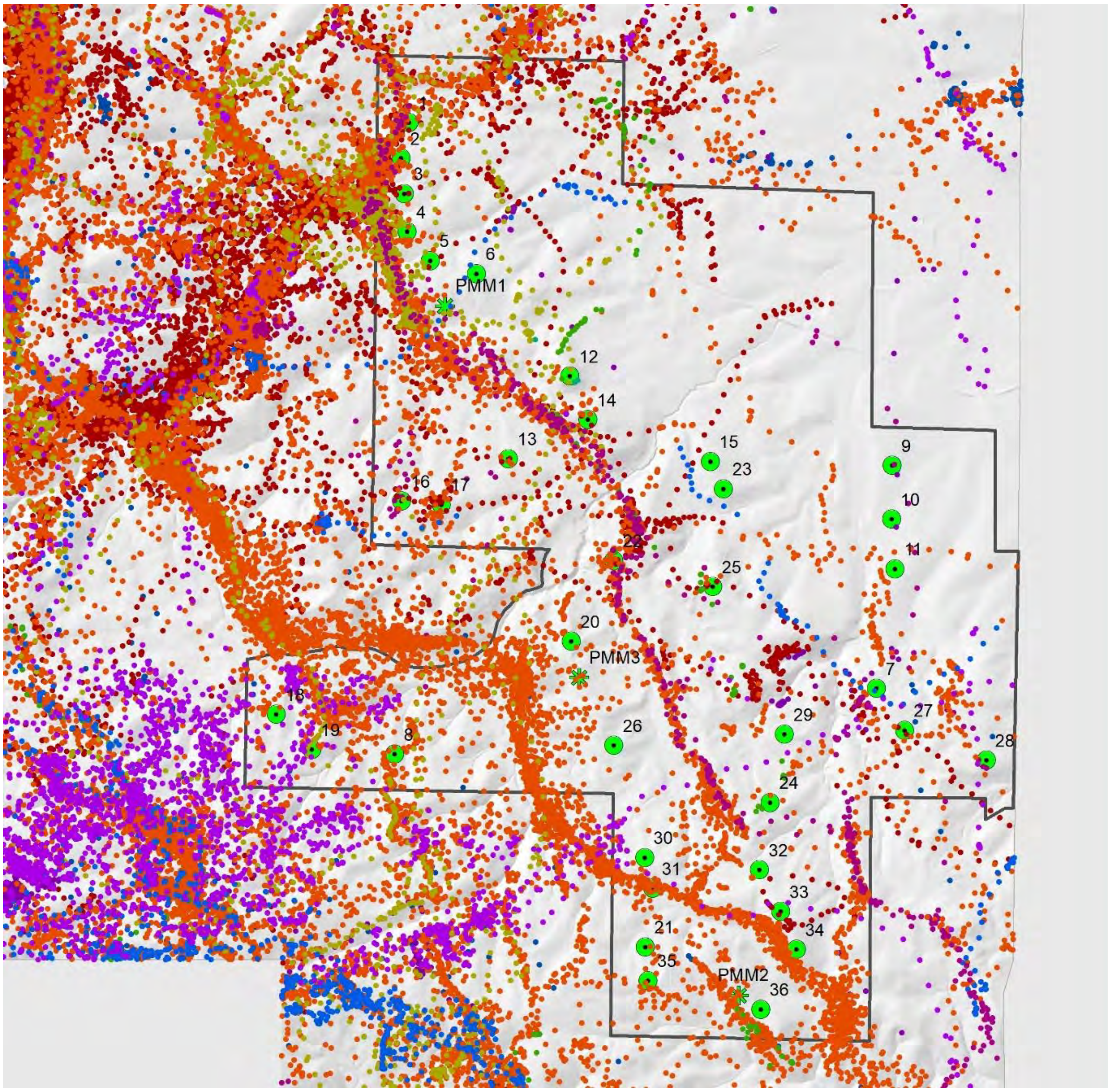

Figure 17. Positions of 11 GPS-telemetered golden eagles in flight within 200 m of the ground, selected for having crossed the Mulqueeney Ranch wind project between 2013 and 2019.

Patterns in the golden eagle telemetry data make clear that not all candidate turbine sites are equal in the collision risk they pose. In Figure 17 it is obvious that sites 9 and 10 get much less traffic than do sites 1 through 5. However, these data reflect only what the 11 telemetered golden eagles did between 2013 and 2019. Many more golden eagles used the APWRA than these 11 eagles. My visual-scan behavior observations included many more of the other golden eagles, so they contributed to my understanding of patterns of eagle activity in the APWRA. For example, Figure 18 does not depict a strong pattern I observed many times during behavior surveys, and that was low, east-west flights along the north side of the east-west ridgeline on which proposed

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Mulqueeney site 3 is located. For some reason our 11 telemetered eagles infrequently flew there, but many other eagles did.

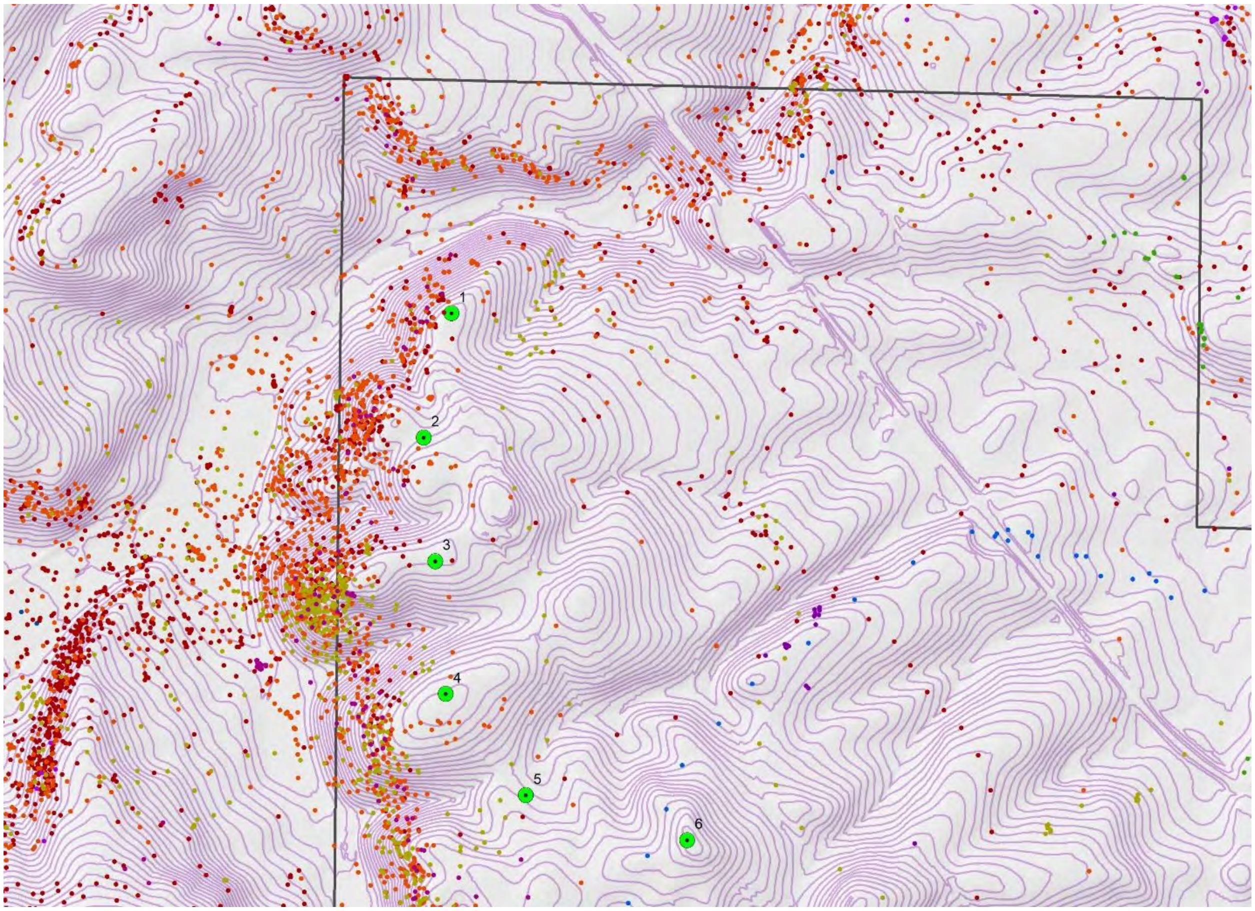

Figure 18. Positions of 11 GPS-telemetered golden eagles in flight within 200 m of the ground in the northwest portion of the Mulqueeney Ranch wind project between 2013 and 2019.

One of the most dangerous turbine sites proposed in the Mulqueeney Ranch project would be site 31 (Figures 20 and 22). Site 31 is located right in the middle of a golden eagle 'river' of flight activity. Based on my experience with behavior surveys, the reason for the intense activity there is obviously due to the declining ravine leading towards a prominent southwest face of a long ridge structure terminating to the east against the face of a north-south oriented ridge structure. The terrain setting is a perfect setup for golden eagles to build speed as they glide east down the ravine to the ridge-face where deflected updrafts provide free lift and outstanding flight control, finally banking into the eastern backstop. Installing a turbine at site 31 would essentially guarantee golden eagle collision fatalities. By the time golden eagles arrived at site 31, they would be traveling too fast to avoid passage through the rotor plane.

Note that site 31 is in the collision hazard model's predicted lowest Hazard Class. To make sense of this contradiction the reader would have to review Smallwood and Neher (2015) to learn that we did not bother predicting collision hazard where we assumed

5-68 cont'd

wind project developers would not site turbines. Such sites included valley bottoms, ravines and other low terrain, which we generally advocated against before models were developed. We simply applied the low Hazard Class to all these obvious 'no-go' areas.

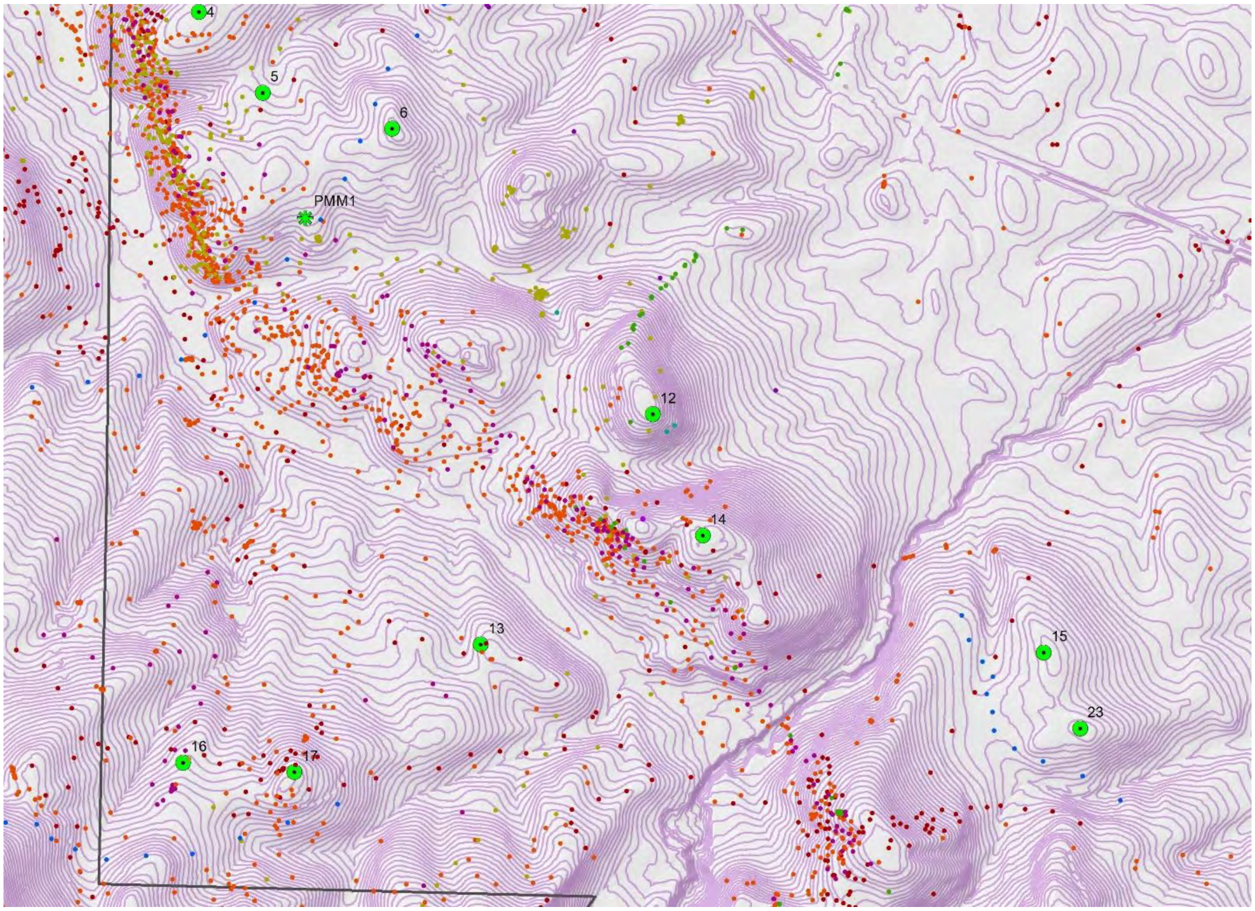

Figure 19. Positions of 11 GPS-telemetered golden eagles in flight within 200 m of the ground in the west-central portion of the Mulqueeney Ranch wind project between 2013 and 2019.

In addition to site 31, and for the reasons given in Table 7, I could not recommend turbines at sites 1 through 8, 14 through 17, 19-22, 24-39, 5C nor 17C. I could not recommend turbines at 34 (84%) of the 41 sites. A few other sites pose considerable collision risk to golden eagles, but those risks could be reduced by relatively small relocations of the turbines to avoid inherently hazardous terrain conditions or the creation of hazards from construction grading. An example would be site 18, which could be safer 80 m north. Overall, the layout of the project appears too dangerous for golden eagles, and will cause excessive mortality. The risk of the project to golden eagles could be reduced substantially by halving the installed capacity and more carefully siting the 18 or so turbines that remain in the project.

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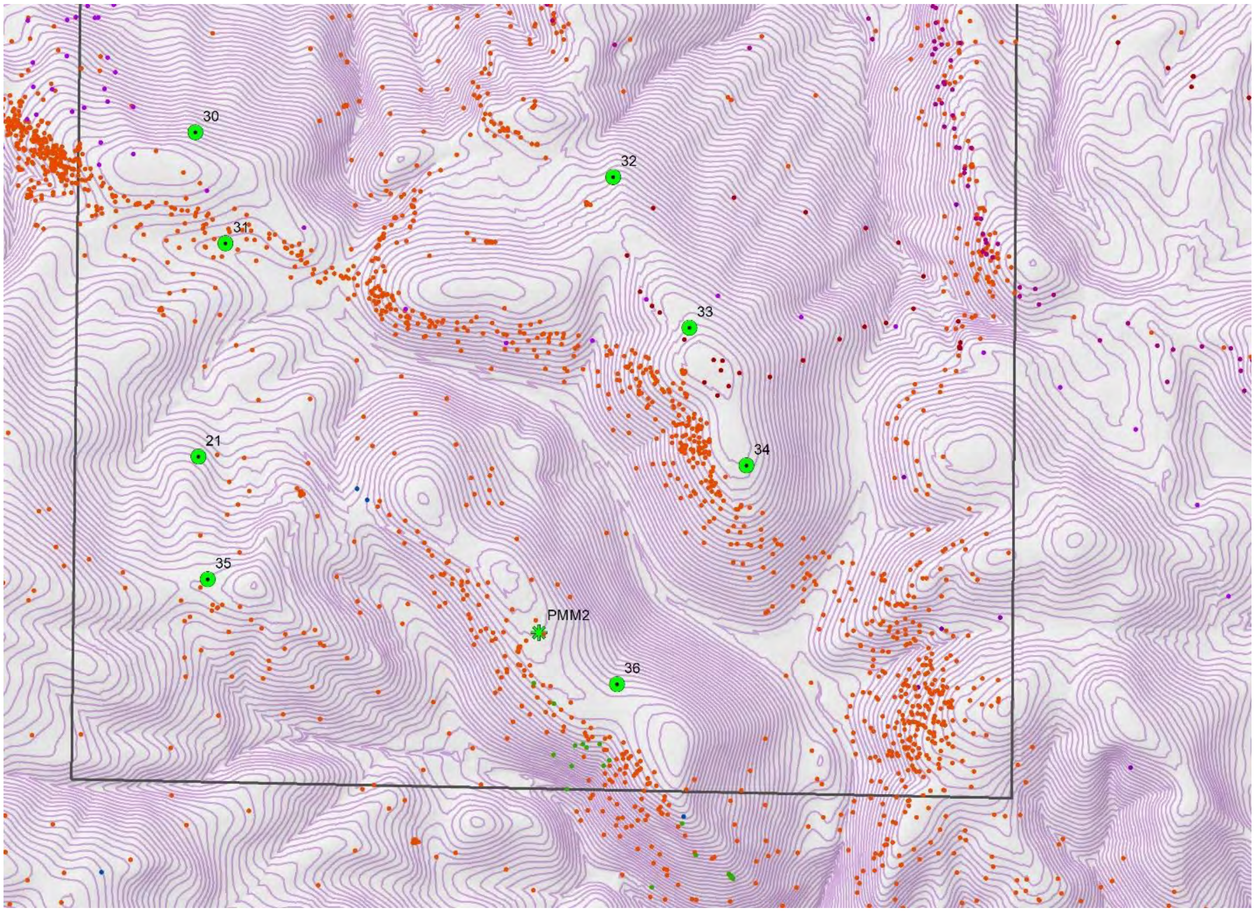

Figure 20. Positions of 11 GPS-telemetered golden eagles in flight within 200 m of the ground within the southern aspect of the Mulqueeney Ranch wind project between 2013 and 2019.

Of the 38 turbine sites occurring within areas to which Mr. Neher and I were able to extend our golden eagle collision hazard model, 18 (47%) were within Collision Hazard Class 4 – the most hazardous of the Classes predicted by our model. Fourteen (37%) of the sites were in our model-predicted Hazard Class 3. Because our policy was to recommend siting turbines outside Hazard Classes 3 and 4, we would have begun our assessment with concern over the proposed sites of 84% of the turbines in the project. We might have overlooked model predictions at some of the locations, based on site assessments and other circumstances, but we would have also recommended against a few of the sites in lower model-predicted Hazard Classes, such as the original site 31 and newest site 16.

Based solely on my SRC-style ratings, I would recommend against 26 (63%) of the proposed sites after the relocations per Estep's micro-siting assessment. Considering likely grading effects that increase collision hazard, I would recommend against even more sites. The layout, even after Estep's micro-siting assessment, would be unnecessarily dangerous to golden eagles. At least 50% of the sites should be removed from the project, and the remainder laid out more safely.

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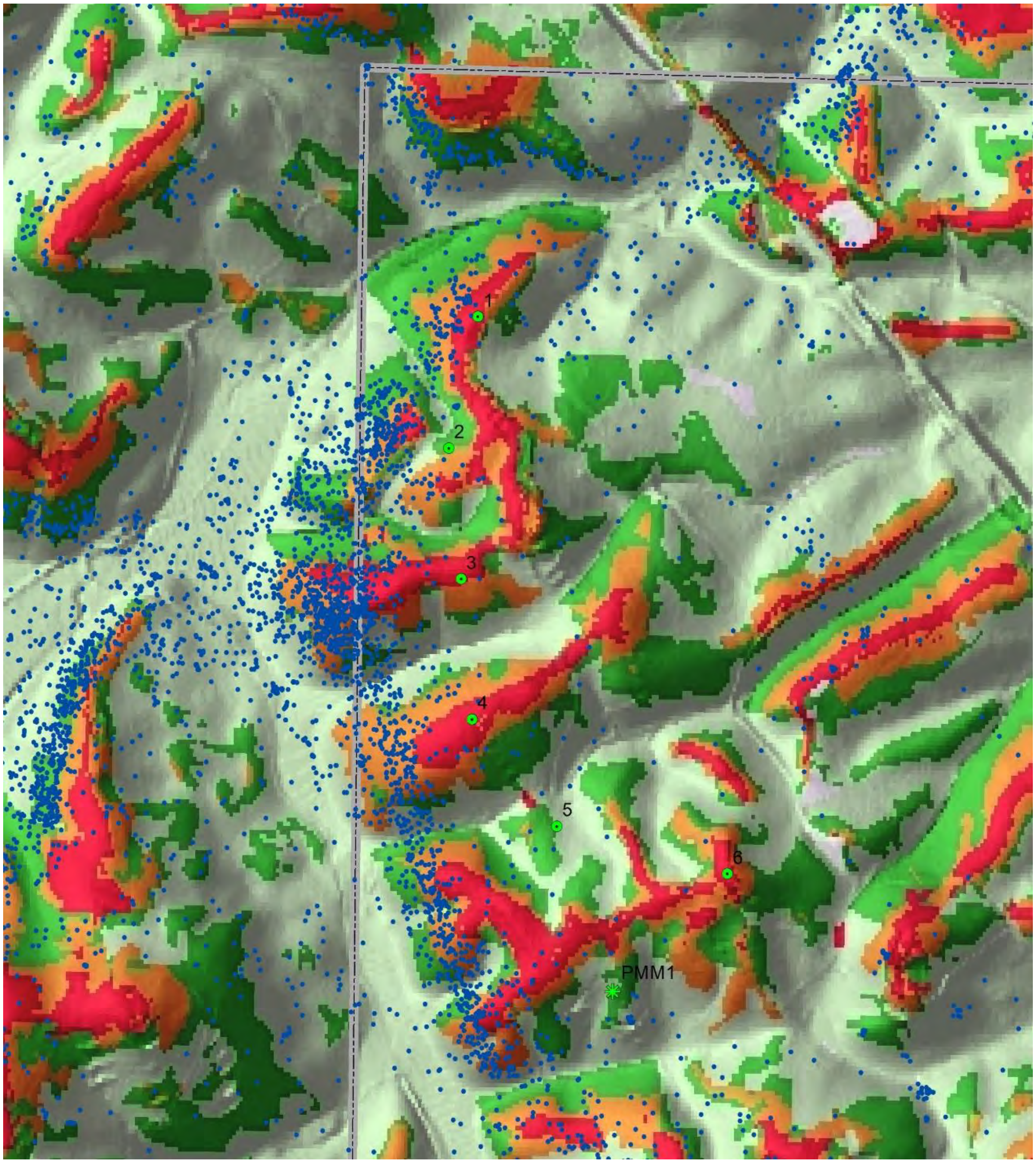

Figure 21. Positions of 11 GPS-telemetered golden eagles in flight within 200 m of the ground within the northern aspect of the Mulqueeney Ranch wind project between 2013 and 2019 and overlaid on Fuzzy Logic likelihood surface classes of golden eagle telemetry, flight behavior and fatality locations across the Sand Hill project area, Altamont Pass Wind Resources Area, California, where red corresponds with highest likelihood of golden eagle collision, orange corresponds with second highest likelihood, yellow corresponds with third highest likelihood, and dark green corresponds with least likelihood.

5-68 cont'd

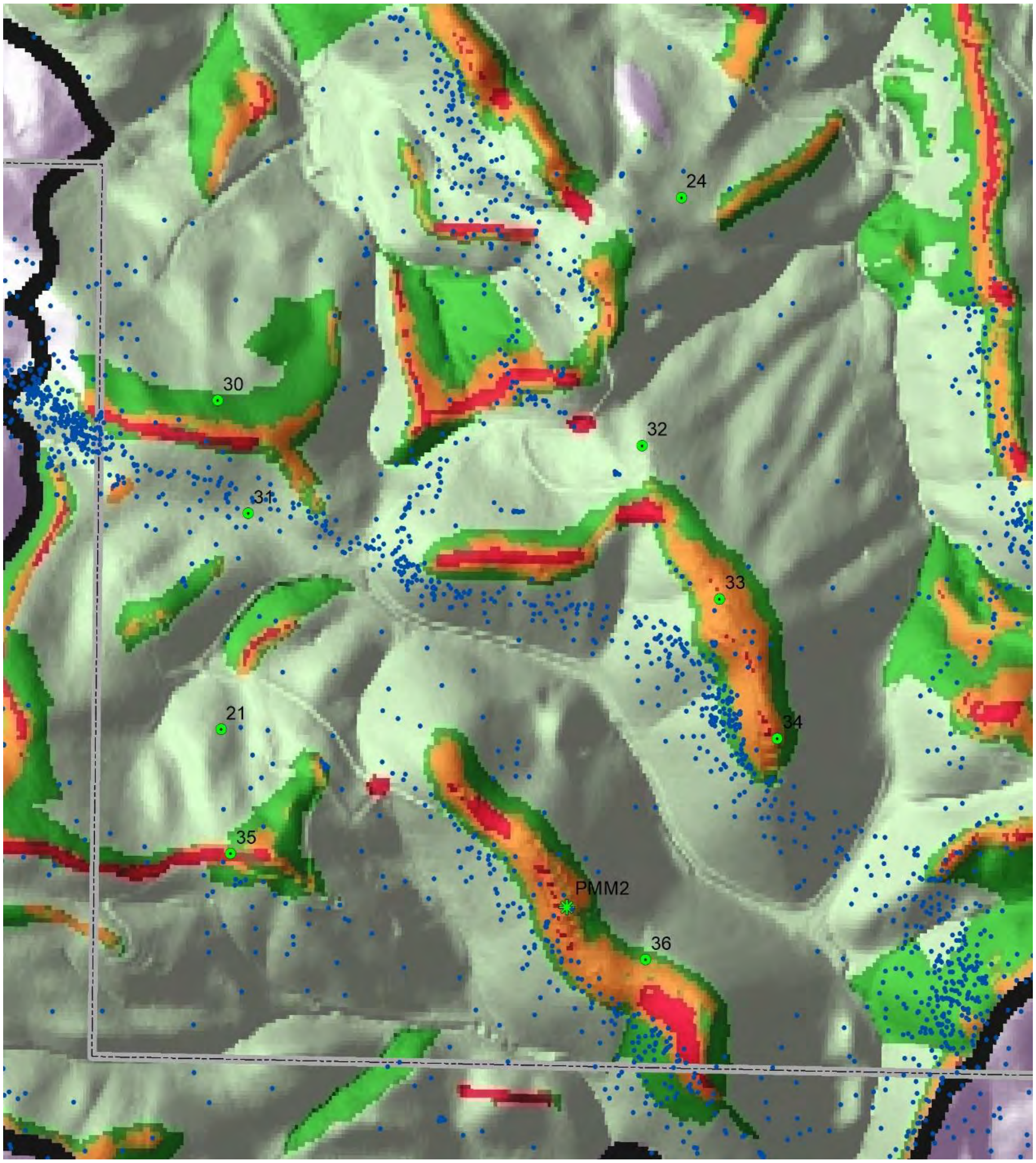

Figure 22. Positions of 11 GPS-telemetered golden eagles in flight within 200 m of the ground within the southern aspect of the Mulqueeney Ranch wind project between 2013 and 2019 and overlaid on Fuzzy Logic likelihood surface classes of golden eagle telemetry, flight behavior and fatality locations across the Sand Hill project area, Altamont Pass Wind Resources Area, California, where red corresponds with highest likelihood of golden eagle collision, orange corresponds with second highest likelihood, yellow corresponds with third highest likelihood, and dark green corresponds with least likelihood.

5-68 cont'd

Photo 29. A pair of golden eagles interacting on the ridge just east of Golden Hills turbine 11, and not far west of proposed Mulqueeney Ranch turbine site 3, 19 June 2018. Interactions such as depicted here account for nearly all of my observational records of wind turbine collision near-misses among golden eagles.

5-68 cont'd

Photo 30. Golden eagle after having just been injured by turbine 11 at Golden Hills on 26 April 2016. She was later euthanized at a wildlife hospital.

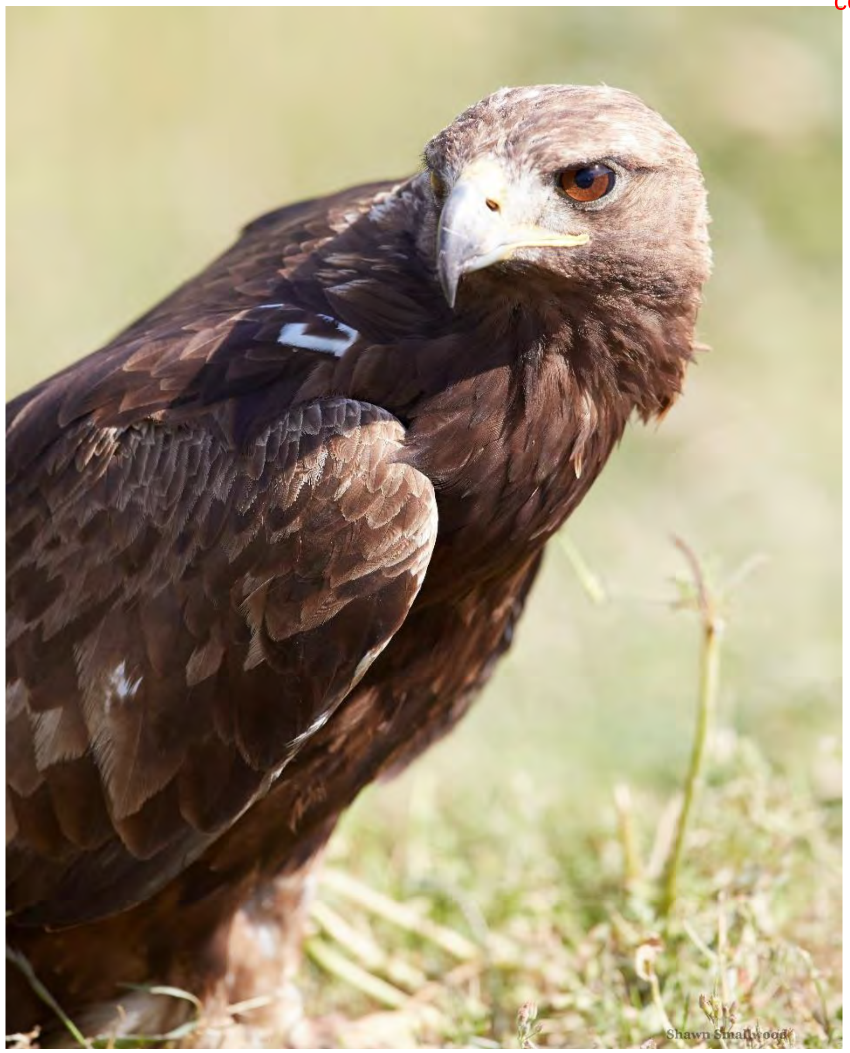

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Table 7. Assessment of golden eagle collision hazard posed by Mulqueeney Ranch wind turbine sites, including hazard classes predicted by our model, GPS-telemetry positions of 11 golden eagles flying ≤200 m of the ground, my SRC-style hazard ratings (scale 0 to 10), my notes on terrain and likely grading impacts relative to collision risk, and Estep's (2020) collision risk assessment and relocation distance (m).

WTG	Model hazard class	GPS telemetry activity	My SRC-style rating	Terrain setting	Grading effect on hazard	Estep's 1st rating	Relocated distance (m)	Estep's 2nd assessment
1	4	Intense	10	2 m lower than GH 11	None	High	0	---
2	4	Intense	10	Complex saddle; low	High	Mod-high	71	Mod-high
3	4	Intense	9	Heavily trafficked E-W ridge	Small	Mod-high	18	Mod-high
4	4	High	9	Heavily trafficked E-W ridge	None	Mod-high	16	Mod-high
5	2	Moderate	10	Low in terrain; upwind berm	High	High	35	---
6	4	High	8.5	E-W ridge	Small	Moderate	353	Moderate
7	4	High	8	Swale	High	Moderate	257	Moderate
8	1	Moderate	8	Leaves upwind berm	High	---	46	---
9	unk	Low	4	Leaves upwind berm	Modest	---	38	Moderate
10	unk	Low	7.5	Low terrain	Modest	Moderate	94	Moderate
11	unk	Low	4		None	Moderate	40	---
12	4	Moderate	8	S side of peak	Modest	High	120	Mod-high
13	3	Moderate	6	Low	Small	---	45	---
14	4	Intense	5	Peak	Modest	Mod-high	5	Mod-high
15	4	Low	8	Shallow saddle	Small	Moderate	119	Moderate
16	1*	High	8.5	Low	Modest	High	540	High
17	3	High	8	Upwind berm remains	High	Moderate	20	Moderate
18	4	Moderate	5	Ridge crest	Small	Mod-high	72	---
19	3	High	5	Ridge crest	Small	Mod-high	12	---
20	3	Moderate	5	Peak	Modest	Mod-high	264	Mod-high
21	1	Moderate	10	Low terrain in ravine	Modest	High	0	High
22	4	Intense	8	On top of chute to NW	Modest	Mod-high	332	---
23	4	Low	5	Edge of canyon	Small	Moderate	0	---
24	3	Moderate	9	Valley bottom	Modest	High	280	Moderate
25	3	High	6.5	Peak	Small	Mod-high	250	---

5-68 cont'd

26	4	Moderate	8.5	Break in slope	Modest	Moderate	140	Moderate
27	3	High	7.5	Break in slope	Small	Moderate	65	---
28	3	High	7	Declining ridgeline	Small	Mod-high	292	Moderate
29	3	Low	5	Peak	Small	Moderate	30	Moderate
30	4	Moderate	7.5	East-west ridge	Modest	Moderate	39	Moderate
31	2	Intense	9	Minor ridge in ravine	Modest	Moderate	146	---
32	4	Low	8.5	Edge of saddle	Modest	Mod-high	112	Mod-high
33	3	High	8	Break in slope	High	Mod-high	75	---
34	4	High	9	Break in slope	None	Mod-high	191	Mod-high
35	3	Moderate	7.5	Below E-W ravine; low	None	Mod-high	20	---
36	3	High	10	Would enhance saddle	High	High	123	Mod-high
37	4	High	8.5	Shallow saddle	None	Mod-high	0	
38	3	Low	8	By pond	Small	High	0	
39	1*	Moderate	8	Bottom of slope near ponds	Modest	High	0	
5C	4	Low	9	Rim of east-west ravine	Modest	---	0	Mod-high
17C	3	Low	9	Upwind of valley pass and at bottom or large hill to west	High	---	0	Mod-high

* Neher and I always assumed the developers would stay out of those portions of Class 1 that were low-lying or near obvious hazards such as ponds, valley bottoms and ravines.

Estep's (2020a,b) Micro-Siting Assessment 5-69

According to Estep (2020a:7), "it is unclear how the specificity of the model [developed by Smallwood and Neher's various micro-siting efforts] outcomes corresponds to higher certainty with regard to a potential reduction in fatalities of target species compared with a field assessment." In each of our reports, Neher and I clearly characterized the modeling approach as one of several approaches we used for making micro-siting recommendations. The model was not intended as a stand-alone method, but rather as a means to complement assessments based on site visits and knowledge of the fatality history associated with the site. We used both the model and field assessments.

Estep (2020a) speculates on multiple ways our micro-siting approach might inaccurately predict collision risk. But he speculates about this after we relied on data and hypothesis-testing, and after we prepared explicit models, and after we validated our predictions. Our predicted collision hazards proved highly accurate, especially for golden eagle. Estep has done none of this.

Estep (2020a) presents attributes he says he quantified in the field, and he presents drawings of golden eagle flight paths and relative eagle use measured in use surveys. However, Estep does not explain how any of this information contributed to micro-siting. Were the eagle flight paths all flights including those 1,000 m above ground? Were the flight paths related to terrain in any way? The mere collection of data is not the same as analyzing data. In fact, Estep (2020a) repudiates the very types of data that he presents by complaining that it is all too complicated to make sense of, anyway.

Estep (2020a:8) claims, "there is little information that would suggest micrositing of turbines in an otherwise monotypic landscape, even one with complex topography like the APWRA, would influence potential bat mortality. As a result, minimizing potential bat mortality has not been a focus of micro-siting efforts in the APWRA." However, I spent 995 hours on a FLIR T620 thermal-imaging camera to gather the information needed to develop methods for micro-siting turbines to minimize impacts to bats. I also collected fatality data for the same purpose. Bats are killed disproportionately more often by wind turbines bordering large valleys and just below hill peaks, as examples, so these types of places can be avoided to minimize impacts to bats. Estep threw up his hands when it came to micro-siting for bats, but the evidence is available to implement PEIR mitigation measure BIO-14a to micro-site turbines to minimize impacts to bats.

According to Estep (2020a:8), "After reviewing these preliminary results [Estep's recommendations], Mulqueeney Wind proposed alternative relocation sites for 18 of the 36 turbines." The DSEIR does not disclose this. However, the relocations appear to have been minor in most cases.

Estep (2020a) rated collision risk to be High for 7 sites. The developer declined to relocate turbines from 6 (86%) of these 7 sites, and provided only a slight change to the seventh site (site 12).

Most of Estep's recommended relocations were very minor, and most were accepted by the developer. Some relocations increased the hazard to golden eagles, in my assessment. These include the following: 5-69 cont'd

Site 2 – Shifts from Hazard Class 3 to 4, and grading effects from small to high;

Site 5 – Grading for pad would cut more steeply into the slope, leaving a steep upwind berm. Estep recommended farther up the ridge, on the crest, which would have been safer;

Site 6 – Shifts from SRC rating of 7 to 8.5 and from telemetered eagle activity from Low to High. Putting the turbine closer to the very intense band of eagle activity increases the hazard;

Site 7 – Shifts from Hazard Class 2 to 4, and into telemetered eagle traffic;

Site 10 – Shifts from Hazard Class 6 to 7.5 because it goes to lowest terrain;

Site 12 – Shifts from Hazard Class 3 to 4 and SRC rating from 7 to 8 due to its position on break in slope;

Site 15 – Shifts SRC rating from 4 to 8 by going into saddle.;

Site 16 – Shifts Hazard Class from 4 to "no-go" low-lying area and SRC rating from 7 to 8.5. New turbine site would be at break in slope and between two ponds and burrowing owls;

Site 20 – New site would be further into telemetered eagle traffic;

Site 21 – shifts from Hazard Class 1 to 4, and from SRC rating 8 to 10, and from telemetered eagle activity of low to moderate;

Site 22 – Shifts from Hazard Class 2 to 4 and into intense telemetered eagle traffic;

Site 24 – Shifts from Hazard Class 1 to 3 and into low terrain, and shifts my SRC-style rating from 7 to 9;

Site 26 – Shifts from Hazard Class 2 to 4 and from telemetered eagle activity of low to moderate;

Site 27 – Shifts halfway to Estep's recommendation but not enough to get outside the hazard of a saddle along a declining ridge;

Site 28 – Shifts from low to high telemetered eagle activity;

Site 32 – Shifts from Hazard Class 1 to 4 and SRC rating 8 to 8.5 due to new position at edge of saddle.

5-70

Validation of Wind Turbine Micro-siting Performance at Golden Hills

With the releases of the Golden Hills 3rd year fatality monitoring report and the 1st year Golden Hills North fatality monitoring report, the opportunity arose to more effectively validate a composite collision hazard model I developed to validate micro-siting recommendations I had made for repowering projects (Smallwood 2019). The opportunity is to test for the magnitude of any validity shrinkage in the test of last year's model performance, which was warned about in Smallwood (2018). Validity shrinkage is caused by inflated model performance caused by using the same data to test performance that were used for model development. An example would be the use of r^2 as an indicator of performance of a linear regression model. A model with an r^2 value of 0.95 would be considered highly explanatory of the variation in the data used to develop the model, but superior measures of the model's predictive power would be to determine whether the same or similar model would fit independent data drawn from the same population, or whether future events matched model-predicted outcomes.

The composite model in Smallwood (2019) represented multiple factors that contributed to micro-siting recommendations (Smallwood and Neher 2015a,b). The model's foundation consisted of four mapped hazard classes predicted from a fuzzy logic model, the development of which has been described in the scientific literature (Smallwood and Neher 2017b, Smallwood et al. 2017). I used fatality data contributing to the development of fuzzy logic models to compare the performance of various model iterations as data sets and understanding of causal factors improved (Smallwood and Neher 2017a). I also performed some validation by extending more recent iterations of fuzzy logic model predictions to other wind projects to which I had earlier predicted turbine-specific collision hazards to eagles (Smallwood et al. 2017b). The late-2019 release of fatality monitoring reports from Golden Hills and Golden Hills North provided the best opportunity to validate the entire suite of factors that contributed to micro-siting recommendations. This suite of factors was additional to the fuzzy logic model predictions, which only served as a starting point in micro-siting recommendations.

My micro-siting recommendations were to generally avoid sites that the model predicted to be located within Hazard Classes 3 or 4. However, the models could not capture all of the factors that concerned me. As warned at the time, "*Map-based collision hazard maps need to be interpreted carefully, meaning the hazards of specific terrain and wind situations – ridge saddles, apices of southwest and northwest-facing concave slopes, and breaks in slope – should always trump model predictions*" (Smallwood and Neher 2015a). It was also warned at the time, "*As an example of the need for interpreting risk maps, our collision hazard models do not account for grading that will be necessary for access roads and wind turbine pads*." (Smallwood and Neher 2015a). The models were useful for ruling out turbine siting over large portions of a project area, thereby narrowing the areas where I could consider factors that were either not represented or only weakly represented in the models.

SRC-style hazard ratings on a 0-10 scale captured some of the factors that were unrepresented in the models, so I also relied on them for micro-siting

5-70 cont'd

recommendations. They were based on experience with predicting collision hazards based on terrain settings and other factors, and later learning whether my predictions were accurate. For Golden Hills and Golden Hills North, I assigned ratings of 9.5 (highly hazardous) to turbine 56, 9 (highly hazardous) to Golden Hills turbines 1, 11, and 22, 8.5 to turbines 8 and 36, and 8 to turbine 59, as examples. Had I been the decision-maker, and assuming the project had to have been developed, then I would not have constructed wind turbines at any of these turbine addresses either by building them at alternate sites or not having to build them at all by instead building the project with a smaller number of larger wind turbines. On the other hand, I assigned an SRC-style rating of only 3 (not hazardous) at turbine 15, which later killed multiple eagles. Whereas I clearly was concerned about turbine 11's low position on the landscape ("*Pretty much the entire slope has been identified as hazardous to eagles, so this site was of concern. The site is low, near the valley, and gets a lot of eagle traffic*." Smallwood and Neher 2015a), my SRC-style rating did not express that concern for turbine 15. In hindsight, it should have. And now I know better.

As noted earlier, another factor that contributed to my micro-siting recommendations was terrain settings where I feared substantial grading would be needed for the turbine pad and access road, leaving an upwind cut slope or berm that would reduce the effective height of the low reach of the turbine blades for any eagles on a flight path to clear that upwind slope or berm (see Photos 18 and 19). Another factor was a turbine site located near a ridge saddle or break in slope, because eagles often cross ridge structures at these features. Another factor was a turbine's position low on a declining ridgeline, and another was a turbine's position that was low relative to surrounding ridges or hills, such as turbines located in large valley structures or on crests of relatively short ridges with larger ridges or hills on two or more sides. Even though these terrain-related factors would have contributed to my SRC-style ratings, I called them out again to emphasize to the wind company the source of my concern.

I used 51 eagle fatalities from modern wind turbines in the Altamont Pass Wind Resource Area to develop composite model of collision hazard in Smallwood (2019). These fatalities were from 3 years of fatality monitoring at Vasco Winds and Buena Vista, 5 years of fatality monitoring at Diablo Winds, and the first 2 years of monitoring at Golden Hills. These 51 fatalities I refer to as the source pool. Fatalities used to validate the model are referred to as the validation pool.

Since the composite collision hazard model of Smallwood (2019), I modified it slightly to better represent the factors I relied on for micro-siting recommendations. I added a grading level 3, where the earlier versions included grading classes of levels 0, 1, and 2. I also added a factor referred to as 'Low on terrain,' which better represented a concern that I had for Golden Hills turbines such as 11, 12 and 15. In Smallwood (2019), I represented this factor incompletely with a variable named 'Low on Declining Ridge or Slope.' This variable represented an overly narrow portion of the factor I considered; the rest of it was a site's position that was low in the terrain relative to nearby ridges and hills. Therefore, I added the factor, 'Low on terrain.' I treated all factors with equal weight (see below).

5-70 cont'd

Scoring System leading to Composite Hazard Levels

	Score
SRC-style rating of collision hazard (SRC)	0-10
Low on Declining Ridge or Slope (Low)	1
Low on terrain (LT)	
Not low	0
Low relative to 1 adjacent slope	1
Low relative to ≥2 adjacent slopes, hills, or ridges	2
Near terrain feature: major saddle, valley, slope break (T)	1
Grading (G)	
Berm bank height <1 m or Distance to berm/bank ≥40 m	0
Berm bank height >1 and ≤3 m & Distance to berm/bank <40 m	1
Berm bank height >3 m and ≤13 m & Distance to berm/bank <40 m	2
Berm bank height >13 m & Distance to berm/bank <40 m	3

$$\text{Combined Hazard Score (CHS)} = \frac{SRC}{10} + \frac{G}{3} + Low + T + LT$$

Composite Hazard Level	
CHS ≤1.25	1
CHS >1.25 and ≤2	2
CHS >2 and ≤2.85	3
CHS >2.85	4

If the combined collision risk model representing micro-siting recommendations was effective, then mean golden eagle fatalities should increase with increasing hazard levels predicted by the model. We should see this pattern for both the source and validation pools of eagle fatalities. Mean golden eagle fatalities in the validation pool should parallel mean golden eagle fatalities in the source pool in their responses to increasing predicted hazard levels.

I also compared observed numbers of fatalities to the expected numbers, where the expected numbers were total fatalities × proportion of wind turbines composing the *i*th predicted hazard level. The ratio of observed to expected fatalities sacrificed measurement error (hence no CI), but the reward was seeing the magnitude of effects among collision hazard levels. Numbers >1 can be interpreted as eagle fatalities as corresponding multiples of a random distribution of fatalities among the 171 wind turbines compared. An observed/expected ratio of 2 would represent twice the number of golden eagle fatalities other than expected among wind turbines comprising the associated hazard level.

5-70 cont'd

Results

Not only were mean golden eagle fatalities responsive to collision risk predicted by the composite model, but the pattern of response in the validation data paralleled the response in the source data (Figure 23, left graph). The most recently reported golden eagle fatalities validated the composite model of Smallwood (2019). The most substantial difference in the pattern of fatalities was the lower means in in the validation data, but the lower means were due to the smaller number of eagles involved – 16 eagle fatalities in the validation data compared to 51 eagle fatalities in the source data, both of which were compared to 171 modern wind turbines (among Golden Hills, Golden Hills North, Vasco Winds, Buena Vista, and Diablo Winds). However, compared to golden eagle fatalities at wind turbines in hazard level 1, those in hazard level 4 averaged 7.6 times higher for the source pool and 28.8 times higher for the validation pool.

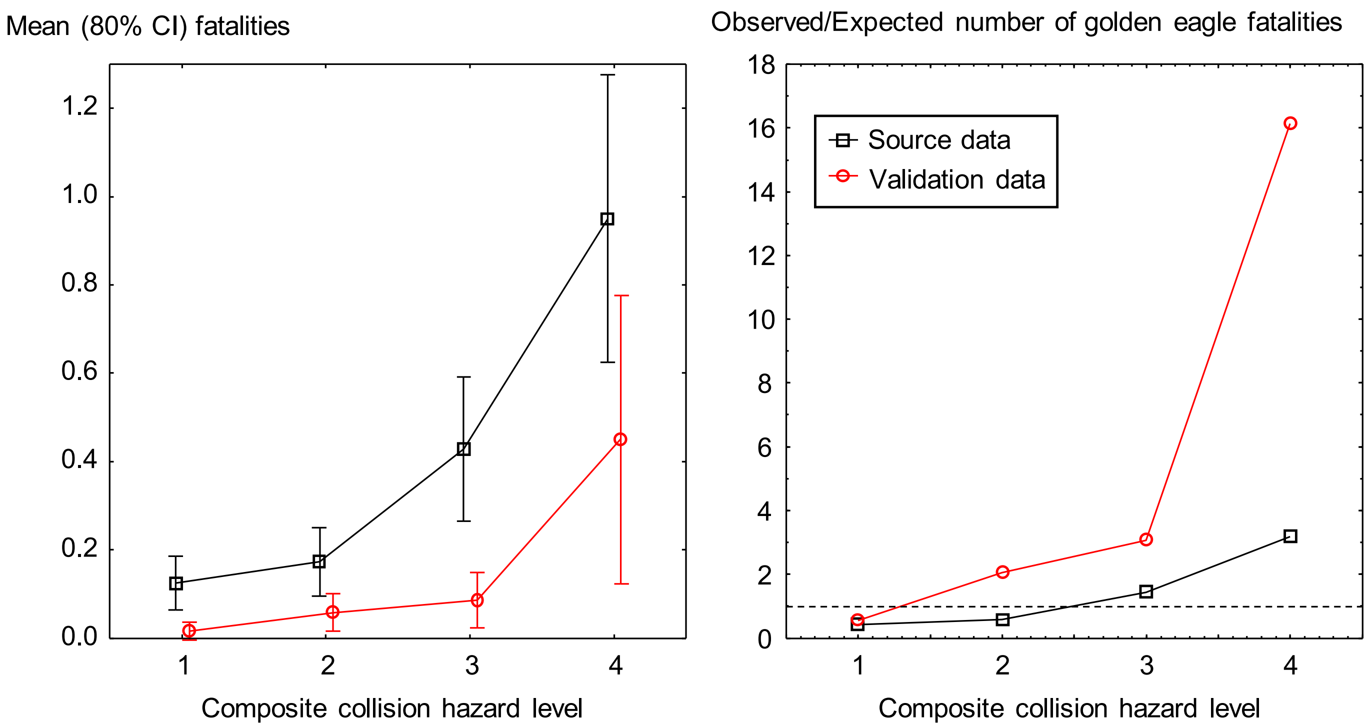

Figure 23. Mean golden eagle fatalities (left) and Observed/Expected number of fatalities (right) among wind turbines by collision hazard level at Golden Hills and Golden Hills North, where the source data used to develop the combined collision hazard levels are depicted in black and the validation data are depicted in red.

The difference in magnitude of effect between validation and source data was revealed when replacing mean fatalities with the observed/expected number of fatalities as the dependent variable (Figure 23, right graph). In the source data, golden eagle fatalities were found 3.2 times other than expected among wind turbines comprising collision level 4, thus indicating strong model performance (Figure 23, right graph, black color). But in the validation data, golden eagle fatalities were found 16 times other than expected among wind turbines comprising collision level 4 (Figure 23, right graph, red color), thus indicating even stronger model performance compared to using the source data. 5-70 cont'd

At Golden Hills and Golden Hills North, I predicted 11 (16%) of 68 wind turbines belonged to collision hazard level 4, and it was at these turbines where 23 (50%) of 46 golden eagle fatalities were found through September 2019. At Golden Hills alone, I predicted 8 (16%) of 48 wind turbines belonged to collision hazard level 4, and it was at these turbines where 18 (16%) of 41 golden eagle fatalities were found through September 2019. At Golden Hills North, I predicted 3 (15%) of the 20 wind turbines belonged to collision hazard level 4, and it was at these turbines where 5 (71%) of 7 golden eagle fatalities are known to have occurred through September 2019. In summary, half of the eagle fatalities at Golden Hills and Golden Hills North occurred at a small subset of turbines that my micro-siting recommendations (except for turbine 15) accurately identified as the most dangerous turbines if constructed.

In Figure 24, I broke down the responses of golden eagle fatalities to specific factors in the composite model. Whereas golden eagle fatalities increased with increasing SRC-style hazard ratings at Vasco Winds (Figure 24, top left graph), they did not increase in the validation pool at Golden Hills and Golden Hills North (Figure 24, top right graph). The lack of response at Golden Hills and Golden Hills North was likely due to the much greater extent and levels of grading at these projects as compared to Vasco Caves (see other graphs in Figure 24).

Mean golden eagle fatalities increased with more neighboring terrain features that were taller than the turbine site, both at Vasco Winds and Golden Hills (Figure 24 middle graphs). They also increased with the level of grading at Golden Hills and Golden Hills North, whereas they did not do so at Vasco Winds (Figure 24, lower graphs), where grading was much less extensive.

Wind turbines predicted by the model as most hazardous to golden eagles at Golden Hills and Golden Hill North included 1, 8, 11, 12, 15, 22, 32, 36, 53, 56, and 59.

Comparison of fatalities before and after repowering 5-71

During 2006 and 2007, which were years of extensive fatality monitoring prior to removals of hazardous turbines per SRC recommendations, golden eagle fatalities numbered 17 and 19 per year at Golden Hills and 11 and 9 per year at Golden Hills North, respectively. Three years of post-repowered fatality monitoring resulted in an estimated 14 golden eagles per year at Golden Hills, and the first year of post-repowered monitoring resulted in an estimated 3 golden eagles. Compared to 2006 and 2007, post-repowering golden eagle fatalities have so far averaged 22% lower at Golden Hills and 70% lower at Golden Hills North. According to Smallwood and Neher (2015a), "*As a project … Golden Hills should prove safer to raptors than the wind turbines being replaced, and it should also prove safer than the Vasco Winds repowering project, which greatly reduced fatality rates at that site*." The first prediction proved true, but the latter prediction was inaccurate, likely due to the higher density of turbines and levels of construction grading on the Golden Hills projects.

5-71
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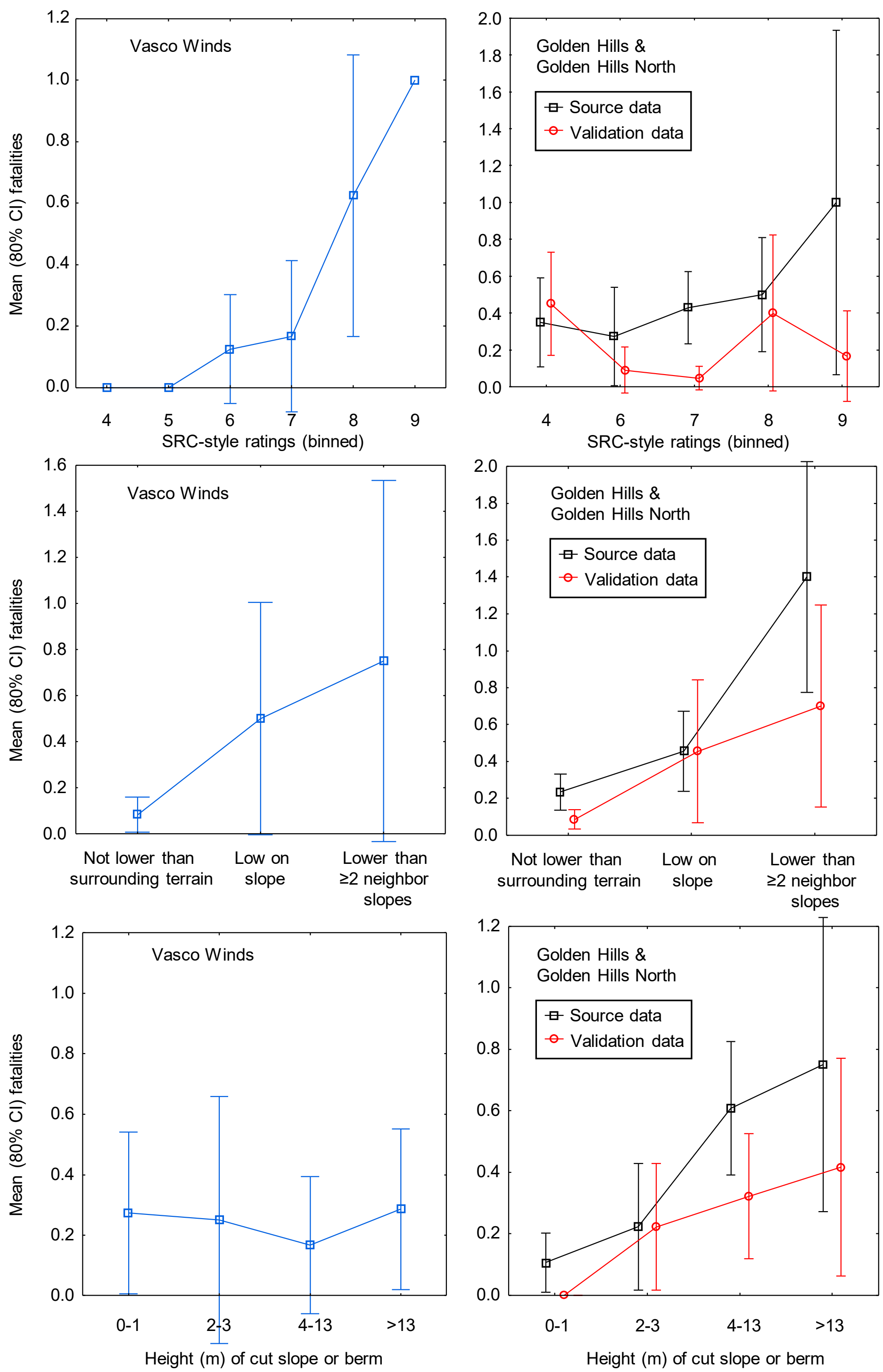


Figure 24. Mean golden eagle fatalities among wind turbines at Vasco Winds (left graphs) and Golden Hills and Golden Hills North (right graphs) by levels of each factor contributing to micro-siting recommendations, and where the source data used to develop the combined collision hazard levels are depicted in black and the validation data are depicted in red. The factors were SRC-style ratings (top graphs, Low on terrain (middle), and height of cut slope or berm after grading (bottom graphs).

5-72

IMPACT BIO-11: AVIAN MORTALITY FROM WIND ENERGY FACILITIES

Summarizing patterns of mortality in the DSEIR's Table 3.4-8a, the DSEIR (p. 3.4-96) continues to mislead. The Table compares fatality rates estimated at repowered projects to the wrong baselines derived from monitoring of old-generation turbines. Fatality estimates at old-generation turbines need to be revised to account for what has been learned about biases in the monitoring performed from 1998 through 2014. We now know that the 39-day search interval performed by ICF produced an estimate of annual bird fatalities/MW that was 39% lower than the estimate produced from the 5-day search interval performed by a team that searched concurrently at some of the same turbines searched by ICF (Smallwood 2017a). We also know that the ICF searchers failed to detect 62.5% of the species represented by fatalities, and because they took longer to find fatalities, their identification of fatalities to species was poorer and further impinged on fatality estimates (Smallwood 2017a). We also know that at such long search intervals, carcass detection rates are much lower for bats and small birds using human searchers than scent-detection dogs (Smallwood et al. 2020). What we have learned can and should be used to further adjust the fatality estimates representing the years 1998 through 2014.

To be comparable, each baseline fatality estimate in the DSEIR's Table 3.4-8a also needs to be specific to the repowered project, meaning it must represent the specific turbines that were replaced in the project. Fatality rates varied considerably among projects, so averaging among them all to serve as the baseline for a specific project is misleading. 5-73

To be comparable, baseline fatality estimates also must be interpreted with respect to inter-annual variation in fatalities (Smallwood 2017c). Species-specific fatality rates often cycle, probably as the population cycles, so fatality rates from specific portions of the cycle in the baseline period need to match fatality rates in the same portion of the cycle in the repowered period (Smallwood 2017c). 5-74

The DSEIR's Table 3.4-8a inaccurately represents 0 fatalities with 'no data.' Outcomes of 0 qualify as data. 5-75

Statements in the DSEIR's summary of Table 3.4-8a were misleading in other ways as well. For example, ICF says, "…only Diablo Winds was sited in a location with a high concentration of burrowing owls, so only it has a high fatality rate." Had ICF consulted Smallwood et al. (2013), they'd have not made this error. Burrowing owls have been most abundant not at Diablo Winds, but rather at Sand Hill, the Midway portion of Golden Hills, and the northern portion of the proposed Mulqueeney Ranch project. There were clusters of burrowing owls around the large pond on Elworthy Ranch, but those owls were fairly distant from the Diablo Winds turbines. No matter how one examines the distribution of burrowing owls in the APWRA, the owls do not occur at Diablo Winds in any greater abundance than at multiple other portions of the APWRA. 5-76

In another example, the DSEIR (p. 3.4-96) claims, "The same rationale likely explains the one high value [in Table 3.4-8a] for red-tailed hawk, 129% of baseline at Golden Hills (versus average 41% of baseline at the four other repowered sites). It appears that 5-77 red-tailed hawks are exceptionally abundant at this site." Again, this conclusion is inaccurate (see Figure 7, above). Red-tailed hawks were most abundant on the Elworthy Ranch, at Sand Hill, and at the northeast aspect of Buena Vista. Red-tailed hawk abundance at Golden Hills was low to moderate. 5-77 cont'd

The DSEIR (p. 3.4-96) continues, "The golden eagle, too, seems to be unusually abundant at the Golden Hills site." In fact, golden eagle abundance at Golden Hills was on the low side of moderate (see Figure 2, above). 5-78

The DSEIR (p. 3.4-96) then claims, "With regard to the prairie falcon fatalities at Buena Vista and Golden Hills North, this is a rare species and the seemingly high fatality rate is a chance outcome from a small dataset with only a few fatalities ever recorded." Whereas I concur the prairie falcon is a rarely occurring species, I disagree that its high fatality rates at particular projects represent "chance outcomes." Prairie falcons breed nearby Buena Vista and Golden Hills North, including within the nacelles of derelict wind turbines. I have watched prairie falcons hunt in these wind projects and I have watched them training their chicks to hunt at these projects (Photo 31). I have seen prairie falcons corral fleeing rock pigeons into the rotors of operative turbines. I have witnessed near-misses of prairie falcons flying through the rotors of operative turbines. With study, chance is often replaced by understood causal factors. 5-79

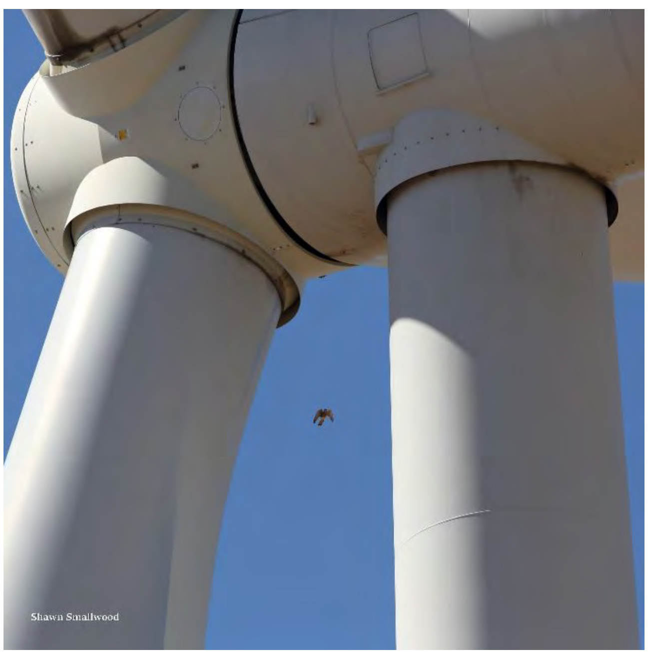
Photo 31. A prairie falcon trains its chick to forage on the east side of Golden Hills North on 7 June 2018.

The misleading statements I comment upon in the preceding 4 paragraphs were made by the DSEIR in only the second paragraph of discussion under Impact Bio-11. Given the numerous inaccuracies in this section, I opted to not comment on most of them. Going forward, I will comment on a select few. 5-80

5-81

Based on comparisons of fatality rates in Table 3.4-8, ICF (202:3.4-97) predicts "…7–33 American kestrel fatalities per year, with an average expectation of 12 fatalities/year when calculated on a MW basis, or 17.3 fatalities/year on an RSA basis." This prediction exemplifies an error made for other species as well. The predictions should be the same whether based on MW or rotor-swept area (RSA). If the prediction of 7-33 fatalities/year did not come from either the MW basis or the RSA basis, then where did it come from? Three different predictions make no sense; there should be a single predicted fatality rate for each species.

I will add that the DSEIR's prediction is inappropriately founded on the expectation that fatality rates measured in the past would continue into the future regardless of turbine attributes. We knew decades ago that many of the American kestrel fatalities were caused by entrapment or by collision of American kestrels attempting to enter cavities on the turbines or their towers. American kestrels are cavity-nesters. I recall that when a turbine fell over in the Sand Hill project area, 7 American kestrel carcasses were found in a hollow leg of the tower. Some of the risk to American kestrels going forward can be found in the design of the turbine. Wind turbines that offer cavities in the tower, nacelle, or at the sleeves connecting blades to the hub will tempt American kestrels to enter (Photos 32 and 33). The DSEIR should divulge the wind turbine design(s) and whether efforts would be made to prevent attracting American kestrels to cavities built into the turbine or its tower. 5-82



Photos 32 and 33. One of a pair of American kestrels repeatedly attempt to enter the blade sleeve of an operative turbine in the APWRA in September 2015.

ICF (p. 3.4-101) writes, "Avian use surveys (ICF 2020) did not record any observations of barn owls on the project site, which indicates that there is low potential for future mortalities." Barn owls are nocturnal, so rarely seen during daylight hours. Biologists 5-83 should not expect to detect barn owls during daylight use surveys; use surveys were not designed for barn owls. the DSEIR's conclusion is therefore baseless. 5-83 cont'd

During my nearly 1,000 hours of nocturnal surveys using a thermal-imaging camera, in which I made rounds to stations across the APWRA including to stations on the project site, I recorded barn owls on the project site 12 times. I have yet to quantify the rate of detections, but at first glance at my data I do not see any fewer barn owl observations on the project site than elsewhere in the APWRA. Photo 34 shows a barn owl on the project site. The photo is not very sharp, but the other records I have of barn owls on the site are videos.

Photo 34. Barn owl observed on the project site near proposed turbine site 5. The bright spot is the heat emerging from the owl's face; otherwise, barn owl feathers effectively dampen the animal's heat signature.

On page 3.4-102, the DSEIR speculates that many burrowing owl fatalities represented casualties of background mortality, i.e., natural causes. Their conclusion is based on the premise that fatalities found as feather piles could not have become feather piles without having become the victims of predation. This premise is easily refuted. First, the same predators that can catch and consume burrowing owls will readily consume burrowing owls found as wind turbine fatalities, and will leave the same type of evidence in the form of feather piles. Second, the DESEIR cannot cite a single observation of a predator catching and killing a burrowing owl. In 21 years of research in the APWRA, I saw multiple attempts by predators to catch and consume burrowing owls, but only once was a burrowing owl actually caught, and that one got away from the predator – a peregrine falcon. Third, the many feather piles left of carcasses placed in detection trials prove that predation is not the sole source of feather piles. Fourth, if the premise was accurate, then many more burrowing owl feather piles would have been found during monitoring at repowered Buena Vista, Vasco Winds, Golden Hills, and Golden Hills North. Background mortality certainly exists, but it contributes few fatalities to the areas searched around wind turbines. 5-84

Again, the DSEIR (p. 3.4-102) falsely reports results from past studies: "The fatality monitoring information available since the PEIR was published indicate the final Vasco 5-85

Wind monitoring results (Brown et al. 2016) showed a substantially higher estimated mortality rate for golden eagle (0.13 fatality/MW/year) than the rate reported in the PEIR (0.03 fatality/MW/year)." Brown et al. (2016) reported an estimate of 0.044 golden eagle fatalities/MW/year. I assume, and I hope, that the DSEIR erred in its reporting. 5-85 Cont'd

On page 3.4-104, the DSEIR concludes, "The PEIR noted that the lack of documented fatalities [of loggerhead shrikes] suggests that there may be a reduced level of fatalities from repowered turbines, and this analysis tends to confirm that inference." (How can the DSEIR's analysis confirm an inference?) Each repowered wind project has killed loggerhead shrikes, which are small in size and we know are difficult to detect as fatalities. Existing fatality estimates in the APWRA very likely underestimate loggerhead shrike mortality. But more importantly, the size of the population needs to be considered in any analysis of the project's potential impacts to loggerhead shrikes. 5-86

Loggerhead shrikes breed at multiple locations on the project site. The species' population size is small in the APWRA. For four years, I sampled about 50 large plots across the APWRA for loggerhead shrikes (Figure 25). My APWRA-wide population estimates ranged 135 to 138 nest attempts over the first 3 years, but declined to 106 nest attempts in 2019. Therefore, what might seem like small losses compared to some other species, wind turbine-caused fatalities can significantly affect loggerhead shrikes in the APWRA. For this and other species, wind turbine-caused mortality should be analyzed with respect to the status of the population.

Similar to the DSEIR's analysis of impacts to loggerhead shrike, the DSEIR's analysis of impacts to prairie falcons lacks any consideration of the species' population size.

I disagree with the DSEIR's (p. 3.4-105) rationale for dismissing collision impacts to Swainson's hawk. Swainson's hawks occur in the APWRA, and have been recorded as fatalities at least twice before (not once, as the DSEIR reported). Also, given the high species identification error rates documented for earlier monitoring performed with long search intervals (see Smallwood 2017, Smallwood et al. 2018), it is likely that numerous Swainson's hawks were found as fatalities but identified as 'Buteo,' 'large hawk,' or 'large raptor,' or misidentified as red-tailed hawks. Erring on the side of caution would be more appropriate, especially considering the Swainson's hawk is listed as Threatened under the California Endangered Species Act. 5-87

The DSEIR (p. 3.4-106) again misleads, this time involving another species listed as Threatened under the California Endangered Species Act. The DSEIR claims, "At the time the PEIR was prepared, tricolored blackbird had not been recorded as a fatality either at non-repowered turbines or at repowered turbines. Since that time, the Vasco Winds, Golden Hills, and Golden Hills North projects have each reported one fatality, resulting in an average mortality rate of 0.02 fatality/MW/year..." In truth, 7 tricolored blackbirds had been documented as fatalities in the APWRA by the time of the PEIR, including 5 at old-generation wind turbines and 2 at Vasco Winds. Another 6 tricolored blackbird fatalities have been found since the PEIR at Golden Hills and Golden Hills North. And similar to Swainson's hawk, tricolored blackbird fatalities can easily be 5-88 misidentified as other blackbird species, so were likely under-represented in fatality monitoring. 5-88 cont'd

5-89

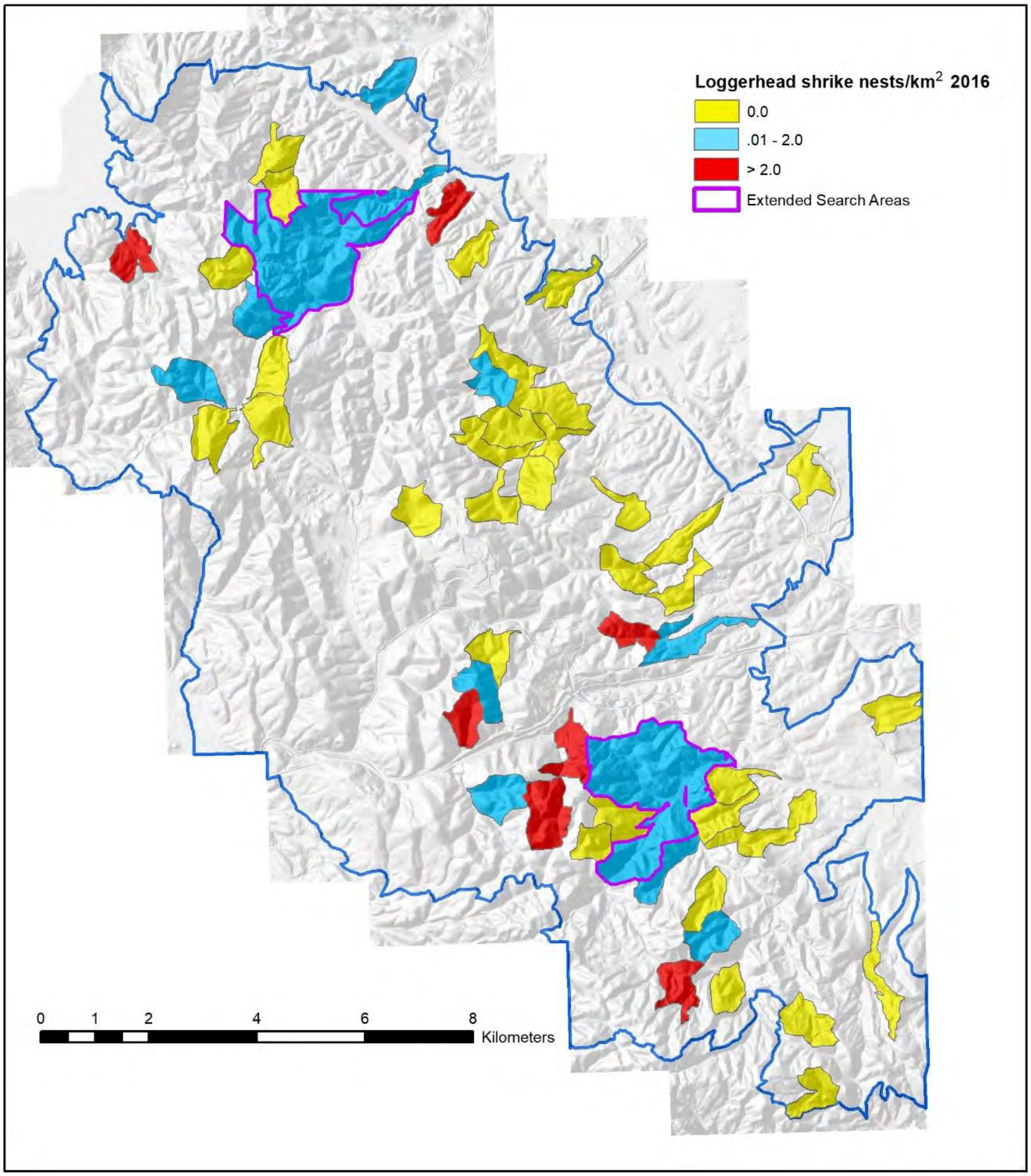


Figure 25. Loggerhead shrike nest attempts/km² across the APWRA in 2016.

The DSEIR (p. 3.4-106) claims "At the time the PEIR was prepared, white-tailed kite had not been recorded as a fatality either at non-repowered turbines or at repowered turbines. Since that time, one fatality has occurred..." This claim is yet another that is not true. Six white-tailed kites were reported as wind turbine-caused fatalities prior to the PEIR. Two have been found as fatalities at Golden Hills. If County of Alameda lacks 5-90

5-90 cont'd

access to the data, then I suggest not offering conclusions on the history of fatalities in the APWRA.

The DSEIR (p. 3.4-106) adds, "Avian use surveys and raptor use surveys (ICF 2020b) have not recorded white-tailed kites in the project site, suggesting a low risk of future mortalities." But this is not true, either. My records include at least 4 detections of white-tailed kite, including my own near proposed turbine site 1. I suggest more analytical care be directed towards this species, which is a California Fully Protected species, and for which its rarity cannot afford many collision fatalities.

5-91

According to the DSEIR (p. 3.4-108), "Each project applicant will prepare and submit a draft project-specific APP to the County. The draft APP will be reviewed by the technical advisory committee (TAC) for consistency and the inclusion of appropriate mitigation measures that are consistent with the PEIR and recommended for approval by the County." It is inappropriate for ICF to prepare planning documents to go before the Technical Advisory Committee (TAC) for review when one of ICF's employees serves as a member of the TAC. It is a conflict of interest. Either ICF should not be allowed to prepare planning and review documents related to this project, or its employee should resign from the TAC.

5-92

PEIR Mitigation Measure BIO-11b: Site turbines to minimize potential mortality of birds

The DSEIR appears to have copied text from the 2014 PEIR, as it does not appear directed toward the project at issue. Furthermore, the standards presented in this section are not met by the micro-siting effort of Estep (2020a,b). For example, a PEIR standard for supporting micro-siting was that "Proponents will utilize existing data as well as collect new site-specific data as part of the siting analysis." Whereas data were collected, there is no evidence the data were used in any way in support of micro-siting.

Another PEIR standard was "project proponents will use the results of previous siting efforts to inform the analysis and siting methods as appropriate such that the science of siting continues to be advanced." Whereas this has step has been a hallmark of the Smallwood and Neher approach, Estep presented no evidence that he adopted it. He used the methods that he and I implemented to rate hazards posed by old-generation wind turbines back in 2009. I still use this approach, but in combination with collision hazard models and measured effects of construction grading.

Another PEIR standard was that "Project proponents will utilize methods (i.e., computer models) to identify dangerous locations for birds and bats based on site-specific risk factors informed by the information discussed above." Estep (2020a,b) made no use of models, nor did he present any models or describe any models. He could have requested use of our models, but he did not.

Unstated in the DSEIR is the 2014 PEIR standard for micro-siting to use "*the best information available to site turbines to reduce avian collision risk*" (ICF 2014:3.4-104). To be consistent with this standard, the validation of the collision hazard models I presented earlier would minimally qualify as the best information available. I qualify the models as minimally consistent with this standard because since the last version of the models, we learned much more through field research and experience with repowering. The models performed very well. They offered objectivity to a challenging process. Assessing proposed turbine sites by feel is no equal to the micro-siting approach Lee Neher and I developed in the APWRA. 5-92 cont'd

2020 Updated PEIR Mitigation Measure BIO-11g: Implement postconstruction avian fatality monitoring 5-93

Rationalizing that advances in post-construction fatality monitoring are advancing rapidly, the DSEIR glosses over best practices, leaving details to be decided by the TAC. In reality, the advances have been made. Only one significant question remains, and that is how far from the turbines to search for fatalities. Otherwise, we know how best to monitor and estimate fatality rates. Below is a cursory suite of best practices for fatality monitoring.

1. Keep it simple;
2. Have a plan and a budget for responding to the discoveries of injured wildlife;
3. Ask wind company employees to leave carcasses alone;
4. Search all of the turbines in the project;
5. Delineate unsearchable areas due to hazards or dense vegetation;
6. Use scent-detection dogs with skilled handlers, but if dogs are not possible, then use human searchers and short search intervals, i.e.., no longer than one week between searches;
7. Implement no more than one search interval;
8. Minimum monitoring duration should be 3 years;
9. Maximum search radius should be 110 m or farther;
10. Inter-transect spacing of 6 m, unless dogs are used;
11. Refrain from performing 'clearing searches' because they're ineffective and unnecessary;
12. Do not alter vegetation or other conditions to accommodate fatality searches, because the conditions need to represent those over the long term;
13. Upon discovery of feathers, stop and search increasingly larger circles to determine whether more feathers can lead to a carcass;
14. Integrate carcass detection trials into routine fatality monitoring by randomly placing just-thawed, fresh-frozen carcasses of appropriate bird and bat species onto the search areas at a rate of about 2.3 g/ha/year, where appropriate species means those likely to be killed by the turbines at the project site and include the full range of body sizes;
15. In carcass detection trials, place many more of the smallest birds and bats because detections of those trial carcasses are necessary but more rarely achieved;
16. Mark trial carcasses discreetly and safely with regard to scavengers – snipping toes and the ends of flight feathers works well, or one foot of each bat;
17. Weigh trial carcasses just prior to placement;

5-93 cont'd

18. Keep searchers blind to the trial placements by using a disciplined trial administrator who places carcasses while searchers are not onsite and who leaves no obvious evidence of each visit other than the carcass itself;
19. Upon placement, drop each trial carcass from waist height so that small bats or birds do not blow off in strong winds, and then photograph and map the location with high-end GPS and take notes of the location, e.g., 10 cm east of white pebble and 2 m north of 1-m long north-south oriented stick;
20. At placement sites, use rangefinder to record distance to turbine and use compass to record bearing to turbine;
21. Leave all fatality and trial carcasses in the field, thereafter monitoring subsequent detections of the same carcasses;
22. All carcasses in integrated trials are either found or not found, so do not attempt separate trials for searcher detection and carcass persistence;
23. Count fatalities discovered incidentally to routine fatality monitoring unless, even those found beyond the maximum search radius of a sampled unit, but omit those found at units not selected for sampling (if sampling was used);
24. Map and photograph all fatality and trial carcasses every time they are detected;
25. Enter data into electronic spreadsheet daily and share data with supervisor no less often than weekly to identify and resolve problems in a timely manner;
26. Identify all remains to species, so include sufficient budget for visiting museums or experts to achieve this objective (every species misidentification adds error to two species – to the species misidentified and to the species not identified);
27. See Smallwood et al. (2018) for details on how to use the data in a simple estimator;
28. Repeat the monitoring effort 10 years after the first monitoring effort;
29. Share data and reports publicly and require peer-review by independent party.

5-94

2020 Updated PEIR Mitigation Measure BIO-11h: Compensate for the loss of avian species, including golden eagles, by contributing to conservation efforts

County of Alameda should revise the DSEIR to adopt the mitigation approach in County of Contra Costa when NextEra sought to repower their wind projects. Half the fund went to protecting habitat, and half was directed toward research. East Bay Regional Park District administered the funds. This approach proved highly effective. Lands were purchased to protect wildlife. The funded research generated findings that decades of monitoring and speculation could not. It funded research that informs of how many golden eagles occur in the region, patterns of eagle flight activity, behavior patterns of eagles and other raptors, burrowing owl population attributes, nocturnal patterns of bats, burrowing owls, and migratory birds, and much more. Until the County adopted an antiquated approach to micro-siting starting with the Sand Hill project, the research fund fed right back into the development of ever-improving collision hazard models. The settlement agreement among NextEra, the California Attorney General, Audubon, and Californians for Renewable Energy accomplished all of this. Their agreement worked. It should be adopted for all wind projects undergoing repowering now and in the future.

Compensatory mitigation is also needed to stop the poisoning of ground squirrels in the APWRA. Ground squirrels across large portions of the APWRA have been poisoned, resulting in a substantial contraction of ground squirrels in the APWRA. Burrowing owls and golden eagles are declining with the decline of squirrels. These trends pose major conservation challenges. Having interviewed ranchers over their willingness to cease ground squirrel control in exchange for damage reparations, I believe it would be feasible to formulate a plan to direct compensatory mitigation funds toward ranchers to not control squirrels. Ceasing ground squirrel control would benefit raptors in the APWRA much more so than power pole retrofits, which anyway is the responsibility of the utilities. 5-94 cont'd

2020 Updated PEIR Mitigation Measure BIO-11i: Implement an avian adaptive management program 5-95

The County says adaptive management would commence should project-caused fatality rates exceed preconstruction fatality rates. As I commented earlier, the DSEIR's preconstruction fatality rates are in error, so the thresholds for initiating adaptive management are poorly based. More importantly, the adaptive management process is mischaracterized. The essential steps of adaptive management are the following: (1) define the interested parties and who will be participating, (2) distinguish the roles of managers from those of scientists, (3) compile all existing data, (4) develop project goals and objectives, (5) develop working hypotheses directly from the objectives, (6) implement the management prescriptions, (7) monitor results, (8) evaluate and test monitoring data, and (9) return to step #5 (Holling 1978, Walters 1986, Walters and Hollings 1990, Haney and Powers 1996, McClain and Lee 1996, Lancia et al. 1996). The DSEIR skips step 1 and designates the TAC as the body that will decide on adaptive management prescriptions and whether objectives are met.

Step 1 should not be skipped. It was an essential step that led to the formation and public acceptance of Alameda County's Scientific Review Committee. Following the Smallwood and Thelander (2004) report and Californians for Renewable Energy's appeal of the County's approval of renewed conditional use permits for the continued operation of old-generation turbines, the County hosted a series of Altamont Working Group meetings. Multiple stake-holders attended those meetings and together they identified goals and objectives, candidate management prescriptions, monitoring methods, and they proposed a committee of qualified scientists should guide the next steps. Central to these meetings and their adaptive management outcome were 3 reports prepared by California Energy Commission staff and myself (Smallwood and Spiegel 2005a, b, c). Essentially, the participants of the Altamont Working Group meetings served as step 1 of an adaptive management program, which the County wrote up and initiated from a Board of Supervisors' Resolution. The SRC was composed of five members, each nominated by a different stake-holder group. They included four PhD scientists and four with personal research or planning experience in the APWRA. Although stake-holders disagreed with many SRC recommendations, the SRC remained a respected decision-making body who oversaw the only truly adaptive management program in the APWRA's history (Smallwood 2008). If adaptive management is to be implemented in the APWRA, it needs to follow the basic model of the SRC, but improved with sufficient funding and stronger authority. 5-95 cont'd

Critical to the adaptive management steps outlined above are the availability of candidate management prescriptions, *a priori* objectives and performance thresholds, performance monitoring, and feedbacks to objectives and alternative prescriptive measures. Those implementing adaptive management must know what measures are feasible, whether and to what degree they are effective, how their effects can be measured, and how they should be prioritized.

ADMM-1: Visual Modifications. The first measure suggested in the DSEIR is blade painting, which follows from an idea tested by Hodos (2003) to decrease the distance from the rotor at which a raptor can see the blades without experiencing motion smear. The key word in the foregoing sentence is 'raptor.' The DSEIR does not mention that the measure was specific to raptors, and was tested solely on American kestrel viewing a scaled-down simulation of a wind turbine in a laboratory setting. Raptors were the only target of the measure because raptors are particularly prone to motion smear due to their visual acuity for detecting the motion of prey items located far away. I have seen no evidence that birds other than diurnal raptors experience motion smear. Also, birds collide just as often with inoperative as with operative turbines (Smallwood and Bell 2020a), and there's no motion smear expressed by inoperative turbines. Related to this latter shortcoming, wind turbines only operate a third of the time, on average. Furthermore, many birds collide with turbines at night when the Hodos painting schemes would be irrelevant. 5-96

The SRC deliberated over the potential efficacy of this measure, because it was one of the candidate measures that I had suggested (Smallwood and Thelander 2004) and which came out of the Altamont Working Group meetings (Smallwood and Spiegel 2005a). Most of the wind companies told the SRC they would not implement this measure for fear of violating manufacturer standards and because they feared it would generate a wobble in the rotor caused by differential solar heat absorption into the black and white paints that are needed for the measure. The DSEIR needs to reveal the SRC's decision to recommend deprioritizing this measure.

The DSEIR also needs to reveal that one wind company in the APWRA did deploy the Hodos (2003) painting scheme. AWI painted one blade black on many of its wind turbines, but unfortunately did not confer with the SRC before they did so. The result was an allocation of the treatment without any possible experimental control of the variation in fatality rates, because nearly all the turbines they painted were on the shorter towers of turbines composing wind walls. With treated turbines on short towers and untreated turbines on taller towers owned by a different wind company, there was no way to determine whether found fatalities were caused by the treated versus untreated turbines because these turbines were right next to each other. The measure could not be tested for efficacy. The SRC asked AWI to redeploy the treatment to turbines outside wind walls, but AWI refused to cooperate further with the SRC on this matter. However, AWI eventually implemented the measure on enough turbines outside of wind walls that some testing became possible. I kept track of them, and I reported to the SRC what I found in a test of the measure's efficacy (Smallwood 2010). Not only did the fatality evidence indicate the measure was ineffective, some raptor species experienced higher fatality rates at the treated turbines. 5-96 cont'd

The DSEIR cites May et al. (2020) as evidence that the measure is effective. However, May et al. (2020) suffers a variety of serious shortfalls, including the incredibly small sample sizes of 2 treated turbines and 2 controls, none of which were selected randomly. May et al. (2020) did not report their fatality search history nor their average search interval. They performed no carcass detection trials, assuming unrealistically that there was little scavenging and that they found all available carcasses. These assumptions were particularly troublesome because body mass explains most of the variation in carcass detection rates (Smallwood et al. 2018), but May et al. (2020) lumped all species of fatalities together when they tested for an effect of the measure. They assumed that every fatality of a songbird found represented a single songbird fatality just as they assumed every fatality of an eagle found represented a single eagle. The latter assumption would be reasonable, whereas the former could be wrong by an order of magnitude. Furthermore, May et al. omitted willow ptarmigan fatalities from the test because they were known to collide with turbine towers. That they collide with turbine towers does not mean, however, that they only collide with the towers. Adding willow ptarmigan to the test changes the test result, as I found when I did it. When the authors offered conclusions about the measure's efficacy regarding eagles, they violated their scope of inference because the test was of all species lumped together. And I could go on. The DSEIR would better inform decision-makers and the public by more carefully presenting the feasibility of visual modifications as an adaptive management measure.

ADMM-2: Anti-Perching Measures. This measure would cause habitat loss for all birds that perch on tall structures. It was also considered and rejected by the SRC years ago. 5-97

ADMM-3: Prey Reduction. This measure would also destroy habitat, thereby extending the habitat impacts from construction grading. It would further reduce the abundance and spatial distribution of burrowing owls in the APWRA, because burrowing owls depend on ground squirrels for nest success (see my earlier comments). This measure was rejected by the SRC, who actually recommended that his measure not be implemented in the APWRA. The PEIR specifically says that rodenticides cannot be used (Mitigation Measure BIO-11f). 5-98

ADMM-4: Implementation of Experimental Technologies. The DSEIR must inform decision-makers and the public that no such technology has been proven effective for birds, and only acoustic deterrents have shown limited efficacy for bats. 5-99

ADMM-5: Turbine Curtailment. Given what we know of the efficacy of turbine curtailment for bats, this should not be an adaptive management measure. Instead, it should be a required measure regardless of its use in an adaptive management framework. By using real-time acoustic detection of bats combined with wind speed data, Hayes et al. (2019) achieved much greater fatality reductions than any previous operational curtailment approach. It should be used in the APWRA. 5-100

For birds, however, the DSEIR needs to inform decision-makers and the public that no evidence exists in support of the notion that operational curtailment reduces bird collisions with wind turbines. Winter shutdown was implemented in the APWRA for years, but no evidence showed that it worked. Smallwood and Bell (2020a) tested for effects of operational curtailment in two studies in the APWRA, finding no evidence that it reduced fatalities. 5-100 cont'd

ADMM-6: Cut-in Speed Study. It would have to be a very serious and well-funded study to improve on Hayes et al. (2019). A better alternative would be to implement the smart curtailment approach of Hayes et al. (2019) as a required mitigation measure outside the framework of adaptive management. As for birds, there is no evidence that cut-in speeds have any bearing on collision mortality. 5-101

ADMM-7: Real-Time Turbine Curtailment. No evidence has been brought to bear that a person monitoring birds in the area can effectively shutdown operative turbines to prevent collision fatalities. Evidence does exist for the efficacy of this measure specific to Griffon vultures in Spain, but otherwise nobody has shown that it works for any other species. Having spent many hours watching birds in the APWRA, I am highly skeptical that a monitor would be capable of detecting the approach of a golden eagle in time to affect a shutdown. Eagles use the terrain to surprise prey items and each other, so they often emerge suddenly from terrain-obscured airspace and with very little time to react with a turbine shutdown. Shutdowns of modern turbines take too long to be effective. 5-102

RECOMMENDED MITIGATION MEASURES 5-103

So, what might work to minimize or reduce wildlife-wind turbine collisions? I have considered many measures, starting with the 15 "house-cleaning" measures Thelander and I suggested in 2004. I also deliberated over measures as a member of the SRC, and I participated with micro-siting in multiple repowering projects a I summarized earlier. I also tested the efficacy of operational curtailment among 3 wind projects in the APWRA. I measured the efficacy of every measure I could, the results of many of my tests for efficacy can be found among my reports to the SRC. Based on experience, the following are the measures I recommend.

Bats.–I recommend the following measures for bats: 5-104

(1) Survey for bat roosts and avoid them, as required by PEIR mitigation measures BIO-12a and BIO-12b.

(2) Micro-site turbines to minimize impacts to bats, as required by PEIR mitigation measures BIO-14a. I recently completed seven years of surveys using a FLIR T620 thermal-imaging camera fitted with an 89-mm telephoto lens to study bats at wind turbines throughout the APWRA for the purpose of developing a micro-siting strategy. As the County knows from my presentations to the SRC, and more recently to the TAC, I have identified preliminary patterns that can help with micro-siting. Wind turbines located next to prominent canyons or large valleys kill disproportionately more bats, as 5-105

do turbines just below hill peaks. I am not aware of anyone else who has collected more suitable data for micro-siting turbines to minimize bat collisions, so the County ought to confer with me. 5-106

(3) Implement the smart curtailment approach of Hayes et al. (2019) at all wind turbines. 5-107

Birds.–I recommend the following measures for birds: 5-108

(4) Micro-site the turbines to minimize collision impacts to raptors, but using the methods of Smallwood et al. (2017). On page 3.4-104, the PEIR specifies, "All project proponents will use the best information available to site turbines to reduce avian collision risk: avian use of the area; topographic features known to increase collision risk (trees, riparian areas, water bodies, and wetlands); and the latest models of collision risk)." I possess the latest models of collision risk, which for golden eagle I showed in map-form earlier. The DSEIR doe not make use of the latest models of collision risk, nor does it make use of any models at all nor the best information available.

Other than micro-siting, there is only one measure that has shown any substantial efficacy, but it applies to both birds and bats. Evidence for its efficacy originates from the APWRA, and was implemented by the SRC. It is hazardous turbine removal, as suggested below.

(5) Commit to the removal of up to 3 of the project's wind turbines should the project be composed of 4.2-MW turbines or up to 5 wind turbines should the project be composed of smaller turbines. Link the removals directly to numbers of fatalities found during monitoring, where numbers of found fatalities of golden eagles, bald eagles, California condor, and bats are specified in advance to identify candidates, and candidates are then ranked fatality rates and species affected. Any turbine that kills a California condor ought to quality as a candidate for removal. The threshold numbers of fatalities that identify candidates and the ranking of candidates for removal need to be explicit so that there is no argument over implementation of the measure should it be needed. 5-109

WILDFIRE IMPACTS TO WILDLIFE 5-110

In the DSEIR, I see no discussion of potential impacts to wildlife from the increased frequency of fires caused by wind energy in the APWRA or likely on the project site. That this impact is likely is evidenced in the many fires that already occurred since wind turbines were installed in the APWRA. Wildfires are ignited by wind projects for various reasons, starting from automobiles, electrical lines, collector facilities, and the wind turbines themselves. I have witnessed many fires begun by wind projects in the APWRA, and have had to evacuate on multiple occasions. Large areas of grassland are burned every year (Photo 35).

The increased fire frequency could severely affect grassland-nesting birds and other wildlife. Efforts to prevent wind energy-caused wildfires also degrade and remove habitat. Such efforts typically involve repeat disking of firebreaks around the wind

5-110 cont'd

turbines (Photo 36). The DSEIR needs to be revised to add these disked areas as annual grassland permanently removed by the project, and it needs to account for the impacts caused by repeat fires.

Photo 35. Visible portion of burned grassland as seen from the fire's starting point, where a decommissioned turbine was being dismantled by use of a blowtorch.

Photo 36. Example of a disked firebreak in the APWRA. On it lies a golden eagle fatality. This disking results in loss of wildlife habitat.

5-111

CUMULATIVE IMPACTS

County of Alameda implemented two types of cumulative impacts to vertebrate wildlife in the project area. The first type of analysis is a comparison of fatality rates among non-repowered and repowered wind projects in the APWRA, and the second type is the comparison of APWRA fatalities to numerical estimates of living animals across a vast region. An important premise of the analysis, appearing on page 5-6, is that "Overall, the project represents approximately 18 percent of approved increases in wind power capacity in the entire APWRA, and thus makes an approximate 18 percent contribution to the fatalities anticipated under the PEIR 450 MW alternative, for all birds." This premise, however, is proven false in its first analysis, whereby Table 5-1 summarizes widely varying fatality estimates among repowered projects. Repowered projects cannot be assumed to contribute proportionally equivalent impacts to birds and bats because they vary in location relative to animal activity patterns, in density of installed capacity, in turbine size, in the effects of construction grading, and in micro-siting efficacy.

5-112

Table 5-1 is confusing and potentially misleading. It projects fatality rates measured at individual projects and projects them APWRA-wide. The comparison could be clarified by simply replacing the projected estimates with per-MW rates, or fatalities/MW/year. (The additional metric of fatalities per RSA per year is redundant with fatalities/MW/year and ought to be dropped from the DSEIR.) It would also help to clarify things by removing the column under 'Not repowered,' because none of the old-generation turbines have operated in the APWRA since 2014. Some of the old turbines continue to stand derelict in the Patterson Pass project, but they have not operated for years. (These Patterson Pass turbines, by the way, were supposed to have been removed by 2018, so the County is not enforcing its conditional use permits. These turbines continue to pose collision hazards to birds (see Smallwood and Bell 2020a).) As presented, Table 5-1 does not inform of cumulative impacts.

5-113

As its second type of analysis, the County compares predicted numbers of fatalities to estimates of regional "populations" of bird species to assess population-level impacts. The regional population estimates were based on an estimator developed by Partners In Flight (PIF), where the region was PIF's Bird Conservation Region (BCR) 32. BCR 32, otherwise known as Coastal California, is 166,997 km^2 in area and extends from the northern Sacramento Valley to the northern aspect of Baja California. The PIF estimator has been criticized in the scientific literature (Thogmartin et al. 2006), and I share certain concerns about it. One concern is the way it mischaracterizes the population concept as a term of convenience more than a biologically determined unit of demography. For any given species of bird, BCR 32 encompasses multiple populations and therefore should not be characterized as representative of any single population. Centers of animal activity – whether or not they are deemed "populations" – occupy about a quarter of the available habitat at any given time and are spatially dynamic, shifting locations every generation or so (Taylor and Taylor 1979). A related concern is that the spatial scale of BCR 32 far exceeds that of the local population directly affected by collision mortality.

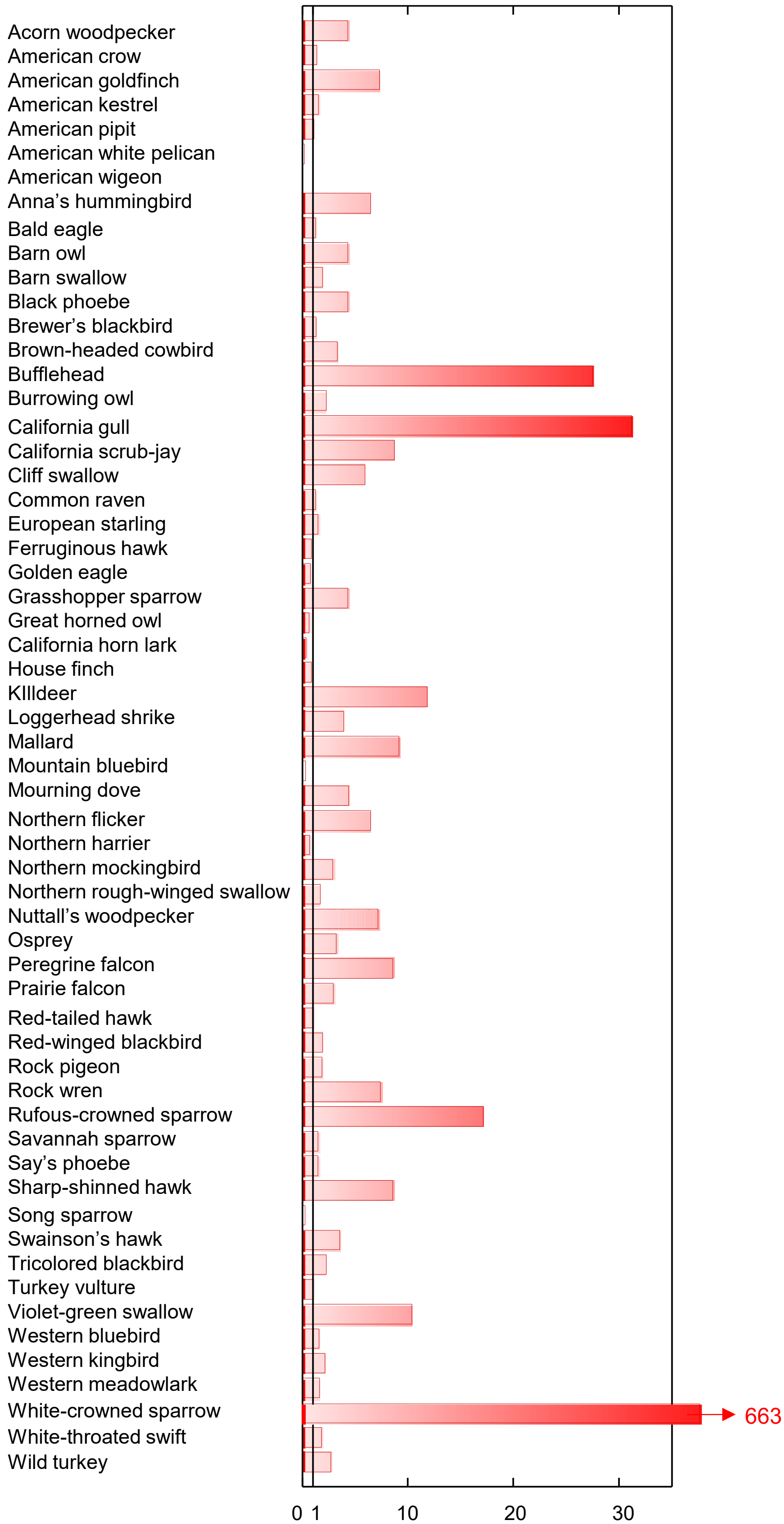
My third concern is the PIF estimator's reliance on roadside bird counts, from which densities are extrapolated to much larger areas beyond the roads where the counts were made. If birds are attracted to landscape settings typical of where roads are built, and if birds are attracted to vertical structure created along roads, then bird counts might be biased high along roads relative to areas far from roads. Roads tend to be built through the lowest portions of hilly terrain, so along concave, valley-like structures where streams flow, water pools, and more trees and shrubs grow. Where roads are built, birds find more perches and cover among the utility poles, fences, signs, and windrows of trees and shrubs that follow. To test whether birds are attracted to the landscape settings typical of roadways where breeding bird surveys are performed, I selected 11 visual scan stations that closely overlooked prominent valleys, ponds, streams and vertical structure including extensive fencing and large rock formations. I performed 133 hours of visual scan surveys at these stations, and 569 hours of visual scan surveys at the other stations far from prominent valleys and devoid of significant vertical structure. 5-114

Mean N/100 hours of birds at stations with landscape attributes typical of roadways typically exceeded that of stations without landscape attributes typical of roadways (Figure 26). For each of the 59 species compared, I divided mean N/100 hours counted at stations overlooking landscapes typical of road routes by N/100 hours counted at stations overlooking landscapes atypical of road routes. The median ratio was 2.25, or 2.25 times more birds per species at stations overlooking landscapes typical or road routes. The ratio was <1.0 for 10 species, about 1.0 for 2 species, and >1.0 for 47 species. For 32 bird species, I counted more than twice as many birds per hour at stations overlooking landscapes typical of road routes. For 22 bird species, I counted more than four times as many birds per hour at stations overlooking landscapes typical of road routes. The rate of new species detections was much faster among stations typical of conditions where roads are typically routed (Figure 27). For example, after 100 hours of surveys, 74 species were detected at stations with road route conditions as compared to 41 species at stations without road route conditions. Both species richness and abundance of birds are higher where conditions are typical of where roads are built.

How does the PIF estimator perform against available numerical estimates of burrowing owl? According to the PIF estimator, there are 9,664 burrowing owls in BCR 32, which the DSEIR rounds up to 9,700. The last statewide estimate was made nearly 3 decades ago, numbering 9,127 (DeSante et al. 2007a), with 71% of California's entire population within the Imperial Valley (DeSante et al. 2007b). At this scale and relative to the random sampling effort of DeSante et al. (2007), the PIF estimate exceeded the 1993 estimate of DeSante et al. by a factor of only 1.06, which is close. However, the DeSante et al. surveys also relied on roadside counts, often having to forego effective coverage of portions of the sampling plots far from roads (I surveyed some of the plots in 2020). Both the PIF estimator and the DeSante et al. surveys were subject to the same bias (see Figure 26), and therefore likely over-estimated the number of burrowing owls at the scales to which they were applied. Furthermore, burrowing owls have declined across California since 1993, having become nearly extirpated from Yolo County, having severely declined across the Bay Area, and having suffered massive habitat loss in the

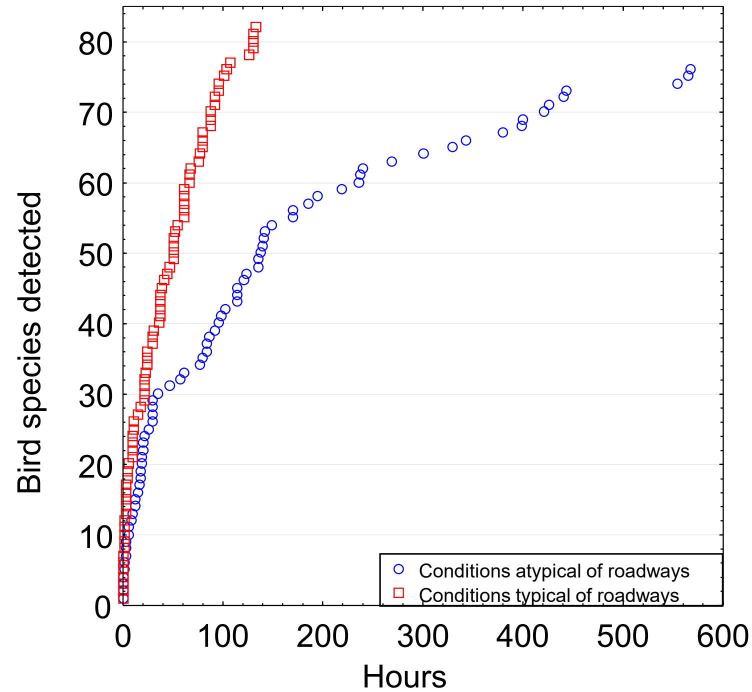
5-114
cont'd

Figure 26. N/hour of birds at stations typical of road routes relative to N/hour of birds at stations atypical of road routes, where values of 1.0 (vertical line) indicate no difference. For example, I counted 663 times the number of white-crowned sparrows among stations overlooking valleys, waterbodies or amid abundant vertical structure as compared to stations lacking such attributes.



5-114 cont'd

Figure 27. Rates of new bird species detections between visual scan stations in the APWRA indicative of the conditions under which roads are routed and not, based on surveys performed September 2015 through December 2019.



Imperial Valley due to utility-scale solar development. The PIF estimator over-estimates burrowing owls in BCR 32.

At the local scale of the APWRA, the BCR 32 density of 0.0579 burrowing owls per km^2 derived from the PIF estimate would predict 10 burrowing owls in the APWRA, which is an under-estimate by a factor of 107 in 2011 (Smallwood et al. 2013) and an under-estimate by a factor of 59 in 2019 (Smallwood data reported herein). Applied to the area of the APWRA, the PIF estimate is absurdly too low.

The PIF estimator is too crude for the task the County assigns it. Impacts need to be analyzed relative to meaningful demographic units (Smallwood 2001). Whereas the DSEIR characterizes the killing of 9 barn owls as only 0.06% of the "population" in BCR 32, each of those 9 owls could have been 50% of 9 mated pairs, leaving 10 to 20 chicks to die on the nest. Those 9 barn owls might have composed 33% of a biologically defined population, which my research indicates typically numbers about 30 adults among various species (Smallwood 2001). Relating fatalities to meaningful units of demography makes sense, whereas relating them to highly uncertain estimates of numbers across some vast area makes no sense except for the purpose of trivializing impacts. Relating wind turbine-caused fatalities in the APWRA to a numerical estimate representing BCR 32 begs the question of why not relate them to the species' global number to achieve the same level of meaninglessness. The County needs to more carefully analyze cumulative impacts.

5-115

A more appropriate cumulative impacts analysis would be to prepare tables of project-level and APWRA-level fatality estimates as I have done herein. These fatality estimates then need to be added to those projected for planned and foreseeable utility-scale solar projects in eastern Alameda and Contra Costa Counties (see Smallwood 2020 for

5-115 cont'd

estimates of collision fatality rates and losses from habitat destruction as solar projects are constructed). And they need to be added to those impacts caused by the expansion of the Altamont Landfill and other activities that potentially affect wildlife in the area. The analysis needs to also factor-in numerical trends, such as the ongoing declines of burrowing owls and golden eagles in the APWRA.

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Curriculum Vitae

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Ecologist

Expertise

- Finding solutions to controversial problems related to wildlife interactions with human industry, infrastructure, and activities;
- Wildlife monitoring and field study using GPS, thermal imaging, behavior surveys;
- Using systems analysis and experimental design principles to identify meaningful ecological patterns that inform management decisions.

Education

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience

- 575 professional publications, including:
- 88 peer reviewed publications
- 24 in non-reviewed proceedings
- 461 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 87 public presentations of research results

Editing for scientific journals: Guest Editor, *Wildlife Society Bulletin*, 2012-2013, of invited papers representing international views on the impacts of wind energy on wildlife and how to mitigate the impacts. Associate Editor, *Journal of Wildlife Management*, March 2004 to 30 June 2007. Editorial Board Member, *Environmental Management*, 10/1999 to 8/2004. Associate Editor, *Biological Conservation*, 9/1994 to 9/1995.

Member, Alameda County Scientific Review Committee (SRC), August 2006 to April 2011. The five-member committee investigated causes of bird and bat collisions in the Altamont Pass Wind Resource Area, and recommended mitigation and monitoring measures. The SRC reviewed the science underlying the Alameda County

Avian Protection Program, and advised the County on how to reduce wildlife fatalities.

Consulting Ecologist, 2004-2007, California Energy Commission (CEC). Provided consulting services as needed to the CEC on renewable energy impacts, monitoring and research, and produced several reports. Also collaborated with Lawrence-Livermore National Lab on research to understand and reduce wind turbine impacts on wildlife.

Consulting Ecologist, 1999-2013, U.S. Navy. Performed endangered species surveys, hazardous waste site monitoring, and habitat restoration for the endangered San Joaquin kangaroo rat, California tiger salamander, California red-legged frog, California clapper rail, western burrowing owl, salt marsh harvest mouse, and other species at Naval Air Station Lemoore; Naval Weapons Station, Seal Beach, Detachment Concord; Naval Security Group Activity, Skaggs Island; National Radio Transmitter Facility, Dixon; and, Naval Outlying Landing Field Imperial Beach.

Part-time Lecturer, 1998-2005, California State University, Sacramento. Instructed Mammalogy, Behavioral Ecology, and Ornithology Lab, Contemporary Environmental Issues, Natural Resources Conservation.

Senior Ecologist, 1999-2005, BioResource Consultants. Designed and implemented research and monitoring studies related to avian fatalities at wind turbines, avian electrocutions on electric distribution poles across California, and avian fatalities at transmission lines.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001. Prepared position statements and led efforts directed toward conservation issues, including travel to Washington, D.C. to lobby Congress for more wildlife conservation funding.

Systems Ecologist, 1995-2000, Institute for Sustainable Development. Headed ISD's program on integrated resources management. Developed indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis. Worked with Shu Geng and Mingua Zhang on several studies related to wildlife interactions with agriculture and patterns of fertilizer and pesticide residues in groundwater across a large landscape.

Lead Scientist, 1996-1999, National Endangered Species Network. Informed academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws. Testified at public hearings on endangered species issues.

Ecologist, 1997-1998, Western Foundation of Vertebrate Zoology. Conducted field research to determine the impact of past mercury mining on the status of California red-legged frogs in Santa Clara County, California.

Senior Systems Ecologist, 1994-1995, EIP Associates, Sacramento, California. Provided consulting services in environmental planning, and quantitative assessment of land units for their conservation and restoration opportunities basedon ecological resource requirements of 29 special-status species. Developed ecological indicators for prioritizing areas within Yolo County to receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 1990-1994, Department of Agronomy and Range Science, *U.C. Davis*. Under Dr. Shu Geng's mentorship, studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. Managed and analyzed a data base of energy use in California agriculture. Assisted with landscape (GIS) study of groundwater contamination across Tulare County, California.

Work experience in graduate school: Co-taught Conservation Biology with Dr. Christine Schonewald, 1991 & 1993, UC Davis Graduate Group in Ecology; Reader for Dr. Richard Coss's course on Psychobiology in 1990, UC Davis Department of Psychology; Research Assistant to Dr. Walter E. Howard, 1988-1990, UC Davis Department of Wildlife and Fisheries Biology, testing durable baits for pocket gopher management in forest clearcuts; Research Assistant to Dr. Terrell P. Salmon, 1987-1988, UC Wildlife Extension, Department of Wildlife and Fisheries Biology, developing empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental and human health hazards in California. Student Assistant to Dr. E. Lee Fitzhugh, 1985-1987, UC Cooperative Extension, Department of Wildlife and Fisheries Biology, developing and implementing statewide mountain lion track count for long-term monitoring.

Fulbright Research Fellow, Indonesia, 1988. Tested use of new sampling methods for numerical monitoring of Sumatran tiger and six other species of endemic felids, and evaluated methods used by other researchers.

Projects

Repowering wind energy projects through careful siting of new wind turbines using map-based collision hazard models to minimize impacts to volant wildlife. Funded by wind companies (principally NextEra Renewable Energy, Inc.), California Energy Commission and East Bay Regional Park District, I have collaborated with a GIS analyst and managed a crew of five field biologists performing golden eagle behavior surveys and nocturnal surveys on bats and owls. The goal is to quantify flight patterns for development of predictive models to more carefully site new wind turbines in repowering projects. Focused behavior surveys began May 2012 and continue. Collision hazard models have been prepared for seven wind projects, three of which were built. Planning for additional repowering projects is underway.

Test avian safety of new mixer-ejector wind turbine (MEWT). Designed and implemented a before-after, control-impact experimental design to test the avian safety of a new, shrouded wind turbine developed by Ogin Inc. (formerly known as FloDesign Wind Turbine Corporation). Supported by a $718,000 grant from the California Energy Commission's Public Interest Energy Research program and a 20% match share contribution from Ogin, I managed a crew of seven field biologists who performed periodic fatality searches and behavior surveys, carcass detection trials, nocturnal behavior surveys using a thermal camera, and spatial analyses with the collaboration of a GIS analyst. Field work began 1 April 2012 and ended 30 March 2015 without Ogin installing its MEWTs, but we still achieved multiple important scientific advances.

Reduce avian mortality due to wind turbines at Altamont Pass. Studied wildlife impacts caused by 5,400 wind turbines at the world's most notorious wind resource area. Studied how impacts are perceived by monitoring and how they are affected by terrain, wind patterns, food resources, range management practices, wind turbine operations, seasonal patterns, population cycles, infrastructure management such as electric distribution, animal behavior and social interactions.

Reduce avian mortality on electric distribution poles. Directed research toward reducing bird electrocutions on electric distribution poles, 2000-2007. Oversaw 5 founds of fatality searches at 10,000 poles from Orange County to Glenn County, California, and produced two large reports.

Cook *et al*. v. Rockwell International *et al*., No. 90-K-181 (D. Colorado). Provided expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. Provided expert reports based on four site visits and an extensive document review of burrowing animals. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals. I testified in federal court in November 2005, and my clients were subsequently awarded a $553,000,000 judgment by a jury. After appeals the award was increased to two billion dollars.

Hanford Nuclear Reservation Litigation. Provided expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. Provided three expert reports based on three site visits and extensive document review. Predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals.

Expert testimony and declarations on proposed residential and commercial developments, gas-fired power plants, wind, solar and geothermal projects, water transfers and water transfer delivery systems, endangered species recovery plans, Habitat Conservation Plans and Natural Communities Conservation Programs. Testified before multiple government agencies, Tribunals, Boards of Supervisors and City Councils, and participated with press conferences and depositions. Prepared expert witness reports and court declarations, which are summarized under Reports (below).

Protocol-level surveys for special-status species. Used California Department of Fish and Wildlife and US Fish and Wildlife Service protocols to search for California red-legged frog, California tiger salamander, arroyo southwestern toad, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, San Joaquin kangaroo rat, San Joaquin kit fox, western burrowing owl, Swainson's hawk, Valley elderberry longhorn beetle and other special-status species.

Conservation of San Joaquin kangaroo rat. Performed research to identify factors responsible for the decline of this endangered species at Lemoore Naval Air Station, 2000-2013, and implemented habitat enhancements designed to reverse the trend and expand the population.

Impact of West Nile Virus on yellow-billed magpies. Funded by Sacramento-Yolo Mosquito and Vector Control District, 2005-2008, compared survey results pre- and post-West Nile Virus epidemic for multiple bird species in the Sacramento Valley, particularly on yellow-billed magpie and American crow due to susceptibility to WNV.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of biological resources along Highways 101, 46 and 41. Used GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, 14 miles of highway and roadway in Monterey County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. Monitored the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both sites. Also used GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley in Colusa County and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. Assisted Dr. Michael Morrison and US Fish and Wildlife Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. Also measured habitat variables in streams.

Opposition to proposed No Surprises rule. Wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a "properly functioning HCP." Submitted 188 signatures of scientists and environmental professionals concerned about No Surprises rule US Fish and Wildlife Service, National Marine Fisheries Service, all US Senators.

Natomas Basin Habitat Conservation Plan alternative. Designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson's hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Assessments of agricultural production system and environmental technology transfer to China. Twice visited China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China.

Yolo County Habitat Conservation Plan. Conducted landscape ecology study of Yolo County to spatially prioritize allocation of mitigation efforts to improve ecosystem functionality within the County from the perspective of 29 special-status species of wildlife and plants. Used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. Derived GIS maps to help guide the conservation area design, and then developed implementation strategies.

Mountain lion track count. Developed and conducted a carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. Track survey transect was established on dusty, dirt roads within randomly selected quadrats.

Sumatran tiger and other felids. Upon award of Fulbright Research Fellowship, I designed and initiated track counts for seven species of wild cats in Sumatra, including Sumatran tiger, fishing cat, and golden cat. Spent four months on Sumatra and Java in 1988, and learned Bahasa Indonesia, the official Indonesian language.

Wildlife in agriculture. Beginning as post-graduate research, I studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife along a 200 mile road transect since 1989 with a hiatus of 1996-2004. The data are analyzed using GIS and methods from landscape ecology, and the results published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural energy use and Tulare County groundwater study. Developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket gopher damage in forest clear-cuts. Developed gopher sampling methods and tested various poison baits and baiting regimes in the largest-ever field study of pocket gopher management in forest plantations, involving 68 research plots in 55 clear-cuts among 6 National Forests in northern California.

Risk assessment of exotic species in North America. Developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

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- Steeno Warehouse IS/MND, Hesperia (2020; 19);
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- Rubidoux Commerce Center Project IS/MND, Jurupa Valley (2020; 27);
- Haun and Holland Mixed Use Center MND, Menifee (2020; 23);
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- GLP Store Warehouse Project Staff Report (2020; 15);
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- Greenlaw Partners Warehouse and Distribution Center Staff Report, Palmdale (2020; 14);
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- The Ranch at Eastvale EIR Addendum, Riverside County (2020; 19);
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- Del Rey Pointe Residential Project IS/MND, Los Angeles (2019; 34);
- 1 AMD Redevelopment EIR, Sunnyvale (2019; 22);
- Lawrence Equipment Industrial Warehouse IS/MND, Banning (2019; 14);
- SDG Commerce 330 Warehouse IS, American Canyon (2019; 21);
- PAMA Business Center IS/MND, Moreno Valley (2019; 23);
- Lake House IS/ND, Lodi (2019; 33);
- Stirling Warehouse MND site visit, Victorville (2019; 7);
- Green Valley II Mixed-Use Project EIR, Fairfield (2019; 36);
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- Mather South Community Masterplan Project EIR (2019; 35);
- Del Hombre Apartments EIR, Walnut Creek (2019; 23);
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- Logisticenter at Vacaville MND (2018; 24);
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- Tamarind Warehouse MND, Fontana (2018; 16);
- Lathrop Gateway Business Park EIR Addendum (2018; 23);
- Centerpointe Commerce Center IS, Moreno Valley (2019; 18);
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- San Gorgonio Crossings EIR, Riverside County (2017; 22);
- Replies to responses on Jupiter Project IS and MND, Apple Valley (2017; 12);
- Proposed World Logistics Center Mitigation Measures, Moreno Valley (2017, 2019; 12);
- MacArthur Transit Village Project Modified 2016 CEQA Analysis (2017; 12);
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- Colony Commerce Center Specific Plan DEIR, Ontario (2016; 16);
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- Replies to responses on Initial Study for Pyramid Asphalt (2016; 5);
- Initial Study for Pyramid Asphalt (2016; 4);
- Agua Mansa Distribution Warehouse Project Initial Study (2016; 14);
- Santa Anita Warehouse MND, Rancho Cucamonga (2016; 12);
- CapRock Distribution Center III DEIR, Rialto (2016: 12);
- Orange Show Logistics Center Initial Study and MND, San Bernardino (2016; 9);
- City of Palmdale Oasis Medical Village Project IS and MND (2016; 7);
- Comments on proposed rule for incidental eagle take (2016, 49);
- Replies on Grapevine Specific and Community Plan FEIR, Kern County (2016; 25);

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- Replies on Soccer Center Solar Project Mitigated Negative Declaration (2013; 6);
- Soccer Center Solar Project Mitigated Negative Declaration (2013; 10);
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- Replies on Imperial Valley Solar Company 2 Project (2013; 10);
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- FRV Orion Solar Project DEIR (PP12232) (2013; 9);
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- Replies on Regional University Specific Plan EIR, Roseville (2008; 20);
- Regional University Specific Plan EIR, Roseville (2008: 33);
- Clark Precast, LLC's "Sugarland" project, ND, Woodland (2008: 15);
- Cape Wind Project DEIS (2008; 157);
- Yuba Highlands Specific Plan EIR, Yuba County (2006; 37);
- Replies to responses on North Table Mountain MND, Butte County (2006; 5);
- North Table Mountain MND, Butte County (2006; 15);
- Windy Point Wind Farm EIS (2006; 14 and Powerpoint slides in reply to responses);

- Shiloh I Wind Power Project EIR, Rio Vista (2005; 18);
- Buena Vista Wind Energy Project NOP, Byron (2004; 15);
- Callahan Estates Subdivision ND, Winters (2004; 11);
- Winters Highlands Subdivision IS/ND (2004; 9);
- Winters Highlands Subdivision IS/ND (2004; 13);
- Creekside Highlands Project, Tract 7270 ND (2004; 21);
- On the petition California Fish and Game Commission to list the Burrowing Owl as threatened or endangered (2003; 10);
- Conditional Use Permit renewals from Alameda County for wind turbine operations in the Altamont Pass Wind Resource Area (2003; 41);
- UC Davis Long Range Development Plan of 2003, particularly with regard to the Neighborhood Master Plan (2003; 23);
- Anderson Marketplace Draft Environmental Impact Report (2003: 18 + 3 plates of photos);
- Negative Declaration of the proposed expansion of Temple B'nai Tikyah (2003: 6);
- Antonio Mountain Ranch Specific Plan Public Draft EIR (2002: 23);
- Response to testimony of experts at the East Altamont Energy Center evidentiary hearing on biological resources (2002: 9);
- Revised Draft Environmental Impact Report, The Promenade (2002: 7);
- Recirculated Initial Study for Calpine's proposed Pajaro Valley Energy Center (2002: 3);
- UC Merced -- Declaration of Dr. Shawn Smallwood in support of petitioner's application for temporary restraining order and preliminary injunction (2002: 5);
- Replies to response to comments in Final Environmental Impact Report, Atwood Ranch Unit III Subdivision (2003: 22);
- Atwood Ranch Unit III Subdivision EIR (2002; 19);
- California Energy Commission Staff Report on GWF Tracy Peaker Project (2002: 17 + 3 photos; follow-up report of 3);
- Silver Bend Apartments IS/MND, Placer County (2002: 13);
- UC Merced Long-range Development Plan DEIR and UC Merced Community Plan DEIR (2001: 26);
- Colusa County Power Plant IS, Maxwell (2001: 6);
- Dog Park at Catlin Park, Folsom, California (2001: 5 + 4 photos);
- Pacific Lumber Co. (Headwaters) HCP & EIR, Fortuna (1998: 28);
- Final Environmental Impact Report/Statement for Issuance of Take authorization for listed species within the MSCP planning area in San Diego County, California (Fed. Reg. 62 (60): 14938, San Diego Multi-Species Conservation Program) (1997: 10);
- Permit (PRT-823773) Amendment for the Natomas Basin Habitat Conservation Plan, Sacramento, CA (Fed. Reg. 63 (101): 29020-29021) (1998);
- Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). (Fed. Reg. 64(176): 49497-49498) (1999: 8);
- Draft Recovery Plan for the Arroyo Southwestern Toad (*Bufo microscaphus californicus*) (1998);
- Ballona West Bluffs Project Environmental Impact Report (1999: oral presentation);

- California Board of Forestry's proposed amended Forest Practices Rules (1999);
- Sunset Skyranch Airport Use Permit IS/MND (1999);
- Calpine and Bechtel Corporations' Biological Resources Implementation and Monitoring Program (BRMIMP) for the Metcalf Energy Center (2000: 10);
- Metcalf Energy Center, California Energy Commission FSA (2000);
- US Fish and Wildlife Service Section 7 consultation with the California Energy Commission regarding Calpine and Bechtel Corporations' Metcalf Energy Center (2000: 4);
- California Energy Commission's Preliminary Staff Assessment of the proposed Metcalf Energy Center (2000: 11);
- Site-specific management plans for the Natomas Basin Conservancy's mitigation lands, prepared by Wildlands, Inc. (2000: 7);
- Affidavit of K. Shawn Smallwood in Spirit of the Sage Council, et al. (Plaintiffs) vs. Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. (Defendants), Injuries caused by the No Surprises policy and final rule which codifies that policy (1999: 9).

Comments on other Environmental Review Documents:

- Proposed Regulation for California Fish and Game Code Section 3503.5 (2015: 12);
- Statement of Overriding Considerations related to extending Altamont Winds, Inc.'s Conditional Use Permit PLN2014-00028 (2015; 8);
- Draft Program Level EIR for Covell Village (2005; 19);
- Bureau of Land Management Wind Energy Programmatic EIS Scoping document (2003: 7.);
- NEPA Environmental Analysis for Biosafety Level 4 National Biocontainment Laboratory (NBL) at UC Davis (2003: 7);
- Notice of Preparation of UC Merced Community and Area Plan EIR, on behalf of The Wildlife Society—Western Section (2001: 8.);
- Preliminary Draft Yolo County Habitat Conservation Plan (2001; 2 letters totaling 35.);
- Merced County General Plan Revision, notice of Negative Declaration (2001: 2.);
- Notice of Preparation of Campus Parkway EIR/EIS (2001: 7.);
- Draft Recovery Plan for the bighorn sheep in the Peninsular Range (*Ovis candensis*) (2000);
- Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*), on behalf of The Wildlife Society—Western Section (2000: 10.);
- Sierra Nevada Forest Plan Amendment Draft Environmental Impact Statement, on behalf of The Wildlife Society—Western Section (2000: 7.);
- State Water Project Supplemental Water Purchase Program, Draft Program EIR (1997);
- Davis General Plan Update EIR (2000);
- Turn of the Century EIR (1999: 10);

- Proposed termination of Critical Habitat Designation under the Endangered Species Act (Fed. Reg. 64(113): 31871-31874) (1999);
- NOA Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, termed the HCP 5-Point Policy Plan (Fed. Reg. 64(45): 11485 - 11490) (1999; 2 + attachments);
- Covell Center Project EIR and EIR Supplement (1997).

Position Statements I prepared the following position statements for the Western Section of The Wildlife Society, and one for nearly 200 scientists:

- Recommended that the California Department of Fish and Game prioritize the extermination of the introduced southern water snake in northern California. The Wildlife Society--Western Section (2001);
- Recommended that The Wildlife Society—Western Section appoint or recommend members of the independent scientific review panel for the UC Merced environmental review process (2001);
- Opposed the siting of the University of California's 10th campus on a sensitive vernal pool/grassland complex east of Merced. The Wildlife Society--Western Section (2000);
- Opposed the legalization of ferret ownership in California. The Wildlife Society--Western Section (2000);
- Opposed the Proposed "No Surprises," "Safe Harbor," and "Candidate Conservation Agreement" rules, including permit-shield protection provisions (Fed. Reg. Vol. 62, No. 103, pp. 29091-29098 and No. 113, pp. 32189-32194). This statement was signed by 188 scientists and went to the responsible federal agencies, as well as to the U.S. Senate and House of Representatives.

Posters at Professional Meetings

Leyvas, E. and K. S. Smallwood. 2015. Rehabilitating injured animals to offset and rectify wind project impacts. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S., J. Mount, S. Standish, E. Leyvas, D. Bell, E. Walther, B. Karas. 2015. Integrated detection trials to improve the accuracy of fatality rate estimates at wind projects. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S. and C. G. Thelander. 2005. Lessons learned from five years of avian mortality research in the Altamont Pass WRA. AWEA conference, Denver, May 2005.

Neher, L., L. Wilder, J. Woo, L. Spiegel, D. Yen-Nakafugi, and K.S. Smallwood. 2005. Bird's eye view on California wind. AWEA conference, Denver, May 2005.

Smallwood, K. S., C. G. Thelander and L. Spiegel. 2003. Toward a predictive model of avian fatalities in the Altamont Pass Wind Resource Area. Windpower 2003 Conference and Convention, Austin, Texas.

Smallwood, K.S. and Eva Butler. 2002. Pocket Gopher Response to Yellow Star-thistle Eradication as part of Grassland Restoration at Decommissioned Mather Air Force Base, Sacramento County, California. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and Michael L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Third Mountain Lion Workshop, Prescott, AZ.

Smith, T. R. and K. S. Smallwood. 2000. Effects of study area size, location, season, and allometry on reported *Sorex* shrew densities. Annual Meeting of the Western Section of The Wildlife Society.

Presentations at Professional Meetings and Seminars

Dog detections of bat and bird fatalities at wind farms in the Altamont Pass Wind Resource Area. East Bay Regional Park District 2019 Stewardship Seminar, Oakland, California, 13 November 2019.

Repowering the Altamont Pass. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area, 1999-2007. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Conservation and recovery of burrowing owls in Santa Clara Valley. Santa Clara Valley Habitat Agency, Newark, California, 3 February 2017.

Mitigation of Raptor Fatalities in the Altamont Pass Wind Resource Area. Raptor Research Foundation Meeting, Sacramento, California, 6 November 2015.

From burrows to behavior: Research and management for burrowing owls in a diverse landscape. California Burrowing Owl Consortium meeting, 24 October 2015, San Jose, California.

The Challenges of repowering. Keynote presentation at Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 10 March 2015.

Research Highlights Altamont Pass 2011-2015. Scientific Review Committee, Oakland, California, 8 July 2015.

Siting wind turbines to minimize raptor collisions: Altamont Pass Wind Resource Area. US Fish and Wildlife Service Golden Eagle Working Group, Sacramento, California, 8 January 2015.

Evaluation of nest boxes as a burrowing owl conservation strategy. Sacramento Chapter of the Western Section, The Wildlife Society. Sacramento, California, 26 August 2013.

Predicting collision hazard zones to guide repowering of the Altamont Pass. Conference on wind power and environmental impacts. Stockholm, Sweden, 5-7 February 2013.

Impacts of Wind Turbines on Wildlife. California Council for Wildlife Rehabilitators, Yosemite, California, 12 November 2012.

Impacts of Wind Turbines on Birds and Bats. Madrone Audubon Society, Santa Rosa, California, 20 February 2012.

Comparing Wind Turbine Impacts across North America. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Alameda County Scientific Review Committee meeting, 17 February 2011

Comparing Wind Turbine Impacts across North America. Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 3 May 2011.

Update on Wildlife Impacts in the Altamont Pass Wind Resource Area. Raptor Symposium, The Wildlife Society—Western Section, Riverside, California, February 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Raptor Symposium, The Wildlife Society - Western Section, Riverside, California, February 2011.

Wildlife mortality caused by wind turbine collisions. Ecological Society of America, Pittsburgh, Pennsylvania, 6 August 2010.

Map-based repowering and reorganization of a wind farm to minimize burrowing owl fatalities. California burrowing Owl Consortium Meeting, Livermore, California, 6 February 2010.

Environmental barriers to wind power. Getting Real About Renewables: Economic and Environmental Barriers to Biofuels and Wind Energy. A symposium sponsored by the Environmental & Energy Law & Policy Journal, University of Houston Law Center, Houston, 23 February 2007.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Meeting with Japan Ministry of the Environment and Japan Ministry of the Economy, Wild Bird Society of Japan, and other NGOs Tokyo, Japan, 9 November 2006.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Symposium on bird collisions with wind turbines. Wild Bird Society of Japan, Tokyo, Japan, 4 November 2006.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. California Society for Ecological Restoration (SERCAL) 13th Annual Conference, UC Santa Barbara, 27 October 2006.

Fatality associations as the basis for predictive models of fatalities in the Altamont Pass Wind Resource Area. EEI/APLIC/PIER Workshop, 2006 Biologist Task Force and Avian Interaction with Electric Facilities Meeting, Pleasanton, California, 28 April 2006.

Burrowing owl burrows and wind turbine collisions in the Altamont Pass Wind Resource Area. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, February 8, 2006.

Mitigation at wind farms. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Incorporating data from the California Wildlife Habitat Relationships (CWHR) system into an impact assessment tool for birds near wind farms. Shawn Smallwood, Kevin Hunting, Marcus Yee, Linda Spiegel, Monica Parisi. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Toward indicating threats to birds by California's new wind farms. California Energy Commission, Sacramento, May 26, 2005.

Avian collisions in the Altamont Pass. California Energy Commission, Sacramento, May 26, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. EPRI Environmental Sector Council, Monterey, California, February 17, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Associations between avian fatalities and attributes of electric distribution poles in California. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Minimizing avian mortality in the Altamont Pass Wind Resources Area. UC Davis Wind Energy Collaborative Forum, Palm Springs, California, December 14, 2004.

Selecting electric distribution poles for priority retrofitting to reduce raptor mortality. Raptor Research Foundation Meeting, Bakersfield, California, November 10, 2004.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. Annual Meeting of the Society for Ecological Restoration, South Lake Tahoe, California, October 16, 2004.

Lessons learned from five years of avian mortality research at the Altamont Pass Wind Resources Area in California. The Wildlife Society Annual Meeting, Calgary, Canada, September 2004.

The ecology and impacts of power generation at Altamont Pass. Sacramento Petroleum Association, Sacramento, California, August 18, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Consortium meeting, Hayward, California, February 7, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Symposium, Sacramento, November 2, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. National Wind Coordinating Committee, Washington, D.C., November 17, 2003.

Raptor Behavior at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

California mountain lions. Ecological & Environmental Issues Seminar, Department of Biology, California State University, Sacramento, November, 2000.

Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. National Wind Coordinating Committee, Carmel, California, May, 2000.

Using a Geographic Positioning System (GPS) to map wildlife and habitat. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Suggested standards for science applied to conservation issues. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

The indicators framework applied to ecological restoration in Yolo County, California. Society for Ecological Restoration, September 25, 1999.

Ecological restoration in the context of animal social units and their habitat areas. Society for Ecological Restoration, September 24, 1999.

Relating Indicators of Ecological Health and Integrity to Assess Risks to Sustainable Agriculture and Native Biota. International Conference on Ecosystem Health, August 16, 1999.

A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Southern California Edison, Co. and California Energy Commission, March 4-5, 1999.

Mountain lion track counts in California: Implications for Management. Ecological & Environmental Issues Seminar, Department of Biological Sciences, California State University, Sacramento, November 4, 1998.

"No Surprises" -- Lack of science in the HCP process. California Native Plant Society Annual Conservation Conference, The Presidio, San Francisco, September 7, 1997.

In Your Interest. A half hour weekly show aired on Channel 10 Television, Sacramento. In this episode, I served on a panel of experts discussing problems with the implementation of the Endangered Species Act. Aired August 31, 1997.

Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Estimating prairie dog and pocket gopher burrow volume. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Ten years of mountain lion track survey. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Study and interpretive design effects on mountain lion density estimates. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Small animal control. Session moderator and speaker at the California Farm Conference, Sacramento, California, Feb. 28, 1995.

Small animal control. Ecological Farming Conference, Asylomar, California, Jan. 28, 1995.

Habitat associations of the Swainson's Hawk in the Sacramento Valley's agricultural landscape. 1994 Raptor Research Foundation Meeting, Flagstaff, Arizona.

Alfalfa as wildlife habitat. Seed Industry Conference, Woodland, California, May 4, 1994.

Habitats and vertebrate pests: impacts and management. Managing Farmland to Bring Back Game Birds and Wildlife to the Central Valley. Yolo County Resource Conservation District, U.C. Davis, February 19, 1994.

Management of gophers and alfalfa as wildlife habitat. Orland Alfalfa Production Meeting and Sacramento Valley Alfalfa Production Meeting, February 1 and 2, 1994.

Patterns of wildlife movement in a farming landscape. Wildlife and Fisheries Biology Seminar Series: Recent Advances in Wildlife, Fish, and Conservation Biology, U.C. Davis, Dec. 6, 1993.

Alfalfa as wildlife habitat. California Alfalfa Symposium, Fresno, California, Dec. 9, 1993.

Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium, Fresno, California, Dec. 8, 1993.

Association analysis of raptors in a farming landscape. Plenary speaker at Raptor Research Foundation Meeting, Charlotte, North Carolina, Nov. 6, 1993.

Landscape strategies for biological control and IPM. Plenary speaker, International Conference on Integrated Resource Management and Sustainable Agriculture, Beijing, China, Sept. 11, 1993.

Landscape Ecology Study of Pocket Gophers in Alfalfa. Alfalfa Field Day, U.C. Davis, July 1993.

Patterns of wildlife movement in a farming landscape. Spatial Data Analysis Colloquium, U.C. Davis, August 6, 1993.

Sound stewardship of wildlife. Veterinary Medicine Seminar: Ethics of Animal Use, U.C. Davis. May 1993.

Landscape ecology study of pocket gophers in alfalfa. Five County Grower's Meeting, Tracy, California. February 1993.

Turbulence and the community organizers: The role of invading species in ordering a turbulent system, and the factors for invasion success. Ecology Graduate Student Association Colloquium, U.C. Davis. May 1990.

Evaluation of exotic vertebrate pests. Fourteenth Vertebrate Pest Conference, Sacramento, California. March 1990.

Analytical methods for predicting success of mammal introductions to North America. The Western Section of the Wildlife Society, Hilo, Hawaii. February 1988.

A state-wide mountain lion track survey. Sacramento County Dept Parks and Recreation. April 1986.

The mountain lion in California. Davis Chapter of the Audubon Society. October 1985.

Ecology Graduate Student Seminars, U.C. Davis, 1985-1990: Social behavior of the mountain lion; Mountain lion control; Political status of the mountain lion in California.

Other forms of Participation at Professional Meetings

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Berlin, Germany, March 2015.

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Stockholm, Sweden, February 2013.

- Workshop co-presenter at Birds & Wind Energy Specialist Group (BAWESG) Information sharing week, Bird specialist studies for proposed wind energy facilities in South Africa, Endangered Wildlife Trust, Darling, South Africa, 3-7 October 2011.

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 2-5 May 2011.

- Chair of Animal Damage Management Session, The Wildlife Society, Annual Meeting, Reno, Nevada, September 26, 2001.

- Chair of Technical Session: Human communities and ecosystem health: Comparing perspectives and making connection. Managing for Ecosystem Health, International Congress on Ecosystem Health, Sacramento, CA August 15-20, 1999.

- Student Awards Committee, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

- Student Mentor, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Committees

- Scientific Review Committee, Alameda County, Altamont Pass Wind Resource Area
- Ph.D. Thesis Committee, Steve Anderson, University of California, Davis
- MS Thesis Committee, Marcus Yee, California State University, Sacramento

Other Professional Activities or Products

Testified in Federal Court in Denver during 2005 over the fate of radio-nuclides in the soil at Rocky Flats Plant after exposure to burrowing animals. My clients won a judgment of $553,000,000. I have also testified in many other cases of litigation under CEQA, NEPA, the Warren-Alquist Act, and other environmental laws. My clients won most of the cases for which I testified.

Testified before Environmental Review Tribunals in Ontario, Canada regarding proposed White Pines, Amherst Island, and Fairview Wind Energy projects.

Testified in Skamania County Hearing in 2009 on the potential impacts of zoning the County for development of wind farms and hazardous waste facilities.

Testified in deposition in 2007 in the case of O'Dell et al. vs. FPL Energy in Houston, Texas.

Testified in Klickitat County Hearing in 2006 on the potential impacts of the Windy Point Wind Farm.

Memberships in Professional Societies

The Wildlife Society
Raptor Research Foundation

Honors and Awards

Fulbright Research Fellowship to Indonesia, 1987
J.G. Boswell Full Academic Scholarship, 1981 college of choice
Certificate of Appreciation, The Wildlife Society—Western Section, 2000, 2001

ATTACHMENT B

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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January 8, 2021

Andrew Graf
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080

Subject: Comments on the Mulqueeney Ranch Wind Repowering Project (SCH No. 2010082063)

Dear Mr. Graf,

5-116

We have reviewed the November 2020 Draft Subsequent Environmental Impact Report ("DSEIR") for the Mulqueeney Ranch Wind Repowering Project ("Project") located in Alameda County ("County"). The Project proposes to replace approximately 518 generation wind turbines with up to 36 new wind turbines, including turbine generators, towers, foundations, and pad-mounted transformers, allowing up to 80 megawatts ("MW") of generating capacity. The Project would also include the construction of access roads, three permanent meteorological towers, an underground power collection system, and a new substation on the approximately 4,600-acre Project site.

5-117

Our review concludes that the DSEIR fails to adequately evaluate the Project's hazards and hazardous materials, air quality, and health risk impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An updated EIR should be prepared to adequately assess and mitigate the potential hazards and hazardous materials, air quality, and health risk impacts that the project may have on the surrounding environment.

5-118

Hazards and Hazardous Materials

A Phase I Environmental Site Assessment ("ESA"), prepared for the Project site and provided as Appendix E to the DSEIR, found the following recognized environmental conditions as described in the DSEIR:

5-118 cont'd

> A Union Pacific Railroad railway transects the project site in the northern portion of the site; A burn pit is located adjacent to the access road, and north of the barn, on APN # 99B-7925-2-4 and remnants of wood and metal were observed within the burn pit; Multiple chemical storage containers (i.e., tanks, drums) were observed near the main residence on APN# 99B-7925-2-1, though no identifying markers were present on the containers, and no secondary containment was observed under the containers; Residual staining was observed in the immediate vicinity of the hazardous material storage tanks and treated poles located south of the main residence. (p. 3.9-11)

The DSEIR disregards these conditions without analyzing the nature or severity of the contaminants by stating:

> A Phase II investigation would not be warranted. Overall, the identified environmental conditions are typical conditions that would be addressed through standard construction BMPs and compliance with regulations. (p. 3.9-12)

The presence of a burn pit, tanks and drums, and stained soils are in no way "typical" as asserted in the DSEIR and warrant further investigation in a revised EIR. Burn pits may contain hazardous chemical residuals in soils. The hazardous materials storage tanks and drums may still contain hazardous chemicals and may have leaked chemicals to the underlying soil as indicated by the noted soil staining.

When a Phase I ESA finds recognized environmental conditions, a Phase II ESA is routinely performed.[1] The Phase II ESA involves a program of soil and/or groundwater sampling to determine the extent of chemical releases and the need for any regulatory agency notification and any necessary environmental cleanup activities.

A revised EIR should be prepared to include the results of a Phase II ESA. Any hazardous conditions that are found in the Phase II ESA should be reported to the California Regional Water Quality Control Board of the Department of Toxics Substances Control for oversight of cleanup that may be necessary, and all necessary cleanup should be included as binding mitigation to be completed prior to commencing Project construction.

5-119

Air Quality

Incorrect Mitigation Measure Applied to Reduce Criteria Air Pollutant Emissions

The DSEIR concludes that the Project would result in significant construction-related ROG and NO_X emissions (p. 3.3-21). As a result, the DSEIR implements Mitigation Measures ("MM") AQ-2a and AQ-2b, which require the implementation of BAAQMD's *Basic Construction Mitigation Measures* and *Additional Construction Mitigation Measures* (p. 3.3-21). However, emissions remain significant *after* the implementation of these two mitigation measures. According to the DSEIR:

> "Implementation of PEIR Mitigation Measures AQ-2a, *Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures,* and

[1] https://www.partneresi.com/resources/blog/what-is-a-phase-ii-environmental-site-assessment

AQ-2b, *Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures,* would ensure that project impacts related to fugitive dust would be less than significant. However, **implementation of these measures would not reduce project generated NOx emissions to a less-than-significant level. Implementation of an additional mitigation measure, 2020 NEW Mitigation Measure AQ-2c: *Reduce construction-related air pollutant emissions to below BAAQMD NOx thresholds*, which has been added to this SEIR as a required mitigation measure for the project, would reduce NOx emissions to a less-than-significant level**" (emphasis added) (p. 3.3-21). 5-119 cont'd

As you can see in the excerpt above, the DSEIR implements MM AQ-2c, as the Project's emissions remain significant after the implementation of MM AQ-2a and MM AQ-2b. Specifically, MM AQ-2c states the following:

> "The project proponents will ensure construction-related emissions do not exceed BAAQMD's construction NO_X threshold of 54 pounds per day. In addition to implementing PEIR Mitigation Measures AQ-2a and AQ-2b, the project proponents will coordinate with BAAQMD (or the Clean Air Foundation) to purchase NO_X credits to offset remaining NO_X construction and operations emissions exceeding BAAQMD thresholds" (p. 3.3-26).

Thus, MM AQ-2c allows the Project to reduce emissions to less-than-significant levels by purchasing offsets to fund off-site mitigation projects. However, the Project's reliance upon MM AQ-2c is unsupported, as the Project fails to first implement all feasible on-site mitigation. According to the BAAQMD:

> "Land use development projects that exceed lead agency's thresholds of significance *after implementing all feasible onsite mitigation measures* should evaluate the feasibility of implementing an offsite mitigation measure" (emphasis added).[2]

As you can see in the excerpt above, projects within the BAAQMD are required to implement all feasible on-site mitigation, before considering off-site mitigation measures. Here, while the DSEIR includes MM AQ-2a and MM AQ-2b, the DSEIR fails to consider and incorporate all feasible on-site mitigation measures. Additional, on-site mitigation measures exist that should be incorporated, such as those suggested in the section of this letter titled "Feasible Mitigation Measures Available to Reduce Emissions."[3] Thus, the Project should not be approved until an updated EIR is prepared, incorporating *all feasible on-site* mitigation measures to reduce the Project's construction-related NO_X emissions to less-than-significant levels.

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[2] "Guidance for Lead Agencies to Develop an Offsite Mitigation Program." BAAQMD, May 2012, available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/offsite-mitigation-guidance-may-2012.pdf, p. 1.

[3] See section titled "Feasible Mitigation Measures Available to Reduce Emissions" on p. 6 of this comment letter. These measures would effectively reduce construction-related NO_X emissions.

5-120

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The DSEIR concludes that the proposed Project would result in a potentially significant health risk impact (p. 3.3-28). However, without conducting a quantified construction or operational health risk assessment ("HRA"), the DSEIR qualitatively concludes that "PEIR Mitigation Measures AQ-2a and AQ-2b would reduce DPM emissions and associated health risks" to less-than-significant levels. Specifically, the DSEIR states:

> "BAAQMD (2017b) has determined that construction activities occurring at distances of more than 1,000 feet from a sensitive receptor most likely do not pose a significant health risk. As discussed above, the nearest receptors outside the project area are more than 2,000 feet to the east. The Mulqueeney Ranch is the only receptor within the project area and is approximately 865 feet from the staging/laydown area. While exposure to DPM emissions would be of short duration, this receptor may be exposed to increased health risks during construction that could exceed BAAQMD thresholds. Accordingly, this impact is conservatively concluded to be potentially significant. Implementation of PEIR Mitigation Measures AQ-2a and AQ-2b would reduce DPM emissions and associated health risks. This impact would be less than significant with mitigation" (p. 3.3-28).

Finally, regarding health risk impacts related to Project operation, the DSEIR states:

> "Long-term operation of the proposed project would not result in a significant new source of DPM emissions. Offsite truck trips within the SJVAB during construction would be transitory and would use multiple roads over a widespread area, thereby helping to disperse toxic pollutants and minimize exposure. Onsite construction activities would generate DPM, but these activities would occur over a relatively short period—approximately 7 months, far less than the exposure duration of 30 years that is typically associated with chronic cancer risk (Office of Environmental Health Hazard Assessment 2015). Emissions would also be spatially dispersed throughout the project area and at multiple turbine locations" (p. 3.3-27-3.3-28).

As you can see in the excerpts above, the DSEIR concludes that a quantified construction and operational HRA is not necessary, as "the nearest receptors outside the project area are more than 2,000 feet to the east," construction "activities would occur over a relatively short period," and "operation of the proposed project would not result in a significant new source of DPM emissions." However, the DSEIR's analysis of the Project's health risk impacts, as well as the subsequent less-than-significant impact finding, is unsupported for five reasons.

First, the DSEIR's claim that "the nearest receptors outside the project area are more than 2,000 feet to the east" does not accurately describe all relevant sensitive receptors (p. 3.3-28). According to the DSEIR, there is a residence within the Project site, approximately 865 feet from the proposed staging/laydown area (p. 3.3-15). This residence is within the 1,000 foot sensitive receptor zone which BAAQMD and the DSEIR acknowledge may pose a health risk from construction emissions. As such, the DSEIR's claim that a construction HRA is not necessary, because the nearest sensitive receptors are located more than 2,000 feet from the Project site, and the BAAQMD "determined that construction activities occurring at distances of more than 1,000 feet from a sensitive receptor most likely do not pose a significant health risk" is incorrect (p. 3.3-28). 5-120 cont'd

Second, the DSEIR's claim that a construction HRA is not necessary because construction activities "would occur over a relatively short period" is unsupported and overlooks the requirement to analyze the Project's health risk. Adverse health impacts from exposure to toxic air contaminants can occur over short periods of time. By failing to prepare a construction HRA, the DSEIR fails to disclose these impacts and renders the DSEIR inconsistent with the most recent guidance published by the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California, as referenced by the DSEIR (p. 3.3-27 – 3.3-28). In February of 2015, OEHHA released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*.[4] This guidance document describes the types of projects that warrant the preparation of an HRA. Construction of the Project will produce emissions of DPM, a human carcinogen, through the exhaust stacks of construction equipment over a construction period of approximately 7-months, as indicated by the DSEIR (p. 2-15). The OEHHA document recommends that all short-term projects lasting at least two months be evaluated for cancer risks to nearby sensitive receptors.[5] Therefore, per OEHHA guidelines, we conclude that health risk impacts from Project construction should have been evaluated by the DSEIR.

Third, the DSEIR fails to provide any support for its claim that PEIR MM AQ-2a and MM AQ-2b would reduce the Project's construction-related health risk impacts to less-than-significant levels. MM AQ-2a does not address DPM emissions at all (p. 3.3-24). MM AQ-2b requires the off-road construction fleet to achieve a project wide fleet-average 45% PM reduction compared to the most recent ARB fleet average (p. 3.3-25). However, the DSEIR does not disclose either the Project's unmitigated DPM emissions or the Project's mitigated DPM emissions after MM AQ-2b is applied. Thus, the DSEIR lacks evidence to support its conclusion that DPM emissions would be reduced to less-than-significant levels with these measures. Without making a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors, the DSEIR lacks substantial evidence demonstrating that the Project's construction-related health risk impacts would be less than significant. As a result, the DSEIR's less-than significant impact conclusion regarding the Project's construction-related health risk impacts is unsubstantiated.

Fourth, the DSEIR's claim that "operation of the proposed project would not result in a significant new source of DPM emissions" is unsupported, because the DSEIR does not disclose the amount of DPM and other toxic air contaminant emissions that would be released during Project operation (p. 3.3-24, Table 3.3-11).[6] Without making a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors, we cannot verify that the Project's operational health

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[4] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/hotspots2015.html

[5] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf, p. 8-18

[6] Table 3.3-11 identifies the Project's estimated operational criteria pollutant emissions but does not include estimates of the Project's DPM emissions.

risk impact would be less than significant. Appendix B indicates that Project operation will generate 16 daily worker trips, as well as require 5 pieces of off-road equipment and 2 generators, which will generate additional exhaust emissions and continue to expose nearby sensitive receptors to DPM emissions (Appendix B, pp. 4, Table 4). The OEHHA document recommends that exposure from projects lasting more than 6 months be evaluated for the duration of the project, and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident ("MEIR").[7] Even though we were not provided with the expected lifetime of the Project, we can reasonably assume that the Project will operate for at least 30 years, if not more. Therefore, we recommend that health risks from Project operation also be evaluated, as a 30-year exposure duration vastly exceeds the 2-month and 6-month requirements set forth by OEHHA. Furthermore, according to the BAAQMD: 5-120 cont'd

> "The incremental increase in cancer and non-cancer (chronic and acute) risk from TACs and $PM_{2.5}$ concentrations at the affected receptors shall be assessed."[8]

This guidance reflects the most recent health risk policy, and as such, we recommend that an updated assessment of health risks to nearby sensitive receptors from Project operation be included in an updated EIR for the Project.

Fifth, by claiming a less than significant impact without conducting a quantified HRA to disclose the exposure levels to nearby, existing sensitive receptors as a result of Project construction and operation, the DSEIR fails to compare the excess health risk to the BAAQMD's specific numeric threshold of 10 in one million.[9] Furthermore, according to the BAAQMD:

> "Regulation 2, Rule 5 of the Air District specifies permit requirements for new and modified stationary sources of TAC. The Project Risk Requirement (2-5-302.1) states that the Air Pollution Control Officer shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project cancer risk exceeds 10.0 in one million."[10]

Thus, the DSEIR should have made a reasonable effort to estimate the Project's construction and operational cancer risk to compare to the BAAQMD's significance threshold of 10 in one million. As such, the DSEIR cannot conclude that the Project's health risk impacts would be less than significant, without quantifying emissions to compare to the proper threshold.

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[7] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf, p. 8-6, 8-15

[8] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. 5-5.

[9] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at*: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. 2-5.

[10] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p.D-35.

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Additional Feasible Mitigation Measures Available to Reduce Emissions

The DSEIR concludes that construction-related emissions of ROG and NOx would be substantial, resulting in a significant and unavoidable cumulative impact after mitigation (p. 5-5). The DSEIR also concludes that the Project's construction-related PM_{10} and $PM_{2.5}$ emissions are significant prior to mitigation (p. 3.3-22, Table 3.3-9). As discussed above, the DSEIR failed to quantify the Project's DPM emissions. The DSEIR therefore lacks supporting evidence to conclude that DPM emissions would be reduced to less-than-significant levels. Our analysis demonstrates that the DSEIR also fails to require all feasible mitigation to reduce the Project's criteria air pollutant emissions and DPM emissions to less than significant levels. These significant impacts can be mitigated further.

In an effort to further reduce the Project's emissions, including emissions of ROG, NO_X, and DPM, we identified several mitigation measures that are applicable to the proposed Project from NEDC's *Diesel Emission Controls in Construction Projects.*[11] Therefore, to reduce the Project's emissions, consideration of the following measures should be made:

NEDC's *Diesel Emission Controls in Construction Projects*[12]
Measures – Diesel Emission Control Technology
a. Diesel Onroad Vehicles All diesel nonroad vehicles on site for more than 10 total days must have either (1) engines that meet EPA onroad emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.
b. Diesel Generators All diesel generators on site for more than 10 total days must be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.
c. Upon confirming that the diesel vehicle, construction equipment, or generator has either an engine meeting Tier 4 non road emission standards or emission control technology, as specified above, installed and functioning, the developer will issue a compliance sticker. All diesel vehicles, construction equipment, and generators on site shall display the compliance sticker in a visible, external location as designated by the developer.
d. Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer.

[11] "Diesel Emission Controls in Construction Projects." Northeast Diesel Collaborative (NEDC), December 2010, *available at:* https://www.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf.

[12] "Diesel Emission Controls in Construction Projects." Northeast Diesel Collaborative (NEDC), December 2010, *available at:* https://www.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf.

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e.	All diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend[13] approved by the original engine manufacturer with sulfur content of 15 ppm or less.
Measures – Additional Diesel Requirements	
a.	Construction shall not proceed until the contractor submits a certified list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following: i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment. ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation. iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.
b.	If the contractor subsequently needs to bring on site equipment not on the list, the contractor shall submit written notification within 24 hours that attests the equipment complies with all contract conditions and provide information.
c.	All diesel equipment shall comply with all pertinent local, state, and federal regulations relative to exhaust emission controls and safety.
d.	The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.
Reporting	
a.	For each onroad diesel vehicle, nonroad construction equipment, or generator, the contractor shall submit to the developer's representative a report prior to bringing said equipment on site that includes: i. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, and engine serial number. ii. The type of emission control technology installed, serial number, make, model, manufacturer, and EPA/CARB verification number/level. iii. The Certification Statement signed and printed on the contractor's letterhead.
b.	The contractor shall submit to the developer's representative a monthly report that, for each onroad diesel vehicle, nonroad construction equipment, or generator onsite, includes: i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date. ii. Any problems with the equipment or emission controls. iii. Certified copies of fuel deliveries for the time period that identify: 1. Source of supply 2. Quantity of fuel

[13] Biodiesel blends are only to be used in conjunction with the technologies which have been verified for use with biodiesel blends and are subject to the following requirements: http://www.arb.ca.gov/diesel/verdev/reg/biodieselcompliance.pdf.

3. Quality of fuel, including sulfur content (percent by weight)

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Furthermore, in an effort to reduce the Project's emissions, we identified several mitigation measures that are applicable to the Project from the SMAQMD's *Enhanced Exhaust Control Practices*, which attempt to reduce emissions.[14] Therefore, to reduce the Project's emissions, consideration of the following measures should be made:

SMAQMD's *Enhanced Exhaust Control Practices*[15]
1. The project representative shall submit to the lead agency and District a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. • The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. • The project representative shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. • This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. • The District's Equipment List Form can be used to submit this information. • The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.
2. The project representative shall provide a plan for approval by the lead agency and District demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NOX reduction and 45% particulate reduction compared to the most recent California Air Resources Board (ARB) fleet average. • This plan shall be submitted in conjunction with the equipment inventory. • Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. • The District's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction.
3. The project representative shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. • Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. • Non-compliant equipment will be documented and a summary provided to the lead agency and District monthly. • A visual survey of all in-operation equipment shall be made at least weekly.

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[14] "Enhanced Exhaust Control Practices." Sacramento Metropolitan Air Quality Management District (SMAQMD)October 2013, *available at:* http://www.airquality.org/LandUseTransportation/Documents/Ch3EnhancedExhaustControlFINAL10-2013.pdf.

[15] "Enhanced Exhaust Control Practices." Sacramento Metropolitan Air Quality Management District (SMAQMD)October 2013, *available at:* http://www.airquality.org/LandUseTransportation/Documents/Ch3EnhancedExhaustControlFINAL10-2013.pdf.

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• A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.
4. The District and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this mitigation shall supersede other District, state or federal rules or regulations.

These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduce emissions released during Project construction. An updated EIR should be prepared to include all feasible mitigation measures to ensure that the necessary mitigation measures are implemented to reduce emissions to below thresholds. The updated EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's significant emissions are reduced to the maximum extent possible.

Disclaimer 5-123

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

Matt Hagemann, P.G., C.Hg.

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Investigation and Remediation Strategies
Litigation Support and Testifying Expert
Industrial Stormwater Compliance
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 150 industrial facilities.
- Expert witness on numerous cases including, for example, perfluorooctanoic acid (PFOA) contamination of groundwater, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

<u>Policy:</u>

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9.

Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific

principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. Journal of Real Estate Research. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities.* Boston Massachusetts: Elsevier Publishing

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004.* New Orleans, October 2-6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office*, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality.* 29, 1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

Chollack, T. and **P. Rosenfeld. (**1998). Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation On St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution.* Lecture conducted from Boston, MA.

Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (20-22 July, 2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water.* Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant*. The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The *23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E, C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the United States District Court For The Southern District of Illinois
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 3:19-cv-00302-SMY-GCS
Rosenfeld Deposition. 2-19-2020

In the Circuit Court of Jackson County, Missouri
Karen Cornwell, *Plaintiff,* vs. Marathon Petroleum, LP, *Defendant.*
Case No.: 1716-CV10006
Rosenfeld Deposition. 8-30-2019

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case: No 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In United States District Court For The Southern District of Mississippi
Guy Manuel vs. The BP Exploration et al., Defendants
Case: No 1:19-cv-00315-RHW
Rosenfeld Deposition, 4-22-2020

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

Letter #6

inspiring people to protect
Bay Area birds since 1917

Andrew Young, Project Planner 08Jan2021
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Alameda County Planning Department
224 W. Winton Avenue, Room 111
Hayward, CA 94544

Re draft SEIR Brookfield Renewable Energy Partners, CUP Application No. PLN2019-00226, Mulqueeney Ranch Wind Repowering Project

Dear Mr. Young,

6-1

On behalf of Golden Gate Audubon Society (GGAS), we present our comments on the draft SEIR (Subsequent Environmental Impact Report) Brookfield Renewable Energy Partners, CUP Application No. PLN2019-00226, Mulqueeney Ranch Wind Repowering Project. GGAS is a 104 year old nonprofit environmental organization that advocates for conservation of native birds and their habitat.
Per the 2020 Notice Of Preparation, "although the Project objective of 80 MWs of capacity could be nearly met with as few as 19 turbines with a rating of 4.2 MW each, or met with fewer turbines of different combinations of capacity ratings, the SEIR will evaluate up to 36 turbine sites in order to assess a worst-case condition of ground disturbance, visual effects, avian mortality, total rotor swept area and other potential impacts of 36 turbine sites, and a maximum Project capacity of 80 MW."

The County determined that pursuant to CEQA Guideline Section 15162, a subsequent EIR is required based on substantial evidence in light of the whole record. Pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15162, the draft SEIR is reviewed as a project "tiered" under the Altamont Pass Wind Resource Area Repowering Program EIR (PEIR), which the County of Alameda (County) certified in November 2014. The proposed larger turbines may individually have more adverse effects on avian and bat wildlife, substantial changes may have more severe impacts to protected bird and bat species, and new information of substantial importance shows significant effects not previously examined since the PEIR was certified.

6-2

From the Notice, past and on-going avian mortality studies of other APWRA wind turbine projects continue to inform the County on the relationship between MWs and avian mortality on a whole project and individual turbine basis. The SEIR should incorporate the most current monitoring results and other studies and evaluate the Project's impacts accordingly. This comment addresses the adequacy of the draft SEIR to analyze, avoid, and minimize impacts to birds and their habitat in light of the most current monitoring and study reports.

6-3

<u>The Eight Wetland Land Types Show Fragile Ecosystems in the Environmental Setting and Site Conditions</u>

Of the 12 land cover types identified in the SEIR, 8 were associated with wetlands: Alkali Wetland, Ephemeral Stream, Freshwater Marsh, Intermittent Stream, Riparian, Scrub Shrub Wetland (red willow),

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6-3 cont'd

Vernal Pool (one pristine, other degraded) (SEIR 3-2 to 3-3). One vernal pool was characterized as pristine and should receive full avoidance measures during all phases of the project as well operations and maintenance phases. Given the overall abundance of wetland features, this project area is expected to attract a high level of wildlife including thirty-three special status species.

6-4

The Terrain Elevations Depict Multiple Drainages That Should Be Protected For Their High Habitat Value

The project area has multiple drainages, well over 18 ponds, and the Patterson Creek that meanders through much the 4,605-acre project site. The topographical maps verify highly variable terrain. "[T]he Central Valley. Elevations in the project area range from approximately 380 to 1,879 feet above mean sea level." (p3-1 Chapt 3 Results, Biological Resources Report for the Mulqueeney Ranch Wind Repowering Project August 2020) Such land cover features attract abundant wildlife and should be protected from degradation during all project phases.

The Project Area Has Abundant Wetlands That Require Strong Avoidance and Minimization Measures During All Project Phases

While the SEIR does not describe the drainages in detail, it states that "The..Property… is characterized by rolling foothills generally sloping towards the east..contains seasonal creeks and drainages that feed into water retention areas."   SEIR Appendix E Assessment, "3.1.1.2 Open Areas
(SEIR Appendix E Assessment p.3.2)

Multiple photos depict abundant wetland vegetation particularly in the low-lying areas. The Appendix A Photo log includes several water features: Drainages, watering hole, groundwater spring, "Photo 19D. Drainage running through parcel' depicts steep sloping terrain with abundant shrub and tree habitat that runs through the parcel. (P19 SEIR Appendix E Assessment) The historic aerial photos also show varying terrain among steep drainages with stands of vegetation.

6-5

The SEIR Should Include Plans to Avoid, Minimize, and Mitigate for Habitat Degradation

The PEIR requires that plans to avoid, minimize, and mitigate for water quality and habitat degradation be completed and implemented prior to construction activities. ("Prior to initiating any construction activities that will result in temporary impacts on natural communities, a restoration and monitoring plan will be developed for temporarily affected habitats in each project area (Mitigation Measure BIO-5c)." (PEIR p3.4-65)

Significant impacts to biological resources are anticipated according to the November 6, 2020 Notice of Availability. "[The project will have impacts on] biological resources, related to avian mortality, bat mortality, wildlife movement, and other potential impacts on special-status species and their habitats."

While the SEIR addresses construction impacts, operational effects should also be addressed to the extent that information is available. "[The draft SEIR] addresses potential construction impacts on roosting bats and nesting birds. Operational effects on birds and bats will be addressed in a separate report after a completion of a siting analysis, and other ongoing site-specific surveys, which will identify turbine locations to minimize potential impacts on birds and bats, as required by the PEIR. Accordingly, the potential operational effects on birds and bats are not discussed in this report." (SEIR p1-1) However, the PEIR requires that some analysis take place before ground-disturbing activities begin and states, "no ground-disturbing activities will take place where surveys determine that a special-status species is present in or adjacent to a project area," (PEIR 3.4-61) and "Prior to ground-disturbing activities in sensitive habitats, project construction boundaries and access areas will be flagged." (PEIR 3.4-61) 6-5 cont'd

Construction impacts to special status bat and bird species should be analyzed and a plan should be in place to avoid and minimize impacts prior to project activities. Under Mitigation Measure BIO-1 that "Where surveys determine that a special-status plant species is present in or adjacent to a project area, direct and indirect impacts of the project on the species will be avoided through the establishment of activity exclusion zones, within which no ground-disturbing activities will take place, including construction of new facilities, construction staging, or other temporary work areas. Activity exclusion zones for special-status plant species will be established around each occupied habitat site, the boundaries of which will be clearly marked with standard orange plastic construction exclusion fencing or its equivalent." (APWRA Repowering Final PEIR 3.4-61 October 2014 ICF 00323.08)

During The Pre-construction Phase, the Project Should Establish Buffers to Avoid Disturbance 6-6

Buffers avoid noise physical and visual disturbance of avian and bat during project-related construction According to the state Fish and Wildlife Department (DFW), buffers should be at least 0.5 mi for large raptors, 0.3 miles for burrowing owls, and 0.25 miles for tricolored blackbird and bats. (NOP Mulqueeney DFW Comment, 2020)
Qualified biologists should regularly monitor for nests, especially active nests. The project must stop all disturbance during nesting activity. Monitoring should be intensified during nesting season from January too late August. (from Impact Analysis Alameda County Community Development Agency Biological Resources) Avoidance of disturbance should include activity exclusion zones

The Project Should Avoid Impacts to Existing Preserves 6-7

The project area encompasses existing preserves for several special-status species. In particular, the Burrowing Owl Two Sisters preserve should receive the highest avoidance levels, such as exclusion zones or a project alternative should consider excluding preserves from the project area.

The Impacts to Land Features Should Include Analysis and Avoidance of Both Direct and Indirect Impacts 6-8

The SEIR should adequately examine indirect effects to the hydrologic features in the project area, such as erosion and/or alterations to drainages, sedimentation, and contaminants. Further study should be required to determine the extent of indirect effects from changes in hydrology and recommended avoidance measures. (Mulqueeney Wind Energy, LLC Effects Analysis Appendix C BioRes 4-3)

The SEIR should include a study of the extent of indirect effects from changes in hydrology prior to construction. Plans for avoiding, minimizing and mitigating for anticipated indirect effects should be implemented prior to construction. Under PEIR Mitigation Measure BIO-35, the project proponent must "Avoid modifying or changing the hydrology of aquatic habitats." (PEIR p3.4-69)
The PEIR requires that "Erosion control measures will be implemented to reduce sedimentation in nearby aquatic habitat when activities are the source of potential erosion." (PEIR 3.4-61)

The SEIR states that, "Project maintenance has the potential to result in degradation of water quality in aquatic habitats from runoff of petroleum-based products associated with equipment and vehicles used during maintenance activities." 4-5 Biological Resources Report for the Mulqueeney Ranch Repowering Project August 202 (Appendix C BioRes p73 of 158) 6-8 cont'd

The PEIR states that "Operation and maintenance activities may also result in impacts on vernal pools." (p3.4-67) Analysis of this impact and measures for avoiding, minimizing, and mitigating for this impact should apply to seasonal wetlands throughout the project area. Potential for project maintenance to result in water quality degradation throughout the project area should be analyzed prior to project maintenance activities. The PEIR requires that plans to avoid, minimize, and mitigate for water quality degradation should be completed and implemented prior to project maintenance activities. ("Prior to initiating any construction activities that will result in temporary impacts on natural communities, a restoration and monitoring plan will be developed for temporarily affected habitats in each project area (Mitigation Measure BIO-5c)." (PEIR p3.4-65)

The PEIR requires mitigation measures to implement best management practices to avoid and minimize impacts from ground-disturbing activities for both construction and operation and maintenance project phases. "[P]roject proponents will prepare and implement erosion and sediment control plans to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas… These plans will include methods for restoring soil conditions and revegetating disturbed areas, seed mixes, monitoring and maintenance schedules, adaptive management strategies, reporting requirements, and success criteria."
(PEIR p3.4-65)

The PEIR requires that "Ground disturbance will be avoided from the first day of the first significant rain (1 inch or more) until June 1, or until pools remain dry for 72 hours and no significant rain is forecast on the day of such ground disturbance." (p3.4-68)

The PEIR further requires that projects "Avoid modifying or changing the hydrology of aquatic habitats. Minimize the work area for stream crossings and conduct work during the dry season (June 1 through the first significant rain of the fall/winter).
Install utility collection lines across perennial creeks by boring under the creek." and
"Where impacts cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS" (Appendix C).

The PEIR discusses in Impact BIO-3c the need to avoid direct and indirect affects to seasonal wetlands. (PEIR p3.4-71) "The seasonal wetland …provides suitable habitat for vernal pool branchiopods …" [M]ortality of these aquatic species could occur if oil or other contaminants enter the wetland during construction. Additionally, the seasonal wetland could be indirectly affected if the hydrology of the wetland is modified as a result of project construction. Small areas of other seasonal wetlands and stream/freshwater marsh … would be temporarily affected during construction. Adapting from the PEIR, none of the ponds … should be filled or removed. Estimated permanent and temporary impacts on seasonal wetland and stream/freshwater marsh that may provide habitat for vernal pool branchiopods …may be significant because the project could reduce the local populations of federally listed vernal pool branchiopods … through direct mortality or habitat loss. Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, and BIO-3b would reduce this impact to a less-than-significant level." (PEIR p3.4-71) In order to comply with PEIR requirements, the SEIR should more thoroughly analyze and provide detailed plans for avoiding and minimizing impacts to the many aquatic habitats in the project area.

Annual Surveys Should Monitor For Impacts to Wildlife and Activate Avoidance and Mitigation Measures 6-9

The SEIR describes possible impacts to nine special-status avian species of the thirty-three total special-status wildlife species on pp.3-13, 14 of the Biological Resources. Some impacts are more likely where the presence of that species is identified as likely to occur (Table 3, p.3-15). Under PEIR Mitigation Measure Bio-1b, the project should implement best management practices to avoid and minimize impacts on special-status species and their habitat (p3.4-72 and throughout Chapter 3-04 Impact Analysis)

Along with conducting annual surveys of the thirty-three special-status wildlife species in the project area, the project should require a qualified biologist to specifically conduct annual surveys of nesting, foraging roosting activity of all 4 focal raptors (Golden Eagle, Red-tailed Hawk, American Kestrel, Burrowing Owl), other special-status avian species, and bats.

A qualified biologist should conduct all surveys in accordance with state wildlife avian survey protocols found at https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds

While the SEIR identifies applicable mitigation measures, such as MM BIO-8a, a description for how the mitigation would be applied in the project should be analyzed and included in the SEIR. Under PEIR "Mitigation Measure BIO-8a, the project proponent must "implement measures to avoid and minimize potential impacts on special-status and non–special-status nesting birds.
Where suitable habitat is present for raptors within 1 mile (within 2 miles for golden eagles) and for tree/shrub- and ground-nesting migratory birds (non-raptors) within 50 feet of proposed work areas, the following measures will be implemented to ensure that the proposed project does not have a significant impact on nesting special-status and non–special-status birds." (PEIR 3.4-90)

Impacts to Golden Eagles Have Been Underestimated and Require New Mitigation 6-10

The SEIR conducted multiple Golden Eagle surveys and reported "no CNDDB records for golden eagle nests within 5 miles of the project area." (SEIR p.3-27) However, new reports show higher than expected fatalities of Golden Eagles in the Altamont. Recommended new mitigations are discussed in this comment.

The PEIR requires that "If an active nest (other than golden eagle) is identified near a proposed work area and work cannot be conducted outside the nesting season (February 1–August 31), a no-activity zone will be established around the nest by a qualified biologist in coordination with USFWS and/or CDFW…The no-activity zone will be large enough to avoid nest abandonment." (PEIR p3.4-90)

Under USFWS Eagle Conservation Plan Guidance (ECP Guidance), "Each stage builds on the prior stage, such that together the process is a progressive, increasingly intensive look at likely effects on eagles of the development and operation of a particular site and configuration. Additional refinements to the Eagle Guidance are expected at some point in the future. (PEIR p3.4-2)

Provide Project-specific Impact Analyses for Tricolored Blackbird and Swainson's Hawk 6-11

A project-specific impact analysis is required for CESA Threatened species, including the Swainson's Hawk and Tricolored Blackbirds. The SEIR states in Appendix C, "Although operational impacts of the turbines are not addressed in this document, it is assumed that all turbine operations-related mitigation

6-11 cont'd

would be applicable; accordingly, those measures are included in Table 6." The SEIR describes "A small flock of tricolored blackbirds was observed near the cattle holding area near Pond K during the October field surveys. There are nine CNDDB records for tricolored blackbird nesting locations within 5 miles of the project area; the closest occurrence is approximately 1.7 miles east of the project area (CDFW)." Table 3 states that the likelihood of tricolored blackbirds to occur in the project area is high (SEIR p3-21). Additional data from eBird reported 150 tricolored blackbirds frequenting the nearby Bethany Reservoir and the project area provides suitable foraging and nesting habitat among the wetlands and marshes. Nine CNDDB nesting records are within 5 miles of the project area. This information will inform a project-specific impact analysis.

A project-specific impact analysis will help identify the threshold of significance for impacts to tricolored blackbirds in the project area. Under the PEIR, the basis for determining when a given impact exceeds the threshold of significance—that is, when it has a substantial adverse effect—was determined by the professional judgment of qualified biologists. (PEIR 3.4-58) Here, the focus of CEQA is on "substantial adverse effect" as a change from existing conditions or in this instance, levels of fatality that have direct and/or indirect impacts to tricolored blackbird populations in the project area.

Four tricolored blackbird fatalities were reported by HTHarvey in their Golden Hills Wind Energy Project Post-Construction Bird and Bat Fatality Monitoring 2019 Summary Report (Prepared by H.T. Harvey & Associates, January 2020). "This report documents that the operation of the Golden Hills project has resulted in at least four tricolored blackbird mortalities. Three of the four fatalities occurred at turbines less than one mile from the northwestern Project boundary which could indicate an undocumented nest site in or near the north end of the Project area." (from DFW comment letter, 2020)

The Swainson's Hawk Is California ESA Threatened and Also Requires A Project-Specific Impact Analysis

A detailed habitat assessment and a thorough analysis of potential impacts of the Project on nesting, foraging and roosting habitats on the Project site during construction, as well impacts to the species from ongoing turbine operations are required (DFW NOA comment, 2020)

Burrowing Owl Preserve, Use and Occupancy Should Be Strictly Protected From Significant Effects 6-12

The project proponent should permanently exclude the Two Sister Preserve from the project area. Under Mitigation Measure BIO-8b, the project proponent must "implement measures to avoid and minimize potential impacts on the Burrowing Owl. Where suitable habitat for the Burrowing Owl is in or within 500 feet of proposed work areas, the following measures will be implemented to avoid or minimize potential adverse impacts on Burrowing Owls.
To the maximum extent feasible (e.g., where the construction footprint can be modified), construction activities within 500 feet of active burrowing owl burrows will be avoided during the nesting season (February 1–August 31)." (PER 3.4-91)

New Burrowing Owl Altamont Studies Should Inform Burrowing Owl Mitigation Measures

During Shawn Smallwood's East Bay Regional Park Stewardship presentation (Dec2020) on Burrowing Owls in the Altamont, Dr. Smallwood stated that Burrowing Owls are declining and should be listed as state endangered. Burrowing owl impact analyses should incorporate new data and studies that include data showing the burrowing owl population declines in the Altamont and throughout the state.

6-13

American Kestrel and Red-tailed Hawk Need More Survey Studies

Appendix B List of Animal Species reports Red-tailed Hawks as being observed. However, no detailed reports are included in the SEIR. The SEIR should have detailed reports about these focal species.

6-14

Cumulative Impacts from Existing Wind Turbine Projects Should Be Thoroughly Analyzed

From the November 6, 2020 Notice of Availability, "cumulative impacts [from this proposed project] would be cumulatively considerable." Here, the SEIR should examine the cumulative impacts from existing wind turbine operations that have caused exceedingly high mortality among three of the four focal species, Golden Eagle, Red-tailed Hawk, and Burrowing Owl. Until causes for this high mortality is better understood, aggressive avoidance, minimization, and mitigation measures should be considered. Adaptive management measures such as curtailment of fatality-causing turbines, should be implemented after just one year of monitoring.

A Cumulative Impacts Analysis Requires Substantial Evidence of Severe Additional Environmental Effects

This project area has hilly terrain and multiple attractive wetland habitats that already have documented occupancy by up to thirty-three special-status wildlife species. The terrain's steep slopes, variable elevations, numerous drainages, and multiple preserves make this site particularly hazardous for turbine operations and standard avoidance measures will likely be inadequate.

The Project Area Shows Substantial Evidence of More Severe or Additional Environmental Effects on Birds and Bats

Given the high rate of occupancy of at least ten of the thirty three special-status species in the SEIR, the cumulative impacts from the proposed project will likely show substantial evidence of more severe and additional environmental direct and indirect effects. Direct effects will be turbine strikes. Indirect effects will be adverse impacts to drainages and wetland function throughout the project area.

6-15

Other Adverse Effects on Biological Resources May Include High Nesting Failure Rates

Other adverse effects may include high nesting failure rates of nesting tricolored blackbirds colonies from excessive operations and maintenance disturbance. Permanent damage to wetlands and drainages may indirectly cause damage to Burrowing Owl burrows and foraging habitat as well as foraging and nesting habitat for ground-nesting Northern Harriers.

6-16

Additional or Different Alternatives Than Were Analyzed in the PEIR Should Be Carefully Considered

Under CEQA, the SEIR should carefully consider the no-project alternative because the project site poses inherently high risks of high fatalities among special status wildlife species.
The project proponent should reduce the project area to exclude all preserves for special-status species, such as the Two Sisters Preserve for Burrowing Owls. By eliminating the preserves from the project area, the effects from cumulative impacts will be considerably reduced.

The Project Will Require Additional or Different Mitigation Measures Than Were Analyzed in the PEIR 6-17

Given the new information from recent monitoring reports and field studies as well as the inherently high-risk character of the land cover that is primarily hilly with steep slopes and varying terrain and diffuse with wetland and ephemeral water features, the project should require additional or different mitigation measures than were analyzed in the PEIR.

6-18

Additional Mitigations Should Include Removal of High Risk Turbines and Steep Grade Turbines

From the November 6, 2020, "Mitigation would reduce … impacts [to special-status species and their habitats], but not to a level of less-than-significant." Here, additional mitigations should be considered such as reducing the project size by removing the rated high-risk turbines and removing some moderate risk turbines that will require deep cuts into the slopes or benches. Given that expert opinion anticipates higher risks of fatalities from turbines that are positioned into benches that are cut into steep slopes, the project should prioritize removal of such turbines. (Public comment, Shawn Smallwood, 2019)

Expert opinion warns of increasing fatality risk in hilly terrain with steep slopes such as the land cover in this project area. Hilly sloped features can be blind spots for eagles, other raptors, and birds generally that fly close to sloped surfaces. Any turbines situated along the potential blind spots represent a high collision risk for raptors, special-status avian and bat species, and volant species generally. (Public comment, Shawn Smallwood, 2019)

6-19

Curtail Turbines During Bat Migrations

Curtail turbines nightly within at least 0.5 miles of bat colony activity during spring and fall migration – early Aug to November and spring migration from March to late May. Bats are expected to be abundant among the wetlands and particularly, the many ponds in the project area.
Monitoring for bats during Year 1 and then implementing curtailment thereafter of the entire wind farm each spring and fall for at least 3 weeks offers a reasonable adaptive management and mitigation for bat activity in the project area and throughout the APWRA.

Implement project-wide curtailment During High Activity Times for Raptors, Special Status Avian Species, and Bats.

The SEIR should implement real-time turbine curtailment using the latest detection and deterrent technology (for example, Identi-flight for golden eagle and acoustic deterrents for bats). Implementing additional changes in turbine cut-in speed upon specified triggers, and other effective and legally-enforceable measures should be implemented after just one year of Project monitoring. (from DFW comment, 2020)

6-20

The SEIR Should Provide An Avian and Bat Protection Plan As Soon As Practicable

The SEIR mentions plans to implement BIO-11a and prepare a project-specific Avian and Bat Protection Plan. A date for when the ABPP will be produced should be provided.

6-21

New Compensatory Mitigation Should Cover Costs for Recovery and Restoration of Biological Resources.

Existing compensatory mitigation recommendations are outdated and need to cover the costs of recovery and restoration of biological resources in our current economy.

6-22

The SEIR Should Incorporate New Monitoring Reports and Information From Ongoing Studies

The most recent monitoring reports from Golden Hills and from Golden Hills North should inform all avoidance, minimization, adaptive management measures, and turbine micro-siting for this project.

6-23

New USGS Golden Eagle Use and Occupancy Studies Should Inform Project Avoidance Measures

Recent studies by U.S.Geologic Survey biologists indicate that Golden Eagles occupy and use the APWRA at rates not anticipated in the PEIR. These new studies indicate that the Altamont may represent recruitment levels or a population sink that translates into high mortality particularly among younger eagles that seek nesting and/or pairing opportunities. Given the high mortality of Golden Eagles at Golden Hills and Golden Hills North, new adaptive management measures, such as curtailment, technical advances in tracking eagles and shutting down high risk turbines, and risk hazard modeling for improved micro-siting should all be required in the analysis for avoiding and reducing mortality of Golden Eagles in the project area.

6-24

Require Strict Adaptive Management Measures to Compensate for the Qualitative Micro-Siting Analysis

While the micro-siting report (SEIR Appendix G) was detailed, it was qualitative and not quantitative. Micro-siting turbine hazard ratings that were completed for other Altamont projects were based on quantitative analysis.

In Appendix G, the qualitative assessment for micro-siting turbines lacks a quantitative approach. Therefore, monitoring protocols should be more stringently applied. In the event of a pattern of fatalities ascribed to one turbine immediate adaptive management measures should be implemented with the first of year of monitoring. Such measures should include but not be limited to curtailment, cut-in speed, and/or removal.

The project should require detailed and frequent monitoring of the proposed 11 Moderate High risk turbines during high avian use and occupancy periods. If after one year, fatalities are higher than the cumulative analysis anticipates, then the dangerous turbine(s) should be curtailed and considered for permanent removal.

6-25

Remove High Risk Turbines 16 and 21

In Appendix G of the SEIR, Jim Estep rated Turbines 16 and 21 as High Risk. Given that 11 of the 24 turbines in the Supplemental Micro-Siting report are rated as Moderate-High risk, the High Risk turbines should be removed. Even with their removal, 11 of the remaining 22 turbines are rated as moderate high-risk. Therefore, the probability of high risk micro-siting of the overall project remains high because half of the remaining turbines are still rated as higher than moderate risk. This factor is consistent with the SEIR's statement that cumulative impacts are expected to be considerable. Removing the high risk turbines and preparing to curtail high moderate risk turbines may be best practices for reducing cumulative impacts.

Require A Thorough Habitat Assessment for Four Focal Species: Golden Eagle, Red-Tailed Hawk, American Kestrel, Burrowing Owl 6-26

The SEIR provided some information about the four focal species but had very little data about the American Kestrel or the Red-tailed Hawk. In order to fairly assess risk and avoidance measures for these focal species, the SEIR should have more information about the use and occupancy by the American kestrel and Red-tailed Hawk in the project area.

Summary 6-27

Cumulative impacts from this project in combination with existing wind turbine projects and from the environmental setting of the project location make this project particularly hazardous. Terrain variation with elevations ranging from 380 to 1,879 feet above mean sea level will likely cause higher risks of bat and bird collisions with turbines. Numerous aquatic features ranging from ephemeral streams to well over 18 ponds may be permanently degraded. This project will likely exceed thresholds of significance and cumulative impacts may contribute to high mortality of special status and wildlife species.

The draft SEIR states that mitigation measures would not reduce the potential impacts on special status species to a level of less-than-significant. Per the PEIR on p3.4-58, "the County has determined that the threshold of significance for impacts on avian species is effectively any level of avian mortality above zero." Therefore, this SEIR must demonstrate clear and attainable goals for avoiding and minimizing impacts such as fatalities to special-status wildlife species and the four focal species and degradation of aquatic habitats.

Thank you for considering these comments.
We look forward to reviewing all related documents and discussions on this proposed project.

Sincerely,

Pam Young

Pam Young
Executive Director

Letter #7

XAVIER BECERRA
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January 14, 2021

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RE: ***Comments on Draft Subsequent Environmental Impact Report*: *Mulqueeney Ranch Wind Repowering Project, Conditional Use Permit Application, PLN2019-00226***

Dear Mr. Young:

7-1

We submit this comment letter, on behalf of the Attorney General in his independent capacity, on the County of Alameda's (County's) draft Subsequent Environmental Impact Report (DSEIR) for the proposed Mulqueeney Ranch Wind Repowering Project, Conditional Use Permit Application, PLN2019-00226 (Project). The Attorney General is the chief law enforcement officer of the State of California and has the authority to file civil actions to protect public rights and interests, including actions to protect the natural resources of the State. (Cal. Const., art. V, § 13; Gov. Code, §§ 12511, 12600-12612; *D'Amico v. Bd. of Medical Examiners* (1974) 11 Cal.3d 1, 14-15.)

The County initially circulated the DSEIR for a 45-day public comment period on November 6, 2020. On December 21, 2020, after the Attorney General's Office and others requested an extension of the public comment period to January 15, 2020, the County agreed to extend this period to January 8, 2020. The number and complexity of the issues indicate why the January 15 deadline was requested.

We recognize that these comments are being submitted after the January 8 comment deadline. Nevertheless, our hope is that the County will meaningfully engage with and respond to our Office's concerns, as detailed below, so that the final SEIR adequately discloses, analyzes, and mitigates for the significant impacts of Project construction and operation on birds and bats and their habitat.

At the outset, we would like to thank the County and Project applicant for addressing certain stakeholder feedback received on the Sand Hill Project, and including more detailed impact analyses and some additional mitigation measures, in this DSEIR. However, a number of our critical concerns remain unaddressed for this Project. Similar to the Sand Hill Project, we recommend that the final SEIR include a reduced megawatt (MW) alternative that avoids certain high-risk and sensitive areas of the Project site, as well as a substantially strengthened and improved suite of mitigation measures, as discussed further below. 7-1 cont'd 7-2

While we recognize and support the need to develop more renewable energy resources in California to meet the State's renewable energy goals, such renewable energy projects still must comply with the fundamental policies of CEQA. As the County is no doubt aware, CEQA requires that "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." (Pub. Resources Code, § 21002.)

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      d. Issues concerning the impact analysis for tricolored blackbirds
      e. Issues concerning the impact analysis for burrowing owls
      f. Issues concerning potential impacts on bat roosts
      g. Impacts of turbine and road construction on site topography and pond, wetland and riparian habitat

E. The DSEIR Does Not Include a Sufficient Suite of Mitigation Measures to Avoid or Reduce the Project's Significant Impacts on Avian and Bat Resources
   1. Standards for adequacy of mitigation measures in an EIR
   2. Overall cumulative impact context for Project mitigation measures
   3. Recommended additional Project mitigation measures

IV. CONCLUSION

I. <u>SUMMARY AND OVERVIEW</u>

7-4

The Project will place up to 36 new, 2.2 to 4.2 MW turbines in the southeastern portion of the Alameda County side of the Altamont Pass Wind Resources Area (Altamont Pass), for a total maximum operating capacity of 80 MW. (DSEIR, p. 1-1.) The Project would be located on 29 parcels extending over 4,600 acres. (*Id*., p. 2-1.) The Project applicant is Mulqueeney Wind, LLC, a subsidiary of New York City-based Brookfield Renewable. (*Id*., p. 1-1.)

As with our Office's comment letters on previous repowering projects, this letter focuses on the Project's potentially significant effects on avian and bat resources. Specifically, our comments focus on the extent to which the DSEIR adequately analyzes those effects, and contains a reasonable range of feasible alternatives and mitigation measures that would avoid or reduce such effects. This comment letter also addresses new information that has become available since the County's certification in November 2014 of the program environmental impact report for repowering at Altamont Pass (PEIR), and since the County's issuance of the Notice of Preparation (NOP) for the Sand Hill Wind Project subsequent EIR in January 2019 (which updated certain mitigation measures in the PEIR).

7-4 cont'd

The Attorney General's Office appreciates that this DSEIR includes more detailed impact analyses for some Project impacts on avian and bat resources and evaluates more current scientific information beyond that evaluated in the Sand Hill Project SEIR. We also appreciate that this DSEIR includes a "Reduced Project Alternative," which, although it would have roughly the same total operational capacity as the proposed Project, would include fewer (though much larger) turbines, and would avoid some of the high-risk turbine sites and sites within zero to a half mile of a golden eagle nest or activity center. This alternative also would include some additional avoidance and minimization measures, such as turbine curtailment during certain times of the day and year, to protect raptors and bats.

7-5

However, as mentioned, several significant issues remain unaddressed. Most importantly, the proposed 36-turbine Project includes no significant mitigation measures beyond those in the PEIR and includes seventeen high-risk, eleven moderate-high risk turbines and an undisclosed number of turbines within one mile of an active golden eagle or Swainson's hawk nest. (DSEIR, pp. ES-3, 4-4; DSEIR Appendix F, J. Estep, *Assessment of Proposed Wind Turbine Sites to Minimize Raptor Collisions at the Mulqueeney Ranch Wind Repowering Project*, Mar. 2019 (App. F), Table 1.)

7-6

Moreover, even the "Reduced Project Alternative," rather than truly reducing the overall Project size, proposes an 83 MW alternative Project (three MW more than the proposed Project), and includes two high-risk turbines, eleven moderate-high risk turbines, and seven turbines located within a half mile to one mile of an active golden eagle or Swainson's hawk nest. (DSEIR, pp. ES-4, 4-6, Appendix G, J. Estep, *Supplemental Assessment of Revised Mulqueeny Ranch Wind Repowering Project to Minimize Raptor Collisions in the Altamont Pass Wind Resource Area*, Sept. 2020 (App. G), Table 1.) The Reduced Project turbines would be an average of 3.3 MW in size, with a significantly lower blade height above ground, than analyzed in the PEIR—which turbine types are generally considered to be more dangerous to volant animals. (DSEIR, p. 1-4, Table 2-7, p. 2-28.)

7-7

In addition to the above concerns regarding inclusion of a sufficiently reduced Project alternative, we have concerns regarding the DSEIR's project description, statement of project objectives, environmental baseline, impact analysis, and discussion of mitigation measures, as discussed in detail in Part III below.

With respect to the DSEIR's impact analysis and mitigation measures, our concerns are briefly summarized as follows. First, although the DSEIR identifies the Project site as a relatively lower use area for golden eagles (DSEIR Appendix D, *Avian Survey Report for the Mulqueeny Ranch Wind Repowering Project*, ICF, Oct. 2020 (App. D), pp. 3-8 to 3-9), it actually is within two miles of **seven** golden eagle nests and/or pair activity centers, and there is at least one active golden eagle nest and one active state-threatened Swainson's hawk nest and associated territory on site. (*Id*., pp. 3-9, 3-12.) However, the DSEIR does not adequately evaluate the impact of Project operation on these nests and activity centers.

Second, the DSEIR does not assess turbines that may be sited too close to several state-threatened tricolored blackbird colonies, protected burrowing owl preserves, possible bat roosts, and ponds and other water features, which provide important habitat for species of special concern on or immediately adjacent to the Project site. 7-7 cont'd

Third, the DSEIR does not analyze the extent to which construction of the large turbine pads and roads on steep, rugged terrain (particularly in the southern portion of the Project site, DSEIR, p. 3.1-11) could alter site topography and thereby increase sheet flow and sedimentation to onsite water features that provide habitat for tricolored blackbirds and other species of special concern. 7-8

Finally, the DSEIR needs to include additional mitigation measures to reduce the Project's identified significant effects, particularly cumulative effects, on birds and bats. 7-9 In sum, the Attorney General's Office recommends that, as identified by the United States Fish and Wildlife Service (FWS), California Department of Fish and Wildlife Service (CDFW) and East Bay Regional Park District (EBRPD), the DSEIR and Project be revised to include a Project alternative that is reduced in size when evaluated using the long-accepted and sole metric in the PEIR for measuring the operational impacts of wind turbines on birds and bats (*i.e.*, average annual fatalities per MW). 7-10 This Project alternative must, among other things:

(1) Avoid *all* high-risk turbine sites and turbine sites within zero to a half mile of an active golden eagle or Swainson's hawk nesting or roosting site;

(2) Avoid or curtail operations of all moderately-high risk turbine sites and turbine sites within a half to one mile of an active golden eagle or Swainson's hawk nesting or roosting site;

(3) Include appropriate construction and operational setbacks, as identified by FWS and CDFW, from other sensitive habitats on or adjacent to the Project site such as tricolored blackbird colonies, burrowing owl preserves, bat roosts, and significant water features that provide habitat for sensitive species; and

(4) Include nighttime seasonal shutdowns or substantial curtailment of turbine operations during the spring and fall bat migration seasons.

II. <u>BACKGROUND AND CONTEXT</u> 7-11

In addition to being protected under CEQA, many bird species affected by wind energy projects are protected under various other federal and state laws, including the federal and state Endangered Species Acts, federal Migratory Bird Treaty Act, federal Bald and Golden Eagle Protection Act, and multiple provisions of the California Fish and Game Code. As relevant to this Project, for example, both Swainson's hawks and tricolored blackbirds have been identified on the Project site, which are listed as threatened species under the California Endangered Species Act (CESA), Fish and Game Code section 2050 *et seq*., and thereby protected from

7-11 cont'd

"take" under this state law.[1] (Fish & G. Code, § 2080.) The golden eagle, California condor and white-tailed kite, which also have been identified onsite, are listed as "fully protected species" and likewise protected from take under state law. (Fish & G. Code, § 3511, subds. (a)(1), (b)(5), (7), (12).)[2] The California condor also is listed as an endangered species under both the federal ESA and CESA.

This Project comes at the tail end of the repowering program for the Alameda County side of Altamont Pass,[3] and also follows the availability of significant new scientific information, including additional monitoring reports for repowering projects operating at Altamont Pass, which indicate that these repowering projects are having substantially more severe impacts on birds and bats than previously anticipated in the PEIR. Consequently, the need for full compliance with environmental laws such as CEQA and CESA, and the County's and the Project proponent's duty to adopt all feasible project alternatives and mitigation measures under those statutes, is even more pressing than it was when the County certified the PEIR in 2014.

In particular, the cumulative impacts of wind energy projects on avian and bat resources at Altamont Pass is now amply scientifically documented through several years of project monitoring reports, as well as extensive scientific studies of the effects of wind turbines on birds and bats in the area, the latter of which were funded in large part by the 2010 settlement agreement between the Attorney General's Office, Golden Gate Audubon Society and Next Era Energy Resources (2010 Attorney General Agreement). These monitoring reports and studies demonstrate that impacts to golden eagles, and possibly other raptors such as red-tailed hawks, from approved repowering projects at Altamont Pass are anticipated to exceed those of the old-generation turbines, and that impacts to bats, particularly hoary bats and Mexican free-tailed bats, are unsustainably high. 7-12

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[1] Fish and Game Code section 86 defines "take" as to "hunt, pursue, catch, capture, or kill," or to attempt to do any of these things.

[2] Fish and Game Code sections 3503.5 and 3513 further prohibit take of any raptors and their nests and eggs, and prohibit take of all birds protected under the federal Migratory Bird Treaty Act, respectively. (*See also id*., § 3800, subd. (a) (prohibiting take of all non-game birds, except as provided in the Fish and Game Code).)

[3] If the County approves the Project, there will be **384.8 MW** of total approved operating capacity on the Alameda County side of Altamont Pass, out of the **450 MW** maximum operating capacity potentially allowable under the 2014 PEIR. (*See* DSEIR, Table 2-6, p. 2-27 (substituting 50 MW for the Sand Hill Project, approved by the County Board of Supervisors on Dec. 15, 2020, instead of the 109.5 MW approved by the County Board of Zoning Adjustments on Feb. 13, 2020 as indicated in Table 2-6).) There is an additional **116.2 MW** of wind capacity currently operating on the Contra Costa County side of Altamont Pass (the Buena Vista and Vasco Winds projects), for a total capacity of **501 MW** Altamont-wide.

7-13

A. Significant Population-Level Cumulative Impacts of Wind Turbines on Golden Eagles

With regard to golden eagles, both the FWS and U.S. Geological Survey (USGS) have recently re-confirmed that Altamont Pass is a "population sink" for golden eagles, where immigration exceeds emigration.[4] Indeed, the DSEIR admits as much. (DSEIR, pp. 3.4-52 to 3.4-53 ("the high incidence of subadults as territorial breeding pair members, and high turnover rates of individual pair members, indicates the [Altamont Pass] is an ecological sink, continually attracting golden eagles into prime foraging and nesting habitat that is of high risk to eagles, and for which survivorship is low") (citing FWS 2019a); *see also* EBPRD Comments on Notice of Preparation of Subsequent Environmental Impact Report for Mulqueeny Ranch Wind Repowering Project, May 7, 2020, p. 2 (EBPRD NOP Comments).)

In addition to the high incidence of subadult breeders, which are typically less productive, nest productivity was even lower in the Altamont Pass during the recent drought years. (J.D. Wiens *et al*., *Spatial Patterns in Occupancy and Reproduction of Golden Eagles During Drought*, Ornithological Applications, Vol. 120, 2018, p. 116 (Wiens 2018).) Finally, most recently, about *a third* of the golden eagle nesting and roosting sites being monitored on an ongoing basis by USGS biologists at Altamont Pass were destroyed in the late summer fires of 2020. (J.D. Wiens, pers. comm., Oct. 13, 2020.) The results of the ongoing USGS surveys of golden eagle nesting and territorial pairs at Altamont Pass show that these pairs "may experience a high rate [of] mortality and territory turnover (i.e., mate replacement) relative to the surrounding region," which "indicate[s] that wind turbine-related fatality of breeding and nonbreeding golden eagles at [Altamont Pass] may be affecting broader population dynamics of this species in west-central California." (Wiens and Kolar 2019, p. 8.)

At the same time, recent monitoring results for repowered projects show a high level of annual golden eagle take that in some cases exceeds that of the old generation turbines. For example, the Golden Hills Project final three-year monitoring report states:

> The 3-year adjusted average of 0.16 fatalities/MW/year [for golden eagles] *was nearly twice as high as the [Altamont]-wide pre-repower rate of 0.08 fatalities/MW/year represented in the Final Programmatic EIR*. Also note that even the unadjusted average naïve-with-offplots estimate of 0.12 fatalities/MW/year, which we consider the most accurate indicator from our study

[4] *See* FWS letter to East County Board of Zoning Adjustments re Sand Hill Wind Project, Feb. 12, 2020 (FWS Feb. 2020 Letter), p. 2; P. Kolar and J.D. Wiens, *Distribution, Nesting Activities and Age Class of Territorial Pairs of Golden Eagles at the Altamont Pass Wind Resource Area, California, 2014-16,* USGS Open File Report 2017-1035 (Kolar and Wiens 2017), pp. 2, 9; J.D. Wiens and P. Kolar, *Golden Eagle Population Monitoring in the Vicinity of the Altamont Pass Wind Resource Area, California, 2014-2018*, USGS report prepared for Next Era Energy, July 2019 (Wiens and Kolar 2019), pp. 7-8; D. Wiens, pers. comm, Oct. 13, 2020.

7-13 cont'd

for this species, *was higher than the adjusted estimates from all previous post-repower studies and still 50% higher than the pre-repower estimate.*

(H.T. Harvey, *Golden Hills Wind Energy Center Postconstruction Fatality Monitoring Project: Final 3-Year Report*, Jan. 2020 draft (H.T. Harvey 2020a), pp. xi-xii (emphasis added).) Consequently, as the EBRPD stated in its comments on the NOP for this Project: "at anticipated build-out of the [Altamont Pass], one can expect the mortality rate to equal or exceed the pre-repowered mortality rate … if all permitted and planned projects are completed." (EBRPD NOP Comments, p. 2.)

The DSEIR appropriately concludes that, in light of this new information, this Project may affect the local area population of golden eagles, "ha[s] the potential to drive long-term population declines" and that "fatalities associated with the proposed [P]roject will … make a *considerable* contribution to cumulative effects" on this species. (DSEIR, pp. 3.4-103, 5-11, 5-16 (emphasis added).) These significant cumulative effects will only be exacerbated in the near future, since the golden eagle populations at Altamont Pass are experiencing other major stressors such as drought and fires, both of which are becoming increasingly more frequent due to climate change. (*Ibid*.)

7-14

B. Significant Population-Level Cumulative Impacts of Wind Turbines on Bats

A similar and perhaps even more significant cumulative impact problem exists with regard to wind turbine impacts on bats. For example, a recent study published in *Issues in Ecology* and authored by T.D. Allison *et al*., estimates that, using adjusted fatality rate data from publicly available studies for land-based wind energy projects, "estimates of average cumulative annual bird fatalities in the continental U.S. published in 2013 and 2014 ranged from approximately 230,000 to 600,000 birds per year, [and] estimates of cumulative bat fatalities published during that same period ranged from 200,000 to 800,000 bats per year." (T.D. Allison *et al*., *Impacts to Wildlife of Wind Energy Siting and Operation in the United States*, Issues in Ecology, Report 21, Fall 2019 (Allison 2019), p. 7.) Another recent study reports even higher estimates, stating that wind turbines in North America have resulted in an estimated 840,500 to 1.7 million bat deaths between 2000 and 2011, which estimate is projected to increase substantially with installation of more wind energy capacity nationwide.[5]

In fact, new studies reveal that the ongoing cumulative effects of wind energy are already having population-level effects on affected bat (and many bird) species. (*See*, *e.g*., Allison 2019, p. 8

[5] *See* E.B. Arnett, *Mitigating Bat Collisions*, Chap. 8 in *Wildlife and Wind Farms, Conflicts and Solutions, Vol. 2: Onshore: Monitoring and Mitigation* (M.R. Perrow, ed.), 2017 (Arnett 2017), p. 168; *see also* K.S. Smallwood and D. Bell, *Relating Bat Passage Rates to Wind Turbine Fatalities*, Diversity, Feb. 2020 (Smallwood and Bell 2020b), p. 1, and K.S. Smallwood and D. Bell, *Effects of Wind Turbine Curtailment on Bird and Bat Fatalities*, J. of Wildlife Mgmt., Jan. 2020 (Smallwood and Bell 2020a), p. 1 (both discussing significant cumulative impacts of wind turbine operations on bats in North America).)

7-14 cont'd

("population size or dynamics of some [affected bat] species may be negatively affected from increases in mortality from collisions at wind turbines," and "modeling results suggest some of these species are at risk of population decline due to collision fatalities"); K. V. Rosenberg *et al*., *Decline of the North American Avifauna*, Science, 2019; T.J. Rodhouse *et al*., *Evidence of Region-Wide Bat Population Decline from Long-Term Monitoring and Bayesian Occupancy Models with Empirically Informed Priors*, Ecology and Evolution, Aug. 2019 (Rodhouse 2019), pp. 7-8 (describing probable population-level impact of wind turbines in Pacific Northwest on hoary bats).)

Both the Golden Hills final three-year monitoring report and Golden Hills North one-year monitoring report document staggering numbers of annual bat fatalities at these two projects, particularly of hoary bats and Mexican free-tailed bats, which make up 90% of the fatalities at Altamont Pass. (DSEIR, pp. 3.4-57, 3.4-123.) The annual bat fatality rates for these two projects range from 6.10 to 14.59 bat fatalities per MW per year, which is orders of magnitude higher than the PEIR baseline of 1.679 fatalities per MW per year, and equals between 800 and nearly 2,000 bats killed every year by these two projects alone. (Compare H.T. Harvey 2020a, Table 31, p. 77 and H.T. Harvey, *Golden Hills North Wind Energy Center Postconstruction Fatality Monitoring Report: Year 1*, Jan. 2020 draft (H.T. Harvey 2020b), Table 12, p. 53 with PEIR, pp. 3.4-49, 3.4-132, 3.4-136, 3.4-139, Table 3.4-15.)

The DSEIR admits that the cumulative impacts of wind turbine operations on bats at Altamont Pass are severe, potentially resulting in population-level effects on hoary bats, which are declining throughout the west coast. (DSEIR, pp. 3.4-56, 3.4-121 to 3.4-122, 5-16.) In fact, "population models suggest that despite the current abundance of this species … declines in abundance *with local extirpations* are possible in the foreseeable future if currently observed mortality rates are not reduced (Rodhouse et al. 2019)." (*Id*., p. 3.4-56 (emphasis added).) Indeed, the bat mortality problem is currently so serious that even the additional mortality from *the proposed Project itself* "could cause or contribute to declines in regional hoary bat populations." (*Id*., p. 3.4-122; *see also id*., p. 5-14.) The problem is exacerbated even more by the "low intrinsic growth rate" of hoary bats, which the DSEIR admits "could lead to *extinction* risk, even in response to low mortality rates." (*Id*., p. 5-14 (emphasis added); *see also id*., pp. 3.4-56, 3.4-122.)

7-15

C. **Summary of Cumulative Impact Concerns**

In sum as the EBPRD so aptly summarized in its NOP comments: "[a]ll evidence points to the likelihood that volant animal fatality rates caused by existing and planned repowering projects will rise to unsustainable levels for multiple species and reach or exceed pre-repowered conditions." (EBPRD NOP Comments, p. 5.) In light of this now-overwhelming evidence, the **County must no longer delay** in requiring substantial additional avoidance, minimization and mitigation measures for all wind projects operating at Altamont Pass, as the DSEIR in several places appears to do. (*See*, *e.g*., DSEIR, pp. 3.4-58, 3.4-100, 3.4-113, 3.4-124.) We discuss these additional measures in Part III.E.3 of our DSEIR-specific comments below.

III. SPECIFIC COMMENTS ON THE DSEIR

7-16

A. The DSEIR Must Include an Accurate and Complete Project Description to Ensure Meaningful Analysis of the Project's Effects and Consideration of a Reasonable Range of Project Alternatives

"An accurate, stable, and finite, project description is the *Sine qua non* of an informative and legally sufficient EIR." (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.) "Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the 'no project' alternative) and weigh other alternatives in the balance." (*Id.*, pp. 192-193.)

Here, the Project does not commit to a turbine size and instead proposes a spectrum of alternative schemes: *up to* 36 turbines at a range of different turbine sizes from 2.2 MW to 4.2 MW per turbine. (DSEIR, pp. 1-1, 2-6, 2-9; *see also id.*, App. D, p. 1-1 ("[t]he exact turbine model has not yet been selected," therefore, the proposed project includes "up to 36 turbine sites and a range of potential turbine specifications").) For purposes of the environmental analysis, the DSEIR assumes a layout of 36, 2.2 MW turbines, the minimum turbine size. (DSEIR, p. 2-9.)

But as the DSEIR describes, differences in turbine sizes result in significant localized differences in environmental impacts. A 4.2 MW turbine as compared to a 3.0 MW turbined has a proposed nameplate capacity of "up to 40% greater," "blade lengths [] up to 5.5 meters (18 feet) longer" (a 9% increase), a 19% increase in rotor-swept area (RSA), and a reduced rotor height of 19.5 meters (64 feet) lower than the typical turbines evaluated in the PEIR. (DSEIR, pp. 1-4, 1-5, 2-28.)[6] The DSEIR notes that avian researchers "have concerns regarding increases in avian and bat mortality that may result from increased rotor-swept area and reduced rotor height." (*Id.*, p. 1-4.) The site-specific differences are presumably much greater when comparing a 4.2 MW turbine to a 2.2 MW turbine, the range that this Project proposes.

Yet, the DSEIR does not fully describe and separately evaluate the range of turbines proposed in this project description. The DSEIR assumes the turbines will be 2.2 MW, at the lowest end of the range, and bases its environmental analysis and alternatives on that 36 turbine 2.2 MW configuration. The DSEIR admits it is deferring environmental analysis of the precise Project configuration, saying that "[t]he exact turbine model is still being evaluated but would be selected based on… environmental considerations, bird use survey results, and avian micro-siting considerations." (DSEIR, p. 2-6.) Nor does the DSEIR include overlay maps showing the proposed location of each Project turbine and turbine pads and roads in relation to onsite

[6] The DSEIR defines "rotor swept area" as "the area of the plane within which the wind turbine rotor blades move, calculated as RSA = pi r2 where pi is approximately 3.14 and r is the length of the rotor blade in meters." (*Id.*, p. 3.4-61 fn. 5.)

topography, threatened and other sensitive species habitat, designated burrowing owl preserves, or significant water features. 7-16 cont'd

Furthermore, the DSEIR's statement of project objectives is impermissibly narrow, essentially defining the Project objectives as the Project itself. (*See* DSEIR, pp. ES-2, 2-5, 4-2 (stating that the "fundamental" project objective is "[t]o site up to 36 new wind turbines that will produce and deliver 80 … MW of commercially viable wind energy … through a long-term power purchase agreement with a local community choice aggregator").) This "artificially narrow" statement of project objectives unlawfully constrains the DSEIR's analysis of a reasonable range of project alternatives. (*See North Coast Rivers Alliance v. Kawamura* (2015) 243 Cal.App.4th 647, 668–669 (*quoting In Re Bay Delta* (2008) 43 Cal.4th 1143, 1166).) As further discussed in Part III.C *infra*, in light of the overriding project objective quoted above, the DSEIR did not even *consider*, let alone consider and then eliminate, a project of less than 80 MW in size. (DSEIR, pp. 4-1 to 4-9.)

7-17

B. <u>The DSEIR Must Include an Existing Conditions Baseline, in Addition to an Accurate Historic Conditions Baseline, to Ensure Meaningful Analysis of the Project's Actual On-the-Ground Effects</u>

1. CEQA requirements for an adequate EIR baseline

In order for an EIR to accurately assess the degree of significance of a proposed project's environmental effects, it normally must evaluate those effects against a "baseline" of environmental conditions as they exist at the time the NOP for the EIR in question is published. (Cal. Code Regs., tit. 14, §§ 15125, subd. (a)(1), 15126.2, subd. (a).)[7] In general, "CEQA requires an EIR to 'focus on impacts to the existing environment, not hypothetical situations,'" and thus "the impacts of a proposed project are ordinarily to be compared to the actual environmental conditions existing at the time of CEQA analysis." (*San Franciscans for Livable Neighborhoods v. City and County of San Francisco* (2015) 26 Cal.App.5th 596, 614–615 (*quoting County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 955 and *Communities for a Better Envt. v. SCAAQMD* (2010) 48 Cal.4th 310, 321, 323); *see also Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 448.)

An agency may only use a baseline of previously existing, historic conditions where existing conditions have changed or fluctuated over time, and even then, only if an historic conditions baseline is "necessary to provide the most accurate picture practically possible of the project's impacts" and is supported by substantial evidence. (Guidelines, § 15125, subd. (a)(1).) Thus, an agency may depart from the "existing conditions" baseline under CEQA only where "factual circumstances" justify this and "when necessary to prevent misinforming or misleading the public and decision makers." (*Neighbors for Smart Rail, supra,* 57 Cal.4th at p. 448.) The

[7] All citations to the CEQA implementing regulations are hereafter cited as the "Guidelines."

7-17 cont'd

rationale for this rule is that "an inappropriate baseline may skew the environmental analysis flowing from it, resulting in an EIR that fails to comply with CEQA." (*Citizens for East Shore Parks v. State Lands Com*. (2011) 202 Cal.App.4th 549, 557.)

7-18

2. The DSEIR must include a current conditions baseline in addition to an historic conditions baseline

Here, the environmental analysis in the biological resources section of the DSEIR relies on a now-hypothetical historic conditions baseline of previously operating old-generation turbines for purposes of evaluating the ongoing operational impacts of the Project on birds and bats. (DSEIR, p. 3.4-61 (stating that the baseline is the average annual fatality rate per MW of the old-generation turbines from 2005-2011, as provided in the Alameda County Avian Fatality Monitoring Program for the old turbines); *see also id*., p. 2-4 (noting "[t]he project site was historically occupied by 518 old generation wind turbines").) But these 518 wind turbines and foundations that formerly occupied the Project site "were decommissioned and removed in 2016," *four years* ago. (*Id.*, p. 3.4-7; *see also id*., p. 2-4 (current "[l]and use on the project site…consists largely of cattle-grazed land" that was "*previously* used for wind production") (emphasis added), *accord* pp. 3.4-7 and App. D., p. 1-1 fn. 2.)

Currently, the Project site consists of undeveloped land adjacent to and within essential habitat for sensitive biological resources. (*See* DSEIR, p. 4-13 ("the project site is currently undeveloped" land).) The Project site also is within Conservation Zone 10 of the East Alameda County Conservation Strategy and adjacent to the only designated "Type 1" open space in this zone. (*Id.*, p. 3.4-7; *East Alameda County Conservation Strategy*, Chapter 3: Conservation Strategy (October 2010), Figure 3-3.)[8] That the Project site "had turbines at the time the PEIR was published" in 2014 and up until 2016 is irrelevant, as the DSEIR concedes that no turbines are on the Project site now. (DSEIR, p. 4-13.) Consequently, although use of an "historic conditions" baseline of all previously operating old-generation turbines can provide a helpful comparative analysis between the effects of the old-generation versus the new-generation turbines, the County *also* must analyze the Project's effects against the actual environmental conditions currently existing on the Project site.

Evidence of rebounding raptor populations in areas of decommissioned old-generation turbines at Altamont Pass further highlights the hypothetical nature and inaccuracies of the DSEIR's reliance on the formerly operating old generation turbines as the *sole* environmental baseline for this Project. The removal of these turbines has led to a noticeable decrease in the number of golden eagle collisions in some parts of the Altamont Pass and a concomitant increase in golden

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[8] "Type 1 Open Space" "is permanently protected public or private land subject to a conservation easement or deed restriction, where the primary purpose and management goal of the land is for ecological protection. This is considered the most protection." (*East Alameda County Conservation Strategy*, Chap. 2: Environmental Setting (Oct. 2010), p. 2-10 <http://www.eastalco-conservation.org/documents/eaccs_ch2_oct2010.pdf> (as of January 6, 2020).)

7-18 cont'd

eagle use of these areas. (Kolar and Wiens 2017, pp. 8-9.) This is attributed to golden eagles' ability to establish new territories and maintain stable occupancy in the areas that have not been repowered because no wind generation exists on site. (*Ibid.*; *see also* EBRPD NOP Comments, p. 4 ("raptors tend to forage and use areas of turbine-free habitat more often than ridges with turbines").)

In addition, since at least 2005, lands in and adjacent to the Project site have served as essential habitat for sensitive biological resources, specifically in the form of several designated conservation lands specifically established to offset the impacts of other previous development projects. This includes 578 acres of conservation lands established to protect the burrowing owl and other species on or adjacent to the Project site. (DSEIR, p. 3.4-13; *see, e.g.*, *Haera Wildlife Conservation Bank*, Wildlands Inc. <https://www.wildlandsinc.com/banks/haera-wildlife-conservation-bank-sjkf/> [as of Jan. 7, 2021].) The entire Project site also is within designated critical habitat for the California red-legged frog, a federally-threatened species, and "contains all four primary constituent elements of designated critical habitat." (DSEIR, pp. 3.4-21, 3.4-38.) A 368-acre area in the southern portion of the site is within designated critical habitat for the Alameda whipsnake, a federally- and state- threatened species. (*Id*. pp. 3.4-23, 3.4-40.)

Therefore, because the *current* condition of the Project site is undeveloped land that is within and adjacent to open space and designated protected habitat for sensitive species, the DSEIR also must compare the proposed Project against what may occur if the site in its *current* condition remains as-is. (*See Woodward Park Homeowners Ass'n v. City of Fresno* (2007) 150 Cal.App.4th 683, 707 (an EIR should, in most cases, compare what may happen if the project is built with what may happen if the site is left alone).)

A current conditions baseline is particularly important in order to adequately assess the cumulative effects of the Project going forward. Even if the average annual fatalities per MW for the new-generation turbines is less for some affected species than for the old-generation turbines (which is still an open question), these effects are still highly cumulatively significant, as discussed in Part II, *supra*. The DSEIR's focus on comparison between a repowered versus non-repowered landscape has the effect of masking the true significance of these cumulative effects.

7-19

3. The historic conditions baseline is insufficiently described to ensure meaningful comparison with the impacts of the proposed Project

The DSEIR also does not adequately or accurately describe the historic conditions baseline for purposes of comparison with the proposed Project. For example, the DSEIR does not answer such fundamental questions as:

1) Where were each of the 518 old-generation turbines located in relation to the proposed new turbine sites?

7-19 cont'd

2) How many of the 29 parcels that make up the Project site were previously used for wind energy production?
3) What were the models, sizes, and owners/operators of these 518 old-generation turbines and what was the total installed capacity of these turbines?
4) Were any of these old turbines rated as very high, high, or moderately high-risk turbines by the former Alameda County Scientific Review Committee?
5) What did the prior monitoring data show for these old turbines?

The DSEIR's "historic" baseline analysis also does not compare the total operational capacity of the proposed Project with the total operational capacity of the old turbines onsite. The DSEIR's basic metric for evaluating the significance of the Project's operational impacts on birds and bats are the average annual fatalities per MW of the old generation turbines for each focal species, as set forth in the PEIR. (DSEIR, pp. 3.4-60 to 3.4-61.) Under this metric, the greater the total MW of operational capacity, the greater the average annual number of fatalities of birds and bats. (*See ibid.*) Consequently, "to provide the most accurate picture practically possible of the project's impacts," the DSEIR must compare the total proposed operational capacity of the Project to the total *previously installed* capacity of the 518 old-generation turbines on all parcels comprising the Project site. (Guidelines, § 15125, subd. (a)(1).)

The DSEIR does not disclose that the Project "replaces" 54.5 MW of capacity with 80 MW of operational capacity, a 47% *increase* in operational capacity for this site. The prior, old generation project consisted of over five hundred 100-kw turbines, sixteen 250-kw turbines, and one 400-kw turbine for a total of only 54.5 MW of installed capacity.[9] The proposed Project, on the other hand, as discussed, would consist of up to 36 new 2.2 to 4.2 MW turbines, for a total installed capacity of up to 80 MW. (DSEIR, p. 1-1.) The DSEIR cannot reasonably conclude that the proposed Project will result in fewer impacts than the old generation turbines, based on a comparison of the average annual fatalities per MW between the new generation and old generation turbines operating on the Project site, without considering the total number of megawatts for each project.

Accordingly, the DSEIR must engage in an accurate site-specific comparison of the average annual fatalities per MW for the installed capacity of the old generation project with the estimated average annual fatalities per MW for the current 80 MW Project. (*See North County Advocates v. City of Carlsbad* (2015) 241 Cal.App.4th 94, 105-106 (an historical baseline is only appropriate when that baseline represents *actual* levels of past use).) This is particularly important here, because one of the primary purposes of the PEIR's repowering program is to *reduce* impacts of the old generation turbines. (*See* PEIR, p. 2-2 ("[t]he two primary objectives of repowering are to facilitate efficient wind energy production through repowering and *to avoid*

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[9] Pers. comm. with Dr. Shawn Smallwood, Dec. 12, 2020. The DSEIR does note that *in 2005*, the old-generation wind project operating on the Project site consisted of 711 turbines for a total installed capacity of 74 MW, which is still less than the proposed Project. (DSEIR, p. 3.4-7.)

and minimize impacts on terrestrial and avian wildlife caused by repowered wind turbine construction, operation, and maintenance") (emphasis added).) 7-19 cont'd

Lastly, as a related point, the historic conditions baseline fatality metrics for the DSEIR's impact analysis must be the average annual fatalities per MW for each focal species for the old generation turbines as set forth in the PEIR (*see* PEIR, pp. 3.4-54 to 3.4-56), and not the revised average annual fatalities per MW in the final 2009-2013 monitoring report prepared by ICF International in 2016, or the average annual fatalities per MW for various repowered projects as set forth in DSEIR Table 3.4-4. While the DSEIR may include these other fatality rates for informational and comparative purposes, the impact analysis needs to compare the impacts of the Project to the PEIR's baseline fatality rates, not any subsequently adjusted rates or rates for other repowered projects.

In sum, the DSEIR must be revised to include: 1) an accurate current conditions baseline that acknowledges the area's current status as undeveloped open space and habitat; and 2) meaningful and accurate information concerning historic conditions at the Project site so that the DSEIR adequately discloses the impacts that may result from the proposed increase in historic operational capacity. This will enable the County and the public to compare the effects of the Project against an accurate and informative environmental baseline. Without a current conditions and accurate historic conditions baseline, the true effects of the Project are effectively masked and the Project is being compared to a historical fiction, contrary to CEQA. 7-20

C. The DSEIR's Omission of a Reduced MW Alternative that Avoids all or Most High-Risk Sites and Sensitive Habitat Areas Renders the Alternatives Analysis Inadequate 7-21

1. CEQA standards for adequacy of project alternatives analysis

"[T]he EIR is the heart and soul of CEQA," and "[t]he core of an EIR is the mitigation and alternatives sections." (*Citizens of Goleta Valley v. Bd. of Supervisors* (1990) 52 Cal.3d 553, 564; *Planning & Cons. League v. Dept. of Water Resources* (2000) 83 Cal.App.4th 892, 910.) CEQA Guidelines section 15126.6, subdivision (a) provides that "[a]n EIR shall describe a range of reasonable alternatives to the Project, or to the location of the Project, which would feasibly attain most of the basic objectives of the Project but would avoid or substantially lessen any of the significant effects of the Project, and evaluate the comparative merits of the alternatives." (Guidelines, § 15126.6, subd. (a) (emphasis added); *see also id*., § 15126.6, subd. (f), *Citizens of Goleta*, *supra*, 52 Cal.3d at p. 566.) The "reasonable range of potentially feasible alternatives" must be selected on the basis of "foster[ing] informed decision-making" and "meaningful public participation." (Guidelines, § 15126.6, subds. (a), (f).)

The EIR's alternatives discussion must "focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives *would impede to some degree the attainment of the project objectives, or would be more costly*." (Guidelines, § 15126.6, subd. (b) (emphasis added); *see also id*., § 15126.6, subds. (c), (f).) The EIR must "include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project." (*Id*., § 15126.6, subd. (d); *see also Laurel Heights Improvement Assn. v. Regents of Univ. of Calif.* (1988) 47 Cal.3d 376, 404 ("[t]o facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions").) The EIR also must discuss the lead agency's reasoning for selecting the alternatives to be discussed in detail, and the reasons for rejecting other alternatives as infeasible. (Guidelines, § 15126.6, subds. (a), (c).) 7-21 cont'd

CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors," including but not limited to site suitability, economic viability, and availability of infrastructure. (Pub. Resources Code, § 21061.1; Guidelines, §§ 15126.6, subd. (f)(1), 15364.) The determination of whether to include an alternative in an EIR is based on whether the alternative is "*potentially* feasible." (*South County Citizens for Smart Growth v. County of Nevada* (2013) 221 Cal.App.4th 316, 327 (emphasis added, citation omitted); *see also Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490, 1504, fn. 5 (EIR "is required to make an in-depth discussion of those alternatives identified as at least potentially feasible").) "The fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible." (*Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1181; *accord Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 599-600; *Center for Biol. Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883 (*CBD*).)

In sum, "[a]n alternatives analysis in an EIR is intended to facilitate consideration of whether an environmentally superior alternative could meet most project objectives; therefore, the key to the selection of the range of alternatives is to identify alternatives that meet most of the project's objectives but have a reduced level of environmental impacts." (*Bay Area Citizens v. Assn. of Bay Area Govts*. (2016) 248 Cal.App.4th 966, 1014 (internal quotations and citation omitted); *see also Habitat and Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1304 ("[a] potentially feasible alternative that might avoid a significant impact must be discussed and analyzed in an EIR").)

Absent macro siting (e.g., avoidance of siting wind energy projects at inherently high-risk locations, such as Altamont Pass, altogether), it is generally recognized that the next-best option for avoidance and minimization of ongoing raptor and bat fatalities due to operation of wind turbines is micro-siting. This includes siting turbines with appropriate set-backs from known raptor and bat nesting and roosting sites, and avoiding locations on the Project site that are generally known to be hazardous to raptors, such as "along the edges of steep slopes, on downslope benches, within depressions such as swales, saddles and notches, or along descending ridge slopes following a slope break." (DSEIR, App. F, p. 4.) The PEIR, though Mitigation Measure BIO-11b, recognizes that micro-siting is one of the best available avoidance measures at Altamont Pass. This mitigation measure requires all project proponents to conduct a micro-siting analysis to identify locations on the project site with reduced raptor collision risk. (PEIR, pp. 3.4-109 to 3.4-110; *see also* DSEIR, p. 3.4-108.)

Here, in addition to the CEQA-mandated "No Project-No Repowering" alternative, the DSEIR analyzes two purported alternatives, both of which maintain an operational capacity of at least 80 MW for the Project and involve some degree of the already-required micro-siting: the "Micro-Sited Alternative" and the "Reduced Project Alternative." (DSEIR, pp. 4-4 to 4-6, 4-13 to 4-24.) Issues with each of these alternatives are discussed below. 7-21 cont'd

7-22

2. Micro-Sited Alternative

The "Micro-Sited Alternative" would involve the "same turbines proposed for use" in the proposed Project, but would adjust the location of some turbines in response to a micro-siting analysis. (DSEIR, p. 4-14.) There are several problems with this supposed alternative. First, the micro-sited alternative cannot be considered a true alternative to the proposed Project as required by CEQA, because, as mentioned, the PEIR already requires such micro-siting to be done for all repowering projects. (*See* PEIR, pp. 3.4-109 to 3.4-110 and DSEIR, p. 3.4-108 (requiring all project proponents to "prepare a siting analysis" and "conduct a siting process" in order "to select turbine locations to minimize potential impacts on bird and bat species" based on the best available science and field data).) Thus, this alternative is not "capable of avoiding or substantially lessening any significant effects of the project" (Guidelines, § 15126.6, subd. (b)), but is really the same as the proposed Project, only including the micro-siting mitigation measure that is already mandated by the PEIR.

Second, even assuming that this can serve as a meaningful "alternative" to the proposed Project, the "Micro-Sited Alternative" in fact involves only a minimal degree of micro-siting in response to the expert's recommendations. (*See* DSEIR, App. F, p. 19.) The expert recommended 31 alternative sites out of the 36 total project turbines, but the Project proponent accepted only ten of these, based on unexplained and conclusory assertions of "wake effect" and "setback requirements." (*Id.*, p. 18, App. A-1 of App. F.) Perhaps more significantly, the Project proponent accepted the expert's recommendation for only four of the seventeen identified high-risk turbines, again based on unspecified "wake effect" and setback limitations. (*Id.*, Table 1, App. A-1.) This alternative still retains *half* of the high- and moderate-high-risk turbine sites identified in the project micro-siting reports.

Furthermore, where there was a choice between a higher and a relatively lower risk nearby location for a given high-risk turbine site, the Micro-Sited Alternative in most cases proposed minor relocations that most often did not change the risk designation for that turbine and so were ultimately inconsequential. (DSEIR, App. F, Table 1, App. A-1.) Only three turbines were removed as a claimed result of the micro-siting analysis—one high, one moderate-high, and one moderate risk—but these turbines appear to have been removed for reasons unrelated to avoiding avian impacts, such as "low wind projections" or "nearby transmission lines." (*See ibid.*) More importantly, the Project proponent ultimately replaced these three turbine locations with *even higher* risk locations—two high risk and one moderate-high risk. (*Ibid.*)

7-22 cont'd

Third, while the Micro-Sited Alternative states that it considered the risk to raptors (DSEIR, p. 4-14), the expert actually excluded consideration of risks to other raptors besides golden eagles based on allegedly insufficient information regarding raptor use of the site. Despite the expert's representations that the micro-siting analysis collected field information on "active raptor nests," the expert, relying on "incidental" observations and without conducting protocol-level field surveys, found an "overall lack of raptor nesting within the project area." (*Id.*, App. F, pp. 9, 17-18.) From this conclusion, the expert then excluded proximity to raptor nests other than golden eagle nests as a risk factor in the micro-siting analysis for the Micro-Sited Alternative. (*Ibid.*)

But the expert's determination of a lack of onsite raptor nesting is contradicted by the DSEIR itself. Just this year, ICF biologists conducted raptor nest surveys on the Project site and identified four active, and twelve unoccupied, raptor nests within and immediately adjacent to the Project site, including an onsite Swainson's hawk nest. (DSEIR, pp. 3.4-24 to 3.4-25, 3.4-50; App. D, pp. 3-9, 3-12.) In addition, USGS biologists have determined that the Project site is within a two-mile radius of *seven* active golden eagle nesting and territorial pairs, including one onsite golden eagle nest. (*Id.*, pp. 3.4-25, 3.4-52, 3.4-54; App. D, p. 3-12, Fig. 9.)[10] Thus, the micro-siting analysis lacks substantial evidence to conclude that the Micro-Sited Alternative need not consider the risks of siting turbines near active raptor nests other than golden eagles, due to allegedly low raptor use of the Project site.

Finally, while certainly likely to be an improvement over the proposed Project in terms of impacts on affected raptors, the DSEIR and supporting documents lack analysis of the relative extent to which the Micro-Sited Alternative is expected to reduce the Project's impacts on raptors based on the best available data. Rather, the DSEIR only contains conclusory and general assertions that the Micro-Sited Alternative "would reduce raptor fatalities" and that the impacts of this alternative would be "less" or "similar." (*See* DSEIR, pp. 4-14 to 4-15.)

Absent a metric for quantitative—or even meaningful qualitative—comparison between the impacts of this alternative versus the proposed Project, the DSEIR does not satisfy CEQA's requirement for an informative alternatives analysis. (*See* Guidelines, § 15126.6, subd. (d) (the EIR "shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project").) The Project micro-siting analysis therefore should be repeated using Dr. Shawn Smallwood's quantitative, GIS modeling approach for all proposed turbine sites, rather than the qualitative and subjective risk designations based "entirely on an individual interpretation of conditions." (DSEIR, App. F, p. 10; *see CDFW Comments on NOP for Mulqueeny Wind Repowering Project*, May 4, 2020, pp. 4–5 (CDFW NOP Comments); FWS Feb. 2020 Letter, p. 5; EBPRD NOP Comments, p. 4.)

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[10] The FWS' Eagle Conservation Plan Guidance finds that eagle territories extend at least two miles around a nest, and that wind energy projects may result in disturbance to these territories within that radius. (FWS, *Eagle Conservation Plan Guidance, Module 1: Land-Based Wind Energy, Version 2*, Apr. 2013, pp. 13, 98.) Accordingly, the FWS requires surveys within two miles of a proposed wind project footprint as part of its golden eagle take permit process. (*See* FWS, *Updated Eagle Nest Survey Protocol*, Apr. 2020.)

7-23

3. Reduced Project Alternative

The "Reduced Project Alternative" would install 24 (rather than 36) turbines, but would substitute larger 3.465 MW turbines (instead of the proposed 2.2 MW turbines), thereby maintaining the total Project size at 83 MW (three MW more than the proposed Project). (DSEIR, pp. 4-6 fn. 2, 4-19.) However, the DSEIR concludes that, because this alternative would reduce rotor swept area or "RSA by 19%, it "would be expected to decrease avian and bat fatalities *of every focal species or species group* by up to 19% based on [the] changed RSA." (*Id*., p. 4-19 (emphasis added).) But contrary to its characterization as a "reduced" Project, this alternative would actually *increase* the total Project operational capacity to 83.16 MW. (*Ibid*.)

As the DSEIR admits, "avian fatality rates are generally proportional to power generation capacity," or the total installed project MW. (DSEIR, p. 3.4-65.) And as discussed, the sole metric for measuring annual avian and bat fatalities from operating wind projects under the PEIR is the average annual fatalities per MW of installed project capacity (the MW metric). (*Id*., pp. 3.4-60 to 3.4-61; *see also id*., pp. 1-4, 4-4 fn. 1.) This metric has been accepted and used in all the wind project fatality monitoring reports prepared under the PEIR to date. Under this MW metric, the DSEIR's supposed Reduced Project Alternative actually is likely to have greater impacts than the proposed Project.

But despite the fact that the Reduced Project Alternative has a slightly *increased* total operational capacity (MW), the DSEIR attempts to reframe its alternative as reduced in size by introducing the new and unvetted RSA metric. (DSEIR, pp. 3.4-61, 4-4 fn.1, 4-19.) The DSEIR simply assumes, without evidence, that impacts to birds and bats increase or decrease *proportionally* with each percentage increase in RSA with regard to each species or species group. The DSEIR admittedly bases this assumption on speculation, stating that "[i]ntuitively, a larger RSA has a greater probability of intercepting a bird in flight." (*Id*., p. 3.4-61.)

However, the only scientific basis the DSEIR provides for this conclusion is the PEIR's discussion that "avian fatality rates are generally proportional to power generation capacity" or *MW* of installed capacity, which the DSEIR then simply *assumes* would apply in the same manner to the RSA metric. (DSEIR, p. 3.4-65; *see also id*., p. 3.4-96 ("[t]he MW and RSA metrics have similar performance"); *id*., p. 4-19 (stating that "RSA is widely regarding as a plausible metric for avian and bat fatality risk," but citing no studies).) The DSEIR must provide a better explanation for its departure from the PEIR's MW fatality metric that has been applied to all previous repowering projects. As it stands, it appears that the RSA metric is being used as a justification for not including an alternative in the DSEIR that reduces the total Project MW.

The DSEIR also contains inconsistent conclusions regarding the claimed benefits of a reduced Project RSA. For example, the DSEIR concludes that the "primary benefit[]" of the Reduced Project Alternative is the 19% reduction in total RSA, which it surmises "could benefit small birds and bats as well as raptors." (DSEIR, p. 4-19.) But elsewhere, the DSEIR admits that

7-23 cont'd

"[o]verall, avian fatality rates are an average of *20% higher* when calculated on an RSA basis rather than a [MW] capacity basis," which would appear to cancel out or at least have the potential to obviate possible benefits of the 19% reduction in RSA in the Reduced Project Alternative.[11] The DSEIR also admits that "it is possible that the Reduced Project Alternative would result in *increased* bat fatality rates, on a unit RSA basis, relative to the project." (*Id*., p. 4-20 (emphasis added).)[12]

7-24

The DSEIR further recognizes that the larger turbines of the Reduced Project Alternative may result in equal or greater avian and bat impacts than the proposed Project. This is based on (in addition to the total MW for this alternative) the taller turbine heights, reduced rotor heights and reduced blade heights above ground for the larger turbines, locations of individual turbines relative to other onsite features, and other risk factors. (DSEIR, p. 4-20.) For example, the DSEIR acknowledges that taller turbines have been known to result in "increased bat fatality rates" and it is therefore "possible that the Reduced Project Alternative would result in increased bat fatality rates." (*Ibid*.) Further, as mentioned, larger turbines also are associated with reduced rotor height and reduced blade height above ground, which likewise may increase impacts to birds and bats. (*Ibid.*; *see also* EBPRD NOP Comments, p. 4 (lower height of RSA above ground is a "key risk factor, with lower heights creating substantially more risk to birds").)

7-25

Yet the DSEIR does not adequately consider the extent to which these other risk factors affect its assumption that the Reduced Project Alternative, at 83 total MW, would reduce impacts to birds and bats as compared to the proposed Project at 80 MW. Furthermore, some of these additional risk factors, such as reduced blade height above ground of larger turbines, likewise undercut the DSEIR's assumptions of proportionally-reduced risk of the Reduced Project Alternative based on reduced total RSA. For all of these reasons, the DSEIR lacks substantial evidence to demonstrate that the Reduced Project Alternative will result in a proportional reduction in avian and bat impacts of 19% for each focal species, as compared to the proposed Project.

7-26

And as with the Micro-Sited Alternative, the expert's micro-siting analysis for the Reduced Project Alternative (DSEIR, App. G) also retains a number of turbines in areas of high- to

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[11] *See id*., p. 3.4-96 (emphasis added); *see also id*., pp. 3.4-97, 3.4-102 to 103, 3.4-105, Table 3.4-8b, 3.4-98 (estimated annual Project fatalities for each of the four focal raptor species are *higher* when calculated on an RSA basis than a per-MW basis); *cf*. Tables 3.4-4, 3.4-5, pp. 3.4-62, 3.4-64 (comparing annual fatalities per MW vs. annual fatalities per hectare RSA and showing that the latter are, without exception, *significantly* higher).

[12] H.T. Harvey 2020b surmises that the significantly increased bat fatalities at the Golden Hills North versus Golden Hills Project are possibly due to the former project's proximity to water sources. (H.T. Harvey 2020b, pp. vii, 52.) The existence of extensive water features on the Project site, even when the surveys were apparently only conducted during the dry season, indicates that bat fatalities could be at the higher end for this Project, even if reduced in size. (*See* DSEIR, pp. 3.4-9, 3.4-21 to 3.4-22, 3.4-58; DSEIR, Appendix C, *Biological Resources Report for the Mulqueeney Ranch Wind Repowering Project*, ICF, Aug. 2020 (App. C), p. 2-2, Att. A.)

7-26 cont'd

moderately-high risk and within a half mile to one mile of protected raptor nests. This alternative would keep eighteen turbine locations "nearly the same" as the proposed Project, with some "minor relocations" under the micro-siting process, and only six would be located at a "substantial distance" from the originally proposed turbine locations. (DSEIR, p. 4-19.) While this alternative does remove the majority of the high-risk turbines in the proposed Project, it still would retain two high-risk and eleven moderate-high risk turbines, and seven turbines within a half mile to one mile of a golden eagle nest site. (*Id*., pp. ES-4, 4-6; App. G, Table 1, p. 8.) Ultimately, similar to the Micro-Sited Alternative, the Reduced Project Alternative accepts the expert's micro-siting analysis recommendations for only two of the 24 turbines. (*Id*., App. G, Table 1, p. 8.) Thus, although this alternative describes itself as "micro-sited," it is unclear that a micro-siting analysis actually informed the decision on where to place the 24 turbines.

7-27

Lastly, we note that there are significant inconsistencies and ambiguities in the DSEIR's description of the mitigation measures for the Reduced Project Alternative. For example, the summary description commits to increased nighttime cut-in speeds to protect bats during the fall migration season (DSEIR, p. 4-6), but does not mention increased cut-in speeds during daylight hours to protect golden eagles and other raptors. The DSEIR's Executive Summary and main description of this alternative, on the other hand, state precisely the opposite: these sections do not mention the increased seasonal nighttime cut-in speeds for bats, but do mention the increased daytime cut-in speeds for raptors. (*Id*., pp. ES-4, 4-20.) This needs to be clarified.

7-28

4. Comments applicable to both the Micro-Sited and Reduced Project Alternatives

With regard to both the Micro-Sited and Reduced Project Alternatives, the DSEIR's analysis also does not consider the proximity of the proposed turbine sites to known nests or nesting colonies of state-listed threatened bird species (Swainson's Hawk and tricolored blackbird), and other bird species of special concern, such as burrowing owls, that exist within the Project site. (DSEIR, Fig. 3.4-2a, pp. 3.4-9, 3.4-24, 3.4-27; App. F, pp. 10-12.) The siting analysis also does not consider the impacts of locating turbines near burrowing owl nesting habitat in the Haera Mitigation Bank north of the Project site, and near Two Sisters Burrowing Owl Preserve in the middle of the Project site.

7-29

With regard to micro-siting to minimize bat collisions, PEIR Mitigation Measure BIO-14a provides that "[t]o generate site-specific 'best information' to inform turbine siting and operation decisions, a bat habitat assessment and roost survey will be conducted in the project area to identify and map habitat of potential significance to bats, such as potential roost sites … and water sources. Turbine siting decisions will incorporate relevant bat use survey data and bat fatality records published by other projects in the [Altamont Pass]." (PEIR, p. 3.4-133.) The micro-siting analyses do not address this measure. While minimizing potential bat mortality admittedly has not been a "focus" of micro-siting efforts in the Altamont Pass (DSEIR, App. F, p. 8), this does not relieve the Project proponent from complying with this requirement of the PEIR.

7-30

Due to the foregoing identified uncertainties regarding the extent to which both the Micro-Sited and Reduced Project Alternatives actually will reduce the Project's significant effects (including cumulative effects) on avian and bat resources as required by CEQA, the DSEIR must include a reduced-project alternative of less than 80 MW in size with a micro-siting analysis that avoids or curtails operations at all or most of the turbine sites that are identified as high and moderate-high risk, sites that are within one mile of an active golden eagle or Swainson's hawk nest, and sites that are too proximate to tricolored blackbird colonies, burrowing owl preserves, bat roosts, and other sensitive areas, as recommended by CDFW, FWS, and EBRPD. (*See Friends of the Eel River v. Sonoma County Water Agency* (2003) 108 Cal.App.4th 859, 872-873 (holding EIR inadequate for failure to discuss "project alternatives that would mitigate any significant cumulative impact" of the proposed project).)

Apparently due to the DSEIR's constrained statement of Project objectives, as discussed in Part III.A *supra*), the DSEIR does not consider a less than 80 MW alternative in its initial screening process, and does not include any explanation or justification as to why this alternative was not considered or would be infeasible. (DSEIR, pp. 4-3 to 4-6; *see, e.g., CBD, supra*, 185 Cal.App.4th at pp. 884–885 (conclusory statement by Project proponent's consultant that private financing for a more expensive project alternative was unavailable did not constitute substantial evidence supporting EIR's conclusion that the alternative was infeasible).) An alternative that avoids or curtails operations at all or most of the site's high-risk and most sensitive areas and features still could meet most of the Project objectives identified in the DSEIR, and is at least potentially feasible, thereby requiring its examination in the DSEIR. (DSEIR, pp. ES-2, 4-2 to 4-3; *see* Guidelines, § 15126.6, subds. (a)-(c), (f); *South County Citizens, supra*, 221 Cal.App.4th at p. 327).)

D. <u>The DSEIR Contains an Incomplete and Misleading Discussion of Project Impacts on Birds and Bats and Their Habitat</u>

7-31

1. General standards for adequacy of impact analysis in an EIR

"As a general matter the EIR must present facts and analysis, not simply the bare conclusions or opinions of the agency. The discussion of impacts is acceptable if it provides sufficient information and analysis to allow the public to discern the basis for the agency's impact findings. Thus the EIR should set forth specific data, as needed to meaningfully assess whether the proposed activities would result in significant impacts." (*Bay Area Citizens, supra*, 248 Cal.App.4th at p. 977 (*quoting Californians for Alternatives to Toxics v. Calif. Dept. of Food and Agric.* (2005) 136 Cal.App.4th 1, 13); *see also Laurel Heights, supra*, 47 Cal.3d at pp. 404–405 ("[w]ithout meaningful analysis ... in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process").). CEQA Guidelines section 15126.2, subdivision (a) provides that the discussion of environmental impacts "should include *relevant specifics of* the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in ... other aspects of the resource base..." (*Ibid*. (emphasis added).) The "relevant specifics" must include a discussion of the *precise nature and magnitude* of significance of the Project's anticipated effects if it is reasonably scientifically possible to do so, and if it is not

7-31 cont'd

scientifically possible, to explain why. (*Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 519-520 (emphasis added).)

7-32

2. The DSEIR does not adequately analyze the effects of the larger overall Project size and larger turbine size

Here, the DSEIR omits certain information that is essential for the County and the public to meaningfully assess the "precise nature and magnitude" of the Project's significant effects on avian and bat resources, and the DSEIR also contains certain other information that is incorrect and/or misleading. (*Sierra Club, supra*, 6 Cal.5th at pp. 519–520; Guidelines, § 15384, subd. (a) ("[a]rgument, speculation, unsubstantiated opinion or narrative, [or] evidence which is clearly erroneous or inaccurate" does not constitute substantial evidence).) Consequently, the DSEIR must be revised to include the missing and corrected information, as discussed below.

First, as mentioned, the DSEIR omits critical information that is important for the County and the public to meaningfully assess the actual extent of the Project's significant effects on avian and bat resources, such as the 47% increase in total installed capacity proposed for the Project site, from approximately 55 MW to 80 MW. (Pers. comm. with Dr. Shawn Smallwood, Dec. 12, 2020.)

The DSEIR also does not adequately analyze the site-specific avian and bat fatality impacts that may result from larger turbines, despite its recognition that the characteristics of larger turbines can result in greater impacts on birds and bats. (*See* DSEIR, p. 1-4 (avian researchers "have concerns regarding increases in avian and bat mortality that may result from increased rotor-swept area and reduced rotor height").) This is important because the PEIR only studied turbines up to three MW, and so the County here decided to conduct project-specific environmental review tiered from the PEIR, in part, specifically due to the planned increase in turbine size to up to 4.2 MW. (*Id.*; *see* PEIR, pp. 2-4, 2-19 (PEIR expected that "all" turbines "would "fall within the parameters" of 1.6–3 MW capacity).)

Of particular significance here, the 4.2 MW turbines proposed for the Project have a reduced rotor height that is 19.5 meters (64 feet) lower or 42% less "than the typical turbines evaluated in the PEIR." (DSEIR, p. 2-28, Table 2-7.) But the DSEIR does not analyze the foreseeable effects of the lower blade height to ground and lower rotor height than were discussed in PEIR. (DSEIR, pp. 3.4-60 to 3.4-63 (acknowledging that lower ground clearance was not used in the analysis of fatality rates in the PEIR).)

This omission is particularly problematic in light of the PEIR's assumption that the third- and fourth-generation turbines would have *fewer* avian impacts due to *increased* ground clearance. (*See* PEIR, pp. 2-3 to 2-4 ("[e]mpirical evidence … suggests that windfarms utilizing third- and fourth-generation turbines may have significantly less impact on avian species than those using first- and second-generation technology" based on "the much larger distance between the ground and the lowest point of the turbine blade, placing the rotor-swept area above the zone most used by resident birds, including small raptors").) But, according to Dr. Shawn Smallwood (pers.

7-32 cont'd

com., Dec. 2, 2020), the proposed Project would reduce this height above ground by 30%-50%, and the DSEIR does not evaluate that impact.

Similarly, the increased turbine pad size for the larger sized turbines, and increased amount of grading, benches and cut-and-fill slopes necessary for construction of these pads, also is not discussed, except to some extent in the micro-siting analyses in Appendices F and G. (DSEIR, pp. 2-19, 3.4-58.) The substantially larger turbine pads, and increased grading, large benches and cut-and-fill slopes necessary to install larger turbines both have significant potential to increase the degree of risk of a given turbine site to raptors due to changes in site topography.[13]

In addition, the fatality rates in the DSEIR are from repowered projects "associated with turbines that are considerably smaller than those that would be used for the proposed project." (DSEIR, p. 3.4-65.) The DSEIR acknowledges that these rate estimates are "uncertain predictors of rates that would occur at the Mulqueeney site" in part because the "five existing repowered project sites each have different turbine types." (*Id*., p. 3.4-61.) Further, the DSEIR acknowledges that the larger turbines likely have commensurately greater impacts on bats. (*Id*., pp. 3.4-56, 3.4-121 to 3.4-123 fn. 8.)

In sum, the DSEIR must make a better effort to disclose and analyze the environmental impacts of the larger overall Project size as compared to the former project operating on the site, as well as the larger turbine sizes. (Guidelines, § 15151 (EIR must be complete and make "a good faith effort at full disclosure"). The DSEIR's use of the RSA metric to evaluate these larger turbines, as discussed in Part III.C.3, *supra*, does not adequately address the impacts associated with larger wind turbines, such as decreased ground clearance, identified above.

7-33

3. The DSEIR does not adequately analyze the Project's effects on affected avian and bat species and their habitat

The DSEIR also does not adequately disclose the Project's impacts on critical biological resources and habitat on and adjacent to the Project site, in several important respects.

a. Impacts on conservation lands on and adjacent to the Project site

The DSEIR does not analyze the impacts of Project construction and operation on the conservation values of the conservation lands that are on and adjacent to the Project site. These areas were established "to provide compensatory mitigation credits for impacts to western burrowing owl" and several other listed and sensitive species. (CDFW NOP Comments, p. 3.)

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[13] *See id.*; K.S. Smallwood, L. Neher and D.A. Bell, *Mitigating Golden Eagle Impacts from Repowering Altamont Pass Wind Resource Area and Expanding Los Vaqueros Reservoir, Final Report to the East Contra Costa County Habitat Conservancy and Contra Costa Water District* (June 2017), p. 66; K.S. Smallwood, *Addendum to Comparison of Wind Turbine Collision Hazard Model Performance: One-Year Post-Construction Assessment of Golden Eagle Fatalities at Golden Hills* (Apr. 2018), pp. 3, 5.

7-33 cont'd

The DSEIR only generally identifies these conservation areas, and does not include an overlay map identifying the proposed locations of each turbine relative to these areas, either for the proposed Project or the Reduced Project Alternative. (*See* DSEIR, pp. 3.4-8, 3.4-13 to 3.4-14.) Nor does the DSEIR analyze the effects of constructing and operating turbines on the conservation values and species that these areas were established to protect. Notably, CDFW's NOP Comments recommend a 0.3-mile setback from these conservation lands. (CDFW NOP Comments, p. 7.)[14]

7-34

b. Issues concerning the impact analysis for golden eagles

The DSEIR contains a number of errors, inconsistencies and confusing analyses with regard to the Project's operational impacts on golden eagles. First, the DSEIR notes that USGS documented that the Project site is within two miles of six golden eagle territories (DSEIR, p. 3.4-25), whereas DSEIR Appendix D says that there are seven such areas (*id*., p. 3-12.) USGS discovered one active nest on site in 2020, but oddly ICF says it did not discover this nest in 2020. (*Id*., p. 3.4-25.) The DSEIR's overlay map showing proposed locations of turbines relative to golden eagle nests and activity centers are completely redacted. (*Id*., App. D, Fig. 9.) The DSEIR should correct these inconsistencies.

Second, the DSEIR's conclusion that the Project site is less frequently utilized by golden eagles than elsewhere in the Altamont Pass (DSEIR, pp. 3.4-50, 3.4-54, App. D, pp. 3-8 to 3-9) is belied by the fact that the site contains one active golden eagle nest, and lies within a two-mile radius of seven golden eagle territorial pairs and activity centers and four nests. (*Id*., pp. 3.4-25, 3.4-54; App. D, pp. 3-8 to 3-9.) Also, it is unclear whether the DSEIR preparers verified their personal observations regarding golden eagle use of the Project site by consulting the extensive golden eagle GPS tracking data for Altamont Pass, maintained by EBPRD. (*Id*., p. 3.4-54.) It also bears noting that golden eagle use surveys conducted during the non-breeding season or towards the end of the breeding season are far less likely to detect golden eagles. (*See* Wiens 2018, p. 118.) In order for the DSEIR's conclusion regarding golden eagle use of the site to be adequately supported, the DSEIR must conduct protocol-level surveys early in the breeding season, consistent with the wildlife agencies' recommendations and USGS' findings. (CDFW NOP Comments, p. 6; *see also* Wiens 2018, p. 118.)

Third, the DSEIR inappropriately attempts to dismiss the significance of new project fatality monitoring data, discounting the most recent data for the Golden Hills Project as atypical and attributing that project's higher fatality rates to the purportedly greater abundance of golden

[14] The DSEIR also does not discuss the implications of the Project's proximity to the Golden Hills Project to the west. As CDFW notes, this site "is known to provide habitat for western burrowing owl" and other listed and sensitive species, and "has documented mortality of significant numbers of birds and bats, including species such as, golden eagle, red-tailed hawks, burrowing owl, tricolored blackbird, and hoary bat." (CDFW NOP Comments, p. 4.)

eagles on that site.[15] (DSEIR, pp. 3.4-54 to 3.4-55; H.T. Harvey 2020a, p. v.) But the Golden Hills Project site is immediately adjacent to this Project site. The DSEIR also incorrectly states that the golden eagle fatality rates for Golden Hills "may be overstated as a consequence of bias attributable to the presence of old turbines near [this] site that provided perching and nesting opportunities for raptors, including golden eagles." (DSEIR, pp. 3.4-54 to 3.4-55, *citing* H.T Harvey 2018a, the first-year monitoring report for Golden Hills.) But the final three-year monitoring report, which summarizes the monitoring efforts' final conclusions regarding the causes of fatalities at the Golden Hills site, contains no such conclusion. 7-34 cont'd

Fourth, the DSEIR averages the fatality rates for golden eagles from all previously repowered projects at Altamont Pass, regardless of their comparability to the proposed Project, even those that were repowered prior to certification of the PEIR. (DSEIR, pp. 3.4-60 to 3.4-63.) For example, whereas the PEIR estimated a 32-83% *decrease* in average annual golden eagle fatalities relative to the old generation turbines, the five repowered projects indicate fatalities range from an 88% reduction to a 39% *increase* relative to the old turbines. (*Id*., p. 3.4-102.) However, the DSEIR correctly acknowledges that the monitoring reports from repowered projects that are more similar to the proposed Project, such as Vasco Winds, Golden Hills and Golden Hills North, have shown a "substantially higher" estimated fatality rate for golden eagles than was set forth in the PEIR. (*Ibid*.) Given the extremely wide range of fatality estimates for golden eagles, the DSEIR's golden eagle fatality estimate must focus on those post-PEIR repowering projects that are most similar to the proposed Project, in terms of golden eagle use of the site, topography, and turbine and project size, and compare these project-specific fatality rates to the PEIR's baseline fatality rate for golden eagles of .08 fatalities per MW per year. (PEIR, Table 3.2-10, p. 3.4-56.)

Fifth, the DSEIR does not clearly identify the average annual fatalities per MW for golden eagles (or any other focal species) for each repowered project, as compared with the PEIR's .08 average annual fatalities per MW baseline for golden eagles, and as compared with the projected estimates for the proposed Project. Rather, the DSEIR presents the figures in terms of the *total number* of fatalities per year for each repowered project (DSEIR, Table 3.4-8a, p. 3.4-98), which is very confusing and makes it difficult to understand how the DSEIR reached its estimate that the Project would result in 0.8 to 10.4 eagles taken per year. (DSEIR, p. 3.4-103.) Indeed, the DSEIR's estimated range of 0.8 to 10.4 eagles taken per year for this 80 MW Project seems particularly implausible given that the adjacent Golden Hills Project, at a comparable 86 MW, killed between six and fourteen eagles per year. (H.T. Harvey 2020a, p. vi.) The DSEIR accordingly should clearly identify and compare the average annual fatalities per MW for all focal species for each repowered project with both the PEIR's baseline and the projected estimates for the proposed Project.

[15] The DSEIR also incorrectly states that the three-year average of annual fatalities per MW for the Golden Hills Project is .11 fatalities/MW/year (DSEIR, pp. 3.4-54, 3.4-62), but in fact the three-year adjusted average is **.16 fatalities/MW/year, with an alternate estimate of .12 fatalities/MW/year**. (H.T. Harvey 2020a, pp. xi-xii.)

7-35

Finally, despite the Project's significant potential to exceed the PEIR's baseline average annual fatality rates for the golden eagles, as well as the PEIR's overall *Altamont-wide* estimate of five to eighteen eagles taken per year for the entire 450 MW program (PEIR, p. 3.4-120), the DSEIR inexplicably concludes that no additional mitigation is needed for this Project. (DSEIR, p. 3.4-103.)[16] The DSEIR bases this conclusion on the PEIR's conclusion that repowering would result in significant and unavoidable impacts on golden eagles, but fewer impacts than the old generation turbines, similar to the PEIR's predictions for American kestrels. (*Ibid*.)

However, in contrast to the post-PEIR repowering monitoring results for golden eagles, the post-PEIR monitoring results for the American kestrel *were* in line with the PEIR's estimates, "show[ing] nearly the same estimated mortality rate for American kestrel [] compared to the mortality rate reported in the PEIR." (DSEIR, p. 3.4-97.) But because the PEIR's baseline of .08 golden eagle fatalities per MW per year is being met or exceeded by the currently operating Alameda County projects, and the PEIR's maximum estimated *program-wide* levels of take for repowering will soon be exceeded for golden eagles, the DSEIR cannot rely on a conclusion that take is being reduced relative to the old generation turbines to avoid analyzing and requiring additional mitigation measures for this Project (*see* Part III.E.2 *infra*).

7-36

c. Issues concerning the impact analysis for Swainson's hawks

The DSEIR inappropriately minimizes the presence of CESA-threatened Swainson's hawks, including an active hawk nest and territory on site. (DSEIR, pp. 3.4-24 to 3.4-25.) Although it is not clear whether protocol-level surveys were done for Swainson's hawks (*see id.*, App. D, p. 2-3),[17] the DSEIR documents significant Swainson's hawk observations, including an active nest and territory on site. (DSEIR., pp. 3.4-24, 3.4-42, Table 3.4-2, (Swainson's hawk "species observed frequently during project field surveys"); *id*., App. D., p. 3-9, Fig. 8 (documenting onsite nest and territory); *id*., pp. 3.4-25, 3.4-42 (six California Natural Diversity Database (CNDDB) records of Swainson's hawks within 4–5 miles of the Project site).) ICF biologists identified a Swainson's hawk nest on the Project site in May 2020 and determined that it was

[16] The PEIR estimated that the entire 450 MW repowering program would result in take of five to eighteen golden eagles per year, which is well below the PEIR's baseline for golden eagle take of .08 fatalities per MW per year. (PEIR, pp. 3.4-56, 3.4-120, Table 3.4-10.) This level of take is close to being exceeded by the 132 MW of currently operating post-PEIR repowering projects alone (approximately 17.44 eagles, H.T Harvey 2020b, p. 53), and will certainly be exceeded once the 152.3 MW of additional approved operating capacity comes on line (Summit Winds, Sand Hill Wind, Rooney Ranch and possibly Patterson Pass). (*See* EBPRD NOP Comments, pp. 2, 5 (the Altamont Pass "is exceeding the level of mortality set for golden eagles in the PEIR," and fatality rates are "at, or close to, exceeding those set forth in the PEIR or will affect population sustainability" for other focal raptor species as well).)

[17] *See Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California*, California Energy Commission and CDFW (June 2010), pp. 3-4 <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83991&inline> (as of January 6, 2020).

7-36 cont'd

"potentially active," given the Swainson's hawks' territorial behavior. (*Id.*, pp. 3.4-24, 3.4-88; App. D, p. 3-9, Fig. 8.) Oddly, and without basis, the ICF biologists then dismiss this nest site as failed and "inactive," despite the fact that Swainson's hawk nest sites are considered active if they are used once during the past five years. (*See* DSEIR, pp. 3.4-24 to 25; App. D, p. 3-10; CDFW comment letter on Sand Hill Wind Project, Feb. 13, 2020, p. 3.)

Based on the erroneous conclusion that the onsite Swainson's hawk nest is "inactive," the DSEIR does not analyze the potential impacts to this active nest from the Project proponent's plans to place a temporary construction staging area in the precise location of this nest. (*Compare* DSEIR, p. 3.4-10, Fig. 3.4-2a with habitat map in App. D, Fig. 10.) In fact, the DSEIR's impact analysis inexplicably does not even *mention* the presence of the onsite nest. Further, in light of the significant information regarding Swainson's hawk presence on site, the DSEIR inappropriately concludes that the impacts of Project construction on Swainson's hawks are "less than significant," and also does not adequately justify its conclusion that Project operations are unlikely to "take" Swainson's hawks. (*Id.*, pp. 3.4-88, 3.4-105 to 3.4-106; *see* CDFW NOP Comments, p. 5 (the DSEIR "must include detailed habitat assessments" for CESA-listed Swainson's hawk (and tricolored blackbird) "and a thorough analysis of potential impacts of the Project on nesting, foraging and roosting habitats on the Project site during construction, as well impacts to the species from ongoing turbine operations").)

7-37

d. Issues concerning the impact analysis for tricolored blackbirds

The DSEIR contains similarly incomplete and inconsistent analyses with respect to CESA-threatened tricolored blackbirds. As with Swainson's hawks, it is not clear whether any protocol-level surveys were conducted for tricolored blackbirds (DSEIR, App. D, pp. 1-2, 2-4),[18] but the DSEIR nevertheless documents significant presence of this species on site. There is at least one onsite colony, and two offsite colonies within 0.25 and 0.6 miles of the Project site, and there also is significant tricolored blackbird nesting, roosting and foraging habitat onsite. (*Id.*, pp. 3.4-27, 3.4-43, 3.4-91; App. C, p. 4-7; App. D, pp. 3-12 to 3-13, Fig. 10.)[19] Each of these three colonies contained at least *fifty* birds during the nesting season. (*Id.*, p. 3.4-27; App. D, pp. 3-12 to 3-13.) Similar to the Swainson's hawk analysis, the DSEIR's impact analysis contains inconsistent and inaccurate information concerning the presence of tricolored blackbirds onsite, stating that "[a]vian use surveys … recorded one tricolored blackbird observation on the project site" and "[n]o confirmed nest colonies have been previously found on the project site." (DSEIR, pp. 3.4-86, 3.4-106.)

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[18] *See Western Riverside County MSHCP Biological Monitoring Program 2018 Tricolored Blackbird Survey Protocol*, Regional Conservation Authority Western Riverside County <https://www.wrc-rca.org/species/survey_protocols/2018_Tricolored_Blackbird_Survey_Protocol.pdf> (as of January 7, 2020).

[19] CDFW's NOP Comments indicate that the adjacent tricolored blackbird nesting colonies are actually 0.15 and 0.5 miles from the Project boundary, respectively. (CDFW NOP Comments, p. 5.)

7-37 cont'd

The DSEIR acknowledges that both construction and operation of the Project could cause take of tricolored blackbirds, and indeed, the three-year monitoring report for the adjacent Golden Hills Project documents take of four tricolored blackbirds during the past three years of project operations. (DSEIR, pp. 3.4-86, 3.4-106; App. C, p. 4-7; H.T. Harvey 2020a, pp. v, 37.) "Three of the four fatalities occurred at turbines less than one mile from the northwestern Project boundary which could indicate an undocumented nest site in or near the north end of the Project area." (CDFW NOP Comments, p. 5.) CDFW recommends a half-mile setback or curtailment of all turbines from any identified tricolored nesting and roosting habitat. (*Id*., p. 6; pers. comm, Brenda Blinn and Marcia Gresfund, Jan. 5, 2020.)

The DSEIR accordingly should describe in more detail the location of each turbine in relation to the on- and off- site tricolored blackbird nesting, roosting and foraging habitat, and to what extent Project construction and operation will affect these birds and their habitat, besides just the general discussion of habitat types and disturbances that is currently provided. (*See* DSEIR, pp. 3.4-86 to 3.4-87, 3.4-106; CFDW NOP Comments, p. 5 (requesting that DSEIR include a detailed habitat assessment and complete impact analysis of Project construction and operation on tricolored blackbirds).) As it stands, the DSEIR does not provide an adequate basis for its conclusions that the impacts of Project construction and operation on tricolored blackbirds and their habitat will be mitigated to insignificance by the updated PEIR mitigation measures. (*Ibid*.; *see* CDFW NOP Comments, p. 5 ("Tricolored blackbirds typically forage from 3 to 8 miles from nesting colonies (CDFW 2018) and would therefore be at great risk of collision with turbines within the Project area").)

7-38

e. Issues concerning the impact analysis for burrowing owls

The DSEIR's evaluation of impacts to burrowing owl is particularly deficient. First of all, despite the "substantial likelihood that burrowing owls occur with project site", the DSEIR conducted "no focused burrowing owl surveys…on the project site." (DSEIR, pp. 3.4-26, 3.4-42, 3.4-102; App. D, pp. 2-4, 3-8.) Consistent with best available science, a qualified biologist must conduct protocol surveys during the breeding season to assess how many burrowing owls are on the Project site and where they are located.[20]

Regardless, however, ample evidence indicates that a high concentration of burrowing owls exists on this Project site. Suitable burrowing owl nesting, wintering and foraging habitat exists throughout the Project site. (DSEIR, pp. 3.4-26, 3.4-42.) Three separate conservation areas that are protected and managed specifically for burrowing owl are within or adjacent to the Project site. (*Id.*, pp. 3.4-13, 3.4-26, 3.4-88, Fig. 3.4-1.) The DSEIR also acknowledges that the burrowing owls are highly likely to be present and nesting onsite, based on numerous "incidental" observations and six to seven CNDDB records for owls on the Project site. (*Id.*, p. 3.4-26 (burrowing owls "were also observed on numerous occasions throughout the project site

[20] *Staff Report on Burrowing Owl Mitigation*, CDFW (Mar. 7, 2012), pp. 5-6 <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline> (as of Jan. 7, 2020).

7-38 cont'd

during 2020 field surveys" and "ICF biologists observed burrowing owls in six locations in avian use surveys conducted between June 2019 and June 2020"); p. 3.4-42 (species was "observed at several locations throughout the project site"); p. 3.4-88 ("[s]everal burrowing owl sightings were made throughout the project site" in 2019 and 2020 and [b]urrowing owl[s] are expected to be nesting on the project site and are known to also occupy adjacent preserve lands"); *see also id.*, p. 3.4-90; App. C, pp. 3-28, 4-7; App. D, pp. 3-13 to 3-14, Fig. 10.)

With regard to the impacts of Project construction on burrowing owls, the DSEIR makes the unsupported assumption, without evidence of how many burrowing owls actually exist onsite, that burrowing owls will suffer no significant impacts from the approximately 264 acres of allegedly "temporary" disturbances of grassland habitat. (DSEIR, pp. 3.4-69, 3.4-86, 3.4-88, 3.4-90; App. C, pp. 4-2, 4-7.) Each turbine site would require approximately 2.0 acres of graded area to support the turbine foundations, and any temporary areas are "typically compacted and graveled." (*Id.*, pp. 2-14, 2-18, 2-19.) Additionally, on site roads will have to be substantially expanded to accommodate the heavy equipment necessary to install large turbines and blades. (*Id.*, p. 2-12.) The DSEIR acknowledges that compacted areas "do not provide burrowing habitat." (*Id.*, p. 3.4-60.)

Despite the foreseeable impacts to burrowing owl habitat of extensive grading and soil compaction from installation of the larger-sized turbines and construction of turbine pads and roads, the DSEIR does not analyze these effects, or how this might affect habitat suitability and the ability for the area to be revegetated and recolonized by burrowing owls. (*See, e.g.*, DSEIR, pp. 3.4-86, 3.4-88, 3.4-90.) According to CDFW, these types of compacted areas should be considered *permanently* (not temporarily) disturbed and sufficient compensatory mitigation provided. (*See* CDFW, *California Endangered Species Act Incidental Take Permit No. 2081-2014-034-03, Golden Hills Energy Facility Repowering Project* (Apr. 2015), pp. 6-7.)[21]

Regarding the impacts of Project operations on burrowing owls, the DSEIR reasonably assumes that higher fatality rates at certain repowering projects operating at Altamont Pass, exceeding the PEIR baseline fatality rate for burrowing owls, are a result of higher concentrations of owl populations on those project sites. (*See, e.g.*, DSEIR, p. 3.4-96.) Thus, given that there is every indication of a high concentration of burrowing owls on this Project site, it is reasonable to assume that burrowing owl fatalities for this Project may be on the upper end of the wide range of fatality rates identified in monitoring reports for other repowering projects at Altamont Pass. (*Id.*, pp. 3.4-101 to 3.4-102.) This is significant given that the most recent survey data shows a substantially declining burrowing owl population at Altamont Pass, as well as statewide. (*Id.*, pp. 3.4-102, 5-10, 5-16; K.S. Smallwood, *Long Term Population Trend of Burrowing Owls in*

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[21] Currently, there is a "high concentration" of ground squirrels on site, and ground squirrels are an important indicator of suitable burrowing owl as well as golden eagle habitat. (*See* DSEIR App. D, p. 3-14; Smallwood 2020, pp. 19, 27.) Site compaction due to Project construction is likely to reduce recolonization by ground squirrels, which in turn would reduce the availability of burrows for burrowing owls and reduce availability of squirrel prey for golden eagles and other raptors.

the Altamont, Nov. 2020, Presentation to EBPRD (Smallwood 2020).)[22] But instead, the DSEIR includes an overly broad and unexplained range of potential annual burrowing owl fatalities, from zero to 130 fatalities per year, and an unexplained estimated average of seventeen owls per year. (DSEIR, p. 3.4-102.) 7-38 cont'd

f. Issues concerning potential impacts on bat roosts 7-39

The DSEIR states that several species of bats (including pallid bat, little brown bat, Western red bat and hoary bat) "could roost" in rock outcroppings or in riparian habitat onsite and that the likelihood of their presence on site is "high." (DSEIR, pp. 3.4-27 to 3.4-29, 3.4-45 to 3.4-46, 3.4-117 to 3.4-118; App. C, pp. 3-29, 4-8.) But the DSEIR provides virtually no site-specific analysis regarding the location of these areas in relation to Project turbines, or the impacts of Project construction and operation on these areas. CDFW recommends surveys for bat maternity and roosting colonies, and nightly curtailment of turbines within a half mile of such colonies during the breeding and roosting season. (CDFW NOP Comments, p. 6.)

g. Impacts of turbine and road construction on site topography and pond, wetland and riparian habitat 7-40

Finally, and similarly, the DSEIR does not adequately analyze the impacts of Project construction on the numerous onsite water features and hydrology that provide important habitat for threatened tricolored blackbirds and other species. As mentioned, installation of larger turbines will necessitate construction of substantial turbine foundations and significant grading, widening and resurfacing of onsite ranch roads, construction of some entirely new roads, and installation of new and larger culverts. (*See* DSEIR, pp. 2-11 to 12.) Turbine and road construction and the installation of culverts could adversely affect watershed drainage patterns, increasing sheet flow and sedimentation, affecting the quality and quantity of water supplies for onsite drainages, ponds, wetlands, and streams, which constitute occupied and suitable habitat for tricolored blackbirds and other ESA- and CESA- listed species such as California tiger salamander and California red-legged frog. (*Id*., pp. 3.4-21 to 3.4-22, 3.4-128 to 3.4-130, 3.10-9 to 3.10-11.)

The Project proponent, in its presentation of the Project at the public hearing on the DSEIR on December 8, 2020, identified the Project site as some of the most rugged topography in the Altamont Pass. (*See also* DSEIR, pp. 2-4, 3.7-9 ("[e]levations on the project site range from less than 500 to more than 1,900 feet above sea level").) In addition, **despite site surveys only being conducted during the dry season,** the Project site has numerous significant water features, including about 7.3 acres of riparian areas, 15.5 acres of alkali wetland, 3.7 acres of ponds, and

[22] The PEIR notes that "it is believed that the [Altamont Pass] may support the largest number of breeding [burrowing owl] pairs in the Bay Area," but that these populations may not currently be sustainable due to ongoing impacts from wind turbine operations. (PEIR, p. 3.4-105; *see also id*., p. E-37 (FWS PEIR comments to similar effect regarding burrowing owl population status).)

9.2 acres of other types of wetlands and streams. (*Id*., p. 3.4-9; *see also id*., App. C, pp. 3-2 to 3-3, 3-25 to 3-26, Att. A; ICF, *Site Assessment for California Tiger Salamander and California Red-Legged Frog*, Dec. 2019 and attached datasheets and photographs).) 7-40 cont'd

Despite this, the DSEIR does not discuss the site-specific impacts of construction of turbine pads, roads and culverts on this rugged site topography and onsite water features. Instead, the DSEIR provides only a vague, general discussion of the potential impacts of Project construction on site hydrology. (DSEIR, pp. 3.4-128 to 3.4-130, 3.10-9 to 3.10-10; App. C, pp. 4-4 to 4-6.)[23] The DSEIR should provide an overlay map of the proposed turbine locations in relation to site topography and water features, and provide an analysis of how Project construction will affect site topography, drainage, sedimentation and the hydrology of onsite water features. (*See* CDFW NOP Comments, p. 4.) Additionally, the DSEIR should account for the fact that steep and rugged terrain is "strongly" correlated with a higher likelihood of golden eagle occupancy and use and hence greater risks of turbine strikes. (*See* Wiens 2018, pp. 115-116.) And, as previously mentioned in Part III.D.2 *supra*, the substantial grading necessary to install larger turbines can affect the risk analysis for turbine micro-siting by significantly altering site topography. (CDFW NOP Comments, p. 4.) 7-41

In sum, the DSEIR must be revised to address the foregoing errors, omissions and inconsistencies in the impact analyses for birds and bats. 7-42

E. <u>The DSEIR Does Not Include a Sufficient Suite of Mitigation Measures to Avoid or Reduce the Project's Significant Impacts on Avian and Bat Resources</u>

1. Standards for adequacy of mitigation measures in an EIR 7-43

"CEQA contains a 'substantive mandate' requiring public agencies to refrain from approving projects with significant environmental effects if 'there are feasible alternatives or mitigation measures' that can substantially lessen or avoid those effects." (*County of San Diego v. Grossmont–Cuyamaca Community College Dist*. (2006) 141 Cal.App.4th 86, 98 (*quoting Mountain Lion Found. v. Fish and Game Comn.* (1997) 16 Cal.4th 105, 134 and Pub. Resources Code, § 21002).) "Under CEQA, the public agency bears the burden of affirmatively demonstrating that, notwithstanding a project's impact on the environment, the agency's approval of the proposed project followed meaningful consideration of alternatives and mitigation measures." (*Mountain Lion Foundation, supra*, 16 Cal.4th at p. 134.)

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[23] While the DSEIR does state that the Project will comply with best management practices (BMPs) set forth in the State Water Resources Control Board's NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (DSEIR, pp. 3.4-130, 3.10-9; App. C. p. 4-6), there is no analysis of whether and how these BMPs will prevent adverse impacts on the habitat suitability of the ponds and other water features for tricolored blackbirds, California tiger salamanders, and other listed and sensitive species.

7-43 cont'd

The EIR is the key document for carrying out these requirements, and as discussed, "[t]he 'core' of an EIR is the mitigation and alternatives sections." (*Citizens of Goleta, supra,* 52 Cal.3d at p. 564.) CEQA Guidelines section 15126.4, subdivision (a)(1) sets forth the basic CEQA requirements for mitigation measures in an EIR. An EIR must "describe feasible measures which could minimize significant adverse impacts," distinguishing between measures proposed by the project proponent versus other measures proposed by the lead agency and responsible or trustee agencies or other persons. (Guidelines, § 15126.4, subds. (a)(1) & (a)(1)(A).) "Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments." (*Id.*, § 15126.4, subd. (a)(2).) "For each significant effect, the EIR must identify specific mitigation measures; where several potential mitigation measures are available, each should be discussed separately, and the reasons for choosing one over the others should be stated." (*Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1027.)

Mitigation measures must be designed to: (1) avoid "the impact altogether by not taking a certain action or parts of an action;" (2) minimize "impacts by limiting the degree or magnitude of the action and its implementation;" (3) rectify "the impact by repairing, rehabilitating, or restoring the impacted environment;" (4) reduce or eliminate "the impact over time by preservation and maintenance operations during the life of the action;" or (5) compensate "for the impact by replacing or providing substitute resources or environments." (Guidelines, § 15370.) An EIR must include facts and analysis "to support the inference that the mitigation measures will have a quantifiable 'substantial' impact on reducing [a project's] adverse effects," although the measures need not necessarily reduce an impact to below the threshold of significance. (*Sierra Club*, *supra*, 6 Cal.5th at p. 522.)

An EIR's finding that a mitigation measure is economically or otherwise infeasible must be supported by substantial evidence in the record. (*See County of San Diego v. Grossmont-Cuyamaca Commun. College Dist*. (2006) 141 Cal.App.4th 86, 108 ("[w]ithout evidence of the amount of any such cost, we must conclude there is no substantial evidence to support the District's claim that mitigation of the adverse project-related off-campus traffic impacts is economically infeasible").) The conclusion that a project's adverse environmental effects have been adequately mitigated also must be based on substantial evidence. (*Laurel Heights*, *supra,* 47 Cal.3d at pp. 407–408.)

7-44

2. Overall cumulative impact context for Project mitigation measures

The Attorney General's Office recognizes and appreciates the DSEIR's inclusion of certain additional and improved mitigation measures that were included in the final SEIR for the Sand Hill Wind Project. These include: (1) the 1,300-foot construction setback for tricolored blackbird habitat in updated PEIR mitigation measure BIO-8a; (2) requiring the avian compensatory mitigation payments to be periodically adjusted for inflation and to compensate for non-raptor species in updated BIO-11h; (3) the requirement to use scent dog detection teams and seven-day search intervals in the avian and bat fatality monitoring programs in BIO-11g and updated BIO-14b; and (4) allowing increased cut-in speeds, starting at five meters per second, to be implemented immediately, rather than following implementation of other less effective adaptive measures, in the bat adaptive management program in updated BIO-14d.[24] 7-44 cont'd

We also appreciate the inclusion of certain additional mitigation measures in the Reduced Project Alternative, such as an increased cut-in speed of five meters per second of certain turbine sites operating during daylight hours, to reduce impacts on golden eagles, and (presumably) a similar increased nighttime cut-in speed, to reduce impacts on bats during the fall migration period. (DSEIR, pp. ES-4, 4-6, 4-20.) Note, however, that it is unclear whether the Project proponent has actually committed to implement either of these two measures, or whether they are in fact adequate to mitigate the Reduced Project Alternative's significant effects.

The FWS and CDFW, for example, have recommended complete daylight curtailment (and not just an increased daylight cut-in speed) of all moderately-high risk turbines, and all turbines within a half to one mile of a golden eagle or Swainson's hawk nesting or roosting site. (CFDW NOP Comments, p. 6; FWS Feb. 2020 Letter, pp. 4-5.) In addition, recent studies show that increasing nighttime cut in speeds to five meters per second only reduces bat fatalities by approximately 50%, whereas increasing cut-in speeds to 6.5 meters per second or higher can result in nearly complete avoidance of take. (*See, e.g.*, T.D. Allison, *Bats and Wind Energy: Impacts, Mitigation and Tradeoffs*, American Wind Wildlife Inst., 2018 (Allison 2018), p. 15.) 7-45

With the above exceptions, the DSEIR includes very few meaningful changes to the PEIR's mitigation program for the impacts of Project construction and operation on birds and bats. Once again, as with the PEIR and Sand Hill SEIR, the DSEIR repeatedly cites continuing uncertainty in the repowering fatality data and the need for further study as justifications for making few substantive changes in the mitigation program for turbine operations.

But the fatality data at Altamont Pass has *always* been uncertain and will likely continue to be for some time to come. Such uncertainty does not obviate the County's responsibility to consider and adopt all feasible mitigation measures under CEQA, particularly in the face of growing evidence of the major cumulative effects of wind turbine operations in Altamont Pass—in some cases reaching population-level effects on key indicator species—as discussed in Part II, *supra*. (*See Sierra Club, supra*, 6 Cal.5th at p. 520 ("in reviewing an EIR's discussion, we do not require … scientific certainty"); Guidelines, § 15130, subd. (b)(5) (requiring mitigation measures for a projects' significant cumulative effects); *see* Arnett 2017, p. 167 ("[e]ven in the absence of population data, broad implementation of operational mitigation at wind farms globally is recommended as this offers an ecologically sound strategy for reducing bat fatalities with modest economic losses in most locations").)

[24] The DSEIR indicates that certain other mitigation measures also are "updated" from the PEIR, such as the avian fatality monitoring program in BIO-11g and the bat micro-siting requirement in BIO-14a, but it is unclear whether and how these mitigation measures were updated.

7-45 cont'd

Indeed, the trend over time has been that, as monitoring methods become more accurate, the actual (documented) and adjusted (estimated) bird and bat fatalities have only increased beyond previous projections.[25] Furthermore, the DSEIR admits that even these increased estimates still are likely to be substantial underestimates with regard to bats, and probably also with regard to small birds. (DSEIR, pp. 1-4, 3.4-12, 3.4-51, 3.4-121, 5-13 to 5-14.) For example, the DSEIR states that:

> Smallwood and Bell (2019) note that even estimates derived using dogs and short survey intervals may substantially underestimate bat fatalities, since their observations indicate that direct observations of bat/turbine collisions would predict approximately four times the fatality rates detected using dogs, and they speculate that this could in part be due to crippling bias … or search radius … Thus, there are reasons to suspect that all of the bat fatality rate estimates shown in [the DSEIR] are underestimates, while there is no reason to suspect that they are overestimates.

(*Id.*, p. 3.4-121; *see also* Smallwood and Bell 2020b.) The bat fatality rates for other comparable repowering projects (the Vasco Winds three-year average, Golden Hills three-year average, and Golden Hills North Year 1 results) range from 6.2 to 14.6 bat fatalities per MW per year, as compared to the PEIR's baseline rate of 1.679 fatalities per MW per year. (DSEIR, p. 3.4-121, H.T. Harvey 2020b, Table 12, p. 53; PEIR, Table 3.4-15, p. 3.4-133.)

Based on these estimates from prior projects, the DSEIR concludes that this Project alone will kill 648 to 765 bats per year, "but potentially several times higher" than that. (DSEIR, p. 3.4-121.)[26] These estimates also are likely to increase even further with the larger turbines proposed in this Project. (*Ibid.*; *see also id.*, fn. 8.) Even the DSEIR's lower-end of the estimated impacts raise the possibility "that the proposed project could cause or contribute to declines in regional hoary bat populations." (*Id.*, p. 3.4-122.)

In addition to the indisputably significant Project impacts on bats, as discussed in Part III.D.3 *supra*, there are numerous important avian use areas within or immediately adjacent to the proposed Project site, including but not limited to: several active golden eagle nests and territories, an active Swainson's hawk nest and territory, two red-tailed hawk nests, several tricolored blackbird colonies and foraging habitat, and numerous burrowing owl nests and foraging habitat. Yet, as mentioned, the DSEIR makes no substantive changes to the PEIR's

[25] *See* DSEIR, p. 3.4-121 (recent monitoring "results clearly indicate a pattern of improved fatality detection in bats"); *see also* H.T. Harvey 2020a and 2020b; K.S. Smallwood, *USA Wind Energy-Caused Bat Fatalities Increase with Shorter Fatality Search Intervals*, Diversity 2020; K.S. Smallwood, D.A. Bell & S. Standish, *Dogs Detect Larger Wind Energy Effects on Bats and Birds*, J. of Wildlife Mgmt., 2020.

[26] In fact, multiplying the Golden Hills North bat fatality rate of 14.59 fatalities per MW per year by the 80 MW proposed for this Project actually results in an upper end of **1167.2 bat fatalities per MW per year**.

mitigation measures for wind turbine construction and operation beyond the changes identified above that the County already proposed and adopted in the final SEIR for the Sand Hill Project 7-45 cont'd

As with prior wind energy projects in the Altamont Pass, this DSEIR relies mostly upon the PEIR's avian and bat adaptive management programs, which defer implementation of additional mitigation until project fatality monitoring data shows an increase in fatalities above the PEIR baseline. But in light of the clear information that this Project, like the Sand Hill Project, is nearly certain to have significantly greater direct, and indirect and cumulative impacts on birds and bats than was projected in the PEIR, the DSEIR must significantly strengthen the PEIR's mitigation program to require the Project to immediately implement more stringent mitigation measures, and not continue to wait until fatality monitoring results confirm these increased impacts, and then experience further significant delays in developing, reviewing, approving and implementing the adaptive management program.

Further, several mitigation measures have been further studied since certification of the PEIR, and have proven to be both feasible and effective in substantially reducing fatalities to birds and bats caused by wind repowering projects. (*See, e.g.*, Allison 2018, pp. 14–16; Smallwood and Bell 2020a; FWS Feb. 2020 Letter, pp. 4–5; CDFW NOP Comments, pp. 6–7.) This "new information" must be considered in the DSEIR and the mitigation measures rejected only if the County makes a finding that they are infeasible based on substantial evidence. (Pub. Resources Code., § 21166, *see* Guidelines, § 15162, subds. (a)(3)(C) & (D) ("new information" triggering additional environmental review includes "[m]itigation measures or alternatives previously found not to be feasible" that "would in fact be feasible and would substantially reduce one or more significant effects of the project," and new or different "[m]itigation measures or alternatives which are considerably different from those analyzed in the previous EIR [that] would substantially reduce one or more significant effects on the environment").) 7-46

3. Recommended additional Project mitigation measures 7-47

In light of the significant new information that modern wind turbines are having more significant direct, and indirect and cumulative impacts on birds and bats than previously analyzed and mitigated in the PEIR, as we did for the Sand Hill Wind Project, and consistent with the recommendations of FWS, CDFW and the EBPRD, we again recommend that the County include the following significantly strengthened and improved suite of mitigation measures in the final SEIR for this Project, and all other wind projects going forward. These recommendations include the following:

(1) As per the recommendations of FWS, CDFW and EBPRD, avoid construction of any turbine sites designated as "high-risk" in the Project micro-siting analysis, and avoid construction, or curtail operations during daylight and crepuscular hours, of all turbines designated as "moderate-high" risk in the Project micro-siting analysis. (FWS Feb. 2020 Letter, pp. 4-5; CDFW NOP Comments, p. 6; EBPRD NOP Comments, p. 4.)

7-48

(2) As per the recommendations of FWS and CDFW, avoid construction of any turbine sites within a half mile of an active golden eagle or Swainson's hawk nesting or roosting area. (FWS Feb. 2020 Letter, pp. 4-5; CDFW NOP Comments, p. 6) Avoid construction or curtail operations during daylight and crepuscular hours of all turbines within a half mile to a mile of such area during the breeding season, until surveys show that the chicks have fledged more than one month prior, or the nest has failed due to natural causes. (*Ibid*.) Turbines must be surveyed on an annual basis, using protocol-level surveys, *early* in each breeding season to identify new nests, and curtailment implemented immediately upon discovery. (*Ibid*.; *see also* Wiens 2018, p. 118.)

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(3) Verify the Jim Estep qualitative micro-siting analysis using the Dr. Shawn Smallwood quantitative risk modeling approach, and using former Alameda County Scientific Review Committee-style hazard rankings, for all proposed turbine sites and all four focal raptor species, and also considering golden eagle GPS tracking data available from EBPRD. (CDFW NOP Comments, p. 6; FWS Feb. 2020 Letter, p. 5; EBRPD NOP Comments, p. 4.) In addition, while we appreciate that the micro-siting analysis for this Project, unlike micro-siting analyses for prior projects, apparently considered proximity to golden eagle nests and the effect of site grading, the micro-siting analysis also must consider the average blade height above ground and RSA for individual turbines.

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(4) As per CDFW recommendations, no turbines should be constructed within 0.3 mile of any designated conservation lands or burrowing owl colony, or within 0.25 miles of any tricolored blackbird colony. (CDFW NOP Comments, pp. 6–7.) In addition, turbine operations should be curtailed during the breeding season within a half mile of any tricolored blackbird colony (daylight and crepuscular hours) and within a half mile of any bat roosts (nighttime hours). (*Ibid*.; Allison 2018, p. 15.) Annual surveys must be conducted to identify any new tricolored blackbird colonies and bat roosts. (CDFW NOP Comments, p. 6.)

7-51

(5) Curtail all turbine operations at night during the spring and fall bat migration seasons, during which periods the vast majority of the annual bat fatalities occur at Altamont Pass. (CDFW NOP Comments, pp. 6-7; DSEIR, pp. 3.4-28, 3.4-55, 3.4-120, 3.4-122.) The optimal curtailment period for both the spring and fall migration should be determined by the Alameda County Technical Advisory Committee (TAC) based on the best available science. The best available science currently indicates that nighttime seasonal shutdown is by far the most effective mitigation strategy for avoiding or significantly reducing wind projects' substantial bat fatalities, with

7-51 cont'd

minimal economic cost to the project. (*See* DSEIR, pp. 3.4-56, 3.4-120, 3.4-127; Allison 2018, p. 16; Smallwood 2020b.)

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(6) Implement a more robust compensatory mitigation program, including a substantial increase in compensatory mitigation fees, similar to that set forth in the 2010 Attorney General Agreement, but as adjusted for inflation and/or based on a quantified resource equivalency analysis using the projected number of unavoidable, ongoing avian and bat fatalities from the Project. (CDFW NOP Comments, p. 7.) The Project conditions of approval must include specific and enforceable deadlines for preparation, TAC review, County approval, and implementation of the Project compensatory mitigation plan. The adequacy of the compensatory mitigation funds must be reassessed every five years instead of every ten years as currently provided under PEIR mitigation measure BIO-11h.

As under the 2010 Attorney General Agreement, the Project compensatory mitigation plan should include funding for acquisition of conservation lands in fee or through conservation easements, sufficient to compensate for ongoing unavoidable bird and bat fatalities from Project operation, as well as any temporary and permanent habitat loss due to Project construction, as determined by FWS and CDFW. Appropriate compensatory mitigation also may include habitat restoration and management efforts, purchase of wind rights for retirement of existing wind farms, and funding for efforts to eliminate or control use of rodenticides and restore and maintain ground squirrel populations on regional rangelands.

Further, as also required under the 2010 Attorney General Agreement, the Project compensatory mitigation plan should include funding for ongoing scientific research on the effects of wind turbines on birds and bats in the Altamont Pass. This should include contribution of an appropriate pro-rata share of annual funding for ongoing, multi-year third-party monitoring of golden eagle nesting and territorial pairs in the Altamont Pass and surrounding Diablo Range.

Finally, the PEIR's compensatory mitigation program also must include more robust requirements for bats, such as contribution of an annual dollar amount for rehabilitation of bats injured by wind turbines, and funding for any third-party monitoring of bat fatalities and bat roosting locations in the Altamont Pass and surrounding Diablo Range.

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(7) Implementation of a strengthened, improved, and enforceable adaptive management program that requires significant reductions in bird and bat fatalities, to be implemented after one year of monitoring indicating: (a) exceedance of PEIR

baseline(s) for one or more focal raptor species or bats; (b) take of any listed bird species (Swainson's hawk, tricolored blackbird, California condor); or (c) identification of any new raptor nesting or roosting site, tricolored blackbird colony, burrowing owl colony, or bat roost. (CDFW NOP Comments, p. 7.) The conditions for the Project must include specific and enforceable deadlines for preparation, TAC review, County approval, and implementation of the Project adaptive management plan. 7-53 cont'd

The Project adaptive management plan must be based on the best available science concerning the effectiveness of available measures, and must consider emerging technologies and methods to assess, avoid and minimize the impacts of ongoing Project operations on the affected avian species and bats. The adaptive management plan must be designed to reduce post-construction bird and bat fatalities of the affected species or species group to below the PEIR baseline as rapidly as feasibly possible.

Adaptive management measures can include, but are not limited to: (a) use of experimental technologies such as Identiflight; (b) seasonal, temporal and real-time turbine curtailment measures; (c) cut-in speed adjustments beyond five meters per second; and (d) other scientifically-defensible measures as determined by the TAC. The adaptive management plan must establish biologically-appropriate thresholds, triggers and goals, as relevant to the affected avian species or species group, based on the species' biology, population status, use and behavior, as well as the Project's direct, indirect and cumulative effects on those species, as determined by the TAC.

(8) Hold a mandatory TAC meeting if the Project's fatality and nest site monitoring or any third-party monitoring identifies a previously unidentified golden eagle, Swainson's hawk, tricolored blackbird, burrowing owl or bat nesting or roosting site or colony on or adjacent to the Project site, including new nest sites that may appear post-Project construction, or if any Project fatality monitoring results indicate fatalities above the PEIR baseline for any focal raptor species or bats. The purpose of the TAC meeting shall be to discuss immediate implementation of scientifically appropriate adaptive management measures. 7-54

(9) The Project proponent should be required to obtain an incidental take permit under CESA, which includes Swainson's hawks and tricolored blackbirds as covered species for both Project construction and operations, if CDFW determines that take of these species cannot be completely avoided. Lastly, the Project proponent should be required to obtain a take permit under the federal Bald and Golden Eagle Protection Act. 7-55

7-56

IV. CONCLUSION

We appreciate the County's consideration of this comment letter. Should you have any questions concerning this letter, please do not hesitate to contact us.

Sincerely,

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