

SRC Comments on Draft Repowering Program Environmental Impact Report

Alameda County APWRA Scientific Review Committee

I. SRC Consensus Input

The Alameda County Scientific Review Committee (SRC) developed its consensus input on the Draft Repowering Program Environmental Impact Report (DPEIR) at a July 9, 2014 conference call meeting. The SRC, after reviewing comments made by individual SRC members in an earlier version of this document, agreed to endorse all of the individual comments as input on the DPEIR. Alameda County (in P285_Alameda County Memo on Questions for Repowering DPEIR Review) had asked the SRC to provide input on the report's methodology, assumptions and proposed mitigations in reference to avian biological resources.

While individual SRC member comments covered a broad range of subjects in the PEIR, there were several broad issues that the SRC agreed were of particular importance in revising the PEIR:

Analysis/Assumptions

- **Project Baseline:** The data used to derive the baseline could lead to a higher baseline than the estimates from more recent years. Also there is an issue of impacts below baseline being considered less than significant, despite the potential for significant avian fatalities occurring.
- **Selected avian species for impact analysis:** It is not clear why certain species, aside from the four focal species, are the focus of impact analysis, and the broad coverage of the Migratory Bird Treaty Act (MBTA) and other laws and regulations should be noted.

Mitigations

- **Specificity or strengthening of certain mitigation requirements suggested.** Field surveys, biological monitors, seasonal/breeding protections are areas that need more specific requirements.
- **TAC composition and role.** Participation of independent scientists and NGOs is highly recommended. Several qualified and independent scientists should be engaged to provide input throughout the life of the TAC.

II. Comments by Individual SRC Members

Comments submitted by individual members of the Alameda County Scientific Review Committee (SRC) prior to the conference call meeting are as follows:

Chapter 2 - Program Description

The program objectives are ambiguous. Page 2-2 contains a section (2.2.2) titled “Program Objectives” and describes them as such:

“The two primary objectives of repowering are to facilitate efficient wind energy production through repowering and to avoid and minimize impacts on terrestrial and avian wildlife caused by repowered wind turbine construction, operation, and maintenance.”

The objectives were restated on page 4-2 (section 4.1.2) in such a way that separates the term “repowering” out of the program objectives:

“the two primary objectives of the program are to facilitate the replacement of existing wind energy turbines with more efficient turbines, increase energy production, and avoid and minimize impacts on avian wildlife caused by repowered wind turbine construction, operation, and maintenance in the program area.”

Is repowering not an integral program objective? This relates to whether the “No Repowering, Full Decommissioning” should be considered as an environmentally superior alternative among the no-project alternatives. It is not treated as the “No Project” alternative and it will not achieve the objective of repowering, yet it is designated in the draft as the environmentally superior (Page 4-34).

Chapter 3-4 - Biological Resources

3.4.1 Existing Conditions

Page 3.4.1: It might be good to have a comparison of APWRA instead of just the program area. This would indicate the relative importance of different habitats. In all of these tables, percents could be added to make comparisons easier.

Page 3.4-7, last paragraph: The paragraph references a draft Avian Protection Program (APP) and states that key provisions have been incorporated into the draft PEIR. It would be useful to see the APP in its entirety in order to make a full evaluation of the PEIR. The origin of provisions in the PEIR that are associated with the APP are likely to be unclear.

Page 3.4-10, Common Wildlife Associations (Grasslands): Grasslands are the dominant land cover type in the APWRA and the primary foraging habitat for raptor species. While this section discusses the general association of grasslands and various wildlife species, it might be useful to expand the discussion to include the landscape features and other environmental factors that concentrate bird use or that affect bird movements and behavior. These are the things that are related to bird mortality in the APWRA and for which some background discussion would be helpful to many readers. For example, eagle movement is directly related to topography through the grassland landscape. Topography is also a key factor in the siting of turbines. As eagles move through the grassland landscape using topography and low elevation flight to surprise prey, they may encounter turbines and become susceptible to collision. The repowering of the APWRA will not alter eagle behavior or movement or the grassland landscape they use, but it will alter the turbine landscape and potentially reduce encounters with turbines. Other factors worth noting are wind patterns through the APWRA and how they can concentrate bird activity or determine bird behavior and affect susceptibility to collision. Rock outcrops (also described in the grassland section) may concentrate rodent prey, particularly ground squirrels, and also affect local bird abundance and behavior. These are examples of how the discussion of wildlife associations can be more relevant to the project rather than simply associating species with habitats.

This same comment applies to all of the natural communities described. A bit more discussion of the relationships of habitats, habitat elements, and related ecological factors to wildlife species use, abundance, and behavior and how these are associated with the project and its impacts would be helpful to the uninformed reader of the draft PEIR.

Special-Status Wildlife

Page 3.4-24: There are a few minor inconsistencies between the species included on Table 3.4-5 and those that are described in the text. While not included on Table 3.4-5, the text includes several species that are typically not considered ‘special-status’, such as red-tailed hawk, American kestrel, barn owl, and prairie falcon. These non-special-status species appear to be included by virtue of them being protected under the MBTA or DFG Code. However, all native birds receive some protection under these regulations. So, it might be useful to make this point – particularly since the primary issue with repowering and this PEIR is avian mortality. Consider making it clear which birds have actual special-status, describe how all native birds receive protection under state and federal laws and regulations, and describe the significance of this distinction.

There is also the use of the term “APWRA focal species” in the species descriptions. If this refers to the species addressed in the monitoring program, then prairie falcon, barn owl, and loggerhead shrike are not focal species. If there is another reason why these species are referred to this way, then this should be made clear.

Birds and Bats Subject to Turbine-Related Mortality Avian Mortality and Monitoring

Page 3.4-45, second paragraph: The second sentence notes that mortality reduction due to implementation of the two primary management actions is less than ‘predicted’. To be clear, no predictions were made regarding the extent of mortality reduction. This implies that there were some data or other sources of information that might be used to calculate a potential reduction, which there were not. A mortality reduction was assumed, but the extent of that reduction was not calculated or predicted. The 50% reduction goal was a target established by the Settlement Agreement. It was not a prediction.

This section might also point out the extent of turbine attrition that has occurred since the monitoring program has begun, which likely also contributed to the reduction in mortality.

Page 3.4-46: Overall it would be good to consider all migratory birds, not just a focus on raptors (or the focal raptors).

Bat Fatality and Monitoring

Page 3.4-46, fourth paragraph: While there is a somewhat vague reference to it in the last sentence, this section might provide a more complete description of bat mortality at new generation turbines. There are quite a lot of data on bat mortality at larger new generation turbines and the potential for mortality from both collision and changes in air pressure. The low mortality at the older APWRA turbines may not be surprising due to their size, lack of lighting, and more localized changes in air pressure compared to the larger turbines. It would be useful to describe this distinction and these differences.

3.4.2 Environmental Impacts Methods for Analysis

Page 3.4-47, Table 3.4-6: The comparison between the sites is a bit unclear unless you refer to the footnotes. And even then, most readers may not be clear on how to compare MW relative to the number of turbines. To be clearer, consider including the MW totals and the number of turbines for each site within the table itself – following the title of the project (e.g., APWRA Monitoring – 417 MW [# old generation turbines]; Buena Vista Repowering Project – 38 MW [# new generation turbines]; Vasco Winds – 78 MW [#new generation turbines]), or something similar to enhance clarity. Also, the table suggests the differences between new and old generation turbines, but there is no accompanying text to describe this.

Avian Fatality Analysis Methods

Fatality Rates

Page 3.4-51: There is a need to present fatalities BOTH by MW and turbine (as well as type).

Page 3.4-52, fourth paragraph: The baseline estimates were determined as follows: “For the fatality rates, the average of the annual estimates of each fatality rate from the 2005–2011 bird years (n=7 years) provided by the Alameda County Avian Fatality Monitoring Program (ICF International 2013) was based on old-generation turbines only (i.e., results from the Diablo Winds and Buena Vista turbines were excluded because they are not considered old-generation turbines. This average was used because the annual fatality rates vary considerably from year to year.”

Comment: Because you have chosen to use the 2005-2011 monitoring years to derive the baseline estimate, the fatality rates for some of the focal species will likely be higher than if you used the more recent monitoring years. Your method does not take into consideration the reduction in fatalities in the later monitoring years, presumably due to the management actions taken. Those seven years also include the anomalously high 2006 year. In addition, the baseline calculation also uses the installed capacity at the time of the NOP, which is lower than previous years and thus further increases the baseline estimate. Consequently, these baseline analysis methods will make it easier for post-construction monitoring data not to exceed baseline. It may be more appropriate to use the average of the last 3 years as the baseline, because it would include the effects of management actions and better represent existing conditions. The 3 year average is also what the Monitoring Team uses to compare to its baseline. At least mention this as a bias in the PEIR.

Page 3.4-52, fourth complete paragraph and Table 3.4-10 on Page 3.4-53: It is unclear why the other (non-focal) species were selected to represent differences in fatality rates. These are not the most representative birds that are subject to mortality in the APWRA. For example, Table 3.4-10 indicates very few Swainson’s hawk and prairie falcon fatalities. So then why use these species? The APWRA is generally outside the range of the Swainson’s hawk, so its conservation status may not be a reasonable rationale for including it here.

Page 3.4-52, last paragraph: The last sentence states that 95% confidence intervals are included in Table 3.4-10. They are not.

Page 3.4-52: Suggests returning to fatalities per turbine rather than per MW, but then presents data as fatalities per MW; needs clarification of metric(s) to be used following repowering.

Page 3.4-52: Should review and discuss any fatality data from other WRAs with new generation turbines and fatality rates; anything useful such as relative to old gen turbines in the literature including unpublished reports?

Potential Biases in the Avian-Fatality Analysis Methods

Page 3.4-54, second paragraph, fourth sentence: “The Alameda County Avian Fatality Monitoring Program measured detection probabilities in only one year, and these probabilities were used to estimate the number of killed birds in all years of the study.”

Comment: In the last few years of Alameda County Avian Fatality Monitoring Program, a composite of three different detection probability methods have been used to estimate APWRA-wide annual fatalities across all years of the study. Detection probabilities were estimated using data collected during the QAQC study, the carcass removal/scavenging trail study, and the 48-hour search interval study. A QAQC approach to detection probabilities for future monitoring of repowered turbines would more accurately estimate fatalities and improve comparability to the current study (baseline).

Page 3.4-54, second paragraph, fourth sentence: Some type of integrated detection probability study design conducted concurrently with monitoring, such as that used at the Vasco project, would be even more preferable to relying on Alameda County Avian Fatality Monitoring Program detection probabilities developed through the previous QAQC study.

Page 3.4-54: One additional potential bias should be mentioned: search radius. There are different search radius is for larger turbines, and the literature about appropriate search radii is uncertain. There is a potential for an unknown bias.

Bat Fatality Analysis Methods

Page 3.4-54: In the preceding section on bird fatalities, the statement is made that bird fatalities may decline with increasing size of turbines. There is also evidence that bat fatalities may increase with increasing turbine size. While perhaps somewhat more speculative, it seems this section, to be consistent with the preceding section, should at least note this possible relationship and provide the appropriate citations.

In the bat impact assessment on page 3.4-127, the statement is made that “all available data suggest that repowering would result in a substantial increase in bat fatalities”. So it is acknowledged in the document, but to maintain consistency, the analysis methods section should address bats similarly to birds.

Determination of Significance

Page 3.4-55: The analysis establishes a baseline using monitoring data from 2005 to 2011 and uses this baseline as the threshold for determining significance (“Where the projected rate would exceed the baseline rate, the impact would be significant; if the projected rate is below the baseline rate, the impact would be considered less than significant”).

Understanding the CEQA logic and rationale related to establishing a baseline that differentiates the ‘existing condition’ from the ‘project condition,’ there are two issues with it in this case.

First, the baseline condition is one that results in substantial annual bird mortality from operation of the turbines, including protected species, and violates state and federal law. Dropping the level of avian mortality below this baseline threshold may still result in substantial annual bird mortality and continue to violate state and federal law. It's difficult to resolve how this (a continuing high level of avian mortality – including protected species) would be considered a less-than-significant impact. It may drop below the baseline, but it still may not satisfy the CEQA definition of significance. While the ultimate determinations are considered significant and unavoidable (e.g., Impact Bio-11a-1) due to the range of projected mortality reductions and the possibility of not dropping below the baseline threshold, the rationale for using the baseline may not be appropriate.

The existing condition in APWRA can be reduced to zero turbine-related mortality simply by flipping a switch and shutting down the turbines. So it isn't quite the same as a change in the physical landscape from a development project or construction of a dam or similar condition. It seems like the baseline for the taking of animals from operation of a project that otherwise doesn't substantially alter the physical landscape should be based on the effect of that operation on those animal populations rather than accepting a high level of mortality as the existing condition and the threshold for determining significance. In other words, because the impact is the operational-related mortality of birds and bats, mortality that is below the baseline may still constitute a significant biological impact as defined in CEQA.

So in general, the ultimate conclusion that while repowering will likely reduce overall avian mortality, turbine-related mortality could still be significant and unavoidable following repowering is supported. The concern is with the rationale used to develop the significance threshold (i.e., baseline mortality).

Secondly, the baseline uses data (2005-2011) that precedes some management designed to reduce mortality. The existing condition for which the baseline is established no longer exists. It seems more appropriate to use a more recent and up-to-date estimate of mortality to establish the baseline. However, as noted above, it is not convincing that the approach is entirely valid in the first place.

Page 3.4-55, first paragraph, fourth sentence: “Where the projected rate would exceed the baseline rate, the impact would be significant; if the projected rate is below the baseline rate, the impact would be considered less than significant.”

Comment: Although it was unlikely the intention, this sentence gives the impression that the existing baseline fatality rates are below the level of significance. There are also several other places in the PEIR that define significance as being greater than the baseline fatality rates. Actually, by any interruption of the existing fatality data, the level of non-significance has not been reached in any of the eight years of monitoring. The original goal of a 50% reduction in fatalities has not been reached and even if it were, that level of mortality may still be considered significant by many biologists. Perhaps a clarification of this in the text would be appropriate.

Perhaps this is detailed elsewhere in the PIER, but a clearly defined “baseline” fatality rate must be established. The PIER talks about violating the baseline and the consequences of doing so. However, a thorough development of how the baseline is established, the metric used (fatalities per turbine or per MW), and correction factors or other changes to the baseline permissible based on future information on causes of fatalities. The metric is critical as well as the variability around the value (e.g., variance) that will lead to the determination of violating (exceeding) the baseline.

Impacts and Mitigation Measures

Page 3.4-57 BIO-1b: Insufficient details on how direct and indirect disturbance (and take) of animal species (including those protected by MBTA) will be avoided. For example, seasonal limitations during breeding seasons?

Page 3.4-58: It would be useful to present data, such as table 3.4-10, for some other species besides raptors. In that same vein, is there a need to assess bird mortality at different distances from the new repowered turbines (both from studies, and as part of monitoring)? Further assessing effects should encompass examining before, during and after putting in new turbines. A biological monitoring person should be available during all these phases to assess potential injury, and to suggest ways to mitigate or reduce such effects.

Page 3.4-59 BIO-1e: Mentions a biological monitor present during all construction activities, but vague on intensity of survey work (says “periodic”); this needs to be specific such as initial (prior to an activity) and follow up (e.g., weekly) surveys. Here and elsewhere discusses “sensitive species” but does not elaborate on what these include; again need to reference MBTA.

Page 3.4.62: Special attention needs to be devoted to invasive plants because of the high potential for seed dispersal during construction and routine monitoring.

Monitoring for invasive plants needs to be conducted on a regular basis as part of the monitoring scheme.

Page 3.4-63 BIO-3a: Addresses field surveys for the habitat of all species status <3 years prior to activities. This is a very weak requirement unless followed by appropriate field surveys for the presence of the species closer to the time of construction. This is because “habitat” is difficult to quantify with accuracy unless the species of interest are determined to be present or absent. It is appropriate for an initial evaluation of potential species presence.

Page 3.4-64, Mitigation Measure BIO-1bc: Documenting special status species is an on-going activity, and special care should be given to designing the protocol to include all yearly and seasonal variation.

Page 3.4-66: Again, with changing climate, it is critical to continue to monitor and develop best management practices to avoid impacts to special status animals, as both physical and biological conditions will change, as well as bird populations within the APWRA.

Page 3.4-74: Special care should be mandated for reclaiming roads, as this restoration project has the potential to greatly introduce invasive species. Such projects should be timed to avoid sensitive breeding/migration times for herps and birds.

Page 3.4-85 BIO-8a: The distance from construction activities will not avoid disturbance to nesting raptors (500 feet) or other birds (50 feet) based on buffers used elsewhere by various agencies. For example, the USFWS has used 300 feet for some endangered songbirds, and uses a much farther distance (e.g., 1 mile or more) for raptors.

Overall comment: the document does not review or justify the distances proposed for exclusion zones and buffers. The literature, including agency reports and standards, need to be cited as justification for all proposed guidance

Page 3.4-85: It should be noted that the Migratory Bird Act protects all migratory species, not just the list or special concern species. Sufficient monitoring before construction is essential to identify sensitive times for migrant species.

Page 3.4-86: While some tree removal is essential, the concept of just removing them when birds are not present may not sufficient if some birds DEPEND upon these habitat features for nesting, particularly for sensitive species.

Page 3.4-86 BIO-8b: Discusses re-locating non-breeding BUOW but nothing about constructing new burrows; where will birds be relocated? Also, what about destroying burrows in non-breeding season that would have been used in breeding?

Page 3.4-88-9: It is essential to have a reasonable “breeding season” time period so that it includes territory establishment and the post-fledging period for sensitive species.

Page 3.4-89 BIO-9: Calls for mitigation for loss of owl breeding habitat but does not specify the type of mitigation site. For example, preserving already occupied but not permanently protected areas; or relocating owls to currently unoccupied areas? Also, no discussion of mitigation ratios (i.e., 2:1; 3:1?) and follow on monitoring.

Page 3.4-98, Impact BIO-11a-1: This section, consistent with the description in the Existing Conditions section focuses primarily on 8 species. Given the long list of birds that have been subject to collision-related mortality, it makes sense to focus on a representative sample. However, in doing so, the reader may not be fully informed about the extent of mortality that has occurred. Including the focal species used by the ongoing monitoring effort makes sense, but its not clear that the other species are the most representative. It is suggested that this sample be reevaluated to select those that are most representative of the issue and not rely on species' legal or conservation status as a primary factor. Also more fully describe (relative abundance and fatality rates) the birds that are lumped under 'all native non-raptors'.

Page 3.4-100, Impact BIO-11a-1: Although a minor point, it is unlikely that managing rock piles and some perches will reduce prey for kestrels (which forage largely on insects and lizards).

Page 3.4-100: The wide range in predicted kills for burrowing owls further indicates the need for a very rigorous monitoring program and carefully evaluation of analytical methods and results by the TAC.

Page 3.4-101: The G. Hunt research is now approaching 10 years (or more) old and, while relevant to cite, cannot be sued to represent the current status of the eagle population.

Page 3.4-103: The 'decreasing" trends in red-tail fatalities claimed is not supported by the actual data; needs re-evaluation.

Page 3.4-104: Mitigation Measure BIO-11a: Prepare a project-specific avian protection plan

Page 3.4-104: The components and utility of an APP should be more fully described.

Page 3.4-104: Design of a project specific avian plan is a great idea, but the composition of any group that does this should have some specificity with respect to qualification.

Page 3.4-104: No plan to remove hazardous turbines or seasonal shutdown thereof?

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

Page 3.4-104: Micro-siting of turbines - using analyses of landscape features and location-species bird use and behavior data to identify locations with reduced collision risk—may result in reduced fatalities (Smallwood et al. 2009). 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.”

Comment: It would be useful to cite the SRC’s siting guidelines.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). 2010. Guidelines for siting wind turbines recommended for relocation to minimize potential collision-related mortality of four focal raptor species in the Altamont Pass Wind Resource Area. Alameda County SRC document P-70.

For the average reader, this measure may not provide sufficient information or assurances that siting will actually achieve anything. While each turbine should be sited independently according to its particularly surroundings, there is guidance that provides specific measures that have fairly universal application. For example, the SRC guidance document includes measures regarding avoidance of steep slopes, saddles, and other topographic features. Perhaps this measure can provide more specific guidance.

Mitigation Measure BIO-11c: Use turbine designs that reduce avian impacts

Page 3.4-104: This measure really doesn’t constitute ‘mitigation’. These turbine design features are already incorporated into new generation turbines and wind energy facilities.

Page 3.4-104: Retrofitting existing power lines and such should take into consideration any birds that traditionally get caught in them.

Page 3.4-104: The Curry and Kerlinger (2009) report used to support the blade height standard was conducted in Solano County and, while relevant to cite, does not present a complete evaluation of available data and literature.

Page 3.4-105, Mitigation Measure BIO-11d: This measure reads more like a project description than a mitigation measure. These things are also already universally applied to wind facilities in California.

Page 3.4-105 BIO-11f: The prohibition of rodenticides is a positive requirement to protect raptors and other predators. However, allowing rock piles in close proximity (200 yards) of turbines does not adequately minimize the raptor-turbine risk. Rocks (as defined in the document) should be removed farther (~500 m) from turbines to eliminate any concentration of potential prey near turbines.

Mitigation Measure Bio-11g: Implement post-construction avian fatality monitoring for all repowering projects [includes TAC]

Page 3.4-106: Include conservation organizations and natural resource trustees in a way that ensures participation. In many cases, such people are overworked, underpaid, and have little time. So their input is harder to get than that of companies (whose personnel are paid to attend such meetings). The state wildlife people should be involved, as should independent scientists (those not working for regulatory agencies, companies, or state government. The voluntary nature may preclude some people that are necessary to the process. Further, there should be some independent scientists involved – people who have no stake in the outcome or do not have agency directives.

Need to define timely with respect to monitoring reports. Such reports must be available in time to make reasonable decisions. Without timely reports, it is impossible to have adaptive management or respond quickly enough.

Consider adding a section on conservation measures for species other than raptors. We may someday find ourselves with a need to protect some specific group (e.g. Neotropical migrants or such), and need to have considered options. Without monitoring information on non-raptor species, it is difficult to develop conservation strategies.

Page 3.4-106: The key for the TAC to be successful is for the County to retain several (one is insufficient) scientists who are experienced in wildlife ecology, study design, and the wind industry. As stated the TAC is not a “decision making” body; hence it is critical that the County receive consistent and independent advice. Input from agency, NGO, and industry TAC members is important, but specific individuals will certainly change over even short periods of time.

Mitigation Measure BIO-11h: Compensation for the loss of raptors, including Golden Eagles, by contributing to conservation efforts

Page 3.4-107: need specific requirements for review and approval of actual fatality surveys, planned analyses, etc.

Page 3.4-107: What is the rationale for limiting this mitigation measure that addresses conservation efforts to raptors?

Conservation Measures

Page 3.4-108, Conservation Measures, second paragraph: How does the Raptor Mitigation Plan differ from the Avian Protection Plan required under BIO-11a?

Page 3.4-110 BIO-11i: Adaptive management plan—is very good that thresholds and triggers are mentioned. However, the proposed actions have little or no literature support as being effective, including painting blades and removing perching options (perching options were already removed from the new turbines). Using money for research (\$2K/death) is not mitigation, and will be unlikely to build up to a useful amount.

Threshold 3—starts to get to likely effective actions but only ADMM-4 could be effective short of actual turbine removal.

Page 3.4-112 ADMM-6: Real-Time Turbine Curtailment: “If the above measures prove ineffective, then the project proponent will employ a real-time turbine curtailment program designed in conjunction with the TAC. The intent is to deploy a biologist to monitor onsite conditions and issue a curtailment order when raptors are near operating turbines.”

Comment: This seems like it would be impossible to implement. First of all you would really need several biologists not just one to cover the entire area. Second, by the time the raptor is observed in close proximity to an operating turbine, operators notified, and then turbines shut down, the raptor would likely be gone.

It may be more beneficial to examine the prey base around the more hazardous turbines and implement a prey reduction program around the offending turbines.

Page 3.4-113: Again, it would be useful to add some non-raptors to the table, especially those that have high collision rates.

Page 3.4-127 BIO-14b: Suggestions to restrict bat fatality surveys to roads and pads is unacceptable unless it is first indexed against a proper (all ground cover) surveys. Additionally, the acoustic sampling guidelines referenced are now >8 years old and need to be revised to match current technology.

Page 3.4-129 BIO-14d: While it is difficult to know the proper actions for bat fatalities, the document should default to those known to be effective (and logical) for birds such as seasonal shutdown of known hazardous turbines.

Page 3.4-130, ADMM-7: Seasonal Turbine Cut-in Speed Increase, first paragraph. There are conclusive data to support the reduction in mortality from an increase in cut-in speeds. There are now several studies that have been completed that clearly indicate this relationship. While increasing cut-in speed from the typical 3.5m/s to 5.0m/s will reduce power generation, this reduction and the associated economic impact has been shown to be fairly minimal.

First bullet: Studies have shown that increasing cut-in speed above 5.0 m/s is ineffective. If substantial mortality continues following the increase to 5.0, then experimentation with other cut-in speeds is warranted. But the document should more fully describe what is already known about the effect of increasing cut-in speed.

Chapter 4 - Alternatives Analysis

Why is the no project alternative this: **No Repowering, Reauthorization of Existing CUPs**, and not this: **No Repowering—Full Decommissioning**? Would the status quo be that the current turbines will be decommissioned if not repowered?

Page 4-18, 4.1.6: If repowering is an integral program objective, then how is it that the first two alternatives, which specifically state no repowering, are not automatically eliminated on Page 4-18 in the section (4.1.6) to eliminate alternatives that do not meet the program objectives?

Other Comments

Legal issues: Needs a discussion of how federal agencies, especially USFWS, could deal with violation of MBTA. MBTA will be technically violated because songbirds will be directly killed, and nests will be destroyed unless specific steps are taken to avoid.