

Meeting Summary | December 5-6, 2012 Altamont Scientific Review Committee

Developed by the Center for Collaborative Policy
Reviewed and approved by the SRC

All SRC Members Present:

Joanna Burger
Jim Estep
Mike Morrison
Sue Orloff
Julie Yee

Key Outcomes

Determination on Whether There Has Been a 50% Reduction in Avian Mortality

Under the Adaptive Management Plan, the SRC is to determine whether, by September 2012, there has been a 50% reduction in avian mortality in the Altamont Pass Wind Resource Area, compared to baseline.

Three of five SRC members agreed that there has been a 50% reduction. One SRC member disagreed that a reduction of 50% had occurred. One SRC member stood aside, indicating she did not oppose the vote but was not confident that there has been a 50% reduction.

Under the Adaptive Management Plan, a finding that the 50% was not achieved would have required two wind companies to remove additional turbines from their operations.

SRC members agreeing that a 50% reduction had occurred based their decision on the Monitoring Team's final 2005-2010 Bird Fatality Report, which found that there was a 51% reduction in fatalities of four focal raptor species in the last three years of monitoring (2008-2010) compared to first three years of monitoring data (2005-2007). They also considered an adjustment developed by SRC Member Julie Yee for a bleed-through bias in the data which resulted in a calculation of a 52% avian mortality reduction.

SRC members unwilling to support a "yes" finding on the 50% question expressed concern about wide confidence intervals in analyses to date; that the fatality trend was increasing since 2008 with 2010 fatality reduction below 50%; whether the 2010 uptick might continue as a trend; and whether unusually high mortality in 2006 might have had too strong of an influence on the final 50% reduction calculation. The SRC member concluding that it was not clear a 50% reduction had occurred disagreed with the three-year rolling average method of analysis used. One disagreeing SRC member noted that he was not a committee member when the decision was made to use the moving average.

All SRC members agreed that:

- There is great scientific uncertainty around avian mortality in the Altamont and wide confidence intervals in data;
- Viewing 2011-12 bird year data will be important to gain information on the trend after the 2010-11 bird year;
- The Monitoring Team should calculate the 50% as well using only the 60% of turbines that have been consistently monitored since 2005 (core), in case a new rolling panel monitoring design started in 2010 introduced complications into the data.

Upcoming Fatality Reports

The SRC provided recommendations on the next bird fatality report, expected in February-March 2013, to increase confidence in the 50% assessment:

- Include analysis of the 60% core turbines and implications for expanding the analysis to APWRA-wide (for 2005-2011, not by BLOB);
- Tables showing installed capacity for all and monitored turbines by BLOB and year (all data in Appendix D in table format), including information on raw fatalities.
- Provide more context for winter shutdown tables and data;
- All tables should stand alone, and be able to be interpreted by themselves.
- Indicate in tables and figures when the sampling regime has changed and explain briefly why there were differences; and
- Include a separate analysis of Diablo Winds (as a control) for winter shutdown.

The SRC also asked that future reports:

- Include more descriptive information on repowered turbines.

The SRC supported the Monitoring Team's efforts at developing a multivariate analysis, if it appears allocating the resources to the effort will provide useful results.

High-Risk Turbine Removals

The Adaptive Management Plan (AMP) calls for removal or relocation of high-risk turbines and towers ranked 8.0 by February 15, 2013, pending SRC consideration of on-the-ground conditions.

The SRC agreed to recommend an exemption for four 8.0 Forebay/FloDesign/SeaWest turbines the Adaptive Management Plan had identified for removal, because the turbines are part of a study to test whether a new turbine design reduces avian mortality.

EDF (enXco) has 38 turbines the Adaptive Management Plan identified for removal/relocation. EDF had requested a credit toward these removals, because it has removed 56 turbines, an entire project area responsible for seven golden eagle fatalities. All SRC members agreed to recommend accepting credit for 32 of the 38 turbines. All had less than three associated fatalities. The SRC looked intensively at the other 6 additional turbines which either had three associated fatalities or two golden eagle fatalities. The SRC had a split recommendation:

- Two SRC members recommended removing the 6 turbines, as called for under the Adaptive Management Plan;

- Two SRC members recommended accepting the full EDF credit request;
- One SRC member abstained.

Action Items & Meeting Follow-Up

Party	Due Date	Action
SRC	March 4-5 or 25-26, 2013	Next In-Person Meeting – 1.5 days
SRC	Jan. 16, 2013, 10 a.m. – Noon	Topic: 60% core turbine analysis 2005-2011. MT memo prior to call
MT	For 1-16-13 call	Memo on 60% core turbine analysis vs. 100% analysis
MT	March 4, 2013	Release of 2011-2012 Monitoring Draft Report
MT	For next report March 2013	<p>The SRC provided recommendations on the next bird fatality report, expected in February-March 2013, to increase confidence in the 50% assessment:</p> <ul style="list-style-type: none"> ▪ Include analysis of the 60% core turbines and implications for expanding the analysis to APWRA-wide (for 2005-2011, not by BLOB); ▪ Tables showing installed capacity for all and monitored turbines by BLOB and year (all data in Appendix D) in table format, with raw fatalities added; ▪ Include the megawatt basis for the tables, including installed capacity for BLOBs; ▪ Also show tabular figures of the installed capacity; ▪ Indicate in tables (such as Figures 3-1 and 3-3) when the sampling regime has changed; ▪ Provide more context for winter shutdown tables and data; ▪ Include a separate analysis of Diablo Winds (as a control) for winter shutdown fatality rates broken out by month to replicate Table 3-15 for Diablo Winds data; ▪ For greater transparency, tables and figures should footnote when there are year-to-year changes in the sampling design; ▪ The report should include more descriptive information on repowered turbines so reader understands why Diablo and Buena Vista have different avian mortality associations; ▪ Mention that the analysis was done at the post-stratified BLOB level. It is difficult to correlate the data at the BLOB level. The goal is to better understand the potential for a different ratio outcome and to more easily interpret the data as a reviewer. ▪ Histograms should be easily read in black and white.
MT		<ul style="list-style-type: none"> ▪ The Monitoring Team will provide a PDF of presentation slides so meeting participants can follow along more easily with the presentation.

Table of Contents

Key Outcomes.....	1
Action Items & Meeting Follow-Up.....	3
Meeting Account.....	4
Announcements.....	4
Presentation of Final 2010-11 Bird Year Fatality Study.....	4
Determination of Progress toward Achieving 50% Reduction in Avian Mortality.....	10
Looking Ahead to 2013.....	14
Meeting Summary Review and Approval.....	16
High-Risk Turbine Removals.....	16
Future SRC Meetings.....	21
Documents Circulated at Meeting.....	21
SRC Meeting Participants.....	21
List of SRC Agreements Developed December 5 & 6.....	23

Meeting Account

Announcements

Sandra Rivera of Alameda County announced that Facilitator Mary Selkirk of the Center for Collaborative Policy is retiring at the end of 2012. Ariel Ambruster will take her place.

Presentation of Final 2010-11 Bird Year Fatality Study

Related Documents

[M87 2010-11 APWRA Final Bird Fatality Report](#)

[M94 December 2012 Presentation Slides](#)

Final 2010-2011 Bird Year Fatality Study Presentation

Chris Brungardt, ICF Vice President, acknowledged the delays in the Monitoring Team's production of the study and the resulting problems this caused, and took personal responsibility for the decision to hold off on publication in order to best integrate the QAQC data.

Monitoring Team Project Manager Doug Leslie gave a presentation on the Final 2010 Bird Year Report (Report). Key points included:

Background and Methods

- In the first five years of monitoring in the Altamont, the Monitoring Team collected data on half of the turbines. Since the 2010-11 bird year, the Monitoring Team uses a monitoring model that collects data on only about a quarter of the turbines comprised of a 60% core of turbines selected from the baseline monitored turbines, and, for the remaining 40%, rotates data collection every year among turbines. The monitoring program also collects data on the avian use of the Altamont Pass from 77 monitoring stations. The monitoring program occurs in an environment where the wind power companies have removed hazardous turbines, removed turbines because of attrition or for other reasons. Each year as the installed capacity in the Altamont decreases, there has been a decline in fatalities.
- The Monitoring Report attempts to assess the impact of the seasonal turbine shutdown periods aimed at reducing fatalities. The first two years of shutdowns involved crossover

experiments where half of Altamont turbines were shut down for a two-month period and the other half were shut down for the next two months. The following year used a two-month universal shutdown, followed by a three-month phased shutdown for the next two years. The current shutdown program is a 3.5-month universal shutdown during the winter months.

- The main difference between the 2010-2011 report and previous monitoring reports was the post-stratification of the Altamont into base layer operating group boundaries (BLOB). The Monitoring Team designed the monitoring distribution to use distinct stratification and boundaries to ascertain information about whether mortality correlates to specific turbine types, topography, and geography.

Bird Use

- Figure 3-2 in the 2010-2011 report shows the fatality data for the four focal species (golden eagle, red-tailed hawk, American kestrel, and burrowing owl) overlaid with monthly changes in bird use. In 2010-2011 there was a large influx of red-tailed hawks in the fall and winter months, and the data collected showed a dramatic decrease in red-tailed hawk fatalities during the seasonal shutdown periods. Golden eagle use of the area also increased during the fall and winter, and there was also a decrease in fatalities during the shutdown periods. There did not appear to be a correlation between burrowing owls' use of the area and the fatalities. On the other hand, there was a strong correlation between use and number of fatalities for American kestrels.

Detection Probability Estimate

- The detection probability rate is determined by statistical models which combine searcher efficiency probability with the carcasses remaining probability at the time of the search. The analysis incorporates QAQC study data on 233 carcasses representing 29 species found in the Altamont. Of the 233 carcasses, 109 were raptors, including 32 small raptors, as there was a concern to get an adequate representation of small raptors in the QAQC Study. The Monitoring Team analysis categorized carcasses by wingspan length instead of the previous approach of using large, medium and small size classes.
- The analysis showed a substantial decline in searcher efficiency with the increase of a carcass's age. The analysis used in the QAQC Study postulated a composite of two models; one for searcher efficiency and one for carcass removal. The important outcomes show that searcher efficiency informs the estimated rate for carcass removal. This is a big difference, as the Team previously used a model which assumed the same probability of finding old and young carcasses.

Bleed-through Issue

- Bleed-through of fatality data contributes bias to fatality estimates. Bleed-through is when a fatality occurs during a search interval, but is not found until later (i.e. after the interval). Thus it is assigned to the wrong time period. Fatality counts are adjusted to account for unfound carcasses from the same interval, so the later found carcasses result in an upward bias in the fatality estimate because they are effectively counted twice and adjusted further upward. SRC Member Julie Yee conducted simulations to examine the issue and develop an adjustment for the bias.

- The implications of bleed-through can be a significant problem if there is a low detection probability.
- It is important that monitoring programs at repowered locations have similar search intervals as other monitored turbine locations. The adjustment to account for bleed-through helps compare the data collected for different search intervals.

Fatality Study Results

Key results included:

- Figure 3-5 shows adjusted fatality rates at monitored turbines for the four focal species for each year from 2005-2010, and Figure 3-7 shows the estimate of fatalities APWRA-wide. There is an increase in fatalities for red-tailed hawks in 2010.
- Figure 3-8 shows fatalities and bird use. There is a strong relationship between use and fatalities for red-tailed hawks, but not for golden eagles.
- **Reduction in Avian Mortality since Baseline:** Figure 3-9 shows the three-year rolling average analysis for APWRA-wide fatalities, which shows a decline since baseline for all four species. Tables shown in pages 3-12 and 3-13 show the analysis to determine the reduction in avian mortality compared to the baseline. Using a numeric comparison of the 2010 bird-year fatality estimate with the Settlement Agreement number, the analysis showed a 44% decline. Using the three-year rolling average method of analysis results in a 51% overall decline. Red-tailed hawks and burrowing owls show more than a 50% decline, while American kestrels and golden eagles do not.
- **Seasonal Shutdown:** The 2010 Seasonal Shutdown data analysis used the same processes as in previous bird year monitoring reports. The Monitoring Team looked at fatalities over the winter, and noted that there was a substantial decrease in American kestrel fatalities over time. The Monitoring Team anticipated that the seasonal shutdown would show a decline in fatalities for all bird species. However, golden eagles did not show a decline. It might be due to the fact that there are few golden eagle fatalities overall, so any killed in the winter might show as an increase in the fatality rate. Additionally, there appears to be no relationship between American kestrel and burrowing owl fatality decreases and the seasonal shutdown periods. However, red-tailed hawk fatalities have a strong relationship with the seasonal shutdown periods.
- **Repowering:** The report compared fatalities at repowered sites (Diablo Winds and Buena Vista) with non-repowered sites. Fatality rates were lower at repowered sites. Yet, the fatality patterns were different from the older turbines, which might be due to the different geography and bird use of the area, as well as different tower configurations and intermixing of old and new towers.
- **Conclusions:** The report concludes that the monitoring data show a strong decline in fatalities since 2005, as well as strong evidence that winter shutdown is decreasing raptor fatalities.

The Monitoring Team acknowledged SRC Member Julie Yee's help in developing the QAQC and bleed-through analyses used in the report, working with Monitoring Team member Brian Karas.

SRC Questions and Comments

SRC members raised the following questions and made the following comments:

- Under the new analytical approach, the size of the species appears to influence the number of detected fatalities. Would birds classified with smaller wingspans be assigned greater fatalities estimates?
 - The Monitoring Team responded that there had been an assumed 100% searcher efficiency rate for golden eagles, different than that for red-tailed hawks. Under its new analytical approach, the Team is accounting for size based on wingspan, rather than the previous three size classifications of small, medium and large birds. There are differences when compared with previous analyses, as some birds might fall on the larger or smaller side of one of the three size categories. Looking at the detection probability curve (Figure C-4), it is possible to see a connection depending on the carcass age classification.
- How different are the results if the team were not using a composite model for the QAQC Study? Specifically, how sensitive is the model to the relationship between searcher efficiency and carcasses removal rates?
 - Doug Leslie responded that using the original adjustment factor approach, the removal rate seemed to decline too quickly. Brian Karas of the Monitoring Team said the QAQC analysis leverages more information about carcass removal and searcher efficiency to inform each half of the composite model.
- Did the Monitoring Team analyze carcass feather piles?
 - The Monitoring Team responded that there is an outstanding issue of how to address analysis of feather piles, and how to track that information. The Monitoring Team could develop datasets to address detection probabilities. In individual cases, feather piles may be easier to find over time, but the overall data show that it is more difficult for searchers to find feather piles.
 - SRC member Julie Yee shared that, in reaction to the large difference in the estimated detection functions for red-tailed hawks between models (Figure C-4), she and the Monitoring Team had conducted basic quality review of the QAQC model by following the progression of fresh carcasses for large species. They looked at raw proportions of carcasses detected as those carcasses aged, so that they were not looking at it as a model. They noted that detection declined over time as carcasses aged, in agreement with the QAQC model results.
- What is the significance level of the American kestrel's R^2 value at 0.34?
 - The Monitoring Team responded that they do not advise using regression to attach a significance value to the trend of a time series, because the data are serially correlated. Several SRC members responded that regression is, indeed, appropriate and should be conducted.
 - SRC member Julie Yee shared that on an earlier report she did a regression to determine the p-value out of curiosity. She found that red-tailed hawk and golden eagle p-values were close to 0.05. This was difficult to interpret due to the small sample size.
- An SRC member asked to see the bird use data to do this analysis.
- An SRC member said that using bird use as a single variable might help ascertain more information about fatalities.
- Two SRC members asked for further analysis of whether the winter shutdown period reduced bird fatalities.

- The Monitoring Team expressed that the shutdown period data are complex. The Monitoring Team did not find it useful to do statistical analysis on these data because of the small sample size for red-tailed hawks and golden eagles.
- An SRC member asked whether an analysis is possible for burrowing owls since there is a larger sample size for that species.
- An SRC member suggested that perhaps incorporating winter bird use data might help in analyzing the effect of the winter shutdowns.
- An SRC member asked for further explanation of how the bleed-through adjustments might impact the overall monitoring results. Does the bleed-through adjustment bias change with each search interval?
 - The Monitoring Team acknowledged that the bleed-through issue was not addressed in the report. Bleed-through was discussed during the SRC conference call in September. Using the bleed-through adjustment with the three-year rolling average shows a fatality reduction of 52%.
- An SRC member said that the issue of repowering is important and it would have been helpful to have clarifying text in the report on the differences between repowering areas, such as turbines and species found, to help explain the difference between results at Diablo Winds and Buena Vista.
- An SRC member asked about differences in burrowing owl fatality trends in Table 3-1 and Figure 3-3. The table shows a large decline in 2009-10, but the figure does not show much of a change.
 - The Monitoring Team explained that the same number of turbines was monitored during 2009-2010, but only half of the turbines' monitoring data was used to determine the rates for burrowing owl fatalities used in Figure 3-3.
 - An SRC member requested that the figures be modified to include that information in the table description.
- An SRC member wanted to know why the report discussed fatalities found in 2005, yet the adjusted fatality dataset did not include the numbers in the adjusted reduction percentages.
 - The Monitoring Team explained that the wind power companies picked up carcasses at that time, so it was not appropriate to include the data in the adjustment calculations. If the Monitoring Team had included the data in the adjustment calculations, it would have caused a greater reduction in the fatality rate.
- An SRC member expressed concern about the winter shutdown data and wanted clarification on how the data were analyzed. She also wanted to know if there was a three-year rolling average analysis available for the winter shutdown data.
- One SRC member said Figure 3-10 shows the percentage as relative to the rest of the year. A potential resolution would be to remove Figure 3-10 from the report.
 - The Monitoring Team said that 2010 was the first year of the revised monitoring design, which uses a rotating panel for 40% of monitored turbines. One possibility is that this design may lead to the appearance of fatality hot spots.

SRC Recommendations for Future Bird Fatality Reports

SRC members raised the following points:

- Tables and figures in the slide presentations should be labeled so meeting participants can immediately find them in the printed report.
- Mention that the analysis was done at the post-stratified BLOB level. It is difficult to corroborate the analysis at the BLOB level because of limited data reported at that level. It is

also difficult to identify correlations unless the data are at the BLOB level, because the estimates of standard errors require information on variance within each year. The BLOBs are treated as representations of that information. The stratification of the data at the geographic level is appreciated, since there is no other form of intra-year stratification. The goal is to better understand the potential for a different fatality rate estimate to occur due to sampling variation and to more easily interpret the data as a reviewer.

- Relevant figures should include information acknowledging the change in the Monitoring Program in 2010 to a rotating panel with a fixed 60% set of monitored turbines. Wherever differences occur, they should be noted.
- Provide a summary table of the use and fatality rates in a tabular form. Ideally, provide the information in the same format as Table 3-7, which shows 2008-2010 adjusted fatality rates, to show the fatalities against the bigger picture of installed capacity. Also, in the tables, identify any major decisions to include or exclude data over time.
- Include annual installed turbine capacity in megawatts across each year, as both total installed capacity for all turbines in the area, and total capacity of the turbines monitored. Previous reports use different numbers for fatalities than recent reports. Also, track adjustment factors that changed and reasons for the change, like megawatt capacity.
 - The Monitoring Team expressed concern that it may not be feasible to conduct a BLOB level analysis of total installed capacity as well as monitored capacity.

Public Comment

Danielle Roach with the California Department of Fish and Game asked about the QAQC Study setting, and whether the Monitoring Team looked at seasonal variation, and additional separations of the trials. She asked whether the analysis looked at locational characteristics such as slope or grass types. She also wanted to know if the Monitoring Team plans to develop the wingspan categorization model for use in other areas in California.

- Jesse Schwartz of the Monitoring Team responded that other researchers may consider using wingspan as a categorization for other areas in California, but there are many caveats for its use in analysis.
- The Monitoring Team stated the trial locations and stratification were random, and varied across the BLOBs, and that the trials were spread across seasons to represent their variation.

Emre Ergas asked about the monitoring efforts in other areas with turbines, as well as whether there was discussion in the report about the 2011 shutdown credit.

- The Monitoring Team responded that there is no monitoring in the Diablo Winds wind farm, however there were three cases in the Diablo Winds wind farm that were explained in the report. Information about the shutdown was included in the turbines table, however, there is no separate field in the database to track turbine shutdown versus removal.

Shawn Smallwood said that one difficulty in analyzing the winter shutdown effect is that, in the early winter shutdowns, the search interval, at 64 days, was longer than the treatment.

Mike Lynes with Golden Gate Audubon wanted clarification about golden eagle fatalities and whether the fatalities decreased each year.

- The Monitoring Team responded that the number of golden eagles killed during the winter months has remained the same, but the total number of golden eagles killed each year has gone down.

Determination of Progress toward Achieving 50% Reduction in Avian Mortality

Related Documents

[M87_2010-11_Bird_Year_Monitoring_Report](#),
[P255_Center_Background_Memo_on_50%_Determination](#)

Background

Sandra Rivera of Alameda County provided background information on the process to reach a determination. Key points included:

- In 2009, the SRC was asked to make a determination on whether there had been a 50% reduction in avian fatalities, and was not able to reach a conclusion at that time, given the data.
- The Adaptive Management Plan states that the SRC consider in 2012 whether there has been a 50% reduction in avian fatalities. The decision is needed at this meeting so that, if the 50% is determined not to have been met, companies have the ability to remove their turbines by the end of the seasonal shutdown.
- If the SRC determines that the 50% reduction has not been achieved, two wind power companies, EDF (enXco) and Forebay Wind (FloDesign/SeaWest), must remove 25% of their turbines in the Altamont Pass. To reach 25%, EDF must remove a total of 195 turbines. EDF has removed 179 to date, and would need to remove 16 more to achieve the 25%. Forebay Wind must remove 135 turbines to reach 25%. The company has removed 42 turbines to date, so it would need to remove 93 turbines.

SRC Discussion on Method for Reaching Determination

The SRC asked for clarification from Alameda County on whether the SRC has flexibility to make a determination, given the yearly fluctuation in annual fatalities. In response, Sandra Rivera said there is flexibility.

The SRC discussed whether the Adaptive Management Plan requires that the determination be made based on the four focal species as a whole, individually, or total raptor fatality data, or how the SRC should proceed, if the AMP does not specify.

Public Comment

Mike Lynes of Golden Gate Audubon, one of the settling parties, said the Settlement Agreement set a baseline of 1,300 fatalities for all raptors from which the 50% reduction was to be measured. The SRC opted to reduce that baseline number to 1,130 fatalities, based on the four focal raptor species, which the settlement parties agreed to.

Continued SRC Discussion

An SRC member said the reduction should be measured on the four focal species as a whole, and other members of the SRC did not disagree.

Review of Data and Analysis Related to 50% Issue

Facilitator Ariel Ambruster reviewed issues the SRC noted could be relevant to this discussion:

- The implication of SRC member Julie Yee's bleed-through simulations and results; and

- The implication of the Monitoring Program's introduction in 2010 of a rolling panel design with a 40% rotating portion.

The SRC deemed two additional items as important but not of issue for the determination: the 2005 WRRS Data that was excluded from the Monitoring Report – Jesse Schwartz of the Monitoring Team determined that including the data would only affect the fatality reduction estimate by .1%; and winter shutdown analysis.

Jesse Schwartz also noted that monitoring efforts are mid-course for the 3rd year of a three-year study rotation and that removing 25% of turbines (regardless of their location and monitored status), changes the environment and will cause a reduction in overall avian fatalities in the area. He also emphasized that monitoring efforts need to continue regardless of whether the SRC makes a 50% reduction determination.

One SRC member said if the 50% reduction level was not met, then removal of turbines would change the environment and monitoring conditions, thus impacting future efforts to assess whether a 50% reduction was achieved.

An SRC member was concerned about the FloDesign study and how the study might be impacted if Forebay/FloDesign was required to remove 25% of its turbines.

Public Comment

Shawn Smallwood, the scientist who is conducting the FloDesign study, said that if the SRC determined the 50% reduction was not achieved, removal of the turbines would change the environment, and potentially cause the study and monitoring efforts to be open to criticism.

Heather Beeler with the US Fish and Wildlife Service said there are a lot of complications in making the determination, and the Fish and Wildlife Service is very interested in Shawn Smallwood's study.

Continued SRC Discussion

SRC Member Julie Yee reviewed her bleed-through simulations, which re-adjusted the number of fatalities to account for carcasses not found initially, adjusted for, and later found. Her simulation results: years 2005-2007 had an estimated average of 1025 fatalities; years 2006-2008 had an average of 899 fatalities; years 2007-2009 had an average of 557 fatalities; and years 2008-2010 had an average of 488 fatalities. The resulting percentage decline from baseline (2005-2007) to the present (2008-2010) would therefore be 52%.

SRC Discussion on 50% Determination

An SRC member put forth a proposal: that the SRC make a determination that there was a 50% reduction of fatalities for the four focal species, using the bleed-through data that showed a 52% reduction.

Two SRC members raised concerns about uncertainty and methods:

- There is an annual trend of an increase in the number of avian fatalities from when the three-year rolling average started in 2008. Specifically, each annual reduction percentage is different, but the average of the intervals is around 50%. The percent reduction in 2008 was 57%, in 2009 was 50%, and in 2010 was 44%, which averages out to 50%. The SRC member expressed concern that the trend will continue to show an increase in fatalities for the

2011 and 2012 years, but that may be masked due to the use of a three-year rolling average calculation.

- Whether the Monitoring Team's change in monitoring procedures in 2009-2010 from using a static sample to a sample composed of 60% of the same turbines and 40% of a rolling panel accounts for the increase in number of fatalities for all species. It was noted that there was a smaller percentage change between years 2009-2010 and 2008-2009. SRC members expressed support for reviewing fatality data of the core 60% monitored turbines to determine if the change in methodology impacted the reduction analysis.
- A particular concern is the spike in the number of fatalities in 2006, and whether the downward trend in fatalities would occur without the 2006 spike. Looking at all the annual fatality data, there does not appear to be a downward trend, rather they appear to be scattered. The data also appear to follow the trend in avian use data, at least for red-tailed hawks. Based upon this, it is uncertain if there has been a 50% reduction.

An SRC member said the SRC agreed to the changes in methodology and analytical approach, and based upon that data analysis and results, a 50% reduction level was achieved.

The SRC wanted to know when the 2011 monitoring data would be available to review. The Monitoring Team expressed that, due to scheduling and review efforts, the report will likely be released in the spring. An SRC member asked that it be available at least two weeks prior to the next meeting to allow time for review before the meeting.

Facilitators said one possibility is for the SRC to adopt a qualitative "yes but" determination now – yes, 50% has been met, but the SRC desires to review 2011 data or other information in 2013 to assess whether fatality trends have risen.

One SRC member said there was a previous question of whether the Settlement Agreement will accept a 50% point estimate when the confidence range is bracketed around 50%, for example a 45%-65% reduction, and that it was stated by the County that the SRC can use a point value to determine whether the 50% reduction has been met. However, the member agrees with the reasons others have stated for not making a determination, even though it can be said that the 50% reduction estimate has been achieved.

Some SRC members emphasized that the SRC must make a decision on the determination. They said that the SRC agreed to use a three-year rolling average as well as a point level. The data show a 50% reduction.

Another SRC member said there is a weakness to the rolling average approach, and how the nature of the data and analysis impacts the results used to make the determination. The primary concern is whether the 2011 data will fall below 50%, and so the overall assessment will fall below the 50% point.

Sandra Rivera noted that if the 50% reduction is determined not to have been met, the Adaptive Management Plan sets up a process for the SRC to recommend additional adaptive management measures, including potential removal of additional turbines. If that determination is made, the Adaptive Management Plan also requires that the two wind power companies remove 25% of their turbines.

One SRC member commented that the Adaptive Management Plan needs to be revised due to fluctuation of the 50% reduction and to accommodate new data.

Sandra Rivera and facilitators said the Adaptive Management Plan is a settlement party document, different from a typical adaptive management document that can be periodically revised. The SRC can make recommendations to Alameda County about additions to the Adaptive Management Plan. Also, Alameda County understands the importance of collecting the fatality data, and monitoring will continue after the SRC makes its determination, even if 50% has been found to have been achieved.

Initial SRC Range of Views on Proposal to Determine that 50% Has Been Achieved

Given the proposal to determine that there has been a 50% reduction of fatalities for the four focal species, facilitator Ariel Ambruster asked SRC members to give an initial indication of how they were leaning. She noted that the SRC, under its charter, is to strive for consensus, which is defined as a decision that all five members can live with. She offered a “gradients of agreement” scale, a tool that can help groups understand others’ thinking and work toward consensus. The scale has six places, ranging from strong support to strong opposition.

Three SRC members indicated support for the proposal, and one indicated opposition. A fifth SRC member indicated the fourth position on the scale, stand aside, which is similar to an abstention but indicates an interest in not blocking a group’s decision. This member was not convinced that 50% had been achieved, but expressed concern over the impacts of determining that it had not been achieved, because wind power companies would have to remove turbines, or Shawn Smallwood’s FloDesign study could be negatively impacted.

An SRC member asked to hear the perspectives of the settling parties.

Settling Party Comments

Emre Ergas of NextEra said that when the SRC looks at the 2011 data, the data will include two variables not part of the 2010 dataset: the repowering of old turbines, and that FloDesign removed 56 turbines from the area, which will contribute to the downward trend of fatalities.

Snehal Bhatt of Forebay Wind noted that the impact of the 50% reduction determination is whether the wind power companies will have to remove an additional 25% of their turbines, which incurs costs for the companies, and the companies are looking to the SRC for guidance on whether they will have to remove the turbines. The Adaptive Management Plan and Conditional Use Permits continue in effect.

Mike Lynes of Golden Gate Audubon said that bird use impacts the annual fatality data and the three-year rolling average. The challenge is to be consistent with the interpretation of what it means to reach the 50%. He is supportive of a 50% reduction determination given the Adaptive Management Plan is revised with future data. The Adaptive Management Plan sets certain dates for decisions. If the 50% reduction was met, then no additional efforts need to be implemented. If the 50% reduction was not met, then actions would need to be taken. The revision that would need to occur in April won’t happen if the 50% was met. The County’s responsibility to manage the companies does not end if the 50% is met. He has concerns about the quality of the data. However, he will defer to the SRC members’ confidence in the decision. He wants to see a real Adaptive Management Plan, and the county has an obligation to have a real Adaptive Management Plan. This

was a criticism of the original settlement agreement, that it was called an Adaptive Management Plan but did not have triggers for adjustment.

Bob Power of Santa Clara Valley Audubon Society said he relies on the SRC's expertise, and given the SRC's concerns he too is concerned about the data.

Chris Dreiman of EDF said monitoring in the Altamont is critical to understand the impacts of the turbines, and that it is also important to look for long-term cycles. He expressed support for the SRC to make a determination on whether there has been a 50% reduction in fatalities.

Continued SRC Discussion

Two SRC members acknowledged the difficulty of the decision because of scientific uncertainty, and suggested the SRC can characterize the decision around the uncertainty, specifically that the SRC acknowledges the many uncertainties of the data (how it was collected, etc.) and the fact that fatalities may increase.

An SRC member was concerned that key datasets are not available and that the methodology was changed. This member also expressed that the SRC must be able make recommendations to change the Adaptive Management Plan.

SRC Recommendation on Determination of Whether 50% Avian Fatality Reduction Has Been Achieved

After extensive discussion, the SRC was not able to find a consensus on the 50% reduction question.

- Three SRC members agreed that the 50% reduction in fatalities had been achieved.
- One member disagreed that the 50% reduction had been achieved.
- A fifth SRC member stood aside, meaning disagreement with the majority but indicating a willingness not to block the SRC from moving forward.

As described under the SRC Charter, the less-than-100%-consensus recommendation is to be forwarded to Alameda County with a full explanation of the areas of disagreement, as described in this meeting summary.

Next Steps

The Planning Director will take the SRC's less-than-100% recommendation and the explanation of the various points of view, and issue his determination based on the SRC's full discussion.

In the next agenda item, the SRC took up how to move forward on the issue of the uncertainties around the 50% question, and discussed how to reduce the uncertainty.

Looking Ahead to 2013

Context and Issues

The SRC discussed monitoring and analysis going forward, given the Monitoring Team's report on the 2011-12 bird year data and analysis expected in spring 2013, and SRC interest in any additional information that might help clarify the trend or more specific information about the percentage change in avian mortality.

Items for the Next Bird Fatality Report

The SRC identified the following data and analyses it would like to see in the next monitoring report:

- An analysis of fatality data for the 60% core monitored turbines, versus all monitored turbines, to help identify whether the new sampling design might be impacting the 50% determination analysis. Include fatalities for those 60% turbines for all years.
- The analysis of fatalities should include the megawatt basis for the tables, specifically installed capacity for all BLOBs by year, and installed capacity for BLOBs. Also show tabular figures of the installed capacity.
- The bird use data for winter shutdown and fatality data should be better aligned in the tables, and the tables should indicate the sampling regime change.
- Include an analysis of Diablo Winds winter shutdown fatality rates broken out by month, specifically to replicate Table 3-15 using Diablo Winds Wind Farm data.
- Break down the megawatt data by BLOBs, and categorize unadjusted fatalities into BLOBs with the total number of species fatalities.
- Ensure that bird use is included in the analysis.
- Use symbols in figures and tables that can be distinguished if printed in black and white.
- Label the presentation graphs with their corresponding figure number used in the report.

Future Monitoring

Sandra Rivera of Alameda County offered that the SRC can provide input to the County on ways to proceed with monitoring after the 50% percent reduction determination. The Adaptive Management Plan allows for a flexibility of approaches to reduce fatality rates. Fatality monitoring will continue in the future, as it is a requirement of the conditional use permits, and as the wind power companies will want to continue monitoring given the incentives for repowering. The goal is to assess whether to have the same confidence level in the data.

She clarified that repowered projects typically receive new conditional use permits with new conditions. Typically three years of monitoring would be required, and after ten years, another three years of monitoring.

The SRC expressed interest in a Monitoring Team effort to develop a multivariate analysis for the monitoring data. The Monitoring Team wanted to know if there should be an adjustment for seasonal monitoring efforts, using the CALWEA Study approach. The multivariate analysis would include the six years, seasonal shutdowns, and high-risk turbine removals, at the BLOB level (28 BLOBs) since that provides a larger sampling size. Alternatively, the Monitoring Team can conduct univariate analysis at the BLOB level for each year, and with the different covariates relevant at the string level.

The SRC recommended that the Monitoring Team use the best analysis for all the data to seek out trends.

SRC Future Meeting Topics

Facilitator Ariel Ambruster reviewed SRC topics for the coming year. They included:

- Possible 50% follow up to reduce uncertainties
- Review of 2011-12 bird year monitoring data
- Develop recommendations on monitoring after 2012-13 bird year

- Review FloDesign study outcomes
- Provide input on AWI permit modification EIR
- Provide input on repowering DEIR/Avian Protection Plan

In addition, SRC members suggested the following topics:

- SRC member Julie Yee offered to revisit an earlier analysis she presented on seasonal shutdown and revise it to consider avian use. The availability of use data means that seasonal shutdown model can now test for seasonal use/shutdown correlation.
- A presentation on the results from Shawn Smallwood's burrowing owl study

Next Steps

- The Monitoring Team will conduct an analysis of the core 60% monitored turbines to determine if the change in methodology impacted the fatality rate results. It will develop a memo to present to the SRC for discussion during their January conference call.
- The SRC will hold a conference call meeting on January 16 from 10 a.m. to Noon on the 2011-12 bird year data and the 60% core turbine analysis.

Meeting Summary Review and Approval

Related Documents

[P242 SRC Meeting Summary May 2012](#)

[P244 SRC Call Notes 6-27-12](#)

[P248 SRC Call Notes 7-12-12](#)

[P251 SRC Call Notes 9-21-12](#)

SRC Discussion

The SRC reviewed and approved without changes the above four meeting summaries.

High-Risk Turbine Removals

Related Documents

[P256 EDF 8.0 HRT Credit Request Letter](#)

[P256a EDF Turbine Overview Map](#)

[P256b EDF Turbine Map Patterson Pass](#)

[P256c EDF Turbine Table](#)

[P257 Subcom and MT Tables of EDF Turbines](#)

Background

The SRC in 2007 had established the HRT ranking scale for turbines in order to identify turbines that, because of topographic, siting or other geographical factors, are at higher risk of causing avian fatalities. The goal of the rankings was to prioritize higher-risk turbines for removal or relocation. The full SRC or an SRC subcommittee went to the field to rank turbines in 2007 and 2010. Most, but not all, turbines have been ranked. The 2010 Adaptive Management Plan established a schedule, based on the rankings, for periodic removals or relocations of turbines, beginning with those ranked highest.

The goal of this discussion was for the SRC to provide recommendations on 8.0-ranked high-risk turbines (HRTs) that the Adaptive Management Plan has identified for removal or relocation. The

involved turbines include four turbines owned by Forebay Wind/FloDesign/SeaWest, and 44 turbines owned by EDF/enXco.

Review of Information on 8.0 Ranked Turbines

Sandra Rivera of Alameda County explained that the Adaptive Management Plan (AMP) calls for the removals or relocations, if they are recommended by the SRC after it has deliberated on the individual turbines. The removals would need to be completed by February 2013. EDF is asking for credit toward the 44-turbine removal for 56 turbines it has already removed.

SRC members noted that there are no established criteria yet to evaluate the importance of removing HRT or on how to give credit for other removals. An SRC member asked whether there would be future development of other turbines in the area. Sandra Rivera expressed uncertainty whether repowering will occur in the area; she encouraged the SRC not to base its recommendation on a potential future decision by the county.

Forebay Wind (FloDesign/SeaWest) Turbines Credit Request

The SRC reviewed the fatalities tables for the four Forebay Wind 8.0 turbines. Information included:

- The four turbines had three fatalities.
- One turbine had two golden eagle fatalities; another had one golden eagle fatality.

Public Comment

Snehal Bhatt of Forebay Wind said the company wants to keep older turbines to serve as controls in the study Shawn Smallwood is conducting on the impact of the company's new turbine design on avian fatalities. It plans to repower some turbines to analyze new design impacts. Ten turbines would remain for one bird year at least. Other turbines in the study will operate until 2018.

SRC Recommendation on Removal or Relocation of Forebay/FloDesign/Sea West High-Risk Turbines

The SRC recommended exempting Forebay Wind from the AMP removal requirements because the turbines are controls in the ongoing FloDesign avian mortality study, and could impact that study's findings if they were removed.

EDF (EnXco) Turbines Credit Request

SRC member Jim Estep, a member of the SRC's HRT Subcommittee, provided background on the tables he and the Monitoring Team produced showing the status of EDF turbines and associated fatalities ([P257 Subcom and MT Tables of EDF Turbines](#)). He developed probable rankings of unranked turbines.

Chris Dreiman with EDF gave a presentation on EDF's request for credit towards the HRT removals, and reviewed EDF maps and table on the related turbines ([P256a EDF Turbine Overview Map](#), [P256b EDF Turbine Map Patterson Pass](#), [P256c EDF Turbine Table](#)).

Highlights of the information presented include:

- EDF requests credit for the removal of 56 turbines toward the removal of 8.0-ranked HRT's recommended in the Adaptive Management Plan.
- There are 38 EDF 8.0-ranked HRT's still in the Altamont. The memo stated 44 HRT's; however the company has since removed six. To date EDF has removed 23% of its turbines

from the Altamont area, and does not anticipate renewing the lease to repower any of the existing turbines. He noted that removing the remaining 38 HRTs will total 28% of turbines removed.

- The 38 8.0-ranked HRTs are scattered throughout the Altamont.
- Monitoring Team members noted that removing turbines could influence environmental conditions and therefore impact area fatality rates.
- EDF already removed the highest ranked HRTs in addition to three turbines removed through attrition.

SRC Discussion

The SRC reviewed the HRT ranking tables and compared the rankings of existing 8.0-ranked HRTs with the 56 removed turbines in consideration of EDF's credit request. They identified the following key issues to consider:

- Whether the 38 8.0-ranked HRTs scattered across the Altamont override the benefit of removing the other 56 removed turbines
- Whether location and geography of the 38 HRTs impact fatality rates.
- Removal of some turbines in a string may increase fatalities, if it creates a gap that attracts fly-through, thus it may be worth leaving turbines in some cases.

SRC members proposed the following approaches to a recommendation:

- Discuss whether to recommend credit for the 32 HRTs that have less than three fatalities, except for one HRT that had two golden eagle fatalities, even though some of the 38 HRT did not have a high number of searches. The six turbines with fatality issues could be evaluated separately for removal.
- Discuss whether to recommend credit be extended to the remaining 6 HRTs for a total credit toward all 38 HRTs.

In discussion, SRC members raised the following points:

- The removal of the 56 turbines has greater value than the removal of the 38 HRT that still remain, because the 56 comprise an entire project in one geographic area that has been removed.
- If EDF didn't have the credit, the company would have removed the 56 turbines anyway because it was a business decision.
- Patterson Pass has been a particular area of concern for fatalities. However, only turbine 298 is located in Patterson Pass, the other four 8.0-ranked HRTs are not.
- A blanket removal of the six HRTs will help toward the 50% fatality reduction level. The SRC needs to do its due diligence.

The SRC reviewed the following data on the 8.0 HRTs versus the 56 turbines:

- The total number of searches for the 38 HRTs was 1,644. They had 50% more searches than the 56 removed turbines (1,128 searches).
- The 32 8.0-ranked HRT with less than 3 fatalities each had 15 associated fatalities combined, out of the total 28 fatalities for the 38 HRT, compared to the removed turbines, which had 16 associated fatalities.
- Fatality statistics include:

Fatalities for the Four Focal Species

Species	38 8.0 Ranked HRTs	56 Removed Turbines
Red-tailed hawk	15	4
Burrowing owl	6	5
American kestrel	4	1
Golden eagle	3	6

In response to a question, Sandra Rivera said the 38 HRTs may have only four years or less to remain operational, given the timeframe of the conditional use permit.

The SRC agreed it would give EDF credit toward 32 turbines and conduct an individual review of each of the six turbines, with the aid of EDF-supplied Google Earth imagery and the turbine tables. During the discussion, members of the Monitoring Team corrected some erroneous fatality information from the table ([P257 Subcom and MT Tables of EDF Turbines](#)) and revised label/ID numbers for five of the six turbines. The information below incorporates those changes and lists SRC observations made during the review.

Review of Six 8.0-ranked High-Risk Turbines

	Turbine Label/ ID	Associates Fatalities	Other Issues/Observations
1	298/3402	<ul style="list-style-type: none"> ▪ 2 AK ▪ 1 RTH ▪ 1 BO (incidental) 	<ul style="list-style-type: none"> ▪ End-row turbine ▪ There is an AIC road near the turbine and the valley slopes towards the road
2	1333/295	<ul style="list-style-type: none"> ▪ 2 RTH (1 recorded after turbine was ranked) ▪ 1 BO 	<ul style="list-style-type: none"> ▪ Removing could create new end row; counter argument is that removing any turbine could create end row ▪ Steep slope of canyon ▪ On edge of Diablo Winds wind farm
3	1210/177	<ul style="list-style-type: none"> ▪ 3 RTH 	<ul style="list-style-type: none"> ▪ Next to an end-row turbine (178/1211) ▪ Issue of which turbine is responsible for fatalities, given uncertainties in assigning fatalities to specific turbine ▪ Located in the bottom of a saddle. Canyon systems present a challenge because if turbines are removed at the entrance and exit, it creates a funnel towards the turbines in the middle.
4	1211/178	<ul style="list-style-type: none"> ▪ 1 RTH, 1 BO 	<ul style="list-style-type: none"> ▪ Next to a turbine with associated fatalities (177/1210) and is an end-row turbine. ▪ Issue of which turbine is responsible for fatalities, given uncertainties in assigning fatalities to specific turbine
5	305/1343	<ul style="list-style-type: none"> ▪ 2 GE (1 from 2006 WRRS data, 1 from 2007 monitoring) 	<ul style="list-style-type: none"> ▪ Part of 4-turbine string ▪ Next to an end-row turbine (306/1344) with no fatalities, 51 searches. ▪ Issue of which turbine is responsible for fatalities, given uncertainties in assigning fatalities to specific turbine

			<ul style="list-style-type: none"> ▪ GE could be following contours
6	306/1344	<ul style="list-style-type: none"> ▪ None 	<ul style="list-style-type: none"> ▪ Next to a turbine with associated fatalities (305/1343) and is an end-row turbine. ▪ Has been subject to 51 searches, no associated fatalities. ▪ Issue of which turbine is responsible for fatalities, given uncertainties in assigning fatalities to specific turbine.

Public Comment

Danielle Roach with the California Department of Fish and Game asked about the methodology used to determine turbine rankings; whether data will be available for review on the combined rankings; whether EDF has repowered in the areas where turbines were removed; whether roads still exist to the removed turbines, how much ground disturbance will occur when the turbine is removed; and whether electrical wires are still available at those removed turbine locations. She said seven of the 8.0-ranked HRTs had less than eight searches, and requested that the SRC review each of the 38 8.0-ranked HRTs. She also asked about the long-term impact for the site if the 8.0-ranked HRTs remain for four years and if repowering of new turbines will also have a long-term impact. She asked whether the SRC will use the same methodology to evaluate future turbines, given the uncertainty of its reliability. She expressed that DFG supports removal of HRTs that take golden eagle and other Migratory Bird Act species.

- Chris Dreiman with EDF responded that there are still roads and electrical wires out to the removal sites, and the foundations of the turbines are buried with an effort to minimize ground disturbance. He said EDF shares electrical infrastructure with AIC, with a 50/50 split of overhead and underground wiring to the sites. Regarding the issue of repowering, EDF has four years remaining on the purchase power agreement with PG&E, and if there is no financial reason to run the 8.0-ranked HRT, then EDF removes the turbine. He also noted that EDF is repowering in the Altamont.

Kyle Lauder with EDF said potential new turbines in the Altamont may be the newer designed turbines, and thus likely to result in fewer avian fatalities. EDF seeks credit to let the 38 8.0-ranked HRT run through the power purchase agreement, which ends in 2016. In response to a question, he reiterated that there is no value to continue to use an 8.0-ranked turbine if the cost to run or repair the turbine is more than the energy revenue generated. Thus, EDF anticipates removing the turbines at the end of the power purchase agreement.

Heather Beeler with the US Fish and Wildlife Service said she supports giving EDF credit for the 32 8.0-ranked HRTs and recommends removal of 8.0-ranked HRT that have associated golden eagle fatalities.

SRC Discussion

If not considering the question of the 56-turbine credit, four SRC members agreed that each of the six turbines would be appropriate to recommend for removal. One SRC member abstained.

Two of the four SRC members considered that the advantage of removing the 56-turbine project outweighed the value of removing the six turbines. Two other SRC members did not see that the 56 turbines outweighed the impact of the six turbines and supported removing all six.

SRC Recommendation on Removal or Relocation of EDF/enXco High-Risk Turbines

- The SRC agreed to recommend giving credit to EDF for the 32 8.0-ranked HRT's.
- For the remaining six turbines, the SRC was unable to reach a consensus recommendation. Two members of the SRC recommended not removing the turbines; two SRC members recommended removing the turbines; and a fifth SRC member abstained. The less-than-100%-consensus recommendation will be forwarded to Alameda County with a full explanation of the areas of disagreement, as described in this meeting summary.

Future SRC Meetings

Upcoming Meetings:

- Conference Call: 1/16/13 – 10:00 a.m.- Noon PST
- In-Person Meeting: March 25-26, 2013

Documents Circulated at Meeting

[M87 2010-11 APWRA Final Bird Fatality Report](#)
[M94 December 2012 Presentation Slides](#)
[P255 Center Background Memo on 50% Determination](#)
[P256 EDF 8.0 HRT Credit Request Letter](#)
[P256a EDF Turbine Overview Map](#)
[P256b EDF Turbine Map Patterson Pass](#)
[P256c EDF Turbine Table](#)
[P257 Subcom and MT Tables of EDF Turbines](#)
[P242 SRC Meeting Summary May 2012](#)
[P244 SRC Call Notes 6-27-12](#)
[P248 SRC Call Notes 7-12-12](#)
[P251 SRC Call Notes 9-21-12](#)

SRC Meeting Participants

SRC Members Days 1 & 2

Joanna Burger
 Jim Estep
 Mike Morrison
 Sue Orloff
 Julie Yee

Staff

Sandra Rivera, Alameda County, Days 1-2
 Andrew Young, Alameda County, Days 1-2
 Mary Selkirk, Facilitator, Days 1-2
 Ariel Ambruster, Associate Facilitator, Days 1-2
 Grace Person, Assistant Facilitator, Days 1-2

Monitoring Team

Chris Brungardt, Days 1-2
 Doug Leslie, Days 1-2
 Jesse Schwartz, Days 1-2
 Brian Karas, Days 1-2

Others

(Meeting sign-in is optional)
 Heather Beeler, USFWS, Days 1-2
 Snehal Bhatt, FloDesign Wind, Day 1-2
 Chris Dreiman, EDF-RE, Days 1-2
 Chris Dugan, TRA Environmental, Day 1
 John Howe, FloDesign Wind, Day 1

Kyle Lanter, EDF-RE, Days 1-2
Nan Leuschel, Ralph Prop II, Day 1
Mary Lim, AWI, Day 1
Mike Lynes, Golden Gate Audubon, Day 1
Bob Power, SCVAS, Day 1
Danielle Roach, CDFG, Days 1-2

Andrew Roth, AWI, Days 1-2
Stu Russell, Point Impact Analysis, Day 1
Shawn Smallwood, Day 1
Joan Stewart, NextEra, Day 1
Loan Tran, NextEra, Day 1
Emre Ergas, Days 1-2

List of SRC Agreements Developed December 5 & 6

(Compiled from this document)

SRC Recommendations for Future Bird Fatality Reports

SRC members raised the following points:

- Tables and figures in the slide presentations should be labeled so meeting participants can immediately find them in the printed report.
- Mention that the analysis was done at the post-stratified BLOB level. It is difficult to corroborate the analysis at the BLOB level because of limited data reported at that level. It is also difficult to identify correlations unless the data are at the BLOB level, because the estimates of standard errors require information on variance within each year. The BLOBs are treated as representations of that information. The stratification of the data at the geographic level is appreciated, since there is no other form of intra-year stratification. The goal is to better understand the potential for a different fatality rate estimate to occur due to sampling variation and to more easily interpret the data as a reviewer.
- Relevant figures should include information acknowledging the change in the Monitoring Program in 2010 to a rotating panel with a fixed 60% set of monitored turbines. Wherever differences occur, they should be noted.
- There was also a request that the Monitoring Team provide a summary table of the use and fatality rates in a tabular form. Ideally, provide the information in the same format as Table 3-7, which shows 2008-2010 adjusted fatality rates, to show the fatalities against the bigger picture of installed capacity. Also, in the tables, identify any major decisions to include or exclude data over time.
- The SRC asked that future reports include annual installed turbine capacity in megawatts across each year, as both total installed capacity for all turbines in the area, and total capacity of the turbines monitored. Previous reports use different numbers for fatalities than recent reports. Also, track adjustment factors that changed and reasons for the change, like megawatt capacity.

SRC Recommendation on Determination of Whether 50% Avian Fatality Reduction Has Been Achieved

After extensive discussion, the SRC was not able to find a consensus on the 50% reduction question.

- Three SRC members agreed that the 50% reduction in fatalities had been achieved.
- One member disagreed that the 50% reduction had been achieved.
- A fifth SRC member stood aside, meaning disagreement with the majority but indicating a willingness not to block the SRC from moving forward.

As described under the SRC Charter, the less-than-100%-consensus recommendation is to be forwarded to Alameda County with a full explanation of the areas of disagreement, as described in this meeting summary.

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