

Meeting Summary | September 12-13, 2007

Altamont Scientific Review Committee

Developed by the Center for Collaborative Policy
Reviewed and Final SRC Approval 12/21/2007

Key Outcomes

SRC Recommendations on Management Strategies

The SRC agreed to recommend a **four-month winter shutdown** for Altamont Pass Wind Resource Area turbines for the 2007-08 winter season to strive to achieve a 50% reduction in mortality during the period January 2007 through November 2009. The winter shutdown strategy may have a questionable effect on burrowing owl fatalities, but data indicate that the shutdown should reduce mortality for the other three focal species. While a four-month winter shutdown may not succeed in achieving the full 50% reduction in raptor mortality, winter shutdown is a management strategy that could assist the wind companies in achieving the 50% reduction while minimizing loss of power generation. The winter period has been estimated to contribute about 16% of the annual electric power generation in the APWRA.

The SRC made the recommendation after reviewing data and analyses from the previous two years of winter shutdown, specifically the Monitoring Team's 9/12/07 Winter Shutdown Data Tables (M15) and Julie Yee's 9/11/07 Winter Shutdown Data Analysis (M16 and M16b); and Wally Erickson's Updated Seasonal Shutdown Analyses 9/12/07 (M13). At its August 2007 meeting, the SRC expressed concern that the settling parties may not be able to achieve the goal of a demonstrated 50% reduction in focal raptor mortality before the settlement deadline of November 2009.

Results to date suggest that the 2-month crossover shutdown design is not having the desired effect with respect to mortality reduction and that a continuation of this strategy – while potentially producing results sufficient to assess the affect of the strategy – will further restrict the opportunities to meet settlement goals. In addition, no other management actions have been implemented that have been demonstrated to have a substantial effect on mortality reduction. Further, there remains some concern on the part of the SRC regarding full compliance with the Tier 1 and 2 removal condition and its potential contribution to mortality reduction. Thus, after reviewing available data and management actions to date, the SRC agreed that a more substantial shutdown period (four months) is the only currently available means of achieving a marked reduction in mortality.

The SRC also recommends that the Monitoring Team and wind companies work together to sequence shutdown timing so monitors can search turbines shortly after they are shut down to improve data validity. Each turbine would be shut down for four months: the shutdown would begin mid-October for some turbines and run through early March for other turbines to achieve a November 1, 2007, to February 28, 2008, shutdown.

In the future, the SRC may recommend other strategies, including another four-month winter shutdown, to achieve the 50% reduction in raptor mortality after evaluating the effects of other management strategies.

Action Items & Meeting Follow-Up

Party	Due Date	Action
Smallwood	Done	Write memo to SRC on data analyzed during SeaWest shutdown (related to seasonal shutdown)
MT	Nov 1	Examine lockdown effect on mortality
Smallwood		Send Thelander study design for burrowing owls to SRC
Smallwood	deferred	Develop first draft of 50% memo (method to determine)
Facilitator	9/18	To SRC for approval -- four-month shutdown memo
Yee	9/14	Tables, intro to M-16
MT	9/14	Add language to M15 to explain assumptions/filters
County		Give MT list of randomly generated turbines for spot checks
County		Confirm 7/1/07 Tier 3 deadline
MT		Jim Castle December meeting talk about burrowing owls
SRC	Dec	Finalize memo on 50%
SRC		List of questions for Jim Castle for preparation for December meeting
Estep	Done	Post American kestrel/burrowing owl job on Western Wildlife Society
MT	Done	Send American kestrel/burrowing owl job description to SRC

Meeting Account

Compliance Reporting

Alameda County presented a summary of compliance activities by enXco and FPLE in relation to removal and shutdown of vacant towers (P54). EnXco reported that all its vacant or derelict towers will be gone by the end of 2007

Discussion

An audience member asked whether the removed turbines will create gaps in strings that could affect the experimental design, and Monitoring Team members responded affirmatively. SRC members agreed that the question of these gaps should be an "issue of interest" they will start tracking and may at some point examine this as an agenda item. They decided that the Monitoring Team will track a sample of turbines that were to have been removed. Monitoring Team members suggested working with a list of randomly generated turbines. Alameda County will provide a list of the turbines slated for removal to the Monitoring Team.

SRC members reaffirmed their desire to know the status of all turbines that should have been removed. The SRC reiterated that the settlement agreement broadly included the removal of Tier 1 and 2 turbines (based on a model and not necessarily designed for this purpose) without consideration of the possible consequences and noted that there

should be an element of 'common sense' to turbine removal. The SRC does not encourage removal of any turbine without assessing the mortality-related effects of the removal.

Data Discussion: Seasonal Shutdown Year 2

At its August meeting, the SRC considered a proposal to recommend a four-month winter shutdown period for 2007-2008 as a way to aid settling parties in achieving the settlement goal of a 50% reduction in raptor mortality by November 2009. Four members wanted to review the Monitoring Team's analysis of 2006-2007 data to evaluate the effectiveness of the winter shutdown before recommending the four-month shutdown, and the 5th was ready to recommend it at that time.

At the September meeting, several newly produced reports and analyses of winter shutdown data were presented: an updated seasonal shutdown analysis (M13) and a draft avian use survey (M14) by Wally Erickson, a set of tables of filtered winter shutdown fatality data by Brian Karas (M15), and a Poisson data analysis of operating vs. non-operating turbines by SRC member Julie Yee (M16).

Before reviewing the reports, the SRC and members of the public framed the focus of the discussion on the following issues:

SRC Questions

- What are data indicating with regards to mortality?
- What is the effect of the seasonal shutdown?
- What constitutes a fatality of unknown cause?

Public Questions

- What are the weaknesses of the data?
- What are the impacts of removing derelict & high risk (Tier 1 & 2) turbines?
- What are the implications of removal vs. relocation?
- How are "fatalities" defined?

Winter Shutdown Schedule (Cross-over Study Design)

	North	South
Nov-Dec 05	Shutdown	Operating
Jan-Feb 06	Operating	Shutdown
Nov-Dec 06	Operating	Shutdown
Jan-Feb 06	Shutdown	Operating

Data Presentation

Brian Karas explained fatality data filters for M15, which were causes of death, date, searcher notes on estimated date of death, and the condition of the carcass (for example, feather piles, bones and scavenged carcasses were eliminated from analysis). SRC members said the remaining data showed a clear difference for fatality of large raptors in relation to operating versus non-operating turbines. Shawn Smallwood said he recently reanalyzed a study he had done on SeaWest turbines after finding out they

were routinely shut down during the winter, and the new data show zero fatalities during shutdown. He will provide a copy of the analysis. (See [P58 Smallwood Note on Winter Shutdown Effect of Enertech Wind Turbines, 9/14/07](#))

Julie Yee presented a Poisson analysis of operating versus non-operating turbines during the winter shutdown using the unfiltered fatality data (M16, P55). The analysis took into consideration scavenging rates and the number of days since the previous search, among other variables. The difference between fatalities for operating and non-operating turbines for American kestrels is significant with high confidence.

The SRC and Monitoring Team members said the data suggest a different mechanism for burrowing owl mortality. SRC members suggested a targeted study of when and how burrowing owls are dying.

The SRC also went over M14, the avian use survey, but concluded that filtered data on raptors of interest and study sites during shutdown and in the summer were needed.

Discussion of Data

SRC members made the following points during discussion:

- SRC members said the data show lower mortality during winter shutdown, which is also the time when there are more birds in the area. There is clearly decreased mortality for red-tailed hawks as a result of the shutdown.
- Bird use data could influence mortality. The SRC discussed whether it would be possible to compare current bird use data to previous studies (Orloff and Flannery, Smallwood and Thelander), given some different parameters in the past. Reanalysis of the previous studies may be necessary. The facilitator established the bird use data issue as an "issue of interest" to be tracked.

4-Month Winter Shutdown Proposal

During discussion, one SRC member said that the weight of evidence suggests winter shutdown produces significant declines in two of the four focal raptor species, red-tailed hawk and golden eagles, and possibly American kestrels as well. Another member said the measure was necessary to achieve meaningful reductions in mortality. A third agreed that winter shutdown is reducing mortalities in at least two focal species and said that unfortunately no other management strategy appears to currently exist that could produce substantial mortality reductions. Two other SRC members were concerned about the lack of data on burrowing owl fatalities. One saw a weight of evidence with only one of the focal species, red-tailed hawk, and suggested increasing the winter shutdown to 2.5 or three months rather than four. After discussion, however, this SRC member concluded that a 2.5 or 3 month shutdown would produce data that could not be compared to previous years' monitoring data.

Two members were concerned that the shutdown would not reduce mortality for burrowing owls. One member suggested that the SRC consider a separate, short-term behavioral study of burrowing owls, including nighttime activity, to help determine what is causing burrowing owl fatalities.

The SRC also discussed whether the four-month shutdown might achieve more than a 50% reduction, thus causing a greater impact on the wind companies than is needed. Shawn Smallwood referred to his April estimate (S19, Smallwood Estimated Effects of Full Winter Shutdown and Removal of Tier 1 & 2 Turbines), which estimated about 44% reduction in mortality with a full four-month winter shutdown and removal of all Tier 1 and 2 turbines.

One member suggested that the recommendation be for the 2007-08 winter only, as future implemented strategies, such as blade painting, might be found to be effective in reaching a 50% goal.

Public Comments

Bill Damon of AWI asked if avian abundance could be factored into the decision, as the data seemed to demonstrate mixed results. He said his company supported methods that don't reduce renewable energy production.

An SRC member responded that, from a statistical standpoint, the data are not mixed: data either indicate a reduction or are inconclusive.

Joan Stewart of FPLE referenced her company's letter (P56) on costs if asked to lock down its Kenetech turbines that normally "feather," or move slowly, when shut down. The letter estimates a minimum cost of \$180,000 to the company to purchase brakes and pay workers to install and remove them.

Elizabeth Murdoch of Audubon said her group has asked that the turbines be locked down, but if there is no mortality effect from the slowing rotating blades, the group will no longer ask for lockdown.

SRC Recommendation on 4-Month Winter Shutdown

The SRC then moved toward formulating a recommendation. The SRC agreed to recommend a one-year four-month winter shutdown for the 2007-08 year, to strive to achieve the goal of a 50% reduction in mortality for the four focal raptor species as a whole, with the following conditions:

- The SRC consider recommending a separate behavior study of burrowing owls
- The shutdowns are sequenced with the timing of searches so turbines are searched shortly after being shut down to improve the validity of the data.
- The shutdown period would start in mid-October and end in early March, with each turbine shut down for four months, to allow enough time to synchronize the shutdown with the searches while closely achieving a Nov. 1, 2007, to Feb. 28, 2008, shutdown.

The recommendation was made with the following caveats:

- It may not have an effect on burrowing owl mortality
- It may not reach the 50% goal
- The SRC may make additional recommendations to reach the 50% goal based on the results of the shutdown, including possibly recommending a full shutdown in subsequent years.

The decision was based on data and analyses of the previous two years of winter shutdown, including the Monitoring Team's 9/12/07 Winter Shutdown Data Tables (M15), Julie Yee's 9/11/07 Winter Shutdown Data Analysis (M16 and M16b) and Wally Erickson's Updated Seasonal Shutdown Analyses 9/12/07 (M13).

Public Comments on Management Strategies Recommendations

Elizabeth Murdoch of Audubon asked if the SRC could estimate the current percentage reduction in raptor mortality since November 2005. The SRC was unable to do so at that time.

Eli Saddler of Golden Gate Audubon told the SRC that the 50% goal is not to be achieved by November 2009, but is to be achieved for the period of January 2007 through November 2009.

Janice Gan of the California Dept. of Fish and Game asked about the SRC's August recommendation in favor of repowering, saying that repowering could have a variable effect on raptor mortality, depending on how it's implemented. In response, SRC members agreed to discuss the issue at a future meeting.

Additional Data

At the next day of the meeting, Julie Yee presented a new Poisson analysis, M16b, of the estimated effect of the four-month winter shutdown. She looked for, but did not find, any instance of one of the focal species exceeding the 50% mortality reduction. Her estimates were less optimistic than Shawn Smallwood's estimate of 44% (document S19), but unlike his, they include background mortality, which would likely be consistent in both operational and non-operational phases. Another possible explanation for differences between Yee's and Smallwood's reduction estimates is that Yee's estimate did not include the reduction effect of removing Tier 1 and 2 turbines. Smallwood noted that applying his estimate of an 8-11% effect for the Tier 1 and 2 removals would bring Yee's estimates closer to his.

Follow-Up Required on Burrowing Owl Behavioral Study:

- To pursue information about burrowing owls, the SRC discussed inviting Jim Castle, a researcher who did a 3-year behavioral study in Solano County, to speak at the December meeting.
- Shawn Smallwood will distribute a burrowing owl study design that he developed with Carl Thelander
- The SRC will continue thinking through the study and investigate with settling parties the possibility of funding for the study

Monitoring Team Discussion on American Kestrel & Burrowing Owl Study

Monitoring Team members gave an update on the American Kestrel and Burrowing Owl study that began Sept. 4, and presented a data table of surveys for the first 8 days of the study (M17). The study is designed to develop a scavenger rate for the two

species to determine how quickly carcasses disappear so mortality rates can be better estimated. The four-month study was designed to search 250 turbines every other day for two two-month periods, September-October 2007, when mortality is most likely to occur; and March-April 2008, when predators are searching for food.

At this point, searchers have not found a single fresh bird; all but one rock pigeon have been scavenged or are feather piles. Several burrowing owl feather piles were found.

Survey Issues

The Monitoring Team reported two concerns about the survey:

- There was not enough staff to search the required number of turbines per day. Solutions include reducing the sample size, hiring more surveyors, or prioritizing certain turbines to search. It would cost \$39,000 to hire one person.
- The study wasn't designed with a ramp-up period in mind, and the first week of searches didn't search enough turbines. Adding a week to the study would cost \$15,000.

During efforts to brainstorm possible solutions, one SRC member proposed reducing the search radius around each turbine from 50 to 40 meters.

SRC Direction to Monitoring Team on Kestrel and Burrowing Owl Study

The SRC agreed:

- To recommend reducing the radius of search area around a turbine from 50 to 40 meters
- To recommend hiring, as soon as possible, another search-team member. The SRC agreed that funding for the additional worker could come from money allocated for the spring 2008 portion of the study, as it seems more important to gather data during the fall period, when mortality is highest.
- As a contingency plan if new staff can't be found, the SRC agreed that the sample size could be reduced from 250 to 220 turbines.
- At a mid-October conference call, the SRC will consider dropping the first six days of data and adding an additional six days to the study.

Follow-Up Required

- The Monitoring Team will prepare a weekly summary of survey data for the SRC

Habitat Conservation

At the August meeting, Shawn Smallwood noted the requirement in Exhibit G-2, the Avian Wildlife Protection Program & Schedule of the conditional use permits, for the SRC to make recommendations by September 2006 to the County for potential on- and off-site wildlife habitat conservation strategies, and the SRC agreed to discuss the matter in September.

SRC members discussed the definition of the requirement, and agreed it was mitigation designed to address mortality that can't be reduced on the wind farm. Habitat conservation was to be within Alameda County to the greatest extent possible.

Habitat Conservation Opportunities

SRC members and Monitoring Team members raised the following ideas:

- Retrofitting dangerous power poles outside the Altamont area to reduce raptor mortality. This was seen as more effective than preserving habitat. PG&E has 2.2 million poles and is retrofitting them at the rate of 2000 per year. Recent research identified particular poles as especially dangerous so funds could be directed to retrofitting these poles to save the same number of raptors as are killed annually in the APWRA.
- Enhancing habitat on adjacent lands to draw raptors away from the APWRA. One type of enhancement would be halting ground squirrel control, which would help with burrowing owl populations.
- Coordinate with the Contra Costa County Habitat Conservation Plan to protect good raptor lands. Alameda County is launching a conservation strategy and is looking to partner with Contra Costa.
- Purchase of conservation easements closer to APWRA
- Burrowing owls have smaller habitat areas than the other focal raptor species so it would be easier to enhance habitat for them
- The Altamont is not breeding habitat for Golden Eagles and the species has such vast foraging areas that habitat conservation could be done far from the Altamont

Limitations and challenges discussed include:

- Attention to the implications of increasing the raptor population in or near the APWRA
- Obtaining funding
- Mitigation should be designed in such a way that it can be permitted by regulatory agencies such as the California Department of Fish & Game
- Monitoring and maintenance may be needed to ensure that replaced pole equipment doesn't wear out (although an established procedure may need less monitoring)
- Fish and Game requires funding for conservation to be into perpetuity, but retrofits may be able to be excepted from that requirement

Upcoming Meeting Dates

Conference Calls

- 9/18/07, 8-9 a.m. -- Blade Painting
- 10/16/07, 9:30-11:30 a.m. -- Adding days to American kestrel & burrowing owl study/look at data

In-Person

- December 12 & 14 (December 13, tour of APWRA)

Future Agenda Topics

- Burrowing Owl Behavior Study
- Jim Castle Burrowing Owl Presentation
- Define Repowering

Documents Circulated at Meeting

M13_ Table 7—Updated Seasonal Shutdown Analyses, 9/10/07

M14_ Wally Erickson, Draft Avian Use Survey Results, 9/12/2007

M15_ Brian Karas, Winter Shutdown Tables, 9/12/2007

M16_ Julie Yee, Winter Shutdown Data Analysis

M16a

M16b

M17_ Brian Karas, American Kestrel & Burrowing Owl Project Update, 9/12/2007

P54_ Rivera/Alameda County: APWRA Compliance of Removal & Shutdown of Vacant Towers 9/12/07

P55_ Julie Yee: Proposed Poisson Model for Operating and Non-operating Effect for Turbine-Related Fatalities, 9/3/2007

P56_ FPLE: Information about “Locking” the Turbine Rotor, 9/11/07

P57_ Julie Yee: Power analysis to determine sample size for blade painting study, 9/16/07

SRC Meeting Participants

SRC Members Days 1 & 2

Joanna Burger
Jim Estep
Sue Orloff
Shawn Smallwood
Julie Yee

Staff

Gina Bartlett, Facilitator, Days 1-2
Sandi Rivera, Alameda County, Days 1-2
Ariel Ambruster, Facilitator Assistant, Days 1-2

Monitoring Team

Brian Karas, BRC, Days 1-2
Brian Latta, UCSC, Days 1-2

Others

(Meeting Sign-in is optional)

Bill Damon, Altamont Winds Inc.
Janice Gan, CDFG
John Moorman, enXco
Tara Mueller, California DOJ/AG
Elizabeth Murdock, Golden Gate Audubon
Eli Saddler, Golden Gate Audubon
Joan Stewart, FPLE and AIC

Appendix: List of SRC Agreements developed September 12 & 13

(Compiled from this document)

SRC Recommendation on 4-Month Winter Shutdown

The SRC then moved toward formulating a recommendation. The SRC agreed to recommend a one-year four-month winter shutdown for the 2007-08 year, to strive to achieve the goal of a 50% reduction in mortality for the four focal raptor species as a whole, with the following conditions:

- The SRC consider recommending a separate behavior study of burrowing owls
- The shutdowns be sequenced with the timing of searches, so turbines are searched shortly after being shut down, to improve the validity of the data.
- The shutdown period would start in mid-October and end in early March, with each turbine shut down for four months, to allow enough time to synchronize the shutdown with the searches while closely achieving a Nov. 1, 2007 to Feb. 28, 2008 shutdown.

The recommendation was made with the following caveats:

- It may not have an effect on burrowing owl mortality
- It may not reach the 50% goal
- The SRC may make additional recommendations based on the results of the shutdown, including possibly recommending a full shutdown in subsequent years.

The SRC will attempt to estimate the potential effect of the shutdown for the entire year. The decision was based on data and analyses of the previous two years of winter shutdown, including the Monitoring Team's 9/12/07 Winter Shutdown Data Tables (M15), Julie Yee's 9/11/07 Winter Shutdown Data Analysis (M16 and M16b) and Wally Erickson's Updated Seasonal Shutdown Analyses 9/12/07 (M13).