

Appendix C. Technical Advisory Committee Meetings

**PacifiCorp Glenrock/Rolling Hills Technical Advisory Committee Meeting
June 11, 2009**

Meeting attendees:

Travis Brown, PacifiCorp
Laine Anderson, PacifiCorp
Scott Gamo, Wyoming Game and Fish Department
Patricia (Trish) Sweanor, U.S. Fish & Wildlife Service
Scott Covington, U.S. Fish & Wildlife Service
Clark McCreedy, U.S. Fish & Wildlife Service
Greg Johnson, Western EcoSystems Technology, Inc.

The meeting was held via conference call and was initiated at 10 a.m. MST. All members of the Technical Advisory Committee (TAC) were present.

When asked about the role of the three FWS participants, Trish stated that she would be the primary TAC member but that the other FWS employees were participating as a learning experience.

A discussion then ensued about alternates to primary TAC members. Craig Lucke with PacifiCorp will serve as an alternate to Travis Brown. Trish stated that Scott Covington would be her alternate. Scott Gamo named Mary Flanderka as an alternate. Luke Martinson with WEST would be an alternate to Greg Johnson.

The TAC charter was discussed and there were no comments on the charter. The charter will be updated with the TAC member alternates.

Travis stated that reports summarizing study results would be provided to the TAC every six months. The first report will be available around November 1, 2009.

It was asked if there were any more turbines planned for the site. Travis stated that no additional turbines are planned at this time. If a decision were made to expand the sites in the future, it would require an additional permit from the Wyoming Industrial Siting Council.

A discussion then ensued regarding the protocol.

Trish wanted to know if raptor nest monitoring was being conducted as part of the project. No raptor nest monitoring is currently being conducted at the Glenrock/Rolling Hills project area, although the golden eagle platforms that were moved are being monitored at their new location.

Trish said that the FWS is going to recommend in a letter that post-construction monitoring of active raptor nests within one mile of turbines be conducted. Monitoring should be conducted in early May, early June and early July. The FWS is requesting this, as they are interested in how turbines affect nesting success.

Trish stated that the FWS would like to see more frequent searching, perhaps as often as daily searches. Greg stated that the monitoring protocol is designed to determine if mortality is high, moderate, or low relative to other wind energy facilities. The proposed sampling frequency of

weekly searches during migration and monthly searches outside migration seasons is sufficient to achieve this objective. If problems are found, sampling frequency could be adjusted in future monitoring years to target certain species or groups as well as seasons.

In addition to fatality monitoring, WEST has also collected pre-construction pronghorn and sage-grouse pellet count data for the displacement study and is continuing with the pellet count studies at Glenrock/Rolling Hills.

Trish suggested that bird displacement be assessed by conducting point count surveys in the project area and a reference area. Travis suggested that the FWS send their requests in a letter and he will respond to them.

The discussion then centered on the eagle platforms that were moved from the project area. FWS would like a copy of the report so that they can see where the nests were moved. PacifiCorp will send the report. Travis and Greg stated that these nests have been monitored over the last two years and one has been occupied by a ferruginous hawk each year. No eagles have used the platforms although golden eagles have been seen in the area and it appears to be good habitat for golden eagles. The FWS stated that they would also like more involvement earlier on in the process. Greg stated that we had met with and worked with Pat Diebert of the Cheyenne Ecological Services Office when obtaining the permit to move the eagle nest platforms.

For future correspondence, it was suggested that all members of the TAC be copied on all emails related to the TAC.

The meeting was adjourned at 10:30 a.m.

**PacifiCorp Seven Mile Hill and Glenrock/Rolling Hills Technical Advisory Committee Meeting
January 27, 2010**

TAC member attendees:

Travis Brown, PacifiCorp
Laine Anderson, PacifiCorp
Scott Gamo, Wyoming Game and Fish Department
Trish Sweanor, U.S. Fish & Wildlife Service
Greg Johnson, Western EcoSystems Technology, Inc.

Absent: Todd Heward, Medicine Bow Conservation District (Seven Mile Hill TAC only)

The meeting was held via conference call and was initiated at 2 p.m. MST. Greg Johnson, Trish Sweanor and Scott Gamo met at the USFWS office in Cheyenne whereas the others attended by conference line.

The purpose of the meeting was to present results of the first six months of monitoring (late May through late November).

Seven Mile Hill Data Review:

Greg Johnson presented the following results for Seven Mile Hill

Fatality studies

Total of 378 searches have been conducted.

13 birds found (7 passerines, 3 raptors, 3 waterbirds).

18 bats found (13 hoary, 4 silver-haired, 1 western long-eared myotis).

The Seven Mile Hill facility has 79 turbines with a nameplate capacity of 118.5 megawatts. Rough fatality estimates based on searcher efficiency and scavenger removal (~6X multiplier), and proportion of the turbines searched (3X multiplier), would be 240 birds and 270 bats, or 2.0 birds and 2.3 bats/MW/year, which is low based on national averages. Because most bat mortality occurs in the late summer and early fall, most of the expected annual bat mortality has likely already occurred and this estimate will likely not increase greatly.

Greater Sage-Grouse Lek Monitoring

First data ever collected on sage-grouse response to wind turbines:

Lek ID	Distance to nearest turbine	2008 male count	2009 male count
Missouri John	0.85 mi	74	62
Pine Draw	0.38 mi	33	20
Commo 1	0.83 mi	23	21
Total		130	103

Pronghorn and Sage-Grouse Pellet Count Data

Pellet count data collection was limited to areas within 100 m of turbines.

Data indicate displacement of sage grouse and pronghorn during construction. After construction, some minor displacement of sage grouse may be indicated (84% decline on turbine plots vs. 78% decline on reference area), although likely not statistically significant.

Pronghorn use appears to have increased within 100 m of turbines between 2007 and 2009, but increase was 22% at turbines and 130% at reference plots.

Pellet data have yet to be analyzed statistically but will be for final report.

Glenrock/Rolling Hills Data Review:

Greg Johnson presented the following results for Glenrock/Rolling Hills:

Fatality studies

Total of 734 searches have been conducted.

35 birds found (24 passerines, 6 raptors, 5 others (sage-grouse, American coot, mourning dove, northern flicker, common nighthawk))

48 bats found (23 hoary, 22 silver-haired, 3 unidentified)

Rough estimates based on searcher efficiency and scavenger removal (~5X multiplier), and proportion of the turbines searched (3X multiplier) would be 465 birds and 540 bats, or 2.0 birds and 2.3 bats/MW/year, which is low based on national averages and interestingly the exact same estimate as for Seven Mile Hill.

Sage-Grouse Pellet Count Data

Pellet count data collection was limited to areas within 100 m of turbines.

Data indicate displacement of sage grouse during construction. After construction, no displacement of sage grouse indicated (12% decline on turbine plots vs. 33% decline on reference area).

Pellet data – yet to be analyzed statistically

Discussion:

Trish indicated concern over golden eagle and ferruginous hawk fatalities. During the first six months, raptor fatalities at Seven Mile Hill include two golden eagles and one ferruginous hawk. At Glenrock/Rolling Hills during the first six months, raptor fatalities include two golden eagles and one ferruginous hawk.

Trish asked if any fatality estimates have been made for raptors. Greg replied that raptor fatality estimates will be presented in the final report once all data are available.

Travis indicated that all golden eagle carcasses will be sent to Washington State University vet lab for necropsy. The Wyoming vet lab indicated they could not accomplish this due to their schedules. Trish suggested that all ferruginous hawks also be sent for necropsy. Travis agreed.

Travis stated that PacifiCorp is taking steps it can to reduce raptor mortality, and talked about potential options including use of flight diverters (e.g., firefly) as well as perhaps balloons or other scare tactics. PacifiCorp is talking to universities about developing procedures to reduce raptor fatalities (e.g., University of Wyoming, Texas Tech). Both Trish and Scott expressed concern that care must be used when considering scare tactics to restrict raptor use, as these tactics could also impact or displace other birds such as song birds and sage-grouse.

Travis then went over the plans to monitor raptor nests within one mile of each facility as well as to repeat the avian use surveys at both facilities so that avian use can be compared prior to and after construction. The avian use surveys will be conducted at the same 12 points at each site using the same methods, but the intensity (number of surveys at each point) will be doubled.

Trish stated that she was going to request this and was pleased to hear that PacifiCorp is already planning to implement these studies.

Trish asked if we had any data which suggests bats are attracted to turbines. Greg stated that they have no data for the PacifiCorp sites but they have night vision data from a study in Illinois which indicates 82% of bats observed flew straight past turbines and did not appear attracted to them. Trish asked if bat fatalities were submitted for barotraumas analysis. Greg replied that it is necessary to use all fresh bat fatalities for searcher efficiency and scavenger removal trials, and that none were therefore submitted for analysis. He mentioned that other studies are examining the barotrauma issue in other portions of the country.

Trish also asked about our predictions of bird and bat fatality based on the baseline study and pointed out that our bat prediction for Glenrock/Rolling Hills will likely be lower than actual mortality. Greg mentioned that these predictions were based on fatality rates at other facilities, and the sample size is very small. He stated that the only known fatality data for Wyoming are from Foote Creek Rim, and asked Trish and Scott if they were aware of any data from the wind project west of Cheyenne and the two near Evanston. Neither Scott nor Trish was aware of any data from these facilities. Scott pointed out that that the data from Seven Mile Hill and Glenrock/Rolling Hills will help answer some of these questions.

Scott asked about greater sage-grouse nest success data from the WEST telemetry study being conducted near Seven Mile Hill. Greg stated that nest success was lower for nests within one mile of turbines, but cautioned that there are no pre-construction data and it is too early to start making any conclusions on effects of wind turbines on sage-grouse.

Scott asked about the pellet study and wanted to know if there were any other methods we could be using, as Game and Fish has decided not to ask for any more pellet count studies. Greg stated that being as we had good pre-construction data it would be best to continue using this technique.

Future work was then discussed. In addition to conducting the raptor nest and avian use surveys, Trish stated that she would like to see fatality surveys continued for an additional year.

Meeting adjourned.

**PacifiCorp Glenrock/Rolling Hills Technical Advisory Committee Meeting
August 12, 2010**

TAC member attendees:

Travis Brown, PacifiCorp
Laine Anderson, PacifiCorp
Scott Gamo, Wyoming Game and Fish Department
Trish Sweanor, U.S. Fish & Wildlife Service
Greg Johnson, Western EcoSystems Technology, Inc.

Absent: Scott Darrah, USFWS

In addition to the TAC, Scott Hicks with USFWS, and Mark Tallman and Bill Lawson with PacifiCorp attended the meeting.

The meeting was held via conference call and was initiated at approximately 2:30 p.m. MST. Greg Johnson, Trish Sweanor, Scott Gamo and Scott Hicks met at the USFWS office in Cheyenne whereas the others attended by conference line.

The purpose of the meeting was to present results of the first full year of monitoring data (May 2009 through May 2010).

Glenrock/Rolling Hills Data Review:

Greg Johnson presented the following results for Glenrock/Rolling Hills

Fatality Monitoring

- 1,214 searches conducted
- 62 bird fatalities found (41 passerines, 10 raptors, 2 sage grouse, 5 waterbirds/shorebirds, 1 common nighthawk)
- 57 found at turbines and 5 found at met towers (all guyed met towers have been removed)
- Raptor fatality estimate – 0.05/MW/year
- All bird fatality estimate – 1.27/MW/year
- 58 bat fatalities (31 hoary bats, 24 silver-haired bats, 3 unid.)
- Bat fatality estimate – 1.18/MW/year

Pellet Count Studies

- Measured use by sage-grouse in close proximity (within 100 m) of turbines
- Sage grouse use declined during construction, increased to preconstruction levels in 2009, and declined in 2010, as did reference area

Raptor Nest Surveys

- 1 golden eagle nest present on natural substrate in 2007, but none present in 2010 (one located just outside 2-mile buffer in 2010)
- Use of the project area by other nesting raptors lower in 2010 than in 2007

Incidental Wildlife Observations

- 30 groups totaling 89 sage grouse

- 1 mountain plover nest within search plots (proposed for listing)
- 31 short-horned lizards, 5 bullsnakes, 4 rattlesnakes, 2 garter snakes recorded in search plots

Golden Eagle Monitoring Study

- A monitoring study for golden eagles was implemented in April 2010 that consists of eagle surveys along selected turbine strings to map eagle flight paths and document behavior, fatality searches every two weeks at all turbine strings where eagle fatalities have been found, and detailed habitat mapping.
- Preliminary data for the golden eagle monitoring study will be provided in a report that includes all data collected through the end of July.

Conclusion

Data from Seven Mile Hill and Glenrock represent only the 2nd and 3rd set of post-construction monitoring data for Wyoming

Discussion:

Fatality numbers should be expressed as number per turbine as well as number per megawatt.

A map showing which turbines were surveyed, as well as a table that provides UTM coordinates for turbines and fatality locations should be included in the report.

All maps showing the Glenrock site should be provided on paper 11 X 17 in size in the report for ease of reading.

The figure caption for the graph showing timing of bird and bat fatalities should be labeled to indicate the dates presented are the dates the casualty was found, not the date it was estimated to have died.

Scott Gamo stated that use of pellet counts is an antiquated method and will no longer be required.

The three active golden eagle nests on platforms present before the project was built need to be discussed in the report and a map showing their location should be included.

For the maps showing raptor nest locations in 2007 and 2010, color codes for each species of nesting raptor should be consistent across maps.

Future work was then discussed. It was suggested that as part of the golden eagle monitoring program the presence of domestic sheep that graze adjacent to the project area should be recorded by the survey crew each time they are out there. In addition, the rock piles on the site created during reclamation of the coal mine should be surveyed to determine the number of rabbits using them.

If presence of rabbits at the rock piles is determined to be an issue possibly affecting golden eagle fatality rates, an effort should be made to contact DEQ and determine if the mine permit could be amended to allow removal of the rock piles.

Meeting adjourned.