

DOCKETED

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**Ivanpah Solar Electric Generating System (Ivanpah)
Avian & Bat Technical Advisory Committee (TAC) Meeting**
March 24, 2017 – Meeting Notes

TAC Meeting on March 24, 2017 at the California Energy Commission

TAC Members Present: Amedee Brickey – TAC Member - USFWS
George Piantka – TAC Member - Solar Partners I, II and VIII,
LLC

Via Teleconference: Michael Ahrens – TAC Co-chair - BLM
Magdalena Rodriguez - TAC Member – CDFW
Katherine Maikis – BLM – Needles Field Office Biologist

Invited Guests: Shawn Pittard – Assistant Deputy Director – CEC
Joe Douglas – CEC Compliance Project Manager
Christine Root – CEC Compliance Office Manager
John Hillyard – Biological Resource Manager CEC
Thomas Leeman – USFWS
Tim Sisk – Solar Partners I, II and VIII, LLC
Karl Kosciuch – WEST, Inc.
Marc Sydnor – Sydnor and Associates, Inc.

Via Teleconference: Daniel Riser-Espinoza – WEST, Inc.

Introductions

- Attendee introductions (TAC members and invited guests)
- Michael Lewis, former Co-chair, is now assigned to other projects at CEC.

Review of Agenda

- Agenda items reviewed – no changes.

Review of December 16, 2016 Meeting Notes and follow-up actions

- Solar Partners to provide schedule and information for Sandia National Laboratory Study meetings to CEC.
 - Solar Partners will provide the Sandia Labs meeting date to CEC/TAC when scheduled
- Solar Partners to provide September and December 2016 TAC notes
 - Solar Partners provided to the TAC on December 30, 2016
 - TAC to review and provide comments
- WEST to revise the Summer Report per TAC comments
 - Solar Partners provided to TAC on November 15, 2016.
 - TAC to review Summer Report and provide comments.
- WEST to provide Fall Report based on the seasons as defined in the Plan.

- Draft Fall Report submitted to the TAC on January 23, 2017 incorporated the Plan seasons.
- The Annual Report will discuss the biologically informed seasons.
 - Draft Annual Report submitted to TAC on January 31, 2017 incorporates the biologically informed seasons
- Solar Partners will provide a report to describe the modifications to the deterrence systems.
 - Deterrence system update memo provided to TAC on March 16, 2017.

Follow-up Items:

- Solar Partners to provide meeting schedule for Sandia Labs advanced heliostat positioning project.
- Solar Partners to re-issue electronic request for review of September and December 2016 TAC notes and TAC to review and comment.
- TAC to review and provide comments on Summer Report.
- TAC to review and provide comments on Annual Report.

Presentation by WEST of Avian Fatality Estimation:

- WEST reviewed the goals of the Avian and Bat Monitoring and Management Plan (Plan) – to estimate avian mortality from collision and solar flux that is associated with the facility.
- WEST explained that the certainty of the estimates is, in part, driven by inference, which in turn is driven in part on the type of detection. For example, singed carcasses show direct evidence, collision show direct and indirect evidence, and unknown show no evidence. Hence, inference associated with singed carcasses is high, whereas inference for unknown detections is low.
- WEST also explained that the certainty in estimates is related to the probability of detecting a carcass within different areas of the facility. High probability occurs in the tower area where there is little vegetation and 100% of the area is searched, low probability occurs in the heliostat area where there is lower visibility from vegetation and less of the area is searched.
- Combining these two factors, there is high confidence in the estimates from the tower area for singed and entrapped detections, moderate confidence in the tower area for unknown cause and in the heliostat area for known cause, and low confidence in the estimates from the heliostat area with unknown cause.

TAC Discussion:

- No comments on WEST fatality estimation presentation of confidence in estimates.

Follow-up Items:

- None

Presentation by WEST of the Fall 2016 Report

- Average probability of avian carcass persistence (small birds) during the 7-day survey interval was 34%. Large bird persistence time consistent over seasons/location; therefore, testing discontinued per Revision 13 of the Plan.
- Searcher efficiency was higher in the tower area than in the heliostat area.
- No obvious temporal pattern in detections was observed in the tower area or heliostat area.
- High confidence was associated with the tower area singed and collision estimates.
- Moderate confidence is associated with heliostat area known estimate and tower area unknown estimate.
- Low confidence was associated with the heliostat area unknown estimate.

TAC Discussion:

- TAC discussed the number of detections in the heliostat field and whether less than or equal to 5 detections has occurred when 24% of the heliostat array was surveyed. WEST responded that two previous seasons had equal to or less than 5 detections when 24% of the heliostat area was monitored.
- TAC discussed when a feather spot classified as a carcass. WEST explained the criteria for a feather spot to be counted as a detection (at least two or more primary flight feathers, 5 or more tail feathers, or 10 or more feathers of any type concentrated together in an area 1-m² or smaller, without any bone, beak, or significant amounts of flesh or skin). A carcass is distinguished from a feather spot, where a carcass is an intact whole bird. Broken up carcasses are those associated with at least some bone or tissue components.

Follow-up Items:

- None

Presentation by WEST of the Annual Report:

- WEST displayed the temporal patterns of detections from year 1 and 2 that structured the biologically informed seasons.
- Average probability of avian carcass persistence has varied seasonally for small birds, and no seasonal effect was previously found for large birds.
- Searcher efficiency for year three was concordant with the assumptions in the Plan and results have been consistent among years and seasons.
- Bat mortality was reduced by approximately 50% between Year 1 and Years 2 and 3. Bat sonic deterrence was deployed in Unit 1 in Year 1 and in Units 2 and 3 at the beginning of Year 2.
- Temporal patterns show elevated avian detections in the spring and fall monitoring periods.
- High confidence was associated with the tower area singed and collision estimates.
- Moderate confidence was associated with heliostat area known estimate and tower area unknown estimate.
- Low confidence was associated with the heliostat area unknown estimate.
- Top three individual species detected were unidentified small birds, unidentified sparrows and white crowned sparrows – with the primary cause of mortality being

unknown (low confidence estimates). These three unknown classifications accounted for 48% of the estimated fatalities for unknown cause.

- Of the known species with known cause mortality (high confidence), all the top species were common species and had mortality levels that would not affect local, regional, or national populations.
- The overall assessment of avian species mortality levels was consistent with the low category as per the Plan.
- WEST recommended using feather spots instead of small bird carcasses in the small bird searcher efficiency trials, since the results are comparable. The substitution would decrease the carcasses available for scavenging at the facility.

TAC Discussion:

- TAC discussed the species used for scavenger trials. WEST explained that ring-neck pheasants, rock pigeons, and mallard hens are used for large birds. House sparrows and *coturnix* quail or Japanese quail, are used for small birds.
- TAC discussed when the bat deterrence was active. WEST explained that there was a short-term outage of the deterrence units in Year 3. A protocol has been enacted to monitor the units.
- TAC discussed the birdcast radar and the nearest location to Ivanpah. WEST stated that the nearest radar unit for birdcast is in Henderson, Nevada.
- TAC discussed the distance to the carcasses found on other lands. WEST explained that other lands include those lands that are not systematically searched, but are within the facility and subject to incidental finds on and off the facility, including vehicle strikes along nearby roads. No singed carcasses have been found outside of the project and no reports of singed detections have been received during checks with local veterinarians; 99% of singed detections have been found in the tower area.
- TAC discussed the unknown cause estimates in Year 1 and 2 related to Year 3. WEST explained that the perceived increase is largely driven by the reduction in search coverage of the heliostat field from 24% to 8% and carcass persistence (more scavenging) that decreased slightly in Year 3. Also, as discussed previously, the confidence in the heliostat unknown cause detection category is low. Regardless, the fatality estimates have confidence intervals that largely overlap, indicating that the values may not be statistically different.
- TAC discussed whether increases in power production have increased detections. WEST explained that the flux is concentrated near the tower and all the carcasses that are singed are found within that area. Mortality data from the site shows a seasonal pattern that suggests power output is not related directly to the estimated fatalities.
- TAC discussed whether there is a geographic component to the feather spot distribution observed. WEST stated that they have found roadrunner feather spots along the fence. However, with other species there is not a distinct pattern. The low number of roadrunners observed at the site do not appear to support the high species estimates from the roadrunner feather spots, illustrating the issues with the unknown cause heliostat area estimates.
- TAC discussed the process for examining the carcasses and making the determination of the cause of mortality. WEST explained that there is a well-equipped, dedicated laboratory space at the facility for the classification of the species and determination of

the cause of mortality. The equipment includes a binocular microscope and a library of photographs for species comparisons. The results from the site have correlated with the determination of the USFWS Forensics Laboratory necropsies.

- TAC discussed the classification of the carcasses and feather spots. WEST explained that singed birds are always placed in the singed classification, even if they are subject to collision after the singed event.
- TAC discussed the injured birds. WEST indicated that injured birds are taken to a rehabilitation facility. Licensed vets are present at these facilities.
- TAC discussed the detection of birds affected by solar flux in relation to the raven monitoring efforts and the areas monitored. WEST and Solar Partners stated that the veterinarian who did the raven monitoring did not find any singed carcasses outside of the tower area during monitoring. In addition, none were detected during regional awareness monitoring.
- TAC discussed how the small bird scavenger trials compare over time. WEST explained that the scavenger trials vary over year and season. WEST clarified they are not recommending the cessation or modification of these trials.
- TAC discussed recommendation to modify searcher efficiency trials to substitute feathers for small birds. WEST explained that feather spot trials will allow for comparable searcher efficiency metrics and the search personnel are generally consistent on site.

Follow-up Items:

- WEST to provide a memo on the proposal to modify the small bird searcher efficiency trials to use feather spots.

WEST presents 2016-2017 Winter Monitoring Efforts

- Average probability of avian carcass persistence (small birds) during the 21-day survey interval was 39%. Large bird persistence time testing discontinued per Revision 13 of the Plan.
- Searcher efficiency exceeded plan expectations.
- Overall, detections were low in the winter season.

TAC Discussion:

- TAC discussed the field conditions during monitoring and whether large storm or rain events impacts data collection. WEST stated there was no loss of survey effort or survey area because of the weather during the winter seasonal monitoring.
- TAC discussed when the report is scheduled to be presented to the TAC. WEST stated that the report is scheduled to be provided in June – 90 days following the end of the winter monitoring season.

Follow-up Items:

- None

Solar Partners Deterrence Update

- Sonic deterrence (BirdGard) in the tower area was enhanced using elevated amplification and directed speakers.

- Chemosensory deterrence (Bird Buffer) in the tower area was placed on the 2nd floor of the tower and deterrence concentrations increased from 20% to 40%.
- The enhanced deterrence measures (BirgGard and BirdBuffer) were installed in advance of the spring migration.
- Roadrunner BMP has been implemented with four at unit 1; 18 total are planned. The 14 additional BMP installations are out to bid.

TAC Discussion

- TAC discussed noise levels of the enhanced BirdGard system. Solar Partners measured the lower noise detected at the fenceline and explained lower levels are likely the result of focused speakers that lower noise dispersion.
- TAC discussed whether birds have been observed nesting in the towers. WEST and Solar Partners stated that except for a single raven that had attempted to nest, no birds have been noted to be nesting in the towers.

Follow-up Items:

- CEC staff has received the deterrence system update memo and will provide comments.
- CEC to designate a new official TAC Co-chair member.
- Solar Partners to add Thomas Leeman at USFWS and Shawn Pittard at CEC to email list.

Next Meeting:

TAC comments on Summer, Fall and Annual reports to be provided by April 14th for discussion via teleconference on April 25, 2017.

Avian & Bat Technical Advisory Committee (TAC) Meeting - Continued

April 25, 2017 – Meeting Notes

TAC Meeting on April 25, 2017 via Teleconference

TAC Members: Michael Ahrens – TAC Co-chair – BLM
 Eric Knight – TAC Co-chair - CEC
 Thomas Leeman – TAC Member - USFWS
 Magdalena Rodriguez - TAC Member – CDFW
 George Piantka – TAC Member - Solar Partners I, II and VIII, LLC

Invited Guests: Shawn Pittard – Assistant Deputy Director – CEC
 Carol Watson – CEC Biologist
 Christine Root – CEC Compliance Office Manager
 John Hillyard – Biological Resource Manager CEC
 Tim Sisk – Solar Partners I, II and VIII, LLC
 Karl Kosciuch – WEST, Inc.
 Marc Sydnor – Sydnor and Associates, Inc.
 Daniel Riser-Espinoza – WEST, Inc.

Introductions:

- Attendee introductions (TAC members and invited guests)
- Eric Knight is now the TAC Co-Chair for CEC
- Thomas Leeman is now TAC member for USFWS

Review of Agenda:

- Agenda items reviewed – no changes.

Review of previous Meeting Notes:

- TAC Notes from September and December have been docketed.

Follow-up Items:

- Revise dates for the March 2017 notes.
- TAC notes from this meeting were appended to the March 2017 notes.

Summer Report and Status:

- TAC is prepared to docket the report pending minor editorial revisions

Follow-up Items:

- TAC to send the final editorial comments on report.

TAC Fall Report Comments:

- TAC had no comments on the Fall Report

Follow-up Items:

- None

TAC Annual Report Comments:

- TAC noted minor editorial/typographical revisions.
- TAC discussed the implementation of enhanced deterrence measures and whether this information should be in the annual report. NRG indicated that the enhancements were implemented in early 2017 during the Winter Season, so descriptions of the enhancements will be provide in the Winter Report.
- TAC discussed how biologically informed seasons were described in the annual report. WEST responded that the monitoring is still conducted according the seasons described in the ABMMP, and the biologically informed seasons are only used in the context of fatality estimates for year over year comparisons.
- TAC discussed the influence of the unplanned forced outages on the temporal patterns of detections both within season and throughout the year. WEST explained that the unplanned forced outages may have had an effect at each unit within the spring season, but did not affect the overall seasonal patterns throughout the year.
- TAC discussed the enhancement of the deterrence measures. NRG explained the timing and enhancement of the measures. No concerns were identified with the enhancement of the deterrence measures.

Follow-up Items:

- TAC will provide final written comments by Monday May 1, 2017.
- WEST to incorporate the final comments.

TAC Searcher Efficiency Protocol Comments:

- TAC discussed the proposed protocol revisions to substitute feather spots for small birds and asked about the timing for implementing the feather spot searcher protocols. WEST explained that they are not changing protocols until authorized, and explained that their preference would be to have the trials commence at the beginning of the summer season.

Follow-up:

- Final TAC comments will be provided by May 3rd for the proposed searcher protocols.

Next Meeting:

- June 26th in Sacramento