

DOCKETED

Docket Number:	09-AFC-07C
Project Title:	Palen Solar Power Project - Compliance
TN #:	202013
Document Title:	Forensic Lab Report Evaluation
Description:	Report Evaluation
Filer:	Marci Errecart
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	4/11/2014 3:55:08 PM
Docketed Date:	4/11/2014

Agency Review of ‘Preliminary Analysis Report on Avian Mortality at Solar Energy Facilities in Southern California’

Background

In an effort to increase the amount of renewable energy generation in the State of California, several solar projects have been approved by County, State, and Federal agencies in recent years in areas with minimal topography and high solar radiation. The US Fish and Wildlife Service (FWS), as part of its review of these projects, expressed concern over potential impacts to migratory birds and requested the permitting agencies require monitoring and reporting of wildlife fatalities associated with construction and operation of these projects. Both the California Energy Commission (CEC) and the Bureau of Land Management (BLM) included a requirement that developers prepare and implement a monitoring plan under their respective approval processes. During the construction of several projects, avian and bat fatality information was submitted to the FWS. As a preliminary step to identify and implement minimization and adaptive management measures for the solar projects, Region 8 of FWS asked the agency’s Office of Law Enforcement (OLE) to conduct forensic analyses on birds collected at some of these facilities to determine the primary cause of death, and provide insight as to the number of birds found dead or injured. The FWS’s OLE agreed to assess carcasses collected at three energy facilities in Southern California [Desert Sunlight, Genesis, and Ivanpah Solar Energy Generating System (ISEGS)]. Each of these three facilities utilizes a different solar energy technology (photovoltaic, solar thermal parabolic trough, and solar thermal power tower).

Status

In the spring of 2014, the FWS Forensic Lab prepared a Preliminary Analysis Report (Forensic Lab Report) on their findings and provided it to the three solar facility operators, BLM, CEC, California Department of Fish and Wildlife (CDFW), and FWS, Region 8. This report included a summary of the results of the analyses of 233 bird carcasses that had been recovered from these three projects. In addition, the Forensic Lab Report included recommendations for the FWS and facility operators to consider that might reduce impacts to birds and bats and improve data collection at the facilities. The divisions of Migratory Birds, Ecological Services, and OLE in Region 8 of the FWS agreed to review these recommendations. Below is a summary of our review.

Monitoring/Detection Measures The Forensic Lab Report emphasized the scarcity of knowledge regarding the scope of avian mortality at the solar facilities and identified challenges to data collection including: large facilities which are difficult to efficiently search for carcasses; vegetation and panels obscuring ground visibility; carcass loss due to scavenging; rapid degradation of carcass quality hindering

cause of death and species determination; and inconsistent documentation of carcass history. In order to address these challenges The Forensic Lab Report made the following four recommendations:

Forensic Lab Report Recommendation: 1) Install video cameras at the ISEGS project around each tower to record birds and bats entering and exiting the flux.

Due to the intensity of light at the collector system on top of the power towers at the ISEGS project, it is unclear at this time whether “off-the-shelf” video camera equipment would effectively capture the desired information. The US Geological Survey (USGS) has been funded to conduct a proof-of-concept study to evaluate several types of video cameras to determine which, if any, would effectively capture a viable image at solar power tower facilities. The study will also evaluate the use of other technology, such as radar equipment. The FWS would like to use the best technology available to monitor bird and bat movement around the facility and evaluate impacts of concentrated flux levels. Determining bird and bat passage rates through the flux field during operations might provide valuable information for addressing mortality events. A multi-agency Technical Advisory Committee (TAC) has been established for the ISEGS project. The TAC will confer with the USGS scientists after their first field experiment (scheduled for late April, 2014) for insight into what kind of video equipment will be most effective at capturing aerial species exposed to the flux field.

*Forensic Lab Report Recommendation: 2) Conduct daily carcass surveys for birds, bats, and insects at the base of each tower and the area that is cleared of vegetation out to approximately 850 feet around each tower at the ISEGS facility.*¹

The operator of the ISEGS project is implementing a systematic monitoring plan as described in their Avian and Bat Monitoring and Management Plan (Avian Plan). This type of document is also commonly referred to as Bird and Bat Conservation Strategy (BBCS). One of the goals of the Avian Plan is to estimate the overall mortality of birds and bats at the facility. The Avian Plan includes monitoring of defined area searches throughout the solar field, including 100 percent coverage for bird and bat carcasses in the 850-foot cleared area under each of the three power towers every week in the spring and fall. The monitoring plan uses carcass persistence and searcher efficiency surveys as corrective factors to inform the overall bird and bat mortality estimate throughout the facility. The monitoring plan will need to be adapted to better estimate mortality of birds that are injured at the project site and die later in time, outside of the solar field.

The current monitoring plan does not include an assessment of impacts to insects. The USGS pilot study mentioned above also includes a pilot evaluation of monitoring methods for insects. The TAC established for the ISEGS project will confer with the USGS scientists after their first field experiment (scheduled for late April, 2014) for insight into what kind of monitoring methodology will be most effective at capturing information on the extent of insect mortality.

Project specific information will determine the frequency of carcass surveys needed, and FWS will make those recommendations through the TAC. Until the TAC takes action on this topic, FWS recommends

¹ After discussions with the OLE, this recommendation has been restated to clarify the original intent.

daily surveys for birds, bats, and insects within the 850-foot cleared area under each of the three towers. These daily surveys can be utilized within the framework of the current monitoring plan in the BBCS by adjusting the correction factors developed for this project that are used for this portion (850-foot cleared area around the towers) of the overall search area. Although insects are not currently part of the monitoring outlined in the Avian Plan, general information on the quantity and type of insects (beetles, butterflies, etc.) located will be useful in improving our understanding of flux impacts to the larger wildlife community.

Forensic Lab Report Recommendation: 3) Use dogs to detect dead and injured birds.

Injured birds are known to seek cover under and within vegetation, which can make them difficult to detect during monitoring surveys. Trained search dogs have been used to locate difficult to detect items with varying levels of success. The operator of the ISEGS facility recently notified the TAC of their plans to conduct an experiment utilizing trained dogs to find carcasses. Their proposal will be discussed at the next TAC meeting which will be held in late April or early May of 2014. We will assess the effectiveness of this method after further evaluation of the proposal.

Forensic Lab Report Recommendation: 4) Implement raven deterrent actions to minimize removal of carcasses.

We agree that raven deterrents should be implemented on solar projects. Each of these three projects was required to develop a site-specific raven management plan to reduce subsidies for ravens as well as discourage and manage nests that are constructed on-site to address raven predation on desert tortoises, a federally threatened species. In addition, each project contributed funds to a larger effort to offset indirect and cumulative impacts from increasing raven populations associated with development projects. The funds are being used to implement a regional plan to reduce predation by ravens on the desert tortoise in the California desert. More information on this program can be found at <http://dmg.gov/wg-rm.php>. The FWS will work with CDFW, BLM and CEC, as appropriate, to assess the effectiveness of the site-specific plan developed for each of these projects. Adaptive management within these plans may help to decrease raven activity at project sites. Furthermore, the context for this recommendation is to improve overall mortality estimates for the facility because dead and injured birds would not be scavenged and could therefore be counted. As discussed above (#2), corrective factors determined through carcass persistence and searcher efficiency surveys should enable an estimate of the overall mortality while accounting for scavenging.

Bird Mortality Avoidance Measures: The Forensic Lab Report identified specific hazards to birds and bats at the solar facilities that included: vertically-oriented mirrors or other smooth reflective panels; water-like reflective or polarizing panels; actively fluxing towers; open bodies of water; aggregations of insects that may be attracting insectivorous birds; and resident predators. In order to make the towers, ponds, and panels less attractive or accessible to birds and potentially reduce or avoid avian mortality, the Forensic Lab Report made the following seven recommendations:

Forensic Lab Report Recommendation: 1) Increase cleared area around towers at ISEGS project to decrease attractive habitat

Some of the areas near the base of the towers at the ISEGS project have already been cleared of vegetation. This recommendation will be referred to the TAC for further consideration at the next meeting. Permitting agency decision documents for BLM and CEC may include requirements to maintain vegetation in certain areas of the project site. Consideration must be given to other resource concerns, such as the potential for additional runoff and erosion on site and additional water needed to control dust in areas cleared of vegetation.

Forensic Lab Report Recommendation: 2) Retrofit existing panels with visual cues

Additional research is needed to determine whether the use of visual markers on solar panels for each of the solar technologies will be effective at reducing impacts to avian species. The FWS will pursue the possibility of a pilot study to assess the effectiveness of visual markers and other potential deterrent measures. Information on the effectiveness of these types of measures is needed before recommending large-scale application of visual markers. Other measures such as panel spacing, mounting (tracking vs. fixed platforms), and configuration should also be considered and may prove to be effective at reducing avian impacts.

Forensic Lab Report Recommendation: 3) Suspend power tower operation during peak migration times for indicated species

Systematic mortality monitoring at the ISEGS facility commenced in fall of 2013. Prior to this effort, mortality information was collected and reported on an opportunistic basis, as workers encountered carcasses on site during their regular activities. The mortality information collected to date is insufficient to determine what time of year avian mortality rates will be highest, which species may be most affected by the concentrated solar flux, the magnitude of the effect on specific species populations, and whether suspension of operations will be warranted to reduce impacts to avian populations. As additional information is collected at this facility, the TAC is positioned to assess whether there are significant seasonal effects to avian populations that require adaptive management of operations. This project is located on BLM-administered lands, and has been issued a ROW grant. In BLM's oversight role of the ROW (as identified in 43 CFR 2805.15(e)), they are able to amend the ROW, as needed to address issues that arise during operations. If information warrants the need for adaptive management of project operations, the FWS, as a member of the TAC and a trustee agency for wildlife, will provide our recommendations to BLM.

Forensic Lab Report Recommendation: 4) Avoid vertical orientation of mirrors whenever possible

Each solar facility has technology-specific limitations on the ability to rotate the panels. The Desert Sunlight project uses photovoltaic panels mounted on stationary platforms; therefore, the panels cannot

be rotated. The Genesis and ISEGS projects have technology with moving panels. The FWS will work with the operators of these two facilities and the two primary permitting agencies (BLM and CEC) to investigate the duration of time that mirrors are kept in a vertical position, and explore the possibility of minimizing the time mirrors are kept in a vertical position. The FWS recognizes that restrictions have been placed on these facilities related to mirror orientation due to human safety concerns of glint and glare effects to vehicle traffic along nearby highways and air traffic. In addition, further data collection is needed to assess which panel position(s) may possess the greatest risk to avian species to ensure this measure is properly implemented to achieve a reduction in mortality. Project specific BBCS's should incorporate these and other concepts as part of the adaptive management component of the document.

Forensic Lab Report Recommendation: 5) Properly net or otherwise cover ponds

Adaptive management steps have already been taken to address bird mortality at ponds within the Desert Sunlight facility. Netting was initially used at the pond on the Desert Sunlight facility. However, a decision was made by the permitting agencies, in consultation with the FWS, to remove the netting to reduce/avoid bird entanglement and mortality issues, and because the water in the ponds itself did not pose a risk to birds from a water quality stand point. The FWS will investigate whether netting or covering ponds would be the best solution for each site. Site-specific information will be assessed, including water quality, anticipated longevity of water impoundments, and any available mortality information.

Forensic Lab Report Recommendation: 6) Place perch deterrent devices, where indicated, e.g. on tower railings near the flux field

This recommendation will be referred to the TAC on the ISEGS project for consideration. Based on experience with the use of perch deterrents in other situations, birds will likely still approach the towers and attempt to land on them. Placing perch deterrents on tower railings may not be effective at deterring birds from flying toward the tower and encountering the dangerous area of concentrated solar flux. If a site assessment at ISEGS or other projects indicates that perch deterrents or other devices would likely discourage birds from approaching hazardous project features, the FWS will recommend the permitting agencies require installation of such devices.

Forensic Lab Report Recommendation: 7) Employ exclusionary measures to prevent bats from roosting in and around the condenser facility at ISEGS

Bat fatalities at the ISEGS facility were discussed at the first meeting of the TAC. The facility operator was requested to identify problem areas around the buildings and effectively cover the opening to prevent bats from attempting to roost in hazardous areas. The status of their efforts will be discussed at the next meeting of the TAC.