

## DOCKETED

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# United States Department of the Interior

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In Reply Refer To:  
FWS-ERIV-09B0187-14CPA0239

AUG 7 2014

Ms. Christine Stora  
Compliance Project Manager  
California Energy Commission  
1516 Ninth Street  
Sacramento, California 95814

Subject: Comments on the California Energy Commission's Supplemental Staff Assessment and Testimony for the Proposed Palen Solar Electric Generating System Project (09-AFC-07C)

Dear Ms. Stora:

The U.S. Fish and Wildlife Service (Service) is writing in response to the California Energy Commission's (CEC) request for additional information on several topics related to the proposed Palen Solar Electric Generating System project. These issues were identified during the CEC's January 2014 public hearing on the proposed denial of the permit amendment for the Palen project. Specifically, we are providing additional information responsive to avian impacts and mortality monitoring data, flying invertebrates, and avian deterrent strategies.

Based on our review of the information presented to the CEC and our understanding that the proposed project has been reduced to one tower and the associated heliostats and utility infrastructure, the Service supports the analysis contained in the June 23, 2014, docketed Supplemental Staff Assessment and Testimony (CEC 2014a). The CEC staff conducted a thorough analysis and excellent critique of the materials provided by the applicant, and to avoid redundancy, we will limit our comments to only the general issues at hand, in reliance on the detail presented in the staff assessment.

With regard to avian impacts resulting from solar energy projects, data remain limited as most avian fatality information has been collected incidentally to construction monitoring. However, evidence presented from the initial, systematic post-construction monitoring at the Ivanpah Solar Electric Generating System (ISEGS) project supports the concerns we raised previously in our letter dated November 14, 2013 (Service 2013), and that the conversion of the proposed project from solar trough to power tower technology likely would cause an increase in mortality to migratory birds and other wildlife. The significant number of solar flux-related mortalities reported during the early phases of systematic monitoring at the ISEGS project was not contemplated during the permitting process for the project, but rose to the fore as a concern during CEC proceedings for other projects including Rio Mesa and Hidden Hills. Due to the

additional flux-field modality not associated with photovoltaic and solar trough technologies, we remain concerned that power tower technology likely has the highest lethality potential across all solar technology types currently used in the California desert. Potential impacts from concentrated solar flux were understated in the processing of these earlier projects, largely because no data were available to make a reasonable assessment. These risks are now becoming more apparent as monitoring results are being reported for the operational ISEGS project.

Because of the limited extent of systematic monitoring accomplished to date, the magnitude of risk from concentrated solar flux is not fully understood at this time. However, sufficient data have been collected to infer that significant numbers of birds will continue to suffer flux-related injury and death from multiple physiological effects (Service 2014, California Energy Commission 2014b), and diminished flight capabilities from singed feathers throughout the life of the project. Systematic monitoring at ISEGS has also revealed that several taxonomic groups, such as hummingbirds, are at risk from power tower technology. Furthermore, aerial insectivores and other insectivorous species seem to be particularly vulnerable due to the attractive nuisance caused by the bright glow of the tower and other lighting, as reported by the Service's Office of Law Enforcement in their forensics report (Service 2014). The Service (2014) documented that the higher ambient light levels associated with power tower technology attracts large numbers of insects, which in turn attract insectivorous bird species, and in turn bird-eating raptors, creating death and injury at multiple trophic levels unique among solar technologies.

Incidental fatalities are increasingly being documented and reported at a range of solar projects, including photovoltaic and parabolic trough technologies in Riverside and Imperial counties. What is commonly referred to as a "lake effect" or as "polarized light pollution" by Horvath et al. (2009), presents a hazard particularly in the desert to water-associated birds, and other species seeking available resident, seasonal, and/or migratory stopover habitat typically found along rivers and lakeshores (Service 2014). All three technology types appear to present a hazard to water-associated bird species from the lake effect, based on the species composition of avian mortalities documented at ISEGS, Genesis (solar trough), and Desert Sunlight (photovoltaic) projects. The magnitude of this lake effect remains unclear, but may be location-specific and may be correlated with migratory flyways or the availability of other appropriate habitat for migratory stopovers. Desert Sunlight and Genesis in the vicinity of the proposed project are among those reporting the most incidental observations of water-associated mortalities, likely related to the proximity of wintering grounds for large numbers of migratory birds in the Lower Colorado River Valley and Salton Sea Basin.

We have found no evidence in the record suggesting that the heliostat field associated with power towers presents less of a hazard than photovoltaic or solar trough projects within the local landscape and migratory context found along the Interstate-10 corridor. McCrary et al. (1986), in a study at the Solar One project, using a power tower technology, found that most of the bird mortality, including small flocks of birds, died by collisions in the heliostat field. We expect bird mortalities to also occur in the heliostat field at the proposed project but at a larger scale than Solar One while also causing additional solar-flux related bird mortalities similar to those being observed at ISEGS.

We remain concerned that the avian fatality data collected to date at existing solar projects in the Sonoran and Mojave deserts are being interpreted as sufficient to draw conclusions regarding the impacts expected from power tower and other solar technologies. The Service submits, consistent with CEC staff, that the proposed project (as recently reduced to one tower) still has a high probability to kill significant numbers of resident and migratory birds and other wildlife, but that the magnitude and extent of these impacts remains to be determined and first should be grounded in additional, statistically-valid monitoring data from the ISEGS project. While additional minimization measures are presented by the applicant, the literature suggests that there are no proven or reliable deterrents – particularly at this scale – that would lessen the impact to the complex of species and number of individuals throughout the life of the project. Therefore, implementation of any deterrents should be considered experimental and include an appropriate effectiveness monitoring and adaptive management component.

Given the assumption that impacts to avian species will occur throughout the life of the project, of particular concern is the diversity of bird species observed during pre-project surveys at the proposed Palen site during fall migration. With 122 bird species observed on the proposed project site during small bird counts, a wide range of taxa appear to be at risk. The survey and mortality data docketed for the ISEGS project thus far are limited in scope, yet suggests that mortality will be much greater during the migratory periods as was incidentally observed during the flux-testing phase of the project prior to going operational. To fully evaluate the magnitude of risks, we recommend that at least a full year of mortality data be reviewed from reporting for the ISEGS project that spans all seasons.

The Service is also concerned about the limited discussion by the applicant and the CEC regarding the likelihood of fatality events to the federally endangered Yuma clapper rail and other sensitive species. For example, two clapper (Ridgway's) rail records exist in the project vicinity, the first from Desert Center (McCaskie 1992, identified as subsp. *levipes*), and the second (subsp. *yumanensis*) a fatality at the Desert Sunlight project (Ironwood Consulting Inc. 2013). Also, numerous records for migrating *Empidonax* flycatchers of various species on the project site (CEC 2013a) and project vicinity (CEC 2013b, Sandstrom 2014), including willow flycatcher (subspecies not identifiable in the field, except putatively by geography and appropriate habitat in breeding range) (CEC 2013b) have been documented in the project vicinity (nearby Lake Tamarisk). In addition, a yellow-billed cuckoo was killed at the ISEGS project and migration patterns also encompass the project area, with migration records from numerous locales surrounding the project vicinity (Johnson et al. 2008, Clark et al. 2014). Because of the observed mortalities of special status species at other existing solar facilities, an analysis that improves the level of rigor and adequacy for determining the different degrees of vulnerability across all avian taxa and a risk assessment that includes the quantification for take of listed and rare species is warranted. Post-construction monitoring should be designed to account for fatality events of rare species [see also comments below on the Bird and Bat Conservation Strategy (BBCS)].

As we have commented previously, the Service recommends that mitigation for the project be directed toward special status species and/or those species and groups that we predict will incur

higher mortality as a result of the project. The applicant's proposal to reduce domestic cat predation does not directly offset the potential impacts from the proposed project. While an important conservation issue, domestic cat predation generally affects bird species associated with urban and suburban areas. Rather we suggest that the Sonoran Joint Venture is better positioned to direct resources toward projects and programs that would be most effective for birds utilizing desert habitats, including restoring and protecting limited aquatic habitats in the deserts that provide critical migratory stopover and winter destination sites for water-associated birds. In addition, funding required to offset avian mortality would be more effective if it were scaled commensurate with the results of more rigorous post-project mortality monitoring than is currently proposed.

While the Service appreciates the opportunity to comment on the BBCS docketed by the applicant, we recommend that subsequent drafts are prepared in coordination with the Service. We have worked with the Large-Scale Solar Association, which includes BrightSource, to identify project-level monitoring objectives. The Service has shared these objectives with industry representatives and has stated that all project-specific monitoring should meet these basic objectives as a baseline for evaluating avian mortalities at solar projects and implementing effective adaptive management (Enclosure). We recently empaneled the Solar Avian Mortality Monitoring Product Team (Product Team) to develop monitoring guidelines for solar projects of differing technology types that will meet these objectives, which will be made available to industry for review. In addition, the Service is working with U.S. Geological Survey (USGS) to evaluate radar and other imaging technologies that can be used to augment monitoring to address remaining questions about bird behavior responses to power tower technology. These studies may elucidate how mortalities are occurring at the ISEGS project. The Product Team should complete its work this fall and USGS in early 2015. The Service will use the products and results to recommend improvements to and guide monitoring and adaptive management for the proposed project as well as future projects. Similarly, these results will be used to evaluate and refine all components of the draft BBCS for the proposed project.

Finally, we concur with CEC staff that the proposed project would have significant impacts to the regional avian community. We are concerned that the significant direct, indirect, and cumulative impacts to the abundance, distribution, and habitat for a wide diversity of avian species (e.g., resident, winter visitors, and migrants) have not been adequately addressed consistent with the issues raised in our November 14, 2013, letter, and as described above. Therefore, we support CEC's December 2013 proposed decision on the Palen project amendment (CEC 2013c).

We appreciate the opportunity to participate in the amendment proceedings for this proposed project. We will continue to work with the applicant, CEC, and other permitting agencies in addressing remaining natural resources issues.

Ms. Christine Stora (FWS-ERIV-09B0187-14CPA0239)

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If you have any questions regarding these comments or our recommendations, please contact Thomas Dietsch in our Division of Migratory Birds (thomas\_dietsch@fws.gov or 760-431-9440, ext. 214) or Jody Fraser in Ecological Services (jody\_fraser@fws.gov or 760-322-2070 ext. 207).

Sincerely,

A handwritten signature in black ink, appearing to read 'Kennon A. Corey', with a long horizontal flourish extending to the right.

Kennon A. Corey  
Assistant Field Supervisor

Enclosure

cc:

Jennifer Martin, CEC, Sacramento, California

Magdalena Rodriguez, California Department of Fish and Wildlife, Ontario, California

Tom Pogacnik, Bureau of Land Management, California State Office, Sacramento, California

Greg Miller, Bureau of Land Management, California Desert District Office, Moreno Valley, California

Andrea Compton, Joshua Tree National Park, Headquarters, Twentynine Palms, California

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## **Standard Solar Project Monitoring Objectives**

Avian mortality has been documented at several solar facilities in California. In an effort to better understand the circumstances surrounding these mortalities, robust systematic monitoring at solar facilities will need to be conducted. The Service has established the following primary objectives for monitoring at all commercial-scale solar facilities:

- 1) Estimate the overall annual avian mortality rate associated with the facility. This estimate should include mortality associated with all the features of the project that are likely to result in injury and mortality (e.g., fences, ponds, solar panels, elevated solar flux).
- 2) Determine which species are impacted at the facility during daylight hours and which species are being impacted after nightfall.
- 3) Determine whether there is spatial differentiation within the solar field in the rates of mortality between species of (i.e, panels on the edge of the field vs. interior of the field)?

When addressing all of the questions identified above the monitoring methods should be structured in order to provide information on the seasonal differences in mortality rates and which species or taxonomic groups are most vulnerable. This will be accomplished by implementing a consistent monitoring effort throughout the annual cycle and by establishing baseline information regarding local bird abundance during pre-project surveys to inform which species most frequently utilize the project area.

In order to adjust mortality estimates, each project will need to conduct carcass persistence and searcher efficiency surveys to identify corrective factors and adjust mortality estimates as appropriate. In order to calibrate the corrective factors for seasonal differences these surveys should be conducted seasonally throughout the annual cycle. Carcass persistence surveys will inform the search intervals for all monitoring and will be conducted during pre-project surveys and can be re-calibrated by ongoing carcass persistence surveys, as appropriate.

Systematic monitoring should be conducted for a minimum of 3 years unless information or adaptive management strategies warrant an alternative number of years of monitoring. In addition, monitoring should be adequate to provide results that are suitable for meta-analysis and to evaluate effectiveness of adaptive management.