# DOCKETED

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**Ivanpah Solar Electric Generating System (Ivanpah)**
**Avian & Bat Technical Advisory Committee (TAC) Meeting**
Nipton, California September 12, 2014; continued in Sacramento, California October 10, 2014
Meeting Notes

## Part I. September 12, 2014

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| TAC Members Present: | Co-Chair, Roger Johnson – CA Energy Commission (CEC)<br>Amedee Brickey – US Fish and Wildlife Service (USFWS)<br>Magdalena Rodriquez – CA Dept. Fish and Wildlife (CDFW)<br>Mitch Samuelian – Ivanpah Operations (Ivanpah)<br>George Piantka – Solar Partners LLC (SP) |
| Via Teleconference: | Co-Chair, Dr. Larry LaPre – Bureau of Land Management (BLM) |
| Invited Guests Present: | Brian Boroski, Ph.D. – HT Harvey & Associates (HTH)<br>Dave Johnston, Ph.D. – HT Harvey & Associates (HTH) |
| Invited Guest | Amanda Scheib - Ivanpah Operations (Ivanpah)<br>Lara Kobelt – Bureau of Land Management (BLM) |

**Introductions**

- Attendee Introductions (TAC members and invited guests)

**Procedural Issues:**

- Reviewed July 24 Meeting notes and follow up Actions
    - No further comments on July 24 Meeting notes

**Report on Previous TAC Meeting Action Items**

- TAC Request: Ivanpah to provide details of coordination of deterrence study with fatality searches.
    - Ivanpah is in the process of selecting a deterrence system to evaluate at the site. See discussion under Ivanpah Best Management Practices Update below.
- TAC Request: HTH to include in Spring Report: (1) the general relationship between detections and flux production; and (2) spatial analysis of the fatality data.
    - HTH included the requested analysis in the Spring Report. See discussion under Avian and Bat Monitoring and Management Plan (ABMMP) Spring Quarter Monitoring Report below.
- TAC Request: HTH to provide a proposal to measure the searcher efficiency of the combined efforts of the facility workers, HTH biologists, and the site's designated biologists in the power block area. The revised searcher efficiency plan for the power block area is to be distributed to the TAC members for review.
    - HTH provided a power block specific searcher efficiency protocol for TAC review and sought approval of this method.

    - The proposed protocol also provided a methodology to account for differentiated searcher efficiencies in the overall fatality estimates.
- TAC Request: HTH to work with CDFW to obtain permission to take injured birds to Nevada.
    - CDFW explained that California non-listed injured birds can be taken to Nevada per California Code of Regulations (CCR).
    - CDFW requested notification within 48 hours regarding the transportation of non-listed avian species.

**TAC Discussion:**

- Discussed TAC's desire to maintain survey protocol consistency with the ABMMP during deterrent system monitoring. See discussion under Ivanpah Best Management Practices Update below.
- Spring Report fatality flux and spatial analysis deferred to ABMMP Spring Quarter Monitoring Report below.
- Discussed power block proposed methodology and reporting.
- Discussed the survey protocol changes approved by the TAC to date and the desire to document these approvals.
- Discussed that transportation of non-listed injured avian species to Nevada for treatment made sense and was legally allowed.

**TAC Action:**

- TAC approved the HTH proposed protocol for estimating searcher efficiency and accounting for detections in the power block area.

**Follow-up Action Items:**

- HTH to present documentation of TAC approved changes to the survey protocols to amend the ABMMP with an appendix to the plan that documents the approved revisions to date.
- HTH to implement new power block survey protocol.
- CDFW to provide documentation to HTH for the transportation of non-listed injured avian species to Nevada for treatment.

**ABMMP Spring Quarter Monitoring Report**

- HTH Presentation on Spring Quarter Monitoring Report:
    - HTH provided a detailed summary of the various elements covered in the Spring Quarterly Monitoring Report.
    - 38 bird species were recorded during point count surveys; species richness and abundance were higher within the desert bajada grids than within the heliostat grids.
    - Six raptor and two other large bird species were observed during raptor surveys.
    - Human searcher efficiency for spring improved for small and large birds detections and exceeded the efficiencies assumed in the ABMMP.

- Preliminary spatial analysis indicated singed detections continue to occur nearer the tower.
- Preliminary analysis was presented for the number of days per week that flux is produced and the number of singed detections.
- Preliminary analysis was presented to correlate the number of days per week that flux is produced and non-singed detections.
- Migratory bird mortality was classified as low in accordance with the ABMMP.
- HTH reported that the statistical assumptions in the ABMMP are being met and preliminary data indicate that the existing plan is increasing our understanding of the effects of the project, enabling impacts to be addressed, and supporting assessments of responses to impacts.

**TAC Discussion:**

- TAC encouraged by the searcher efficiency results.
- Discussed spatial analysis, flux production and detection correlations – TAC recommended that HT Harvey re-examine the preliminary results.
- Discussed general limitations of inferences from a single season of data.
- Discussed meeting with CEC staff's for a collaborative discussion regarding the analysis of preliminary data.

**Follow-up Action Item:**

- TAC meeting to be continued on October 10 to discuss re-examination of preliminary results of flux and spatial analysis.

**ABMMP Update on Summer Monitoring**

- HTH presentation
  - Avian activity continued to be higher in the desert than in the heliostats during the summer monitoring period.
  - Increases in the number of avian point count observations occurred from spring to summer periods in all areas, partially due to an increase in juvenile birds.
  - Dogs are being integrated into surveys as approved by the TAC.
  - Human searcher efficiency for summer period improved and exceeded the efficiencies assumed in the plan.
  - The pattern of detections remained consistent for the summer period, with singed detections concentrated near the tower.
  - Summer report expected by mid-November.
  - Per TAC approval, HTH conducted additional butterfly observations.

**TAC Discussion:**

- Discussed reporting on observations of butterflies.

**Follow-up Action Items**:

- TAC requested that HTH's provide written reporting of butterfly observations separately from ABMMP reporting.

**Ivanpah Best Management Practices Update**

- Lighting BMPs
  - Ivanpah is turning off non-essential lighting in all towers at night to reduce insect attraction.
  - Ivanpah has ordered non-insect attracting LED lighting to replace current ground level lighting.
- Bat Deterrence within Air Cooled Condenser
  - Screening on one fan of the ACC in Unit 3 is in process of being tested.
  - Sonic deterrence units being installed at the Unit 3 ACC.
- Perching Deterrence
  - Ivanpah is purchasing perch deterrence and installation at Unit 3 is planned to commence in fall of 2014.
- Flux Management
  - Ivanpah has implemented a software upgrade that decreases flux intensity in the standby zone and during start up. Software has been placed in service in Unit 1, Unit 2, and Unit 3. Software update has decreased the aura around the boiler. Plant startup and shutdown procedures have been modified to reduce the number of heliostats in the standby position.
- Deterrence Pilot Study
  - An RFP was issued at the end of July for pilot testing of deterrence technologies. The RFP was subsequently revised in September to allow for additional vendor participation. The technologies proposed are similar to systems in use at airports and mines.
  - Deterrence technology testing will aim to document system effectiveness by comparing the monitoring results of a tower equipped with a pilot system to those that are not.
  - Ivanpah requested approval of a pilot test on the Unit 1 tower of a deterrent called BirdBuffer. The system has been used successfully for bird deterrence in other applications in California from food establishments to substations.
- TAC Discussion of Ivanpah Best Management Practices
  - Discussion of BirdBuffer system and how it works.

**Follow-up Action Item:**

- NRG to provide additional information to the TAC for pilot testing of the BirdBuffer system.

**<u>Part II. October 10, 2014</u>**

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| TAC Members Present: | Co-Chair, Roger Johnson – CA Energy Commission (CEC)<br>Mitch Samuelian – Ivanpah Operations (Ivanpah)<br>George Piantka – Solar Partners LLC (SP) |
| Via Teleconference: | Co-Chair, Dr. Larry LaPre – Bureau of Land Management (BLM)<br>Magdalena Rodriquez – CA Dept. Fish and Wildlife (CDFW) |

Invited Guests Present: Brian Boroski, Ph.D. – HT Harvey & Associates (HTH)
Dave Johnston, Ph.D. – HT Harvey & Associates (HTH)
Thomas Dietsch (by phone) – US Fish and Wildlife Service (USFWS)
Geoff Lesh – California Energy Commission (CEC)
Matt Layton – California Energy Commission (CEC)
Doug Davis – NRG Energy Services (Ivanpah)
Marc Sydnor – Sydnor and Associates, Inc.

**Introductions**

- Attendee Introductions (TAC members and invited guests)

**Procedural Issues:**

- Deferred discussion of September 12 meeting notes to allow incorporation of Part II.

**TAC Request:** Re-examination of Preliminary Findings of Flux/Avian Mortality

**HT Harvey Presentation:**

- The purpose of the Plan is to comprehensively monitor and identify avian impacts associated with flux, collision, transmission lines.
- The plan, as designed, is an exploratory field study that seeks to discover significant variables in the field and to discover the relationships of these variables; this differs from laboratory experiments and field experiments, since manipulation of the variables has limitation in an exploratory field study.
- The presence of confounders in exploratory field studies can be problematic when drawing inferences from data derived in these studies.
- The plan employs randomization and restriction techniques in the study design to attempt to reduce the potential for confounding of results.
- The plan uses stratification and randomization for the inner and outer heliostat areas while considering the direction from the tower.
- All field monitors are agency approved, incidental and systematic monitoring occurs, and detections include all birds, bats, intact or partial and feather spots that are discovered.
- Data tracking requirements were reviewed and the procedure for information recording in a single database was explained; the information is reported in the Appendixes of the reports and in accordance with USFWS permits.
- Criteria for assessing collisions was presented, details included the presence of heliostat imprints, visible external trauma, proximity to a potential collision feature, etc.
- Criteria for assessing singeing was presented, which consists of initial visual examination, subsequent examination with a microscope and that examinations of bird eyes are usually constrained as a result of the dry environment and the effects of desiccation.
- A preliminary alternative singeing classification was presented.

- The TAC-requested spatial analysis in the spring report was presented, detailing the methods and the data within each distance analyzed; the statistical power of the analysis was determined to be low.
- The TAC-requested avian/flux analysis in the spring report was reviewed and a potential confounder is the number of avian species migrating past the facility; the statistical power of the analysis was determined to be low.

**TAC Discussion:**

- Discussed the differentiation between the Power Block and HD Heliostats for incidental discoveries and clarified that the incidental discoveries are usually just limited to the power block and not the HD heliostats.
- Discussed the purpose of fence sampling in the plan and clarified that it is a method to assess the potential risk of collision from fences.
- Discussed documenting when the database is updated to provide version control.
- Discussed tracking the plant operations and clarified that the Plan is designed to measure the mortality from flux, but not to determine the relationship between flux and mortality; as a result of the course-grained nature of the avian mortality data and the fine-grained nature of plant operations and data, determining the relationship may not be possible.
- Discussed the procedure for the publication of seasonal reports and clarified that the reports should be published according to the plan, where the TAC receives the report, the TAC meets and the report is subsequently published.
- Discussed the goal of the avian use studies - to understand the difference in use between onsite and offsite environments.
- Discussed that improved singeing classifications may not be useful at present but the data may provide insight in the future.
- Discussed and resolved that future TAC requested analysis that are outside the purview of the plan will be presented to the TAC and reported separately, if required, and requested that the additional spatial and statistical analysis of the singed and non-singed detections be removed from the Spring Report.

**CEC Presentation:**

- CEC staff presented that over 40% of finds are unknown and that further explanation of the proportion of unknowns would be useful.
- CEC requested HT Harvey to re-examine figure related to detections by distance from the towers in the report and verify the values.
- CEC staff suggested HT Harvey to include in the quarterly reports a corresponding chart of "surveyed area by ring" to be added below the *charts of detections by distance from the towers* to explain and clarify the footnote about the "increase in survey area as distance away from the tower increases."

- CEC presented a histogram of the number of days with incidental finds, noting outliers in the data and requested HT Harvey to examine this data to determine if any driver of these higher incidental days is apparent.
- CEC staff suggested a master table for detections to show detections by type and totals.

**TAC Discussion:**

- Discussed that feather spots are driving the high number of unknown detections.
- Discussed addressing the source of unknowns in the report.

**Follow-Up Action Items:**

- Ivanpah to establish database update protocol.
- HT Harvey to examine proportion unknown detections and provide a further explanation.
- HT Harvey to examine figure on detections by distance from towers and verify values.
- HT Harvey to revise the Spring Report and re-issue to the TAC with a prologue that explains the revision as a result of this TAC meeting; the title will reflect the revised nature of the report.
- HT Harvey to place a master table of detections by type and total in the Spring Report.

**Next Steps:**

- Next Scheduled TAC Meeting in Sacramento on December 3, 2014 at 10:00 AM.