

DOCKETED

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**Ivanpah Solar Electric Generating System (Ivanpah)
Avian & Bat Technical Advisory Committee (TAC) Meeting**
Sacramento, California. July 24, 2014 –Meeting Notes

TAC Members Present: Co-Chair, Roger Johnson – CA Energy Commission (CEC)
Amedee Brickey – US Fish and Wildlife Service (USFWS)
Magdalena Rodriguez – CA Dept. Fish and Wildlife (CDFW)
Mitch Samuelian – Ivanpah Operations (Ivanpah)
Ray Kelly – Solar Partners LLC (SP)
George Piantka – Solar Partners LLC (SP)

Via Teleconference: Co-Chair, Dr. Larry LaPre – Bureau of Land Management (BLM)
Robb Diehl, USGS

Invited Guests Present: Brian Boroski, Ph.D. – HT Harvey & Associates (HTH)
Dave Johnston, Ph.D. – HT Harvey & Associates (HTH)

Introductions

- Attendee Introductions (TAC members and invited guests)

Procedural Issues:

- Revised Agenda Order
 - USGS to join at 1:00pm
- Reviewed 5/20/14 Meeting notes and follow up Actions
 - USFWS to provide additional comments on notes from 5/20/14
 - CEC to repost with revisions

Report on Previous TAC Meeting Action Items

- TAC Request: HTH update on integration of canine search teams
 - HTH reported that canine searcher integration is ongoing
 - Preliminary results indicate that dogs are providing an efficient and effective method to search for avian fatalities at the facility
- TAC Request: HTH to prepare an informal examination of potential monarch butterfly occurrences at Ivanpah
 - HTH stated that monarchs are known to move through southern Nevada. The degree of movement in the vicinity of the project is thought to be low, but is undocumented.
 - HTH recommended butterfly observations in conjunction with raptor and large bird surveys.
 - HTH recommended relocation of 3 raptor and large bird survey points from the eastern fence line to the east side of the tower berms for Units 1, 2 and 3 to improve visibility for butterfly observation.
 - Searchers will record incidental observations of monarch butterflies.
- TAC Request: Ivanpah to report to TAC on additional BMP Investigations

- Lighting: Ivanpah is initiating a two-stage program to 1) decrease nighttime lighting and 2) to replace current ground level lighting with LED lighting, which is not attractive to insects, as light maintenance occurs
- Deterrence for Bat Exclusion: Tests will commence in August to determine the effects of screening ACC fan to exclude bats. A custom sonic deterrence unit is being designed for an ACC unit at Ivanpah and will be tested by end of August.
- Perching Deterrence: Deterrence is focused on decreasing raven activity; anti-perch device placement will be based on two years of onsite monitoring. Installation for testing measures is planned to commence in fall 2014 at Unit 3.
- 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 Units 1 and 2, Unit 3 to be upgraded in late July. 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: Ivanpah has requested quotes from vendors for pilot testing of radar-based deterrence technologies. These technologies are similar to systems in use at airports and mine areas. Deterrence technology testing will be a controlled experiment to demonstrate system effectiveness by comparing the results of a tower equipped with a pilot system to those that are not. Deterrent testing will also be conducted with the system utilizing a week on- week off pattern. Testing is proposed to commence in September and will be coordinated with current fatality searches.

TAC Discussion:

- TAC agreed with the recommendation of HTH for additional butterfly observations during raptor and large bird surveys and to move the raptor and large bird survey points to provide additional visibility for butterflies near the tower.

Follow-up Action Item:

- Ivanpah to provide details of coordination of detection and deterrence study with fatality searches and ongoing USGS study.

ABMMP Winter Quarter Monitoring Report

- HTH Presentation on Winter Quarter Monitoring Report (WQMR) :
 - HTH provided a detailed summary of the various elements covered in the WQMR.
 - Avian activity was higher in the desert than in the heliostats.
 - Raptor activity was higher in the desert than over the heliostats.
 - Species composition in winter similar to species detected as fatalities.
 - Human searcher efficiency for winter was below expectation, but improving over time, and detection dog trials were conducted and determined to significantly improve searcher efficiency.
 - The pattern of detections shows singed effects concentrated near the tower (<260 meters).
 - HTH classified migratory bird mortality as low in accordance with the ABMMP (Section 5.3).

- TAC Discussion of Winter Quarter Monitoring Report
 - Discussed searcher efficiency and positive effect of integration of dog searching.
 - Discussed migratory bird mortality classification for the winter quarter from the winter report.
 - Discussed the correlation between flux and mortality rates, and agreed that inferences will likely be limited to general relationships given data limitations.
 - Discussed that the area near the tower gets searched more often by plant workers and has 100% coverage compared to the remainder of the solar field.

Follow-up Action Item:

- HTH to correlate for Spring Report the general relationship between detections and flux production.
- HTH to include in Spring Report discussion of spatial analysis of the raw fatality data and recommendation for accounting for searcher efficiency and incidental detections in the power block area.

USGS Presentation and Discussion

- USGS researcher Robb Diehl provided a brief overview of the operational aspects of the study.
 - Study is limited in scope and designed to explore a variety of remote sensing techniques and determine which may be best to monitor the behavior of flying animals near the ISEGS power towers.
 - Thanked Ivanpah personnel for cooperation; all needs were accommodated and all access requested was provided.
 - Data generated was very large – over 4 terabytes.
 - Review has just commenced, software is being developed to speed up data analyses.
 - Acoustic detection equipment was not viable since the site generates too much broadband noise.
- TAC Discussion of USGS Presentation
 - Discussed synchronization and number of devices; clarified that cameras were synched twice per day – thermal cameras, optical and near infrared were deployed, including a science grade camera used on a limited basis, because the device collects a large amount of data and is particularly expensive.
 - USGS explained flux - clarified understanding that only when an object is present within the flux field are photons absorbed and heat radiated out from the object; air has very little mass and therefore has little capacity to store and re-radiate heat energy.
 - Discussed insect detection by remote sensing - while some larger insects can be detected by radars, species identification with any of the remote sensing equipment is going to be impossible.
 - Discussed locational precision of remote sensing - USGS is using parabolic radar with a viewshed of 2 degrees, so distance and elevation can be determined for targets providing fairly precise locations of targets.

- Submittal of results for publication in a scientific journal is scheduled for February 2015.

ABMMP Update on Spring and Summer Monitoring

- HTH presentation
 - Avian activity continued to be higher in the desert than in the heliostats in the spring.
 - Raptor activity also continued to be higher in the desert than over the heliostats.
 - Avian activity declined from winter to spring in all but Lower Bajada Desert.
 - Species composition in winter similar to species detected as fatalities, and species composition of detected fatalities in spring biased towards migrating species.
 - Raptor activity declined from winter to spring with many of the winter observations being migrating individuals.
 - Human searcher efficiency for spring has improved significantly as of July 2014.
 - Spring quarter detections show increase as expected during migratory period; summer monitoring to date shows decrease from spring as expected.
 - The pattern of detections remains consistent, with singed effects concentrated near the tower (<260 meters).
 - Spring report expected by end of August.
- TAC Discussion of Spring and Summer Quarter Monitoring
 - Discussed the teams conducting the efficiency trials, additional BLM and CEC approved biologists have been added to the search teams to accommodate the greater effort in the spring period.
 - Injured birds usually expire, because of the long time (4 to 6 hours driving time) necessary to reach the nearest treatment facilities within California; biologists have permission from the state of Nevada to take injured birds from the site across state line into Nevada, but they do not have permission from the state of California (CDFW); USFWS indicated they are not concerned about moving injured birds across the state line to a nearby facility in Nevada.
 - Human activity is high around the tower; consultation with USGS statisticians indicated the need to incorporate this high activity and discovery of detections into the searcher efficiency assessment.

Follow-up Action Items:

- 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 around the towers; searcher efficiency plan for workers to be distributed to the TAC members for review.
- HTH to work with CDFW to obtain permission to take injured birds to Nevada.

Additional topics

- TAC secure website still under construction, but is currently functional.
- Ivanpah to investigate enhancing functionality for website.

Next Steps

- Next TAC Meeting at Ivanpah on September 12, 2014, at 10:00 AM.