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TRANS-7 Heliostat Positioning and Monitoring Plan

To reduce glint and glare from the project, the project owner shall prepare a Heliostat Positioning and Monitoring Plan (HPMP) which includes the following information. The HPMP shall be implemented during installation of the heliostats and during project operation.

1. Identify the heliostat movements and positions (including during normal operations, daytime mirror-washing, removal of solar flux due to high winds, and all non-normal known operational scenarios and possible malfunctions) that could result in potential exposure of observers at various locations, including pilots, motorists, pedestrians and hikers in nearby wilderness areas, to direct solar reflections from the heliostats (DSRH).
2. Describe within the HPMP how programmed heliostat operation would address potential DSRH events at locations of observers, and how it would maximally limit or avoid potential exposures. This shall include heliostat positioning and transition algorithm exclusion zones that maximally avoid ground-based **DSRH events on the ground and in the air.**
3. **Describe within the HPMP how disabling glare to pilots from heliostats in the standby position would be reduced through methods such as limiting the number of mirrors in the standby position, changing the geometry of the standby ring to disperse reflections, improving calibration and positioning algorithms of the heliostats, providing a “light dump” or receiver for heliostat standby reflections, or use of any other method that would effectively mitigate glare.**
34. Describe how the mirrored surfaces of the heliostats would be covered during construction until the heliostats are properly seated, oriented, and under computer control to avoid exclusion zones.
45. Implement a set of baseline heliostat positioning and control algorithms to minimize DSRH events as soon as realistically possible after heliostat installation. The baseline control algorithms shall initially minimize ground-based DSRH events during site set-up, testing and calibration prior to power generation operations. If this does not work to minimize ground-based DSRH events, the project owner shall modify the perimeter fencing along I-10 to prevent motorists from experiencing DSRH events.
56. Prepare a monitoring plan to quantify the frequency and locations of DSRH events and validate that the DSRH events are minimized by HPMP implementation. **The monitoring plan shall ensure that the project owner continues to try different methods of reducing glare impacts until all impacts are reduced to a less than significant level.**

To monitor DSRH events on the ground, ~~This may be implemented with a staring camera system along a known line of sight to ground-based~~

observation points (e.g., I-10) could be used. DSRH events experienced by pilots could be monitored by flying over and photographing or videotaping the PSEGS, and by seeking out pilot reports of glare from sources such as the NASA Aviation Safety Reporting System (ASRS) and nearby airports and aviation agencies.

The monitoring plan shall be made available to interested parties, including the Department of Defense (DoD), California Department of Transportation (Caltrans), California Highway Patrol (CHP), Federal Aviation Administration (FAA), Riverside County Economic Development Agency Department of Aviation, the Riverside County ALUC, and the Riverside County Transportation and Land Management Agency. The monitoring plan shall be updated on an annual basis **during project construction and** for the first 5 years **of project operation. The monitoring plan shall be updated** and at 2-year intervals thereafter for the life of the project, **unless the project owner is released from this requirement as discussed in Section 8 of this condition.**

- 67.** Obtain field measurements in candela per meters squared and watts per meter squared to validate that the HPMP avoids the potential for human health and safety hazards consistent with the methodologies detailed in the 2010 Sandia Lab document presented by Clifford Ho, et al., including those studies and materials related to ocular damage referenced within.
- 78.** Provide requirements and procedures to document, investigate and resolve legitimate complaints regarding glint and glare events. This includes establishing a toll-free number for the public to report complaints related to glint and glare and posting this number in the same location as that required in Condition of Certification **COMPLIANCE-119. If no legitimate complaints are received within the first 5 years of project operation, the project owner can request that the CPM release the project owner from the obligations under Section 6 of this condition after the 5th year of project operations.**

~~The project owner shall notify the CPM within 3 days of receiving a glint or glare complaint. The complaint shall be as soon as the complaint has been resolved or within 10 days of the complaint or at another time agreed to by the CPM, at which time the project owner shall submit to the CPM a report in which the complaint(s) as well as the actions taken to resolve the complaint(s) are documented. The report shall include (a) a complaint summary, including the name and address of the complainant; (b) a discussion of the steps taken to investigate the complaint; (c) the reasons supporting a determination of whether or not the complaint is legitimate; and (d) the steps taken to address the complaint and the final results of these efforts. This information shall be included in the Monthly Compliance Reports.~~

~~or not the complaint is legitimate; and (d) the steps taken to address the complaint and the final results of these efforts. This information shall be included in the Monthly Compliance Reports.~~

Verification: 60 days prior to the start of construction, the project owner shall prepare and submit to the CPM for review and approval a plan for baseline heliostat positioning and control algorithms **and other methods** to minimize DSRH events after heliostat installation and during site set-up, testing, and calibration. 90 days prior to the start of operation of any unit, the project owner shall submit the remainder of the HPMP describing how the above measures will be implemented to reduce glint and glare during project operation, and how monitoring will occur.

If the project owner receives a complaint regarding glint or glare, the owner shall conduct an investigation to determine whether the complaint is legitimate and if the project is the source of such glint or glare. If it is determined that the project is the source of such glint or glare, the project owner shall take all feasible measures to eliminate or reduce the glint or glare. Such measures may include localized screening.

The project owner shall notify the CPM within 3 days of receiving a glint or glare complaint. **The complaint shall be** ~~As soon as the complaint has been resolved or within 10 days of the complaint~~ **or at another time agreed to by the CPM, at which time** the project owner shall submit to the CPM a report in which the complaint(s) as well as the actions taken to resolve the complaint(s) are documented. The report shall include (a) a complaint summary, including the name and address of the complainant; (b) a discussion of the steps taken to investigate the complaint; (c) the reasons supporting a determination of whether or not the complaint is legitimate; and (d) the steps taken to address the complaint and the final results of these efforts. **This information shall be included in the Annual Compliance Reports.**

If no legitimate complaints are received within the first 5 years of project operation, the project owner can request that the CPM release the project owner from the obligations under Section 6 of this condition after the 5th year of project operations.

~~If no legitimate complaints are received and/or if a legitimate complaint is received and the project owner has resolved the source of the complaint(s) within the first 12 months of project operation, project owner can request that the CPM release the project owner from the obligations under Section 4 of this condition after the 12th month of project operations.~~

References

Tiffani Winter (TN 202724). Sandia National Laboratories, Evaluation of Glare at the Ivanpah Solar Electric Generating System, dated July 2014. Submitted to CEC/Docket Unit on July 17, 2014.