

DOCKETED

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From: Ho, Clifford K [<mailto:ckho@sandia.gov>]
Sent: Friday, July 25, 2014 11:51 AM
To: Adams, Jim@Energy
Cc: Ho, Clifford K
Subject: Glare Evaluation of Ivanpah Solar Electric Generating System

Hi Jim,

Thanks for your call today (I also received a voice mail from Dave Flores yesterday). Per your request, I am writing this e-mail to summarize recent activities I have participated in pertaining to glare evaluations at the Ivanpah Solar Electric Generating System (ISEGS).

As you know, Sandia conducted aerial (helicopter) and ground-based surveys of the glare at ISEGS on April 24 – 25, 2014, and we published a report on our findings in July (“Evaluation of Glare at the Ivanpah Solar Electric Generating System,” SAND2014-15847). In that report, we presented quantification of the observed glare (e.g., irradiance, subtended angle), potential ocular impacts, and possible mitigation measures. By the way, I noticed that the report was docketed by the CEC with a cover page title of “Heliostat Positioning Plan Report,” which may be confusing since there are other previous ISEGS documents titled “Heliostat Positioning Plan.”

As a result of the findings in the report and discussions with NRG (Doug Davis, Mitch Samuelian) and Brightsource (Gustavo Buhacoff, Gil Kroyzer, Nitzan Goldberg), Brightsource modified the heliostat standby algorithm for Units 1 and 2 to spread out the ring of aim points. The objective was, in part, to reduce the potential ocular impacts of the glare from the heliostats in standby mode.

On July 22, I performed another aerial survey in a helicopter to observe the glare after the implemented changes. I found that there was still glare visible from all the units as we circled around the site, but there were noticeable differences in the glare from Units 1 and 2. The source of the glare from the heliostats in standby mode were more spread out. In addition, I noted that the glare was more pronounced when we were located to the south of ISEGS. When we were to the north, east, and west of the plant, the glare was not as significant; the reason may be that fewer heliostats were in standby mode in different regions to accommodate the time of day and position of the sun (I took images close to noon on July 22). I have not had an opportunity to process and quantify the numerous images I took of the glare from all the units that day, but I plan to do so over the next few weeks. The pilot, myself, and another passenger noted that, while bright, the glare that was visible did not appear to produce an after-image while wearing sunglasses when viewed momentarily. However, if I took my sunglasses off and looked directly into the glare, I did notice a temporary after-image. I believe that with further modification of the heliostat standby algorithm, the impact of the glare from heliostats in standby mode can be further reduced or mitigated. I recently spoke with Gustavo from Brightsource, and he said that he had some additional ideas that he would try to implement to further mitigate the impacts of glare.

I think it would be best to meet to discuss these issues and possible mitigation methods. I have spoken with NRG and Brightsource, and they are both interested in having a workshop with the CEC and other interested parties to discuss and address issues regarding glint and glare at ISEGS.

Please let me know if you have any questions, and please provide details of the hearing on Tuesday regarding the Palen plant so that I can call in as you requested.

Best regards,

-Cliff Ho

Cliff Ho, Ph.D.

Concentrating Solar Technologies

Sandia National Laboratories

P.O. Box 5800, MS-1127

Albuquerque, NM 87185

(505) 844-2384

ckho@sandia.gov

www.sandia.gov/csp