Subject: CAISO PIRP Solar Telemetry Requirements version 1.4

The cost to own and operate solar telemetry equipment is significant, particularly for smaller generators. Most devices used to measure solar irradiance require maintenance (cleaning) every day or every other day. For smaller plants, in particular, which may not have permanent maintenance staff on site, this could result in a very significant added expense. If these requirements are not considered carefully, they may place an undue cost burden on the generator. With this in mind, we submit the following comments in response to Version 1.4 of the CAISO PIRP Solar Telemetry Requirements.

We would like to reiterate our position that Table 2 not include a specific technology requirement, but instead state the types of measurements needed and the level of accuracy the device would need to achieve. An example of such a table would be the one proposed by Steve Ihnen of SolarCasters, Inc. Not requiring a specific device allows the generator to choose the technology that best meets these requirements.

We recommend that another technical session be held to discuss the measurements required in Table 1 before finalizing it. From the call on September 15, discussion arose over the idea that some measurements could be calculated rather than needing a separate device to measure them. For example, a horizontal PSP measuring GHI and calculating DNI may be sufficient to meet the accuracy requirements set out in Table 2. Also, Dr. Carlos Coimbra suggested that cloud cover may need to be added to the list of required measurements. Further discussion with other experts in solar forecasting would help ensure the list captures only the data necessary for the forecast service provider (FSP) to do their job without adding excessive measurement inputs that will only add cost while doing little or nothing to increase the quality of the forecasting.

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1 For more specific values, see our prior letter to the CAISO, dated August 31, 2009: http://www.caiso.com/241b/241b6b4bfe30.pdf

2 Stated in Cool Earth Solar’s prior letter to the CAISO.

3 See letter from Steve Ihnen of SolarCasters, Inc. submitted to the CAISO on September 17, 2009.
We would like to see further refinement to the section on maintenance requirements. If the maintenance and calibration routine is followed that is recommended by the manufacturer, as specified in the current draft version, then this could add a very large expense to the generator, requiring the device to be removed and sent to the manufacturer for months at a time every year. It would also mean that a second device would have to be purchased that could be swapped in. For small and medium-sized generators (<20 MW), in particular, this could be a major financial burden. Time should be set aside for a technical conference call to discuss this in more detail and ensure maintenance requirements are reasonable.

It is our understanding that a FSP has not yet been selected by CAISO. We request that the solicitation process be made public so that more companies can participate and the bid will truly be competitive.

If the CAISO chooses to continue to make separate requirements for each type of PV and ST technology, as seen in Table 1, then we believe the Concentrated Photovoltaic (CPV) category needs some refinement. First, we request the words "flat plate" be removed from "Concentrated Flat-Plate PV". Many CPV technologies, like those of SolFocus and Cool Earth Solar, use curved reflectors that track the sun on two axes. In the case of Cool Earth Solar in particular, there is no plate and our concentrators (i.e. modules) are not flat. The CAISO may also want to consider making further categories for CPV technologies like Skyline Solar, which uses a single axis tracking system. There are also some very low concentrating photovoltaic (LCPV) technologies that are actually fixed-mount (i.e. static). Perhaps separate categories should be made for each of these.

Finally, we ask that the 60 days of forecasted data requirement be reconsidered. Even if the neural networks are "trained" after 60 days of operation, they will have only been trained for operation in the current season. If the plant were completed in June, for example, the neural networks would have good predictive ability in the summer, but would need to be re-trained for the winter. One solution, which would improve the accuracy of the forecast, would be to operate the plant for a year, collecting data for the neural networks, before bringing the plant online. Obviously, this proposal is totally ridiculous and infeasible. The 60 days of training does seem lengthy, however, considering most of the whole first year will be a continual refinement of the forecast. Given this, we argue for a reduction to, perhaps, 30 days. If there really is some major performance gain that occurs between day 30 and day 60, then at the very minimum, perhaps the standards could be reduced for smaller systems (<20 MW), which have a much less significant impact on the grid.

Thank you for your time and consideration.

Sincerely,

Peter O'Brien
Business Development Manager