

June 8th, 2007

California Energy Commission
Dockets Office
Re: Docket No. 06-NSHP-1
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

DOCKET	
06-NSHP-1	
DATE	JUN 08 2007
RECD.	JUN 11 2007

Re: Comments on CEC-Staff Draft Guidebook of June⁶, 2007

To the California Energy Commission Renewables Committee:

Sun Light and Power Company appreciates the opportunity to offer these comments regarding the Affordable Housing Maintenance and Monitoring Agreement section (Section IV.C.3) of the new draft guidebook. Sun Light and Power is deeply concerned about the ambiguity of the requirements, the expense to the owner, and the apparent redundancy of some of the specific maintenance measures mentioned in this section. We agree that performing regular checks and maintenance to PV systems ensures optimum production by identifying production problems as early as possible and is a good idea. However, the value of the PV system, the return on investment, can be compromised by an excessive or onerous maintenance requirement (which may act as a disincentive for the Affordable Housing developer to consider going solar). Therefore, we propose that the following changes to the paragraph be considered.

Language Clarifications Needed:

"Life of the system"

This time period is unclear. Sun Light and Power and others in the industry generally refer to the life of the system as 30 years (the ROI has a 30 year horizon). In the discussion of this draft of the guidebook that took place on June 6th in Sacramento, there was a proposed definition of system life of 15 years. Clearly, given these widely varying time periods, we need to determine what "life of the system" means.

"Scheduled annual or semiannual maintenance visits":

Please clarify which schedule is being requested, or if this is a choice (at the discretion of the system owner).

"if production is significantly lower"

In the paragraph as written, action is required when system production is "significantly lower than expected", but it does not indicate what would constitute falling into this category. Sun Light & Power proposed that this should be based on long term energy output in kWh and not instantaneous power. In our experience, this is the more accurate method for measuring system functionality: kWh for the month compared to the expected output for that particular system (based on design factors such as tilt, orientation, shade, geographic location, standoff height of the modules, etc.). The comparison of production should be for that same month of the previous year. We would hope that in measuring

actual output compared to expected, weather conditions would be taken into account as seasonal variations (be it dry, wet, cold, or hot) can significantly affect production. An extremely rainy or foggy month is unfortunate as far as production is concerned, but does not indicate a problem with the PV system. Should the state intend to follow through with the monitoring of production, we believe that “benchmarking” system production at start-up should be a requirement. The PV calculator can help to predict expected output for the first year based on design factors mentioned above.

Maintenance and Monitoring Contractual Agreement

Instead of a “contractual agreement” between the Affordable Housing entity and a particular service provider, it may be more appropriate to require the Affordable Housing entity to implement a PV maintenance schedule into the regular maintenance plan for the whole building/complex. This could be documented in a signed letter stating that PV maintenance will be performed regularly (and detailing the maintenance tasks that will be undertaken), but it would release the building owner from a commitment to a particular service provider or schedule for the life of the system. Because of the long life of the system, it may be more amenable to Affordable Housing entities to have a plan which allows them leeway to change their maintenance schedule/provider as needed, rather than a contract with a given provider.

Specific Maintenance Measures

The proposed language would require that four types of maintenance be carried out in one maintenance visit by the service provider: cleaning modules, checking electrical connections, checking inverter output, and tree/plant trimming.

- 1.) Cleaning modules: this could be carried out by regular site maintenance, and once or twice a year is usually appropriate, depending on site conditions (i.e. next to a freeway, near pollinating trees, etc.). We do suggest that the method of cleaning be considered ahead of time by the owner due to the rarity of a hose bib located on the roof and the large surface area that may need to be cleaned. The module array could be significantly more difficult (and therefore more costly) to clean if, for example, there is not a hose spigot on the roof.
- 2.) Checking electrical connections: Sun Light & Power suggests that this should be performed by the solar installer of the system twice during the 10 year warranty period: once in the first year, after the first summer of production due to heating and cooling, and that the connections should be tightened at this time. Once more around the 7-8 year mark should be sufficient. Annual or semiannual checking of this kind is overly expensive and in our experience excessive and unnecessary for the production of the system.
- 3.) Checking output of the inverter: Upon completion of our installations, Sun Light and Power provides information/training to the client about checking their inverter output and tracking production. By providing training on monitoring production, it should be possible for site maintenance to: do this on a regular basis, and alert the installer if output was lower than expected. Checking at least once a month at a minimum is recommended to catch inverter malfunctions quickly and minimize lost system output. The monitoring itself can be as

elaborate as a web-based monitoring system, or as minimal as logging the kWh at the inverter. An active and educated monitor of the system is the critical portion of this, more so than the method of monitoring.

- 4.) Tree/plant trimming: We understand that shading due to growth of tall trees can affect production significantly, however, because the mature tree height is taken into consideration when determining the rebate amount, we think it is outside the bounds of this program to require regular tree trimming for the life of the system. Assuming that the full growth of surrounding trees was considered in determining the expected system production, and thus the appropriate rebate, we think that this requirement is redundant and assures little or no additional system production while adding significant costs to owners. We do agree that if obvious and unexpected shading by trees does appear to be affecting production it behooves the system owner to trim trees on their own property, and to ask that trees on neighboring properties be trimmed in accordance with the solar easement laws (Public Resources Code Section 25980-25986). The problem we see with the language as written is that tree trimming would need to be undertaken if there was any visible shading on the array, regardless of whether it had been factored into the rebate for that project (calculation of mature tree height), and regardless of its affect on system production (it requires action when there is obvious shading, not once the shading has been deemed to affect production). A program requirement that calls for this kind of over-zealous tree trimming could act as a deterrent for some Affordable Housing groups to choose solar (tree trimming is quite an expensive task to carry out on a frequent basis).

Cost Considerations:

The main advantage of having on-site maintenance personnel perform the cleaning and inverter checks is cost. To bring out a PV specialist for semiannual maintenance visits would be expensive, and would either extend the payback period for installing PV, or cut into the benefit for the owner. It would significantly detract from the financial benefits of PV and might mean that certain Affordable Housing groups would not opt to install solar. As an example: consider a 30 kW system. The expected savings on electricity for such a system (assuming a cost of 15 cents a kWh) would be nominally \$6570.00 per year. In order to hire a PV specialist to perform all maintenance duties semiannually (not including tree-trimming), the cost would be roughly \$2080.00 (2 people, all day, times a low estimate of \$65.00 per hour, twice a year). A third of the financial benefit of going solar would evaporate right there in maintenance costs. The maximum additional production that could be achieved with spotless modules (using a high estimate of 5%) would translate into roughly \$300.00 of extra electricity savings per year – not sufficient to offset the burden of the maintenance cost. It is unlikely that many Affordable Housing entities would be willing to accept such a reduced payback on their system, and they would predictably move on without solar. The site maintenance person would be fully competent after our training to perform cleaning and inverter monitoring duties, and as explained above, the frequency of electrical checks can be reduced without production impact, and trees should only be required to be trimmed when it is obvious (from inverter monitoring) that their shade is reducing the expected production.

Sun Light and Power would like to see an “Intent to Implement” letter instead of a service contract for maintenance. The letter would indicate that it is understood that regular maintenance such as cleaning the modules and checking production will be required, and explain how the facility plans to carry out this task. We propose that an electrical check should be conducted in the first year (after the first summer of production) and again around the seven year mark, by either the installer or a competent electrician. As an example, Sun Light and Power could add this service to our regular contract for new construction Affordable Housing systems.

Sun Light and Power whole-heartedly agrees that regular maintenance of PV systems is extremely important to ensuring the highest levels of production, and we are glad to see the reality of PV installations (i.e. dust, leaves, rain, shade) is being taken into account. Our hope is that careful consideration is given to the specific language and long range impact of these maintenance requirements so that their inclusion into the NSHP guidebook does not in any way deter Affordable Housing groups from opting for PV installations, and adversely affect their participation in the NSHP program. We thank the Renewables Committee again for allowing us to comment on these proposed changes to the NSHP Guidebook.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kate Rowland', with a long, sweeping horizontal line extending to the right.

Kate Rowland
Contract Administrator