



October 15, 2007

California Energy Commission
Dockets Office
RE: Docket No. 07-SB-1
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

**Comments of the California Center for Sustainable Energy on
Guidelines for California's Solar Electric Incentive Programs**

On October 4, 2007, the California Energy Commission's (CEC's) Renewables Committee conducted a workshop to receive comments on the Energy Commission draft staff report, *Guidelines for California's Solar Electric Incentive Programs Pursuant to Senate Bill 1* (Draft Report). At the request of workshop participants, Commissioner John L. Geesman graciously extended the deadline for written comments to October 15, 2007. The California Center for Sustainable Energy (CCSE), formerly known as the San Diego Regional Energy Office (SDREO), appreciates the diligence and hard work of CEC Staff in establishing eligibility criteria, conditions for incentives, and equipment rating standards for all rate-payer-funded solar energy system programs in California. CCSE is pleased to provide post-workshop *Comments on Guidelines for California's Solar Electric Incentive Programs* pertaining to the following issues:

- Energy Efficiency Requirements
- Simplification of Processes and Reduction of Requirements
- Lack of Inspection Protocol for PBI Systems
- Definition of "Solar System"
- EPBI and EPBB Calculators
- Rates and NEM Will Drive Program Success
- Shading

Energy Efficiency Requirements

CCSE views energy efficiency (EE) as an integral part of the formula to promote long-term sustainable energy. Our mission statement includes the aim to facilitate the adoption of energy efficient technologies and practices. We fully support its priority in the state's Loading Order as well as the inclusion of EE goals in SB1. Furthermore, we view both EE and solar programs as market transformation initiatives, and believe that these programs are fundamental for overcoming market failures and barriers.

As an implementer of many EE programs over the years, we have learned that to be successful, these programs often require focused, tailored approaches aimed at the particular market sectors in question. For example, larger customers, i.e., military, school districts, and local governments, often require years of education and multiple, complementary efforts before these customers are ready to participate in EE programs. A tailored, opportunistic and facilitated approach often finally succeeds in convincing these customers to make the implementation decision. With the addition of EE goals in SB1, we run the risk of requiring that the program overcome not only the barriers to solar, but also those attached to EE implementation. We echo the concerns expressed by other parties at the workshop that we need to take care to not allow these requirements to hinder the solar energy system adoption goals of SB 1.

The addition of EE goals under SB1 creates a need for the California Solar Initiative (CSI) Program Administrators (PAs) to administer a tailored, customized EE program in parallel and tightly coordinated with the CSI. As the only non-utility PA for the CSI, we realize this puts us in a unique situation. We envision that this program will be administered in parallel with the CSI, by staff specialized in EE technologies and utilizing funding specifically dedicated to EE programs. CCSE proposes a direct carve-out or partnership program within the region's EE portfolio, dedicated to CSI EE requirements compliance and technical support. We respectfully request that the CEC and the California Public Utilities Commission (CPUC) work together in planning for the 2009-2011 EE program cycle to provide the necessary conditions for optimal

implementation of CSI EE requirements. Program design would specify how the CSI PAs would accomplish these activities most efficiently and effectively, in particular what cost-effectiveness criteria the program would be expected to meet. We are open to discussion of the funding source, i.e., whether these funds would be part of the 80% of funds dedicated to the IOU portion of the EE portfolio or the 20% of funds dedicated to third party programs. We suggest that a partnership program with a strong educational component would make the most sense.

Simplification of Processes and Reduction of Requirements

Since the inception of the CSI in January, significant progress has been made in streamlining the program – reducing the requirements for applicants and the CSI PAs alike. These changes have been made in response to opinions expressed in the quarterly CSI program forums and feedback from program participants and installers, particularly within the residential sector. The CSI PAs and CPUC representatives continue to optimize the application process and eliminate the amount of paperwork required. This progress should continue, and additional requirements and paperwork should be kept to a necessary minimum.

We share the concerns expressed by other parties at the workshop that the imposition of additional requirements for participation will likely hinder the goal of installing solar energy systems with a generation capacity of 3000 MW by 2016. We agree with comments made by Solar City that customer confidence is essential to the success of California's solar electric incentive programs. Further, we agree with the proposal made by Solar Alliance that EE requirements information should be included in education and outreach material, rather than with the application materials. This would ensure that the materials would reach program participants and installers, as well as a potentially much broader audience, without increasing the amount of paperwork involved in the application process itself.

Lack of Inspection Protocol for PBI Systems

While the Draft Report contains the field verification protocol to be followed for applicant systems using the EPBI approach, it lacks any inspection protocol for applicant systems using the performance-based incentive (PBI) approach. We feel that this deficiency opens the door for several potential problems. First, by not performing inspections of PBI systems, we miss the opportunity to ensure the meters/Performance Monitoring & Reporting Service (PMRS) are connected properly. As a result, the meters/PMRS may not be located properly, in addition to other potential connection issues. Additionally, not performing inspections of PBI systems allows for possible over-sizing of systems as well as possible under-reporting of actual system size. These potential situations could have detrimental effects on the CSI Trigger Tracker and, in turn, on CSI program budgeting. Finally, not performing inspections of PBI systems disconnects the PAs from those large-scale installations that, per installation, have the greatest impact on program goals.

CCSE would expand the field verification protocol to include random inspection of PBI systems. We feel that this is necessary to ensure not only the collection of real performance data, but also that solar irradiation is properly accounted for, that the meter and PMRS are located and connected properly, and that the customer receives what they have purchased.

Definition of "Solar System"

The Draft Report defines a "solar system" as "one or more strings of PV modules connected to *one* inverter."¹ (Emphasis added.) We believe the intent of this definition is for purposes of inspection only, but would appreciate confirmation of this point.

EPBI and EPBB Calculators

While we are not indifferent to the selection of the EPBX calculator to be utilized in the CSI program, CCSE would like to focus here on a larger point that may be getting

¹ Draft *Guidelines for California's Solar Electric Incentive Programs Pursuant to Senate Bill 1*, California Energy Commission, September 2007, page 34.

lost: the need to facilitate the field-based PV education, marketing and sales process. CCSE respectfully requests that the CEC examine the possibility of a supplemental incentive look-up table. This table could be portable and utilized without use of a computer, specifically without the Internet, and without the need to identify specific system components.

The major determinants of how a system performs (outside of system components) include location, tilt, azimuth, and shade. Location variances within a particular PA territory are mitigated because of two variables: (1) selection of an average performing reference system; and (2) the latitudinal division of service territories (There is only so much difference between the northernmost and southernmost systems within a service territory). With respect to tilt, most homes and businesses have fixed planes to which the PV can be attached – likely an average of 22° or less. Maximum annual performance occurs at a plane equal to the site latitude – likely 32° or less for south facing systems – and maximum summer performance is about 20° or less. The interaction of these two factors keeps installations between 0-30° with a majority of them around 15°. Azimuth (along with tilt) affects annual and time dependent value (TDV) production, with the most positive impacts for TDV occurring on the arc between south and west. Although there is an “optimal” TDV tilt and azimuth within each territory, high (but not optimal) TDV outputs can often be similar between different combinations of tilt and azimuth.

Since these factors that affect system performance are known almost immediately upon viewing the proposed location, they could fairly easily be placed on PA-specific single page worksheets that would allow the home or business owner, the installer, the inspector, and anyone even generally interested in solar to understand how much incentive their property warrants. This would function as a transparent and user-friendly tool that could be leveraged easily for mass market educational purposes. These incentive values could then be simply multiplied by the solar availability as determined by a shading analysis to adjust the incentive rate given the amount of shade

onsite. The use of the modified calculator would be useful at this stage, after the interested parties understand the maximum incentive level at their site, in order to accurately motivate higher efficiency equipment selection.

Rates and Net Energy Metering (NEM) Will Drive Program Success

The determination of CSI incentives is simply one piece of the total financial package that influences the purchase of PV. That total package includes incentives, tax credits, tax deductions, Net Energy Metering (NEM), Renewable Energy Credits (RECs), and property value/property tax considerations. The determination of how to calculate the CSI incentive, when viewed in relation to the long-term importance of financial incentives versus all other incentives, need not be so complex. As incentives decline and energy prices rise, program incentives will become significantly less important over time than the actual NEM value. When comparing even the five-year PBI payment stream versus the 20-25 year NEM valuation, the NEM value far outstrips the incentives. At CSI Trigger Step 4, the incentives for PBI payments, on a per kWh rate, are almost identical or possibly lower than current Tier 5 electricity rates for residential customers. Thus, the NEM valuation, in the near future, will become the single most important financial consideration for residential customers and will remain significant, particularly under new solar-friendly tariffs, for non-residential customers. The emphasis for the long-term success of this program is thus more tied to rates than to cash incentives and the methods by which cash incentives are calculated and paid out.

Net Energy Metering is already a performance based incentive – the value of electricity offset by a given system is directly proportional to the time and quantity of its production. Design factor is not a perfect match but it roughly translates to rewarding more south-facing, summertime optimally tilted systems. The average design factor within the CSI program is 97.5% for all EPBB projects. As the value of NEM remains or increases over time, and the incentive declines, the average design factor should actually remain very high.

Given that (1) all PV systems already have some component of performance-based compensation (NEM), (2) the modest latitudinal variances within a given PA territory, (3) the known impacts of the interaction between tilt and azimuth, and (4) the need to effectively communicate the ever-declining value of the CSI Incentive, CCSE strongly supports a transparent incentive calculation methodology, such as the simplification described above.

Shading

If a PV installation does not meet the minimum shading criterion, the Draft Report directs participants to account for actual shading using a compass divided into 22.5 degree segments. While this method may be successfully utilized for any object of a significant width to actually completely shade a 22.5 degree swath of skyline, any narrow obstruction, e.g., a streetlight or telephone pole, that does not in actuality completely shade the 22.5 degree swath of skyline would still block the entire 22.5 degree segment. We would propose that CEC staff make adjustments to the calculation to account for these potential variances in object width.

Conclusion

CCSE appreciates the opportunity to contribute these post-workshop *Comments on Guidelines for California's Solar Electric Incentive Programs*. CCSE looks forward to working within the EE portfolio for our region to vigorously promote both solar energy system deployment and EE goals of SB 1.

Sincerely,



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