

## February 2008 Handbook: What's New

The CPUC has recently made decisions on a number of key areas that will affect the operation of the CPUC-administered California Solar Initiative (CSI) Program. They change the current Program Handbook in the following ways:

- Remove the requirement that Performance Monitoring and Reporting Service (PMRS) Providers be independent and unaffiliated with California Solar Initiative (CSI) incentive recipients, solar installers, or solar manufacturers. (CSI Program Handbook,,: Section 12: Appendix B – Metering Requirements)
- Establish requirements to validate Performance Based Incentive (PBI) data reporting. The requirements, referred to as performance data provider (PDP) protocols, validate the data reporting between solar energy systems and the Program Administrators that serves as the basis for PBI payments. This CSI Handbook Update includes the Interim PDP protocols (Interim Requirements); Energy Division will be holding a [Public Workshop on February 25, 2008](#) to discuss the final PDP protocols. The Interim Requirements have been added to the CSI Program Handbook as Section 18: Appendix H – Interim CSI PBI Data Transfer Rules.

The attached revisions reflect changes to the CSI Program rules and therefore supercede related rules currently included in the January 2008 CSI Program Handbook. Specifically, the attached *Section 12, Appendix B - Metering Requirements* shall replace the metering requirements found in *Section 12, Appendix B- Metering Requirements* of the January 2008 CSI Program Handbook. The interim PDP protocols that are included in Appendix H shall take effect immediately. At such time as the final PDP protocols are approved by the CPUC; they will be added to the CSI Program Handbook as an Appendix.

## 12. Appendix B: Metering Requirements

The following Appendix contains detailed information with respect to the minimum metering and monitoring requirements for participation in the CSI Program. These minimum requirements were developed to increase owner knowledge of system performance, foster adequate system maintenance, and thereby ensure ratepayer incentives result in expected levels of solar generation.

CSI Program participants are required to install the following metering related components based on the size of their system and type of program participation (i.e. EPBB or PBI), according to Table 16:

**Table 16  
Metering Summary<sup>1</sup>**

Incentive Structure	System Size	Minimum Meter Accuracy	PMRS <sup>2</sup> Required
EPBB	< 30 kW	± 5 %	Yes
EPBB	30 kW and greater	± 5 %	Yes
P	A	±	Y

BI	II	2 %	e s	
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Notes:

- 1) All metering systems are paid for at the System Owner's expense including some form of communications, performance monitoring and reporting capability.
- 2) PMRS stands for Performance Monitoring and Reporting Service
- 3) For systems receiving an EPBB incentive, the total cost of the metering, communication and PMRS for the first five years following final project approval shall be less than 1% of total PV system eligible project costs (exclusive of metering, communication and PRMS costs) for systems up to 30kW and less than 0.5% for larger systems. If the owner of a system receiving an EPBB incentive can demonstrate to the Program Administrator that the costs for these services exceed the caps, they may request an exemption from the communication and PMRS requirements. The System Owner requesting such an exemption must, at a minimum, install a meter with an accuracy of  $\pm 5\%$  of actual system output that meets all applicable parts of Section 12.1 and which includes functionality that allows the System Owner or Host Customer to observe the system performance locally. However, there are no exemptions allowed for systems paid under a PBI structure.

As with other required solar system components, all installed meters and Performance Monitoring and Reporting Services (PMRS) providers must be listed with the Energy Commission. Lists of qualifying meters and PMRS providers can be found on the California Energy Commission's website at [www.consumerenergycenter.org/erprebate/equipment.html](http://www.consumerenergycenter.org/erprebate/equipment.html).

Detailed information on these summarized requirements follows.

## 12.1 Minimum Meter Requirements

All systems must be installed with a meter or meters so that the System Owner and Program Administrator can determine the amount of energy produced by the system and the System Owner may support proper system operation and maintenance. The meter must be listed with the Energy Commission and must meet the minimum meter requirements of this section.

The California Energy Commission's list of qualifying meters can be found at: [www.consumerenergycenter.org/erprebate/equipment.html](http://www.consumerenergycenter.org/erprebate/equipment.html).

### 12.1.1 Meter Type

For all systems receiving PBI payments, the installed meter(s) must be a separate Interval Data Recording (IDR) meter(s), or a complete system that is functionally

equivalent to an IDR meter recording data no less frequently than every 15 minutes. Installed meter(s) for systems receiving an EPBB incentive do not need to be separate IDR meters and may be internal to the inverter(s). Program Administrators may have additional meter functionality requirements for systems receiving PBI payments, as the Program Administrators will use these meters to process PBI payments and system compatibility may be required. For example, meters and service panels must meet all local building codes and utility codes. Each Program Administrator will maintain a publicly-available list of any additional functionality requirements. Please consult your Program Administrator to determine whether any additional requirements apply.

### **12.1.2 Meter Accuracy**

All systems receiving an EPBB incentive must install a solar energy production meter accurate to within  $\pm 5\%$  of actual system output and systems receiving PBI payments must install a solar production meter accurate to within  $\pm 2\%$  of actual system output.

Non-PV electric displacing thermal system Btu meter(s) must be accurate to  $\pm 5\%$ .

### **12.1.3 Meter Measurement**

Meters must measure net generated energy output (kWh) as well as instantaneous power (kW).

### **12.1.4 Meter Testing Standards**

$\pm 2\%$  meters must be tested according to all applicable ANSI C-12 testing protocols. Testing protocols for  $\pm 5\%$  meters are being developed for the CSI Program and will be incorporated into future revisions of this Program Handbook.

### **12.1.5 Meter Certification**

The accuracy rating of  $\pm 2\%$  meters must be certified by an independent testing body (i.e., a NRTL such as UL or TUV).

Certification standards for  $\pm 5\%$  meters are being developed for the CSI Program and will be incorporated into future revisions of this Program Handbook. Until these standards have been developed, the accuracy rating of all  $\pm 5\%$  meters must be certified by the manufacturer of the  $\pm 5\%$  meter or an independent testing body (i.e., a NRTL such as UL or TUV).

All test results or NRTL documentation supporting the certification must be maintained on file for inspection by the Commission or Energy Commission.

### **12.1.6 Meter Communication / Data Transfer Protocols**

As described in Table 16, for systems receiving an EPBB incentive whose costs fall below the cost caps and for all systems receiving PBI payments, protocols for the minimum required Solar Performance / Output Data must enable any PMRS provider to communicate with the meter to obtain the minimum required Solar Performance / Output

Data from the meter. The data transfer protocol provided to the Program Administrator must satisfy servicing the Program Administrator requirements.

### **12.1.7 Meter Data Access**

All meters must provide the PMRS provider with the ability to access and retrieve the minimum required Solar Performance / Output Data from the meter using the Meter Communication / Data Transfer Protocols. In the event that the system is not required to have a PMRS Provider as shown in the Table 16, the System Owner must have a means to retrieve the minimum required Solar Performance/Output Data from the meter.

### **12.1.8 Meter Display**

All meters must provide a display showing the meter's measured net generated energy output and measured instantaneous power. This display must be easy to view and understand. This display must be physically located either on the meter, inverter, or on a remote device.

### **12.1.9 Meter Memory and Storage**

All meters must have the ability to retain collected data in the event of a power outage. Meters that are reporting data remotely must have sufficient memory to retain 60 days of data if their standard reporting schedule is monthly and 7 days of data if their standard reporting schedule is daily. Meters that do not remotely report their data must retain 60 days of data. In all cases meters must be able to retain lifetime production.

### **12.1.10 Thermal Meters**

For liquid solar heating and cooling systems, it is practical to use a commercial BTU meter<sup>1</sup>. The BTU meter specifications shall be as follows –

- Provides totalizing outputs in BTUs per period.
- Capable of remote communications.
- Monthly totalizing accuracy of  $\leq 5\%$ <sup>2</sup>.
- Flow meter and temperature sensor accuracy is NIST traceable.

## **12.2 Minimum Communication Requirements**

All systems must be installed with some form of communication capability that will provide meaningful feedback to System Owners and Program Administrators. In accordance with Table 16, the systems should have remote communicating capability whereby performance data can be collected, accessed remotely, and uploaded for processing by a PMRS. For systems receiving an EPBB incentive that are unable to

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<sup>1</sup> Hot air solar systems will need to be paid incentives based on the EPBB method described below. Metering the thermal output of solar hot air systems, within reasonable accuracy and cost, is difficult.

<sup>2</sup> At least one Btu meter supplier has provided information showing that 5% accuracy is achievable. See Appendix E for an example Btu meter accuracy calculation.

meet the cost cap, the meter display must be accessible to the System Owner, and the Program Administrator must be provided means to retrieve data to collect performance data.

## **12.3 Minimum Performance Monitoring & Reporting Capability Requirements**

In order to enable System Owners to properly maintain and evaluate the performance of their systems and to allow Program Administrators to monitor the performance of systems receiving CSI incentives, a PMRS must be obtained to monitor and report on the following minimum data points and all monitoring, data collection, data retention, and reporting must be performed as specified in the corresponding sub-sections below. For EPBB incentive recipients, a PMRS is defined as, at a minimum, a service that monitors and reports the energy production data from the solar system to the system owner. For PBI incentive recipients, a PMRS is defined as, at a minimum, services that monitor and report the energy production data from the solar system to the system owner, as well as reporting the energy production data from the solar system to the Program Administrator that serves as the basis for PBI payments. The data flow between the solar energy system and the Program Administrator that serves as the basis for PBI payments must, at a minimum, meet the interim Performance Data Provider (PDP) requirements. (Appendix H – Interim CSI PBI Data Transfer Rules). PBI incentive payments are calculated and paid based on actual performance data transferred to the Program Administrator from the respective PMRS associated with each PBI incentive reservation. See Table 16 for more information and exemptions.

The PMRS provider must be listed with the Energy Commission and must meet the minimum requirements of this section.

The California Energy Commission's list of qualifying PMRS providers can be found at [www.consumerenergycenter.org/erprebate/equipment.html](http://www.consumerenergycenter.org/erprebate/equipment.html). [www.energy.ca.gov](http://www.energy.ca.gov).

### **12.3.1 Required Solar Performance / Output Data**

The PMRS must monitor, record, and report on instantaneous AC kW and net kWh Generated by the PV system.

### **12.3.2 Minimum Report Delivery Requirements**

The PMRS must provide for the electronic delivery of reports.

### **12.3.3 Time Granularity of Acquired Data**

The PMRS must log all Required Solar Performance / Output Data points no less frequently than once every 15 minutes.

### **12.3.4 Frequency of Data Collection**

The PMRS must remotely acquire and process all data points no less frequently than once per day.

### **12.3.5 Minimum Reporting Requirements**

The PMRS must provide the following reports based on acquired, processed, and analyzed data:

- Data as collected and summarized by hour, day, month, and year.
- System alerts that indicate a non-functioning or poorly functioning system.

### **12.3.6 Frequency of Data Reporting**

The PMRS must at all times provide System Owners with on-demand access to all reports required by Section 12.3.5. Time sensitive reports (i.e. System Alerts) shall be made available within 24 hours of the PMRS receiving the recorded data points which, when analyzed, indicated a problem with the system.

### **12.3.7 Data Retention Policy**

The PMRS must retain and provide the System Owner and Program Administrator with remote access to 15 minute average data for a minimum of five years from the date of production for systems receiving PBI payments and two years from the date of production for systems receiving an EPBB program incentive.

### **12.3.8 Performance Data Provider Requirements**

As per D.08-01-030, the element of PMRS that entails the data flow between the solar energy system and the Program Administrator that serves as the basis for PBI must, as a minimum, meet the interim CSI PBI data transfer rules (Appendix H).

## **12.4 Eligibility of Performance Monitoring & Reporting Service Providers**

In order to be eligible to provide Performance Monitoring and Reporting Services, providers must be registered and listed with the CEC. The list of eligible PMRS providers is located at <http://www.consumerenergycenter.org/erprebate/monitors+rsp.html>.

## **12.5 Eligible Recipients of Information**

Subject to the stated Data Privacy restrictions appearing in Section 12.5.3, the PMRS provider must at a minimum provide each group listed below with access to data as defined.

### **12.5.1 System Owner**

The PMRS shall at a minimum provide System Owners and/or Host Customers (if different) with access to all Required Solar Performance / Output Data.

### **12.5.2 Program Administrators**

The PMRS shall at a minimum provide Program Administrators with all data listed in Section 12.3 for all systems.

### **12.5.3 Data Privacy**

Protecting the privacy of System Owners and Host Customer is of the highest order. As such, data shall be collected, processed, and reported to the System Owner and the Program Administrator in accordance with this Appendix. The PMRS may provide data to third parties, including Installers and Host Customers (if different than the System Owners), provided the System Owner has consented in writing to the release of such performance data.

## **12.6 Advanced Metering Infrastructure (AMI) Coordination**

To the extent AMI coordination is an important component of PBI or EBPP program administration, the Commission will re-evaluate the requirements of this section at that time.

## **12.7 Overall Cost Constraint**

Recipients of CSI funding are not precluded or penalized from purchasing or installing a metering system and subsequent PMRS that exceeds the minimum requirements or any cost caps described in this Appendix. The selection of a PMRS provider is made at the recipient's choice and expense.

### **12.7.1 EPBB**

For systems receiving an EPBB incentive, the total cost of the metering, communication and PMRS for the first five years following final project approval shall be less than 1% of total PV system eligible project costs (exclusive of metering, communication and PRMS costs) for systems up to 30kW and less than 0.5% for larger systems. If the owner of a system receiving an EPBB incentive can demonstrate to the Program Administrator that the costs for these services exceed the caps, they may request an exemption from the communication and PMRS requirements. The System Owners requesting such an exemption must, at a minimum, install a meter with an accuracy of  $\pm 5\%$  of actual system output that meets all applicable parts of Section 12.1 and which includes functionality that allows the System Owner or Host Customer to observe the system performance locally.



## 12.7.2 PBI

All recipients of CSI funding under the PBI structure, regardless of system size, are required to contract with a PMRS provider for 5 years of service that meets all of the applicable minimum standards defined in this Appendix.

# 18. Appendix H -- Interim CSI PBI Data Transfer Rules

## Interim Criterion for Submitting Production Data

- The Performance Data Provider must be an eligible PMRS provider listed on the CEC's website:  
(<http://www.consumerenergycenter.org/erprebate/monitors+rsp.html>)
- The Performance Data Provider (PDP) must receive authorization from the Program Administrator prior to submitting PBI Data Reports for customer incentive payments.
- The customer is responsible for contracting with an approved PDP. The PDP will provide actual production data from the customer-owned generation to the Program Administrator for determining monthly Performance Based Incentive (PBI) payments. Any delay in delivery of the data report to the Program Administrator may result in the incentive payment being a delayed.
- The Program Administrator will not pay incentives based on estimated data supplied by the PDP, nor will the Program Administrator estimate incentive payments in the absence of actual performance data.
- The PDP must submit performance data using the attached CSI PBI Data Report Worksheet.

## Program Administrator Data Submission Requirements and Instructions for Completing the Spreadsheet:

### PG&E Monthly PBI Data Submission

The PDP must provide monthly system performance data to PG&E in the approved PBI Data Report Excel spreadsheet format. The spreadsheet should be emailed to [SolarPBI@pge.com](mailto:SolarPBI@pge.com) per the established reporting cycle each month. PG&E will validate the resulting PBI payment to ensure it is within an expected range before the payment is issued.

The PDP is responsible for immediately notifying PG&E if they are unable to provide the data for any reason. PG&E will only issue PBI payments based on actual performance data.

### CCSE Monthly PBI Data Submission

The PDP is responsible for providing monthly system performance data to CCSE via our approved Excel PBI Data Report spreadsheet via email per the PA established payment cycle. CCSE has set up two distinct email address for the separate Payment Cycles:

- [pbi1@energycenter.org](mailto:pbi1@energycenter.org) for Cycle 1
  - 12:00AM on the 1st of the month through the 12:00AM on the 1st of the following month
- [pbi2@energycenter.org](mailto:pbi2@energycenter.org) for Cycle 2
  - 12:00AM on the 16th of the month through the 12:00AM on the 16th of the following month

CCSE has specific personnel managing each Payment Cycle and any issues with a specific project or payment can be addressed by the CCSE PBI Payment Team. Should a PDP be unable to transmit a data report due to communication issues, we will pay out during the following cycle (double pay) contingent upon receipt of the missing data.

The PDP is responsible for immediately notifying CCSE of any issues they are/will have with transmitting the PBI Data Report. CCSE will only pay incentives on actual performance data.

### **SCE Monthly PBI Data Submission**

A customer's PBI report period begins on midnight of the 1st or 15th day of the month, whichever is earliest, following the date of the incentive claim approval letter. For example, if the date on the incentive claim approval letter is June 7, 2007, the start date of the new PBI data reporting period will be midnight, June 15, 2007. If the date on the final approval letter is June 23, 2007, the start date would be midnight, July 1, 2007. The PBI data reporting period will be on the date described above and will end on the same date and time of the following month. For the first example, the PBI reporting period would begin on midnight, June 15, 2007 and end on midnight, July 15, 2007.

SCE contact information:

Website: [www.sce.com/rebatesandsavings/CaliforniaSolarInitiative/](http://www.sce.com/rebatesandsavings/CaliforniaSolarInitiative/)

E-mail Address: [csi@sce.com](mailto:csi@sce.com)

Contact Person: *Program Manager, California Solar Initiative Program*

Telephone: (800) 799-4177

Fax: (626) 633-3402

Mailing Address:

*Southern California Edison*

*6042A Irwindale Avenue*

*Irwindale, CA 91702*

### **Interim CSI Data Reporting Worksheet Instructions**

During this interim period the customer must provide all PBI data reports via email to their respective Program Administrator. The appropriate Program Administrator contact information is listed at the end of these instructions. A response email will be sent by the Program Administrator to confirm receipt of the PBI data report.

A PBI data report must be received by the appropriate Program Administrator for a project no later than close of business (COB) five days following the end of the reporting period. This equates to COB the five or 20 of each month depending on the customer's PBI reporting period. As per Section 4.4.5.2 of the CSI Handbook, the Program

Administrator has 30 days from the end of the PBI data report period to provide payment.

The yellow fields in the CSI PBI Data Reporting Worksheet require input by the customer or PDP as described below:

A) **Project Info** – this section identifies all the project details for the Program Administrator to confirm which project and month to which production data and payment will be assigned. It also includes the contact information of the Performance Data Provider (PDP) in the event the Program Administrator identifies a problem with the PBI data report.

i. **Data Report Number** – this is the effective report number out of the scheduled 60 payments.

ii. **Primary/Secondary Incentive Level** – for projects that are approved to receive incentives from two incentive levels OR projects that are prorated due to size or project cost restrictions, the splits established by the Program Administrator and reported on the incentive claim approval letter will be entered here.

B) **Production Report** – this section contains all the pertinent reporting information for the PBI reporting period.

i. **Meter Blocks** – The blocks numbered from one to four represent the fields available for each meter of the specified project. Most projects will only fill out the first block corresponding to a single performance meter onsite. If the specified Project ID has more than one performance meter associated with it, use the additional blocks as needed. Please contact your Program Administrator if more than four blocks are needed.

ii. **Utility and Meter Information** – Input the utility account number that corresponds to the approved PBI meter. Input the utility assigned PBI meter number. If no utility PBI meter number was provided, input the meter's serial number and preface the serial number with an "SN". For example, SN013257.

iii. **Start/End Read Cumulative kWh** – These numbers represent the cumulative count of the total kWh production of the generation system. This is NOT the 15-min kWh production read. The End Read of each PBI data report should be the same as the Start Read of the following period.

iv. **Optional 15-minute Data Report** – the second tab on the spreadsheet is available for PDPs to provide the full log of 15-min interval kWh production data to the Program Administrator if possible. The Program Administrator will require PDPs to submit all historical 15-minute interval data that was not reported during the interim PBI payment process period using the EDI 867 protocol. Therefore, PDPs are strongly encouraged to provide this data during the interim period.

1. **15-minute kWh Read** – this data must be actual production including any meter multipliers. Do not provide raw data that has been processed without applicable meter multipliers.

**2. Timestamp** – each 15-minute read must also be accompanied by a corresponding date and timestamp, each in separate columns adjacent to the data read. The date stamp should be in the DD/MM/YYYY format and the timestamp is to be in the 24 hour format HH:MM:SS.