

Performance-Based Incentive (PBI) Requirements

Introduction

The California Solar Initiative (CSI) program offers various rebates for solar energy systems. This document briefly describes equipment and setup requirements for Enphase system owners to participate in the performance-based incentive (PBI).

A PBI rebate makes payments at periodic intervals based on actual system performance at those intervals. A PBI differs from the Expected Performance Based Buydown (EPBB) rebate, which is based on an estimate of expected production, and makes a one-time payment at the time of system commissioning. For detailed requirements about rebates for solar energy systems, refer to the CSI Handbook found at www.gosloarcalifornia.org.

To register for and receive PBI rebates, a system owner needs an approved performance monitoring system to measure monthly production.

PBI Reporting Requirements

System Requirements

As shown in the illustration, the Enphase Microinverter System™ includes the:

- Enphase Microinverter
- Envoy Communications Gateway™
- Enlighten® web-based monitoring and analysis software



- 1 Enphase Microinverters**
 - are installed beneath each solar module
 - maximize energy harvest
 - send AC power over AC wiring to the load center
 - also send performance data via the AC wiring
- 2 Envoy Communications Gateway**
 - plugs into any AC outlet
 - collects information via the AC wiring
 - transmits data through a standard broadband router to the Internet
 - collects information and transmits it to Enlighten in 5-minute intervals
- 3 Enphase Enlighten Monitoring**
 - provides monitoring and analysis
 - allows performance data to be viewed from any web browser

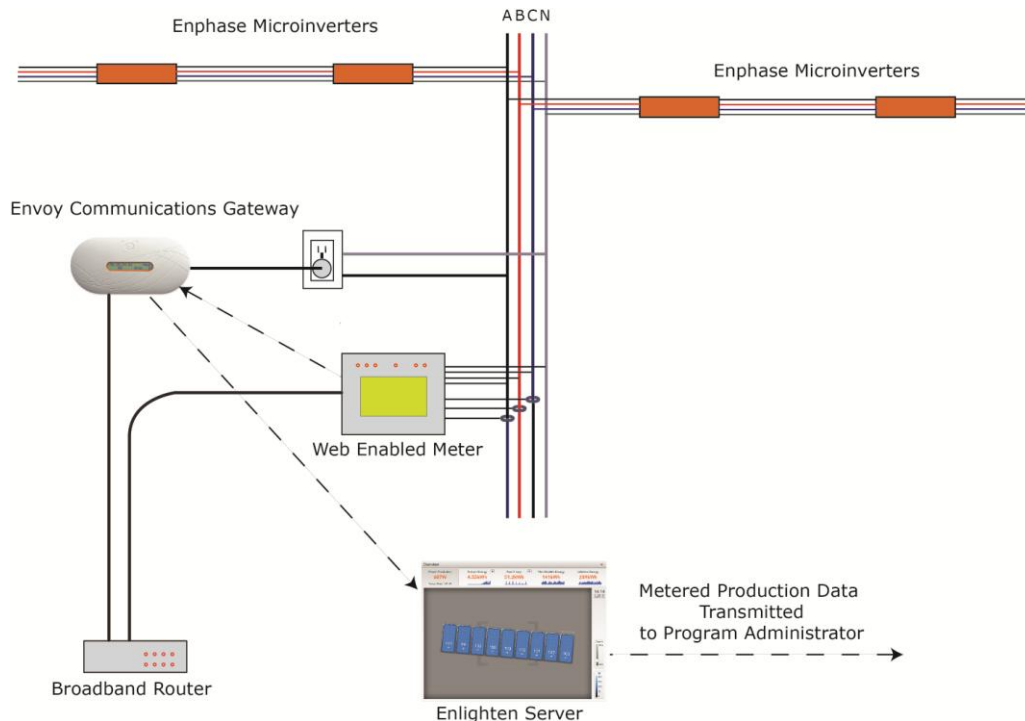
The Envoy Communications Gateway provides a reporting accuracy of $\pm 5\%$ of actual system output. While sufficient for non-monetized reporting and the EPBB rebate, the PBI rebate requires a reporting accuracy of $\pm 2\%$ at the solar-generation site. A revenue grade meter meets the $\pm 2\%$ reporting accuracy requirement.

To qualify for a PBI rebate, install a web-enabled revenue grade meter along with the Enphase Microinverter monitoring system to verify system production measurements. Enphase recommends an Energy Tracking LLC meter to meet this requirement. This meter can be purchased from Energy Tracking LLC at <http://www.energytracking.com/wem.htm>.

Performance Data Provider Requirements

To qualify for a PBI, a system also requires participation by a Performance Data Provider (PDP). Enphase Energy is an approved PDP and offers Performance Reporting and Monitoring Service (PRMS) through Enlighten.

To use Enphase as the PDP, set up the Energy Tracking LLC Web Enabled Meter (WEM) to communicate directly with one of the Envoy's in the system as shown in the following illustration. The WEM can then transmit the metered production data to the Envoy. The metered data, the microinverter status, and production data are then forwarded to the Enphase Enlighten web server. The PDP forwards the accumulated data to the utility at regular intervals, usually monthly.



Setting Up Your System for PBI

To set up a system that meets PBI requirements, you need the following:

- A web-enabled revenue grade meter
- An Enphase Envoy Communications Gateway
- Enlighten web-based monitoring software
- An Enlighten user account
- An always-on broadband Internet connection
- A broadband router with spare Ethernet port

- An up-to-date web browser to view Enlighten. Supported browsers are Internet Explorer 8 or higher, Firefox 3.6 or higher, Chrome 5 or higher, and Safari 4 or higher. Enlighten requires Adobe Flash Player 10 or higher.

For details about installing and setting up the Envoy Communications Gateway, refer to the *Envoy Communications Gateway Installation and Operations Manual*.

Configuring Your System for the PBI

Configuring the Envoy to communicate with the WEM includes the following procedures:

1. Adding the power meter (WEM) to the Envoy database. Refer to “Add the Power Meter to the Envoy Database” on page 3 for steps.
2. Configuring the power meter through the power meter's web interface. Refer to “Configure the Meter” on page 3 for steps.

For assistance with these procedures, contact Enphase at <http://enphase.com/contactus>.

Add the Power Meter to the Envoy Database

To add the power meter to the Envoy Database, do the following:

1. Configure the Envoy for a static IP address either in the router or on the Envoy. A static IP address is required for the power meter to send reports to Envoy. Refer to Appendix A for instructions on how to configure your Envoy for a static IP address.
2. Go to the Envoy Web Page Administration tab and login. The user name is **admin** and the password is **admin**.
3. Go to the **Power Meter Configuration** by using the link in the navigation window.
4. Under the **Power Meters on the Network** heading, select the power meter(s) to associate with the Envoy, and then click **Accept Selected Meters**.

Configure the Meter

Configure the meter by performing the following steps. For more information, refer to the Energy Tracking, LLC WEM-MX Installation and Operation Manual at http://www.energytracking.com/download/WEM_Manual.pdf.

1. Click the **IP Address** link under the power meter entry in the associated power meters table.
2. Login to the meter. The default user name is **em200**, and the password is **PW**. After logging in, you can change the username and password by going to **Setup > Change (Admin) Password**.
3. To associate the meter time zone with the Envoy:
 - a. Navigate to **Setup->Main Configuration**.
 - b. Under FTP Server IP enter the IP address of the Envoy.
 - c. Under FTP Account Name enter: **energytracking**.
 - d. Under FTP Password enter: **enphasepmu**.
 - e. Verify that the FTP Directory is blank.
 - f. Under **Meter Setup**: Change the **CT Ratio** according to the ratio indicated on the CT. For instance, a 200:5A ratio would equate to 40 in the **CT Ratio** field. If the meter is a 333mV model, simply enter the CT primary size (e.g., 200 for a 200A CT).

NOTE: The CT ratio is the ratio of primary (input) current to secondary (output) current. A CT with a listed ratio of 4000:1 would provide 1A of output current, when the primary current was 4000A. The Energy Tracking, LLC WEM-MX Installation and Operation Manual states:

“. . .enter the appropriate CT and or PT ratio to get the actual measurement values. If you are using a CT with a 200 Amp primary to 5 Amp secondary, then your CT Ratio is $200 / 5 = 40$.”

- g. Under the **SNTP And Time Zone Setup**, change the DST and STD Zone offset for your local. Refer to the time zone table on the following page.
- Enter the DST Zone Offset: Daylight Savings Time (18 for PDT).
 - Enter the STD Zone Offset: Standard Time (17 for PST).

NOTE: The meter clock automatically adjusts based on the values entered for DST and STD zones. Values from 1 to 12 represent positive hour offsets from UTC (Universal Coordinated Time), where a value of 1 indicates 1+ hour from UTC. Values from 13 to 24 represent negative hour offsets from UTC, where a value of 13 indicates -12 hours from UTC. An entered value of 24 indicates -1 hour from UTC.

Although this brief addresses California installations, all time zone setting possibilities are shown in the following table.

Time zone	Name	Relative to UTC	STD Zone Offset
UTC	Universal Coordinated Time	UTC	0
ECT	European Central Time	UTC+1:00	1
EET	Eastern European Time	UTC+2:00	2
EAT	Eastern African Time	UTC+3:00	3
NET	Near East Time	UTC+4:00	4
PLT	Pakistan Lahore Time	UTC+5:00	5
BST	Bangladesh Standard Time	UTC+6:00	6
VST	Vietnam Standard Time	UTC+7:00	7
CTT	China Taiwan Time	UTC+8:00	8
JST	Japan Standard Time	UTC+9:00	9
AET	Australia Eastern Time	UTC+10:00	10
SST	Solomon Standard Time	UTC+11:00	11
NST	New Zealand Standard Time	UTC+12:00	12
		UTC-12:00	13
MIT	Midway Islands Time	UTC-11:00	14
HST	Hawaii Standard Time	UTC-10:00	15
AST	Alaska Standard Time	UTC-9:00	16
PST	Pacific Standard Time	UTC-8:00	17
MST	Mountain Standard Time	UTC-7:00	18
CST	Central Standard Time	UTC-6:00	19
EST	Eastern Standard Time	UTC-5:00	20
PRT	Puerto Rico Time	UTC-4:00	21
AGT	Argentina Standard Time	UTC-3:00	22
		UTC-2:00	23
CAT	Central African Time	UTC-1:00	24

- h. Click **Submit**. This reboots the meter, which takes about four minutes. The meter's web page shows reboot progress.
4. After the meter starts again, do the following to configure the FTP transfer and reporting interval.
- a. Navigate to **Setup->Schedule Reporting Setup**.
 - b. Uncheck the box under **Disable FTP Client** (enables FTP).
 - c. Change both the **Periodicity** for email and **Logging Interval** to 5 min.
 - d. Check **Send report upon end of interval**.
 - e. Uncheck **Disable Load Profile**.

- f. Uncheck **Do not save to file**.

NOTE: This allows up to 55 days of interval data backup by the meter in the event of extended network failure.

- g. Select the type of current transformers (CT) used in the installation.
 - h. Uncheck **Enable LP Reporting by Phase**.
 - i. Check **Enable 4 Quadrant Measurement** only if the solar power plant will be exporting energy to the grid.
 - j. Click **Submit**.
5. Validate that the FTP setup is correct:
- a. Navigate to **Setup->Test FTP**.
 - b. Select **Yes**, and the system reports that the transfer was successful. If anything else is reported, review the configuration.

CSI Compliance and Paperwork

The CSI Handbook, Section 4.11.3.3, Copy of Executed PDP Contract, states:

All PBI systems are required to have a PDP and therefore a copy of the executed contract for a PDP, a letter from the PDP stating the Host Customer has purchased its service or an invoice from the Solar Contractor clearly showing the PDP information must be provided. Whichever document is submitted must clearly identify the PDP information, including the name of the PDP, the product or service purchased and the term of agreement, along with the address of the associated solar energy system Site. A separate contract is not required if the same company is providing both the PMRS and PDP services as long as the contract specifies they are providing services that satisfy both requirements.

Enphase provides PMRS (Performance Reporting and Monitoring Service) through Enlighten per the price list available to distributors. An invoice is provided upon purchase of the Enlighten web monitoring and PDP services from an Enphase distributor. Once the system and power meter are configured and verified on Enlighten, Enphase Energy, upon request, provides the customer with a letter stating that the "Host Customer" has purchased the service. This proof of executed contract is required to complete Rebate Claim paperwork under CSI.

To obtain a letter from Enphase Energy, contact Enphase at <http://enphase.com/contactus>.

CSI Acronyms

CSI roles and services are defined as follows:

Performance Data Provider (PDP)

The PDP is the service provider that monitors and reports solar production data from individual sites to the PA. This data provides the values used to generate monthly PBI payments. The PDP may or may not be the same entity as the PMRS provider. Enphase qualifies as both a PDP and PMRS.

Performance Monitoring and Reporting Service (PMRS)

PMRS allows the system owner to monitor and evaluate the performance of their solar system. The Enlighten web-based monitoring software and analysis system is an example of a PMRS. Enphase delivers production data from your system to a participating utility (CSI Program Administrator) using Enlighten.

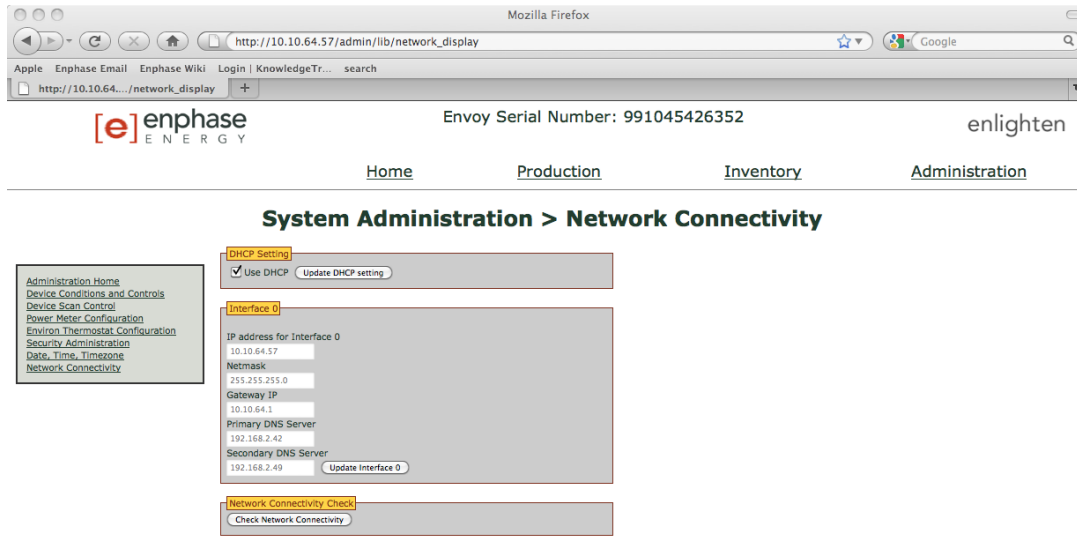
Program Administrator (PA)

In the CSI program, this is generally the local utility, PG&E, SCE or CCSE (which administers the program on behalf of SDG&E).

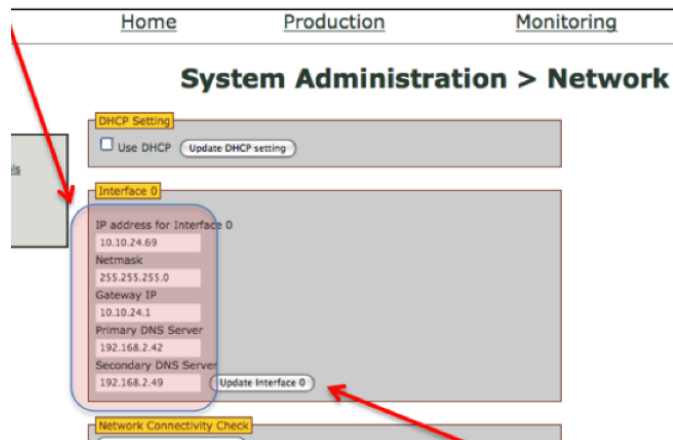
Appendix A: Configuring the Envoy with a Static IP Address

To configure the Envoy with a static IP address:

1. From the **Admin** menu, choose **Network Connectivity**.



2. Clear the check box, **Use DHCP** and click the **Update DHCP Setting** button.
3. Enter static IP settings appropriate for your network, subnet, and name server. The setting for **Secondary DNS Server** is optional.
4. Click the **Update Interface 0**.



NOTE: Since Envoy is now set for the static IP addresses specified; so you no longer have connectivity to it. Although you changed the setting from DHCP to Static, your browser is still pointed to the old IP address.

5. Plug the Envoy into the network router.
6. Unplug the Envoy for 10 seconds and then plug it in again.