



Center for  
Sustainable Energy<sup>®</sup>  
CALIFORNIA

# Pacific Power California Solar Incentive Program

## **Expected Performance Based Incentive Calculator (EPBI)**

# Agenda

- Introduction to the EPBI Calculator
- Archived and Current Calculators
- EPBI Input Page
- Systems with Multiple Arrays
- EPBI Output Page
- EPBI Demonstration



# Introduction to the EPBI Calculator

The EPBI calculator is an internet accessible tool, available for participants of the Pacific Power California Solar Incentive Program, that is designed to determine the appropriate incentive amount for a solar photovoltaic system.

The incentive is based on the expected performance of the system, which is calculated using inputs such as location, system components, and system design factors.

The EPBI calculator relies on industry-standard assumptions, and is driven by the National Renewable Energy Laboratory's (NREL) PV Watts web service, which is used to estimate annual energy production using various system parameters and weather data.

# Introduction to the EPBI Calculator

To access the EPBI calculator, go to the PPCSIP homepage:

[www.pacificpowercasolar.com](http://www.pacificpowercasolar.com)

and click “EPBI Calculator” on the menu at the left side of the webpage.

Or use the direct link:

[www.pacificpowercasolar.com/solar-calculator.html](http://www.pacificpowercasolar.com/solar-calculator.html)



The screenshot shows the Pacific Power website for the California Solar Incentive Program. The header features the Pacific Power logo and the text "PACIFIC POWER". Below the header is a navigation menu with the following items: Home, Apply Here, Net Metering, EPBI Calculator, Resources, Solar Contractors, FAQs, Workshops, and Contact Us. The main content area includes a large blue banner with the text "Pacific Power California Solar Incentive Program". Below the banner, there is a section titled "Get the Handbook" with a thumbnail image of the handbook cover. To the right of the handbook section, there is a paragraph of text: "Thank you for your interest in the Pacific Power California Solar Incentive Program. The program launched on July 1, 2011. We are currently accepting applications. For information about the current incentives please contact the program administrator at 858-244-1177 or PPCSIP@pacifi.com." Below this text is a "Solar Basics" section with a sun icon and the text: "Solar energy is simply turning sunlight into electricity. Learn more about solar energy and how to make them work for you." and a "More »" link.

## Archived and Current Calculators

The Current Calculator has been updated to include new input and output features that allow for increased user flexibility, transparency and accuracy in order to calculate incentives for PPCSIP.

All new incentive applications submitted on or after February 2, 2012 are required to use the *Current Calculator*. (Reservation Application Package)

Projects that were reserved before February 2, 2012 may use the *Archived Calculator* if a new EPBI calculation is rerun at a later application step.

# EPBI Input Page

### Site Specifications

Project Name:

Zip Code:

Customer Type:

Annual Site Demand (kWh):  (Previous 12 months)

### PV System Specifications

PV Array Name:

PV Module:   
215W Polycrystalline Module (189.4 PTC)

Number of Modules:

Mounting Method:

Inverter:   
2110W (240Vac) Utility Interactive Inverter (94.5% efficiency)


Number of Inverters:

Shading:

January:	<input type="text"/>
February:	<input type="text"/>
March:	<input type="text"/>
April:	<input type="text"/>
May:	<input type="text"/>
June:	<input type="text"/>
July:	<input type="text"/>
August:	<input type="text"/>
September:	<input type="text"/>
October:	<input type="text"/>
November:	<input type="text"/>
December:	<input type="text"/>

Array Tilt (degrees)

Array Azimuth (degrees)



True North 0°  
270° 90°  
180°

In order to calculate an incentive for your project, the site and PV system specifications of the proposed system is entered on the EPBI input page.

# EPBI Input Page

### Site Specifications

Project Name:

Zip Code:

Customer Type:

Annual Site Demand (kWh):  (Previous 12 months)

### PV System Specifications

PV Array Name:

PV Module:   
215W Polycrystalline Module (189.4 PTC)

Number of Modules:

Mounting Method:

Inverter:   
2110W (240Vac) Utility Interactive Inverter (94.5% efficiency)


Number of Inverters:

Shading:

January:	<input type="text"/>
February:	<input type="text"/>
March:	<input type="text"/>
April:	<input type="text"/>
May:	<input type="text"/>
June:	<input type="text"/>
July:	<input type="text"/>
August:	<input type="text"/>
September:	<input type="text"/>
October:	<input type="text"/>
November:	<input type="text"/>
December:	<input type="text"/>

Array Tilt (degrees)

Array Azimuth (degrees)



True North 0°  
270° 90°  
180°

## Site Specifications:

- Project Name
- Zip Code of Installation Site
- Customer Type
- Annual Site Demand

The previous 12 months of kWh usage history at the project site. You may obtain this information from previous bills, or by calling Pacific Power (888-221-7070).

# EPBI Input Page

### Site Specifications

Project Name:

Zip Code:

Customer Type:

Annual Site Demand (kWh):  (Previous 12 months)

### PV System Specifications

PV Array Name:

PV Module:   
215W Polycrystalline Module (189.4 PTC)

Number of Modules:

Mounting Method:

Inverter:   
2110W (240Vac) Utility Interactive Inverter (94.5% efficiency)


Number of Inverters:

Shading:

January:	<input type="text"/>
February:	<input type="text"/>
March:	<input type="text"/>
April:	<input type="text"/>
May:	<input type="text"/>
June:	<input type="text"/>
July:	<input type="text"/>
August:	<input type="text"/>
September:	<input type="text"/>
October:	<input type="text"/>
November:	<input type="text"/>
December:	<input type="text"/>

Array Tilt (degrees)

Array Azimuth (degrees)



True North 0°  
270° 90°  
180°

## PV System Specifications:

- PV Array Name
- Make/model of modules
- Number of modules
- Mounting Method
  - Average standoff height of modules from mounting surface.
- Make/model of inverter(s)
- Number of inverter(s)
- Monthly Shading Percentages
- Array Tilt
- Array Azimuth




## Multiple Arrays

For the purposes of PPCSIP, an array is defined as a grouping of modules with a single type of PV panel, inverter, tilt and azimuth combination. The calculator is designed to calculate incentives for systems either with a single array, or mixed systems that use different types of inverters, PV panels, or have varying tilts and/or azimuths. A mixed system will require the user to add additional array information for each combination separately.

# Multiple Arrays

Shading:

January:	<input type="text"/>
February:	<input type="text"/>
March:	<input type="text"/>
April:	<input type="text"/>
May:	<input type="text"/>
June:	<input type="text"/>
July:	<input type="text"/>
August:	<input type="text"/>
September:	<input type="text"/>
October:	<input type="text"/>
November:	<input type="text"/>
December:	<input type="text"/>
Array Tilt (degrees)	<input type="text"/>
Array Azimuth (degrees)	<input type="text"/>



If you have a multiple array system, enter the specifications for the first array combination, then click “Add Additional Array” to enter the second array combination below. Repeat this process as needed and click “Calculate” when all array combinations have been entered.

The calculator will take the weighted average of the readings from each array to generate one incentive for the system.

# EPBI Output Page

Results			
CEC-AC Rating:	4.475 kW	(b)	
Annual Expected Generation:	7,023 kWh	(c)	
kWh/kW:	1,570	(d) = (c)/(b)	
Eligible Generation:	7,023 kWh	(e) = (c)	
Maximum Eligible System Size:	<b>4.475 kW</b>	(f) = (e)/(d), capped at 250 kW	
Design Factor:	<b>99.807 %</b>	<a href="#">Hide Details</a> (g)	
PPCSIP Rating:	<b>4.466 kW</b>	(h) = (g) x (f)	
Incentive Rate:	<b>\$1.13 /watt</b>	(i)	
Incentive:	<b>\$5,047</b>	(j) = (h) x (i) x 1000	
System Design Factor Details			
Array	CEC-AC Design Factor		
South Facing Garage	1.790	99.518 %	
West Facing Roof	2.685	100.000 %	
SYSTEM	4.475	99.807 %	
Step	Incentive Rate	PPCSIP Rating	Incentive
Step 1	\$2.00/watt	4.466 kW	\$8,932
Step 2	\$1.50/watt	4.466 kW	\$6,699
<b>Step 3</b>	<b>\$1.13/watt</b>	<b>4.466 kW</b>	<b>\$5,047</b>
Step 4	\$0.84/watt	4.466 kW	\$3,751
Step 5	\$0.63/watt	4.466 kW	\$2,814
Step 6	\$0.47/watt	4.466 kW	\$2,099
Step 7	\$0.36/watt	4.466 kW	\$1,608

← Current Incentive Step

The output page shows the calculation results and the corresponding incentive amount.

The incentive amount is the product of the PPCSIP Rating (Maximum Eligible System Size x Design Factor) and the current Incentive Rate.

# EPBI Demo: Current Calculator

[www.pacificpowercasolar.com](http://www.pacificpowercasolar.com)