

## **How to Calculate Required TDV Energy Equivalency of the Offset Solar Energy System**

If a developer/seller of production homes chooses not to offer solar as an option they are required to install an offset solar energy system. The amount of energy the offset solar energy system is required to generate will depend on how many homes are in the development being offset and the location of the development being offset . The offset solar energy system must generate an amount of energy greater than or equal to the amount of energy generated from solar systems that would have been installed in the development, assuming that 20% of the homes in the development installed a reference solar energy system. Details of the reference solar energy system can be found in the solar offset regulations Section 2703(d). Energy equivalency will be calculated using TDV energy.

The calculation for TDV energy equivalency of the offset solar energy system is divided into two parts: the expected annual TDV energy from the assumed installation of reference solar energy systems in 20% of the development being offset, and the expected annual TDV energy of the offset solar energy system. The following is an example of how each calculation is to be conducted.

### **Calculating the Expected Annual TDV Energy of the assumed installation of reference solar energy systems in 20% of a development being offset**

1. Identify the number of homes in the development being offset. In this example we will assume that **100** homes are in the development being offset.
2. Multiply the number of homes in the development by **0.2**; this will give you the number of homes you are actually responsible for offsetting.

$$100 \times 0.2 = 20$$

In our example, the total number of homes being offset is **20**.

- Identify the climate zone location of the housing development and look up the associated TDV value of that climate zone in Table 2 of the Solar Offset Regulations. These TDV values represent the expected annual TDV energy of a reference solar energy system installed in each climate zone.

<u>Climate Zone</u>	<u>Expected Annual kWh</u>	<u>Expected Annual TDV Energy</u>
<u>CZ01</u>	<u>2927</u>	<u>43596</u>
<u>CZ02</u>	<u>3303</u>	<u>48686</u>
<u>CZ03</u>	<u>3735</u>	<u>52314</u>
<u>CZ04</u>	<u>3809</u>	<u>54135</u>
<u>CZ05</u>	<u>3887</u>	<u>54289</u>
<u>CZ06</u>	<u>3921</u>	<u>55388</u>
<u>CZ07</u>	<u>3837</u>	<u>61446</u>
<u>CZ08</u>	<u>3883</u>	<u>54577</u>
<u>CZ09</u>	<u>3723</u>	<u>52270</u>
<u>CZ10</u>	<u>3737</u>	<u>52572</u>
<u>CZ11</u>	<u>3802</u>	<u>56055</u>
<u>CZ12</u>	<u>3942</u>	<u>56627</u>
<u>CZ13</u>	<u>3987</u>	<u>53539</u>
<u>CZ14</u>	<u>4262</u>	<u>57345</u>
<u>CZ15</u>	<u>4164</u>	<u>55408</u>
<u>CZ16</u>	<u>3712</u>	<u>55960</u>

For our example, we will use **Climate Zone 12** which has an associated TDV value of **56,627**.

- Multiply the number of homes being offset by the appropriate TDV value.

$$20 \times 56,627 = 1,132,540$$

This figure represents the expected annual TDV energy that an offset solar energy system must produce in order to adequately offset this development of 100 homes built in Climate Zone 12.

### **Calculating Expected Annual TDV Energy of an Offset Solar Energy System**

An Offset Solar Energy System must generate an expected annual TDV energy value greater than or equal to the expected TDV energy value of the assumed installation of reference solar energy systems in 20% of the development being offset . In this example this means that the Offset Solar Energy System must generate an expected annual TDV energy value of least **1,132,540**.

- Using the Solar Offset Program Calculator version 1.0, identify the system specifications of your planned Offset Solar Energy System.

### Solar Offset Program Calculator (SOPC)

Project Title

Number of Inverters per Site with Identical Design Details

PV Module

Standoff Height

Mounting Height   ft

Number of Series Modules in each String

Number of Parallel Strings per Inverter

Tracking

Roof Pitch  Tilt  degrees

Azimuth  degrees

Inverter

City  Climate Zone

Minimal Shading

Run Status

SOPC 1.0 SOPM101/SOPH101

Above is a screen shot of the Solar Offset Program Calculator. Within this program you will need to enter the system specifications of your planned Offset Solar Energy System including specific PV modules, inverters, and design features such as tilt and azimuth.

After you hit the “Run” button, you will be prompted to enter identifying information

## CECPV Calculator - Site Information

Project Title   
Project Address   
City, State Zip

### Developer / Seller

Name   
Title/Firm   
Address   
City, State Zip   
Telephone No.  License No.

### Documentation Author

Name   
Title/Firm   
Address   
City, State Zip   
Telephone No.

Run Status

**Continue**

SOPC 1.0 SOPM101/SOPI101

Click the "Continue" button to finish the calculation.

## Solar Offset Program Calculator - Results

kWh Production		kW AC system size	<input type="text" value="45.23"/>
January	<input type="text" value="3505.1"/>	Annual kWh	<input type="text" value="82,268"/>
February	<input type="text" value="4583.6"/>	TDV (kWh)	<input type="text" value="1,174,162"/>
March	<input type="text" value="6530.9"/>		
April	<input type="text" value="8704.4"/>		
May	<input type="text" value="9589.3"/>		
June	<input type="text" value="9668.6"/>		
July	<input type="text" value="9769.2"/>		
August	<input type="text" value="9198"/>		
September	<input type="text" value="7464.7"/>		
October	<input type="text" value="5812.9"/>		
November	<input type="text" value="3936"/>		
December	<input type="text" value="3505.2"/>		
Annual	<input type="text" value="82,268"/>		

SOPC 1.0

SOPM101/SOP1101

The above screen shot shows the result screen of the Solar Offset Program Calculator. This screen shows a summary of the expected performance of the specified solar energy system. The important figure is circled in red above. This is the expected annual TDV energy value for this system.

As mentioned before an Offset Solar Energy System must generate an expected annual TDV energy value greater than or equal to the expected annual TDV energy value of the assumed installation of reference solar energy systems in 20% of the development being offset. In this example the proposed Offset Solar Energy System entered into the calculator has an expected annual TDV energy value of **1,174,162** which is greater than the required **1,132,540** which means this solar energy system adequately offsets the initial development.

### **Banking Unused Expected Annual TDV Energy Equivalency Credit**

Any excess expected annual TDV energy equivalency credit can be banked for future use for offsetting other housing developments. In this example there is an excess **41,622**. This value can be banked and can be applied to future developments you wish to offset.

Developer/sellers can install multiple Offset Solar Energy systems and aggregate the expected annual TDV energy values of those systems, and apply the aggregated value to offset multiple developments.