



CSD LIWP STANDARDS

FOR

SOLAR PHOTOVOLTAIC - DRAFT

Category	Criteria
1. MEASURE	<p>1.1. Installation of a Solar Photovoltaic (PV) system harnesses the solar radiation and converts it into electricity. This electricity is fed into the utility grid, reducing or eliminating the homeowner's utility bill.</p> <p>1.2. This measure is classified as an Enhanced Measure and requires a solar assessment,</p> <p>1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.</p>
2. LICENSING	<p>2.1. This measure requires a C-10 Electrical Contractor or C-46 Solar Contractor license for purposes of the LIWP program.</p>
3. FEASIBILITY CRITERIA	<p>3.1. Install this measure when:</p> <ul style="list-style-type: none"> a. The home has adequate roof space on the south and/or west facing roof. b. System is justified with a SIR of 1.0. c. System size will not exceed 5.75DC/5-AC. d. Dwelling is located in a climate zone specified within the SASH Guidelines. <p>3.2. Do <u>NOT</u> install this measure when:</p> <ul style="list-style-type: none"> a. Adequate space for solar system (modules and components) is not available. b. The dwelling is a mobile home c. Roof structure or condition will not support the weight of PV modules. d. Installation would violate Cal Fire Solar PV Installation Guideline Requirements. e. Roofing is not a Class-C or better fire rated material.
4. ADDITIONAL ASSESSMENT CRITERIA	<p>4.1. System Size</p> <ul style="list-style-type: none"> a. Maximum system size limits apply as follows: <ul style="list-style-type: none"> - All systems shall be sized to produce no more than 80% of the household annual baseline energy consumption where baseline is determined based on one of these two methods <ul style="list-style-type: none"> o <u>Method 1</u>: Previous 12 months of electric usage. o <u>Method 2</u>: When the client's billing data is not available, the client's baseline energy consumption shall be calculated at 4.3 kWh/sq. ft. of conditioned floor area. o Note: If an energy audit is used to determine feasible weatherization measures, the client's baseline for the purpose of sizing a PV system must be adjusted by the predicted annual electric savings (kWh) resulting from the weatherization measures. - Additionally, no system shall be larger than either 5kW CEC-AC or 5.75 kW DC, where: <ul style="list-style-type: none"> o DC System Size = Module Nameplate Size (W) x Number of Modules ÷ 1,000 W/kW. o CEC-AC system size shall be determined using the California Solar Initiative (CSI) Calculator (only when in investor-owned utility territory). <p>4.2. System production shall be determined based on the following method:</p> <ul style="list-style-type: none"> b. The PVWatts® Calculator (http://pvwatts.nrel.gov/) must be used to quantify system production using the assumptions below: <ul style="list-style-type: none"> o DC System Size = Module Nameplate Size (W) x Number of

	<p>Modules ÷ 1,000 W/kW cost-effectiveness.</p> <ul style="list-style-type: none"> ○ System Losses <ul style="list-style-type: none"> ▪ Shading: Average annual shading based on output of monthly shading analysis using a tool such as Solar Pathfinder or Solmetric Suneye. ▪ Soiling, snow, mismatch, wiring, connections, nameplate rating, age, availability: 0% ○ Tilt: Actual panel array tilt accurate to within 5 degrees. ○ Azimuth: Actual panel array azimuth accurate to within 5 degrees. <p>4.3. Cost-Effectiveness</p> <p>a. Cost effectiveness will be determined on a per-home basis</p> <p>b. SIR must be 1.0 or greater calculated as follows:</p> $\text{SIR} = \frac{\text{First Year kWh Savings (from PVWatts)} \times \text{Customer Cost/kWh} \times 27.7941}{\text{Total Cost of System} - \text{Leveraged Funding}}$ <p>4.4. Client billing rates (Customer Cost/kWh) shall be determined in accordance with CSD's blended rate structure below:</p> <p style="text-align: center;">Blended <u>Electric</u> Rate for Each Utility</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Utility</th> <th>Average Residential Rate</th> </tr> </thead> <tbody> <tr> <td>PG&E</td> <td>\$ 0.167</td> </tr> <tr> <td>SCE</td> <td>\$ 0.164</td> </tr> <tr> <td>SDG&E</td> <td>\$ 0.187</td> </tr> <tr> <td>LADWP</td> <td>\$ 0.150</td> </tr> <tr> <td>SMUD</td> <td>\$ 0.129</td> </tr> <tr> <td>Burbank MUD</td> <td>\$ 0.153</td> </tr> <tr> <td>Glendale Water and Power</td> <td>\$ 0.165</td> </tr> <tr> <td>Pasadena Water and Power</td> <td>\$ 0.166</td> </tr> <tr> <td>Imperial Irrigation District</td> <td>\$ 0.122</td> </tr> <tr> <td>All Other Utilities</td> <td>\$ 0.153</td> </tr> </tbody> </table>	Utility	Average Residential Rate	PG&E	\$ 0.167	SCE	\$ 0.164	SDG&E	\$ 0.187	LADWP	\$ 0.150	SMUD	\$ 0.129	Burbank MUD	\$ 0.153	Glendale Water and Power	\$ 0.165	Pasadena Water and Power	\$ 0.166	Imperial Irrigation District	\$ 0.122	All Other Utilities	\$ 0.153
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<p>5. MINIMUM INSTALLATION GUIDELINES</p>	<p>5.1. Installation practices and materials shall conform with all local codes, "California Solar Permitting Guidebook", manufacturer's installation requirements, and CSD Guidelines.</p> <p>a. A building permit is <u>required</u> to be obtained and finalized.</p> <p>b. All solar PV installations need the local utility's approval to link into the electricity grid, a process commonly referred to as "interconnection."</p>																						
<p>6. POST-INSTALLATION GUIDELINES</p>	<p>6.1. Operational Checks</p> <p>a. The solar PV system shall function as designed and comply with the installation guidelines above.</p>																						
<p>7. MATERIAL SPECIFICATIONS</p>	<p>7.1. Individual components of solar PV systems must comply with the California Electrical Code (CEC). See the following links for Modules and Inverters:</p> <p>a. http://www.gosolarcalifornia.ca.gov/equipment/pv_modules.php</p> <p>b. http://www.gosolarcalifornia.ca.gov/equipment/inverters.php</p>																						
<p>8. WARRANTY</p>	<p>8.1. Manufacturer Warranty – 10 years (collectors) / 1yr. (other)</p>																						