Standardized Permit Submittal
Residential Photovoltaic Systems

REDWOOD EMPIRE ASSOCIATION OF CODE OFFICIALS

Purpose

In an effort to promote a consistent methodology of processing permits by all jurisdictions within the Redwood Empire Chapter of Code Officials, this standardized permit submittal has been developed for residential (one and two family dwellings) roof mounted PV systems of up to 5 KW. If the project is located in a historical district, or is a ground mount system, additional requirements for review may be required.

Design and Review

1. All PV applications shall be reviewed at the front counter for completeness. Every attempt will be made to review and approve projects that are residential PV systems of 5 KW or less "over-the-counter".
2. Larger PV systems (>5 KW) or systems using new technology (i.e., micro inverters, thin film panels, etc.) may be required to submit detailed plans and specifications for plan review.
3. All PV system plans shall specify:
   a. Conductor wiring methods and insulation rating, system and solar panel grounding methods as per inverter and solar panel manufacturer's listings, and PV system DC and AC disconnects.
   b. Signage (on panel(s), disconnects and transmission line conductors).
   c. Placement of equipment and modules with associated access and pathways.
   d. Equipment type, listing, testing agency approvals, etc.
   e. Panel attachment details.

Worksheet Requirements

1. General information: Name of applicant, address of project, name of licensed contractor, size of system being installed.
2. Completion of system detail worksheet and site plan. (attached)
3. Single line diagram of electrical equipment clearly showing size of main panel, sub panels, PV system equipment, including make, model, size of units, and disconnects.
4. Listing information, including mounting, wire type, method of grounding, of PV modules and mounting racks.

Photovoltaic Disconnect Requirements

1. PV disconnect shall be installed in a readily accessible location and located together when possible. All electrical panel disconnecting means shall be designed to shut off all power (solar and domestic).

Protection of Emergency Responders

The following conditions shall be verified and apply to all roof and ground mount solar PV systems:

1. All sharp edges and fastener tips shall be covered or crimped over to eliminate sharp edges. This will minimize risk of injury to emergency responders (or any other individual accessing the roof top).
2. All roof surface mounted conduits, pipes, braces, etc. crossing the pathways are to be clearly identified by a red/white reflective tape, or other approved identifying material.

The Office of the State Fire Marshal has produced guidelines for roof access at photovoltaic panel array locations for emergency responders. These guidelines, while not in the building codes, may be enforced by the local jurisdiction. It is recommended that you contact the local fire and building department prior to submitting your application.

Photovoltaic System Layout & Site Plan

Checklist for PV System Plan Check

☐ Yes	☐ No	Is a basic site diagram provided showing location of structure and equipment?
☐ Yes	☐ No	Is the array configuration shown?
☐ Yes	☐ No	Is the array wiring identified?
☐ Yes	☐ No	Is the combiner/junction box identified?
☐ Yes	☐ No	Is the AC / DC disconnect box identified?
☐ Yes	☐ No	Is the equipment grounding specified?
☐ Yes	☐ No	Is the conduit size from the array to the power source identified?
☐ Yes	☐ No	Are cut sheets provided for the PV modules?
☐ Yes	☐ No	Are cut sheets provided for the mounting hardware?
☐ Yes	☐ No	Are cut sheets provided for the Inverter?
☐ Yes	☐ No	Is the system user's manual available to property owner?
☐ Yes	☐ No	Does the roof appear to be in good condition?

Three forms of signage are required for Solar PV Systems. Permanently affixed labels shall have a red background with white lettering. Printed material shall be resistant to fading per UL 969, and CEC Article 690.

Photovoltaic System Wiring Diagram

If the electrical system is more complex than the standard electrical diagram can effectively communicate, provide an alternative diagram with appropriate detail.

Worksheet Information

Roof Design

Approximate Age of Roof _____

Roofing Type: ☐ Comp Shingle ☐ Tile ☐ Shake ☐ Metal

Rafter Size: _____ X _____ Inches

Rafter Spacing: ☐ 16" o.c. ☐ 24" o.c. ☐ Other _____

Rafter Span: _____ Array Weight: _____ lbs.

Truss/Rafters that are over-spanned or if the array is over 5 lbs psf, design by a licensed professional may be required.

PV System Components

Per Module	Manufacturer & Model
Photovoltaic Panel	_____
Rated Power (P_{Max})	_____ Watts
Open Circuit Voltage (Voc)	_____ VDC
Short Circuit (I_{sc})	_____ Amps DC
Maximum Voltage (V_{pmax})	_____ VDC
Maximum Current (I_{pmax})	_____ Amps DC
Inverter Model	_____

Module Configuration

No. of Modules in Series _____

No. of Strings in Parallel _____

Total Rated Power of System (@STC) _____

DC Grounding Electrode Conductor _____ AWG _____ CEC Sec 690.47 (c) (2)

AC Grounding Electrode Conductor _____ AWG _____ CEC Sec 690.47 (c) (2)

☐ Attach PV module, inverter and mounting system cut sheets.

CUSTOMER NAME			
PROJECT ADDRESS			
DRAWN BY		DATE	
INSTALLERS COMPANY NAME, ADDRESS, & LICENSE NUMBER			
NAME			
ADDRESS			
PHONE NO.	( ) –	CSLB. NO.	