

BUILDING DIVISION INFORMATION SHEET

Residential Rooftop Photovoltaic Systems Plan Submittal Information and Checklist



This standardized permit submittal has been developed for residential (one- and two-family dwellings and legally permitted accessory buildings) roof mounted PV systems. If the project is a ground mount system, additional requirements for review may be required.

This document is effective January 1, 2023. Submittal based upon adoption and effective date of 2022 California Code of Regulations, Title 24 Part 2.5, and/or local amendments.

Design and Review

- All PV applications will be reviewed by the Building Inspector electronically.
- All PV system plans shall specify*:
 - Conductor wiring methods and wire type, system and solar panel grounding methods as per inverter and solar panel manufacturer’s listings, and PV system DC and AC disconnects.
 - Signage (on panel(s), disconnects and transmission line conductors).
 - Placement of equipment and modules with associated access and pathways.
 - Equipment type, listing, testing agency approvals, etc.
 - Module attachment details.
 - Single line drawing of the entire system.

*See page 4 for full plans set requirements

Worksheet Requirements

- General information: Name of applicant, address of project, name of licensed contractor, size of system (DC Rating) being installed.
- Completion of system detail worksheet and site plan. (attached)
- 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.
- Listing information, including mounting attachment to roof, wire type, method of grounding, of PV modules and mounting racks.

Photovoltaic Disconnect Requirements

- 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).
- Microinverter systems must have a label on the exterior of the main service panel stating “Microinverter System Solar Breaker Inside Panel is PV System Disconnect.”

Protection of Emergency Responders

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

- 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).
- All roof surface-mounted conduits, pipes, braces, etc. crossing the pathways are to be clearly identified by red/white reflective tape, or other approved identifying material.

Access Requirements and Array Configurations

All arrays shall be mounted per the listing installation instructions of the system. Pathways shall be established in the design of the solar installation and clearly indicated on the plans. All roof access pathways shall be located at a structurally supported location on the building, such as over a bearing wall, or beam lines. Arrays shall be located in a manner that provides access pathways for the following conditions:

- Residential buildings with hip roof layouts: Modules shall be located in a manner that provides one three-foot wide clear pathway from the eave to the ridge on each roof slope where panels are located.
- Residential buildings with a single ridge: Modules shall be located in a manner that provides two three-foot wide access pathways from the eave to the ridge on each roof slope where arrays are located.
- Hips and valleys: Panels/modules shall be located no closer than 18 inches (457 mm) to a hip or a valley if panels/modules are to be placed on both sides of a hip or valley. If the panels are to be located on only one side of a hip or valley that is of equal length, then the panels shall be permitted to be placed directly adjacent to the hip or valley.

Modules shall be located no higher than 3 ft. below the ridge for fire ventilation purposes.

Project shall comply with local codes of the respective jurisdictions. It is recommended that for installations not in conformance with the access requirements contact the Rancho Adobe Fire Protection District prior to submitting your application.

PLANS SUBMITTAL REQUIREMENTS

All PV system plans shall show and/or specify in the following order:

1. Basic site plan provided showing location of structure and equipment.
2. Array configuration and placement of equipment and modules on roof with dimensioned access and pathways.
3. Electrical single line drawing including:
 - a. Size and location of the main electrical panel and sub panels
 - b. Verification that electrical service is in good condition and adequate for new loads
 - c. Equipment grounding
 - d. Combiner/junction box location
 - e. The AC / DC disconnect box
 - f. Conduit size from the array to the power source
 - g. Inverter string sizing or micro inverter branch circuit details.
 - h. 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.
 - i. Listing information, including mounting, wire type, method of grounding, of PV modules and mounting racks.
4. Signage (on panel(s), disconnects and transmission line conductors).
5. Provide cut sheets for all PV equipment and mounting systems including, but not limited to:
 - a. PV modules
 - b. Rack mounting system
 - c. Mounting brackets
 - d. Grounding hardware
 - e. Inverters or micro inverters
 - f. Panel and rack attachment details
6. Equipment type, listing, testing agency approvals, etc.
7. Permanent labels and signage with a red background and white lettering resistant to fading pursuant to UL 969 and California Electrical Code Article 690 and permanently affixed.

RESIDENTIAL ROOFTOP PHOTOVOLTAIC SYSTEM CHECKLIST

(DO NOT SUBMIT THIS FORM WITH YOUR PERMIT SUBMITTAL – USE AS A GUIDELINE TO ENSURE YOUR SUBMITTAL IS COMPLETE BEFORE SUBMITTING TO THE BUILDING DEPARTMENT)

PROPERTY OWNER _____
 PROJECT LOCATION _____

INSTALLER’S COMPANY NAME, ADDRESS, & LICENSE NUMBER

COMPANY NAME _____
 BUSINESS ADDRESS _____
 BUSINESS PHONE _____ STATE LIC. NO. _____

**WORKSHEET INFORMATION - ROOF DESIGN
 PV SYSTEM COMPONENTS**

APPROXIMATE AGE OF ROOF: _____ ROOFING TYPE: COMP SHINGLE TILE SHAKE METAL OTHER

RAFTER SIZE: _____ X _____ RAFTER SPACING 16" O.C. 24" O.C. OTHER: _____

WORST CASE RAFTER SPAN SUPPORTING ARRAY (FT-IN.): _____ ARRAY WEIGHT: _____ LBS. PER SF.

RAFTERS THAT ARE OVER-SPANNED OR IF THE ARRAY IS OVER 5 LBS. PER SF., DESIGN BY A LICENSED PROFESSIONAL MAY BE REQUIRED

PV MODULE RATINGS

MODULE MANUFACTURER _____
 MODULE MODEL _____
 MAX POWER-POINT CURRENT (I_{MP}) _____ A
 MAX POWER-POINT VOLTAGE (V_{MP}) _____ V
 OPEN-CIRCUIT VOLTAGE (V_{OC}) _____ V
 SHORT-CIRCUIT CURRENT (I_{SC}) _____ A
 MAX SERIES FUSE (OCPD) _____ A
 MAXIMUM POWER (P_{MAX}) _____ W
 MAX VOLTAGE (TYP 600V_{DC}) _____ V
 VOC TEMP COEFF _____
 IF COEFF SUPPLIED CIRCLE UNITS _____

INVERTER RATING

INVERTER MANUFACTURER _____
 INVERTER MODEL _____
 MAX DC VOLT RATING _____ V
 MAX POWER @ 40° C _____ W
 NORMAL AC VOLTAGE _____ V
 MAX AC CURRENT _____ A
 MAX OCPD RATING _____ A

**SIGN FOR DC DISCONNECT
 PHOTOVOLTAIC POWER SOURCE**

RATED MPP CURRENT _____ A
 RATED MPP VOLTAGE _____ V
 MAX SYSTEM VOLTAGE _____ V
 MAX CIRCUIT VOLTAGE _____ A

MODULE CONFIGURATION

NO. MODULES IN SERIES _____
 NO. OF STRINGS IN PARALLEL _____
 TOTAL RATED POWER OF SYSTEM (@STC) _____
 AC GROUNDING ELECTRODE CONDUCTOR _____ AWG _____ CEC Sec 690.47 (C) (2)

**SIGN FOR INVERTER OCPD AND AC DISCONNECT
 (IF USED)**

AC OUTPUT CURRENT _____ A
 NOMINAL AC VOLTAGE _____ V