



RESIDENTIAL PHOTOVOLTAIC (PV) INSPECTION CHECKLIST

BUILDING DIVISION REQUIREMENTS

Required Inspections:

***Note: Per California Electrical Code (CEC), all associated wiring and interconnections shall be installed by qualified persons (sections 690.4 [E] & 705.6).**

- A final inspection is required (systems shall not be energized prior to this inspection) to verify the following:

General:

- If new roofing system is going to be installed, a separate roofing permit and inspections are required.
- Approved plans, permit and installation instructions shall be on site at time of inspection.
- All equipment shall be open and ready for inspection.
- Field installation shall be per code/plan. Changes shall be submitted to the Building Division for approval prior to inspection.
- Panels shall be adequately anchored to the roof framing.
- Penetrations of the roof material shall be sealed in accordance with the roofing manufacturer's requirements.
- Verify equipment and conduit locations to address any issues.

Electrical Requirements:

- PV circuits shall not be located in the same raceway, junction box, outlet box, etc., as non-PV circuits (CEC 690.4B).
- PV Systems with DC circuits shall have arc-fault protection (when greater than 80 volts) and GFCI protection (CEC 690.11).
- The PV main disconnecting breaker shall be located at the opposite end of the bus bar from the main disconnecting circuit breaker (CEC 705.12D).
- GFCI protection shall be provided at the inverters (CEC 690.5).
- A disconnecting means shall be provided to disconnect the conductors within the building from the PV system conductors. This disconnect shall be readily accessible from the outside of the building or inside at the nearest point of entrance of the conductors (CEC 690.14C).
- A disconnecting means shall be provided for all PV equipment. If the equipment is energized from more than one source, the disconnecting means shall be grouped and identified (CEC 690.15).
- Circuit breakers that are back-fed must be suitable for such operation (circuit breakers labeled "Line" and "Load" are not suitable for back-feeding per CEC 690.64).
- All equipment frames shall be grounded (CEC 690.43).
- Torque all connections per manufacturer's listing.

- A ground conductor shall be provided that is sized based on the disconnect size connected to the existing grounding system (CEC 250.47).

GROUNDING ELECTRODE CONDUCTOR FOR AC SYSTEMS (Table 250.66)			
Size of Largest Ungrounded Service-Entrance Conductor		Size of Grounding Electrode Conductor	
Copper	Aluminum or Copper-Clad Aluminum	Copper	Aluminum or Copper-Clad Aluminum
2 or smaller	1/0 or smaller	8	6
1 or 1/0	2/0 to 3/0	6	4
2/0 or 3/0	4/0	4	2

Roof Pathways and Roof Ventilation (CBC 3111, CRC R331):

Panels shall be located to provide the following roof-top clearances (except for roofs with a slope of 2:12 or less).

- Hip roofs shall have a three (3) foot wide pathway from eave to ridge.
- Single-ridge roofs shall have two accesses that are each three foot wide from eave to the ridge.
- Hips and valleys with panels on both sides shall have an 18 inch clearance from each side to the hip and valley. When panels are located on only one side of the hip or valley, they can be placed directly adjacent to the hip or valley.
- Ridge – Panels/modules to be located no higher than three (3) feet below ridge.

Signs and Labels:

Article	Location of Label	Verbiage
690.5 (c)	Utility-interactive inverter & battery enclosure	“WARNING: ELECTRIC SHOCK HAZARD IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE
690.35(F) (Ungrounded Systems)	Junction boxes, combiner boxes, disconnects and other energized devices.	“WARNING: ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED”
690.14 (C)(2)	On the AC and DC disconnects	PHOTOVOLTAIC SYSTEM DC DISCONNECT PHOTOVOLTAIC SYSTEM
690.53	On the DC disconnects	Operating current_____
		Operating voltage_____
		Maximum system voltage_____
		Short circuit current_____

690.54	At interactive points of interconnection, usually the main service	RATED AC OUTPUT CURRENT AMPS NORMAL OPERATING AC VOLTAGE VOLTS
690.56(B)/ 690.14(D)(4), 705.10	At the electrical service and at the photovoltaic inverter if not located at the same location	A directory providing the location of the service disconnecting means and the photovoltaic system disconnecting means
690.4 (H) 705.10	MULTIPLE INVERTERS: Each dc and ac PV system disconnecting means and at the main service	Provide a directory showing the location of all ac and dc disconnects.
690.17	DC disconnects	“WARNING! ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE
705.12(D)(7)	Inverter output OCPD	“WARNING: INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE”
690.31(E)3 & 4, CBC 3111, CRC R331, CFC 605.11.1.2	On conduit, raceways, enclosures, mark every 10 ft., within 1 ft. of turns and penetrations at roof/ceiling assemblies, walls or barriers	“WARNING: PHOTOVOLTAIC POWER SOURCE”
690.55	Battery enclosure	MAXIMUM OPERATING VOLTAGE EQUALIZATION VOLTAGE POLARITY OF GROUNDED CONDUCTORS

PERMIT PROCESS

1. Prior to submittal for a building permit, contact the Planning Division to determine if a separate permit is required.
2. Prior to submittal contact:

Menlo Park Fire District
170 Middlefield Rd.
Menlo Park, California 94025
Tel: (650) 688-8425

for submittal requirements visit:

<http://www.menlofire.org/fireprevention/docreview.html>

Building Permit Review

1. Submittal for photovoltaic permits can be made at the Building Services Counter from 8am-4pm Monday to Friday.

Inspections

1. A minimum of one inspection is required (final inspection). Depending on the scope of work, additional inspections may be required.
2. All Work Exceeding \$1,000 requires the installation of listed/approved *smoke alarms* in all bedrooms, adjoining hall, and at each level per the CA Residential Code. A *carbon monoxide alarm* is required, when there is an attached garage or fuel burning appliance, in the adjoining hallway(s) of the bedrooms and on every level of a dwelling unit including basement. See *City of East Palo Alto Smoke | Carbon Monoxide Alarms Owner Certificate of Compliance* and *Example of Location for Smoke & Carbon Monoxide Alarm Handout* for additional information.

Building Permit Application Requirements

- A completed Building Permit Application- available at Building Services Division.
- An approval letter from the Homeowner's Association (if applicable).
- Confirmation from Menlo Park Fire that plans were submitted to them for review.
- Three (3) complete sets of plans with the following information:
 - Site plan showing the location of the building and the location of the photovoltaic panels.
 - Equipment brochure with installation requirements and UL listing. The installation must meet the manufacturer's requirements
 - Roof Plan. If applicable, the weight of the tiles to be installed on the roof (if the existing roof structure and lateral design may need to be upgraded to accommodate the added load).