



Solar System Photovoltaic Basic Code Requirements

The below requirements are not all inclusive, but are intended as guide to identify some of the field inspection code requirements.

Solar Inspection Checklist	
1.	<b>Marking 331.2 CRC:</b> Marking is required on interior and exterior direct conduit (DC), enclosures, raceways, cable assemblies, junction boxes, combiner boxes and disconnects.
2.	<b>Materials &amp; Content 331.2.1 &amp; 2.2 CRC:</b> Marking materials shall be reflective, weather resistant and suitable for the environment. All letters capitalized, minimum height of 3/8", white on red background and read: "WARNING PHOTOVOLTAIC POWER SOURCE".
3.	<b>Location of Marking 331.2.4 CRC:</b> Required on interior and exterior direct conduit (DC), enclosures, raceways, cable assemblies every 10 feet and within 1 foot of bends and within 1 foot above and below penetrations of roof/ceiling assemblies, walls and barriers.
4.	<b>Locations of DC Conductors 331.3 CRC:</b> Conduit, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities. Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes the total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes shall be located such that conduit runs are minimized in the pathways between arrays. DC wiring shall be installed in metallic conduit or raceways when located within enclosed spaces in a building. Conduit shall run along the bottom of load bearing members.
5.	<b>Access and Pathways 331.4 CRC:</b> Roof access, pathways, and spacing, requirements shall be provided in accordance with Sections 331.4.1 through 331.4.2.4. <b>Exceptions:</b> 1. Residential structures shall be designed so that each photovoltaic array is no greater than 150 feet (45,720 mm) by 150 feet (45,720 mm) in either axis. 2. Panels/modules shall be permitted to be located up to the roof ridge where an alternative ventilation method approved by the fire chief has been provided or where the fire chief has determined vertical ventilation techniques will not be employed.
6.	<b>Roof Access Points 331.4.1 CRC:</b> Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs wires or signs.
7.	<b>Residential Buildings with Hip Roof Layouts CRC 331.4.2.1:</b> Panels/ modules installed on residential buildings with hip roof layouts shall be located in a manner that provides a 3-foot-wide (914 mm) clear access pathway from the eave to the ridge on each roof slope where panels/ modules are located. The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof <b>Exception:</b> These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal 2:12 or less.
8.	<b>Residential Buildings with a Single Ridge CRC 331.4.2.2:</b> Panels/modules installed on residential buildings with a single ridge shall be located in a manner that provides two, 3-foot-wide (914 mm) access pathways from the eave to the ridge on each roof slope where panels/modules are located. <b>Exception:</b> These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal 2:12 or less.
9.	<b>Residential Buildings with Roof Hips and Valleys 331.4.2.3 CRC:</b> Panels/modules installed on residential buildings with roof hips and valleys shall be located no closer than 18 inches (457 mm) to a hip or valley where panels/modules are to be placed on <b>both</b> sides of a hip or valley. Where panels are to be located on only <b>one</b> side of a hip or valley that is of equal length, the panels shall be permitted to be placed directly adjacent to the hip or valley. <b>Exception:</b> These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal 2:12 or less.

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10.	<b>Residential Smoke Ventilation 331.4.2.4 CRC:</b> Panels/modules installed on residential buildings shall be located no higher than 3 feet (914 mm) below the ridge in order to allow for fire department smoke ventilation operations.	
11.	<b>Supplemental Electrode 250.53(A)(2) &amp; (A) (3) CEC:</b> Unless the residence has a concrete-encased electrode (Ufer Ground) a supplemental electrode is required. The supplemental electrode shall stainless steel, or copper or zinc coated steel at least 5/8” in diameter unless listed and spaced no closer than 6 feet apart. If listed ½” diameter is allowed. (250.52(A)(5)) & (250.53(A)(2) & (A)(3). <b>Exception:</b> If a single rod, pipe or plate grounding electrode has a resistance of 25 ohms or less, the supplemental electrode shall not be required.	
Signage/Label Requirements for PV Systems		
Code Section	Location of label	Text
CEC 690.5 (C)	Utility – Interactive Inverter and battery enclosure.	WARNING: ELECTRIC SHOCK HAZARD IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED.
CEC 609.35 (F)	All enclosures with ungrounded circuits or devices which are energized and may be exposed during service.	WARNING: ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED.
CEC 690.14(C)(1)	On the main service when DC wiring is run through the building and the DC disconnect is located other than at the main service.	DC DISCONNECT IS LOCATED....
CEC 690.14(C)(2)	On the AC and DC disconnects.	PHOTOVOLTAIC SYSTEM DISCONNECT.
CEC 690.53	On the DC disconnects.	OPERATING CURRENT _____ OPERATING VOLTAGE _____ MAXIMUM SYSTEM VOLTAGE _____ SHORT CIRCUIT CURRENT _____
CEC 690.54	At interactive points of interconnection, usually the main service.	RATED AC OUTPUT CURRENT _____ AMPS NORMAL OPERATING AC VOLTAGE _____ VOLTS
CEC 690.56(B), 690.14(D)(4), 705.10, 690.4(H)	At the electrical service and at the PV inverter if not at the same location	A directory providing the location of the service disconnecting means and the photovoltaic system disconnecting means.
CEC 690.17	On the DC disconnect and on any equipment that stays energized in the off position from the PV supply	WARNING! ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
CEC 705.12(D)(7)	Inverter Output OCPD	WARNING: INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.
CFC 605.11.1.4, CEC 690.31(E)(3), 690.31(E)(4), CRC 331.2.4	On conduit, raceways and enclosures, mark every 10 feet, at turns, above/ below penetrations	WARNING: PHOTOVOLTAIC POWER SOURCE. <i>Note: This label shall have a red background with white lettering</i>