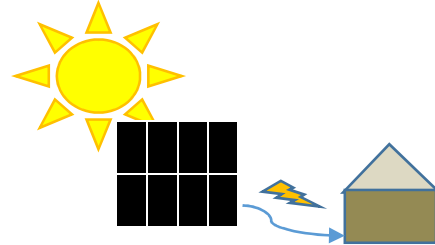


## SOLAR PHOTOVOLTAIC SYSTEM NOTES

- All materials, equipment, installation and work shall comply with the following applicable codes:
  - 2016 CBC / 2015 IBC
  - 2016 CRC / 2015 IRC
  - 2016 CEC / 2014 NEC
  - 2016 CMC / 2015 UMC
  - 2016 CPC / 2015 UPC
  - 2016 CFC / 2015 IFC
  - 2016 Building Energy Efficiency Standards
- All equipment shall be listed and labeled by a recognized testing laboratory and installed per the listing requirements and the manufacturer's instructions, CEC 110.2, 110.3, 690.4(B) and 690.12(5).
- All outdoor equipment shall be NEMA 3R rated, including all roof mounted transition boxes and switches.
- All equipment shall be properly grounded and bonded in accordance with CEC article 250.
- All PV circuits connected to more than one source shall have overcurrent devices located so as to provide overcurrent protection from all sources, CEC 690.9(A).
- All equipment of the PV system (including **rapid shutdown** initiation) shall be located near the main electrical service equipment, CEC 690.13, 690.15.
- Rapid shutdown equipment to provide controlled conductors that are more than 5 feet in length inside a building or more than 10 feet from a PV array limitation to not more than 30 volts and 240 volt-amperes within 30 seconds of rapid shutdown initiation, CEC 690.12.
- The utility-interactive inverters shall automatically de-energize its output to the connected electrical production and distribution network upon loss of voltage in the system and shall remain in that state until the electrical production and distribution network voltage has been restored, CEC 690.61 & 705.40.
- Due to the fact that PV modules are energized whenever exposed to light, PV contractor shall disable the array during installation and service by short circuiting, open circuiting, or covering the array with opaque covering, CEC 690.18.
- All conductor exposed to weather shall be listed and identified for use in direct sunlight, CEC310.10(D) and 690.31(C) through (G).
- All conductors to be of material approved by the code and their insulations to be rated to not less than 90°C 600-Volts minimum.
- Insulation of exposed conductors under the modules shall be USE-2 or PV-Wire type for grounded DC systems, CEC 690.31(B); and PV-Wire type for ungrounded DC systems, (as in transformerless inverters or microinverters with isolated grounds), CEC 690.35(D).
- Fine-stranded cable connections must be made in lugs and terminals listed and marked for the use, CEC 110.14 & 690.74(A).
- All PV circuit conductors shall be marked on each end for unique identification, CEC 690.31(B).
- All grounded, (neutral), conductors' insulation shall be solid white, gray, or with 3-white stripes, CEC 200.6, 200.7, & 400.22; and all grounding conductors shall be of bare wire without covering, or with insulation of green or green with yellow stripes, CEC 250.119 & 400.23. The color of **ungrounded** conductors shall be other than for grounded, (neutral), and grounding conductors, CEC 310.110(C).



- Maximum conductor length between supply side connection and overcurrent protection is 10 feet, CEC 705.31.
- Connections on the load side of the service disconnecting means of the other source(s) at any distribution equipment on the premises shall meet the following, CEC 705.12(D).
- DC wiring inside a building must be in metallic type raceways, conduits, enclosures, or cable sheathings, CEC 690.31(G)
- Raceways in enclosed portions of the building must run along bottom of loadbearing members, CRC R324.7.2.7.
- Metallic type raceways, conduits, enclosures, and cable sheaths containing circuits over 250-Volts to ground must be bonded in accordance with CEC 250.97 & 290.92(B).
- Flexible, fine-stranded cables shall be terminated only with terminals, lugs, devices or connector that are identified and listed for such use, CEC 690.31(H) & 110.14.
- Connectors shall be of latching or locking type. Connectors that are readily accessible and operating at over 30 volts shall require tool to open and marked “Do Not Disconnect Under Load” or “Not For Current Interrupting”, CEC 690.33(C) & (E)(2).
- Equipment grounding conductor for PV modules smaller than 6 AWG shall be protected from physical damage by a raceway or cable armor, CEC 690.46 & 250.120(C).
- The interconnection point shall be on the line side of all ground-fault protection equipment, CEC 705.32.
- DC PV source or DC PV output circuits shall be contained in metal raceways, type MC cable or metallic enclosures when inside the building, CEC 690.31(G).
- Cables/wires that are subject to physical damage, such as those not located under the modules, must be protected, CEC 300.4.
- Proposed locations of electrical service replacements must also be approved by the electrical utility company.
- For electrical service replacements, bonding to the metal pipes of natural gas, hot water, and cold water must be provide, CEC 250.104.
- Grounding rod electrodes shall be installed 8’ minimum in contact with soil, CEC 250.53(G).
- All exterior conduits shall be painted to match the color of the surrounding area (roof, siding, and stucco).
- Existing plumbing vents, skylights, exhaust outlets, & ventilations intake air openings shall not be covered or blocked by the solar photovoltaic system.
- Existing DWV plumbing vent terminations that are horizontally located closer than 12” from the proposed modules, must be rerouted, or must be extended a minimum of 6” above the surface of the modules, CPC 906.1.
- Existing B-vent terminations, for fuel burning appliances, where adjacent to the proposed modules, must be extended 12” above the modules’ top surface, CMC 802.6.2(1) & CPC 509.6.2(1).
- The markings, “WARNING: PHOTOVOLTAIC POWER SOURCE”, for DC raceways and cable assemblies must be at 10’ o.c.; and bends, above or below penetrations of roofs, ceilings, walls, or barriers, CEC 690.31(G)(4).
- PV combiner panelboards must have permanent markings indicating that they are DEDICATED FOR PV CIRCUITS ONLY NO LOADS ARE TO BE CONNECTED.
- Working clearances to be provided at new and existing electrical equipment, CEC 110.26.
- Residential type PV circuits over 150-Volts to ground must not be accessible to other than qualified persons while energized, CEC 690.7(D).
- A ladder must be provided for inspections in accordance with Cal-OSHA regulations.
- All of the required markings, signs, and labels must be installed on all equipment prior to any inspections.
- Labels shall be reflective, and all letters shall be capitalized and shall be a minimum height of 3/8” in white on a red background.
- When the main circuit breaker is derated, a permanent marking must be provided on the panelboard to indicate that THE MAIN CIRCUIT BREAKER HAS BEEN DOWNSIZED TO \_\_\_\_\_ AMPS, DO NOT UPSIZE IT.
- Ground-mounted PV systems must have a clear, brush-free area of 10-feet and a fire separation distance of 5-feet minimum to other structures and property lines, CRC R331.3 & R302.1.