



2019 CALIFORNIA BUILDING STANDARDS CODE OF REGULATIONS TITLE 24

PV Submittal Checklist – System Summary Sheet

The following items are required for a complete submittal.

PROPERTY ADDRESS / APN #: _____

- (Please mark all that apply) [] Main Residence [] Second Residence [] Garage/Storage [] Barn
[] Manufactured Home (if roof mounted, permit will be through HCD) [] Other: _____

[] Required: Signed contract with the property owner for the solar installation

For All Systems, Provide 2-Sets for Roof Mount or 3-Sets for Ground Mount (minimum size 11" x 17"):

- [] Electrical schematic diagram of system [module wiring (series/parallel), disconnects, grounding/bonding, wire, conduit type, size, and number of conductors in each section of conduit], rapid shutdown, D/C color coding. When batteries are to be installed include them in the diagram and their locations/rooms and venting.
[] For AC Battery Connections: An Electrical Engineer is required.
[] Site diagram (show arrangement of panels on the roof or ground, location of combiner box, inverter, utility disconnect, main service, show approximate. distance from panel to all components, dimension all setbacks to all structures and property lines).
[] Equipment cut sheets including inverters, modules, wind generators, etc.
[] Labeling schedule for equipment and electrical hazard per CEC Sec. 110.21(B), 690.13, 690.31, 690.56, 705.10 and 705.12
[] System KW _____ (PGE maximum =30 KW)
[] Completed page 2 of the System Summary sheet
[] Labeling schedule for equipment and electrical hazard per CEC Sec. 110.21(B), 690.13, 690.31, 690.56, 705.10 and 705.12

For Roof Mounted Systems Provide:

- [] Photovoltaic systems shall be Class A listed and labeled for fire classification per UL 1703. Provide documentation demonstrating compliance.
[] Identify location and method of rapid shutdown per CEC sec. 690.12
[] Solar panels that cover more than 50% of the total roof area, require fire department approval.
[] Engineered or listed racking system for mounting and attachment of system.
[] Integrated systems that replace roofing material require detailed information showing class "A" roof assembly.

For Ground Mount and Wind Generator Systems Provide:

- [] Engineering [When the total height from ground to top of the array (not post height) exceeds 7 feet] for mounting, attachments, and foundation to meet the minimum wind and snow loads. Engineering required for all structures if ground snow load (Pg) exceeds 50 psf. Provide details of attachments, anchors, brackets, photovoltaic panels, and all hardware.



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System Summary: [] Roof Mount [] Ground Mount [] Batteries
[] Off-Grid [] Grid Tie [] Generator

Interver(s): # of Inverter(s): ___ Manufacturer / Model Number: ___
DC Input Voltage Range: ___ Listed for Utility Interconnection [] Yes [] No

From the Module Listing: *Maximum System Voltage: ___ Open-Circuit Voltage (VOC): ___
Short-Circuit Current (ICS): ___ Voltage at Pmax: ___
Maximum Series Fuse Rating: ___ Current at Pmax: ___

*Calculated System Voltage – (VOC x # of modules in series x 1.13) CEC 690.7

Calculated system voltage must be less than or equal to the module *Maximum System Voltage.

Array Information: Total # of Modules: ___ # of Modules in Each Series: ___
of Optimizer / Micro-Inverters: ___ # of Parallel Source Circuits: ___

[] Provide and identify Arc Fault protection per CEC sec. 690.11

Operating Voltage: ___ volts (Voltage at Pmax x # of modules in series)

Operating Current: ___ amps (Current at Pmax x # of strings in parallel)

Minimum PV Source Circuit Ampacity or Conductor Sizing: ___

(ICS x number of parallel circuits x 1.25 x 1.25) CEC 690.8A-1, 690.8B-1 and NOTE 2.

Explanation: To determine wire sizing and over current protection you must determine the minimum source circuit conductor ampacity which is 125% of the maximum PV source circuit current ampacity (CEC 690.8.A-1). The maximum PV source circuit current ampacity is 125% of the source circuit ampacity or ICS (CEC 690.8B-1).

- Note 1: All wiring rated at 90 degrees and equipment on array side of the inverter must be DC rated.
Note 2: Further ampacity adjustments are necessary when more than 3 current carrying conductors are installed in the conduit. See CEC Table 310.15(B)(2)(a)
Note 3: PER CEC 705.12 Exception: For dwelling unit, the sum of the ampere ratings of the over current devices shall not exceed 120 percent of the bus bar or conductor.

[] If derating main breaker less than 175 amps, Load Calculation Worksheet is required.

I understand applications for building permits will be reviewed for plan completeness.
An incomplete submittal package may be returned, and additional fees assessed, for subsequent reviews.

ADDRESS: _____ APN #: _____

SIGNATURE: _____ DATE: _____



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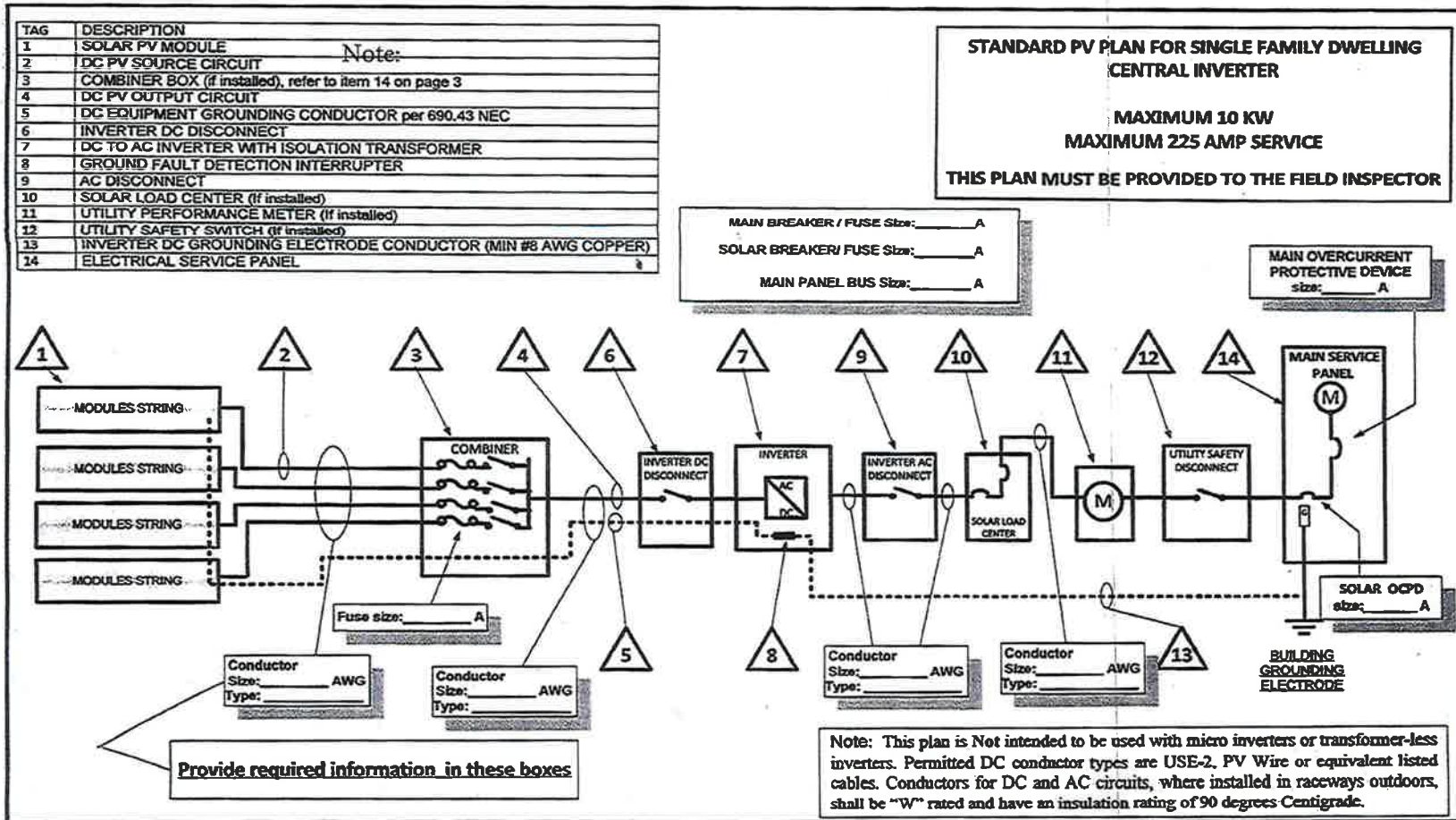
SIGNATURE: _____ DATE: _____

EXAMPLE ONLY

Requirements for Single-Line Diagram



SOLAR PV STANDARD PLAN Central Inverter Systems for Single Family Dwellings



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Declaration of Installation for Smoke Alarms and Carbon Monoxide Alarms

The newly adopted California Residential Code requires the installation of Carbon Monoxide Detectors in dwelling units and in sleeping units within which fuel-burning appliances are installed and in dwelling units that have attached garages. The policy for Carbon Monoxide Alarms in the County of Placer states: “All permits issued and associated with a Residential Group R *Dwelling Unit or Sleeping Unit* shall conform to the following California Residential Code requirements for Carbon Monoxide Alarms (Section R315).”

California Residential Code Requirements for Carbon Monoxide Alarms:

R314.3 Smoke alarm locations: 1) Each sleeping room. 2) Outside each separate sleeping area in the immediate vicinity of the bedroom. 3) On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level. 4) Smoke alarms shall be installed not less than 3 feet horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm. 5) Smoke alarms shall not be installed not less than 36” horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the airflow from those systems. 6) Smoke alarms shall not be installed within a 36” horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan.

R315.2.1 Existing buildings and new construction: Carbon monoxide alarms shall be provided in dwelling units where either or both of the following conditions exist. 1) The dwelling unit contains a fuel-fired appliance or fireplace. 2) The dwelling unit has an attached garage with an opening that communicates with the dwelling unit.

R315.4 Combination alarms: Combination carbon monoxide and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms. Require UL 2075 and UL268.

R315.5 Interconnection. Where more than one carbon monoxide alarm is required to be installed within the dwelling unit or within a sleeping unit in Group R occupancies, the alarm shall be interconnected in a manner that activation of one alarm shall activate all of the alarms in the individual unit.

Exception: Interconnection is not required in existing buildings built prior to January 1, 2011 under the following conditions: 1) no construction is taking place. 2) Repairs or alterations do not result in the removal of interior wall and ceiling finishes. 3) Repairs or alterations are limited to the exterior surfaces of dwellings (re-roofs, siding or window replacement, doors replacement, or the addition of a porch or deck, repairs to plumbing, mechanical or electrical systems) that do not expose the structure in areas that require carbon monoxide alarms.

R315.6 Power source: Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.

Exception: A battery-powered or plug in with a battery backup in existing building prior to January 1, 2011 under any of the following conditions: 1) no construction is taking place. 2) Repairs or alterations do not result in the removal of interior wall and ceiling finishes. 3) Repairs or alterations are limited to the exterior surfaces of dwellings (re-roofs, siding or window replacement, doors replacement, or the addition of a porch or deck, repairs to plumbing, mechanical or electrical systems) that do not expose the structure in areas that require carbon monoxide alarms.

DECLARATION OF INSTALLATION UNDER THE PENALTY OF PERJURY

As Owner/Contractor, I/we affirm and declare under the penalty of perjury, under the laws of the State of California by our signatures below as Owner/Contractor, will comply prior to final inspection with Items A & B as specified herein:

- A. The Owner/Contractor have read and clearly understand the aforementioned California Residential Code (CRC) *Carbon Monoxide Alarm* requirements.
- B. The Owner/Contractor is responsible for installing Carbon Monoxide Alarms prior to final inspection as per the aforementioned building code and maintaining such installation. Smoke alarms will also be installed prior to final inspection as per the CRC. Retrofitted smoke alarms shall contain a non-replaceable, non-removable battery that is capable of powering the smoke alarm for at least 10 years.

Owner or Contractor shall complete this Declaration of Installation.

Owner's name (print): _____

Owner's signature: _____ Date: _____

Contractor's name (print): _____ CSLB License: _____

Contractor's signature: _____ Date: _____

Project Address: _____ Permit #: _____