



CITY *of* CLOVIS

BUILDING DEPARTMENT

1033 FIFTH STREET • CLOVIS, CA 93612

City of Clovis Solar Bulletin 2023-01

Disconnecting Means

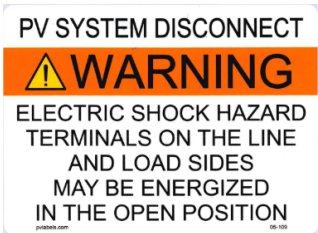
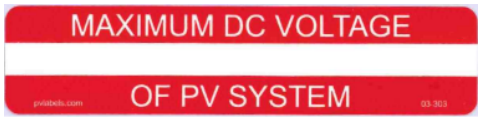
- PV system disconnecting means shall be provided in accordance with the 2022 California Electrical Code Article 690.13 Photovoltaic System Disconnecting Means.
- A Rapid Shutdown switch shall be provided by a readily accessible location outside the building in accordance with The 2022 California Electrical Code Article 690.12 (C) Initiation Device.
- The disconnecting mean shall be located in a readily accessible location. 2022 CEC Article 690.13 (A)
- The disconnect rating shall be sufficient for the maximum Circuit Current, Available fault current, and voltage. 2022 CEC Article 690.13 (D)
- The disconnecting device shall be UL-listed. 2022 CEC Article 90.7, 110.3 (c), 690.43 (B), and 690.12 (D).
- The isolating disconnecting means shall be located in a readily accessible location. 2022 CEC Article 690.15 (A)
- Is the isolating disconnect within ten feet of the equipment or installed in circuits connected to the equipment? 2022 CEC Article 690.15 (A)
- The isolating disconnect rating shall be sufficient for the maximum Circuit Current, Available fault current, and voltage. 2022 CEC Article 690.15 (C)
- Is the isolating disconnecting device UL listed? 2022 CEC Article 90.7, 110.3 (c), 690.43 (B), and 690.12 (D).

Rapid Shutdown Label and UL Requirements

- The rapid shutdown system shall be UL 1741 listed. 2022 CEC Article 90.7, 110.3 (c), 690.43 (B), and 690.12 (D).
- A rapid shutdown switch shall have a label with the following wording located on or no more than three feet from the switch. 2022 California Electrical Code Article 690.56 (C) (2)
- Buildings with a rapid shutdown. Buildings with PV systems shall have a permanent label at each service equipment location to which the PV systems that are connected to at an approved, readily visible location and shall indicate the location of the rapid shutdown initiation device. The label shall include a simple diagram of the building with a roof and shall include the following words: "SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN. TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY. 2022 California Electrical Code Article 690.56 (C).
- See the list of labels on the following pages.

Labels	
<ul style="list-style-type: none"> All labeling shall comply with Articles 110.21 (B), 690, and 705 of the 2022 California Electrical Code. 	

Point of Interconnection	
 <p>Article 705.12 (B) (3) (3) Load-Side Source Connections (busbars)</p>	 <p>Article 705.10 Identifications of power source, and Article 690.56</p>
 <p>Article 705.12 (B) (3) (2) Load-Side Connections (Busbar)</p>	 <p>Article 690.54 Interactive System Point of Connection.</p>
DC Circuit Raceways	
 <p>Article 690.13 (B) Markings</p>	 <p>Article 690.13 (B) Markings</p>

PV System Disconnect	
 <p>Article 690.13 (B) Markings Article 690.15 (C) Equipment Disconnecting Means</p>	 <p>Article 690.53 DC PV Circuit</p>

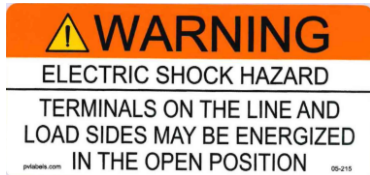
SOLAR PV DC CIRCUIT

Article 690.31 (D) (2) Wiring Methods Marking & Labeling Required

PHOTOVOLTAIC SYSTEM DISCONNECT

Article 690.13 (B) Markings (DC or AC)

DC Equipment Disconnect



Article 690.13 (B) Markings



Article 690.33 (D) (2) Interruption of Circuit.

MAXIMUM DC VOLTAGE

OF PV SYSTEM

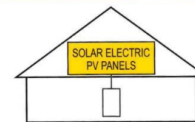
Article 690.53 Markings

Separate RSD Initiation Device

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

Article 690.56 (C) (2) Rapid Shutdown Switch,

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN



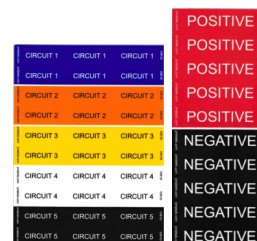
TURN RAPID SHUTDOWN SWITCH TO
THE "OFF" POSITION TO SHUT DOWN
PV SYSTEM AND REDUCE
SHOCK HAZARD IN THE ARRAY

Article 690.56 (C) Buildings with Rapid Shutdown.

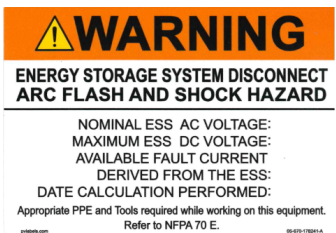
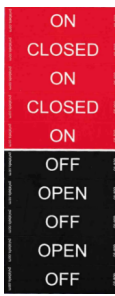

Miscellaneous



Article 690.31 (E) Bipolar Photovoltaic Systems.



Article 690.31 (B) (1) Identification of PC DC Curcits.

Energy Storage Systems (ESS) labels	
 <p>Article 706.15 (C) Notification and Marking.</p>	 <p>Article 706.15 (C) Notification and Marking.</p>
 <p>Article 706.15 (C) Notification and Marking.</p>	

Smoke and Carbon Monoxide Alarms
<ul style="list-style-type: none"> ○ Smoke and Carbon Monoxide alarms shall be installed per the 2022 California Residential Code Sections R314 and R315.

Fire Classification
<ul style="list-style-type: none"> ○ The rooftop-mounted photovoltaic system shall have the same fire classification as the roof assembly required in the 2022 California Residential Code Section R902 and R324.4.2.

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Surge Protection

- Surge protection required - 2022 CEC 230.67 (A)-(D)
 - (A) All services supplying dwelling units shall be provided with a surge-protective device (SPD).
 - (B) The SPD shall be an integral part of the service equipment or shall be located immediately adjacent thereto.

Exception: The SPD shall not be required to be located in the service equipment as required in (B) at each next-level distribution equipment downstream toward the load.
 - (C) The SPD shall be a Type 1 or Type 2 SPD.
 - (D) Where service equipment is replaced, all of the requirements of this section shall apply.

Roof Access, Egress,

- Roof Pathways:
2022 California Residential Code R324.6 Pathways. On separate roof planes from the lowest roof edge to the ridge and not less than 36 inches wide, no fewer than two pathways shall be provided on all buildings. One pathway shall be provided on the street or driveway side of the roof.

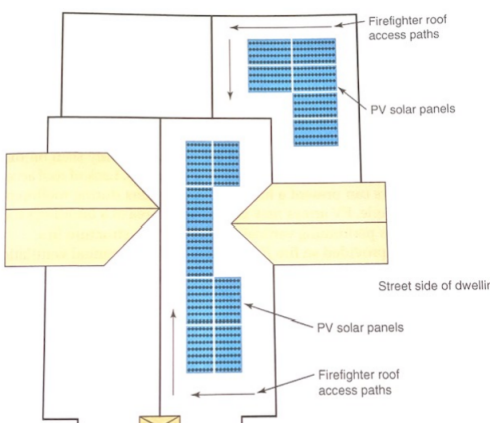
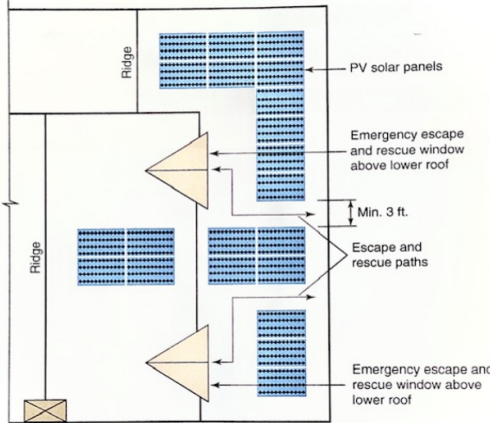
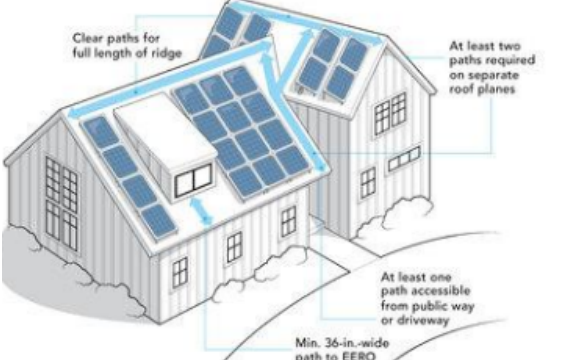
Exceptions:

 - Non-habitable Structures
 - These requirements shall not apply to roofs with slopes of two units vertical in twelve units horizontal or less.
- 2022 California Residential Code R324.6.2 Setback at the ridge. For photovoltaic arrays occupying not more than 33 percent of the plan view total roof area, not less than 18 inches of clear setback is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, not less than 36-inch clear set back on both sides of the horizontal ridge.
- 2022 California Residential Code R324.6.2.1 Alternative setback at the ridge. Where an automatic sprinkler system is installed within the dwelling, in accordance with NFPA 13D or Section R313, a Setback is required at the ridge shall comply with one of the following:
 - For photovoltaic arrays occupying not more than 66 percent of the plan view of the total roof area, not less than an 18-inch clear Setback is required on both sides of the ridge.
 - For photovoltaic arrays occupying more than 66 percent of the plan view of the total roof area, not less than a 36-inch clear Setback is required on both sides of the ridge.
- 2022 California Residential Code R324.6.3 Emergency escape and rescue openings. Panels and modules installed on dwellings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A pathway not less than 36 inches wide shall be provided to the emergency escape and rescue opening.
- See the Illustration below.

Roof Access, Egress,

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- See the Illustration below.

Roof Access R324.6	Emergency Escape and Rescue Opening R324.6.3
 <p>Required roof access and pathways for fire fighters for roof-mounted PV solar systems</p>	 <p>A 36-inch-wide pathway is required for emergency escape and rescue openings above roof-mounted PV solar panels.</p>
Setbacks at Ridge R324.6.2 and R324.6.2.1	
	

Other Listing Requirements

- Is the equipment used in the photovoltaic arrays listed per UL 3741 or 1741? 2022 CEC (90.7, 110.3 (C), and 2022 CRC R106.1)
- Is the racking system UL27C3 listed for grounding and bonding with the photovoltaic modules specified in the project? 2022 CEC Article 90.7, 110.3 (c) and 690.43 (A)
- Is the ESS Listed and labeled in accordance with UL 9540? (2022 CRC Section R328.2)
- Is the manufacturer rate the photovoltaic module and mounting system to withstand the upward forces of the local wind speed and evenly distribute the loads into the supporting structures at the maximum purposed spacing and confirmed in UL 1703 or 61730 and 2703 Listings?

Plan Set Requirements, Specifications, Calculations, and Miscellaneous

- A complete Plan set shall be provided on the job site that has the following:
- A one-line schematic of the photovoltaic system shall be provided. This will show all equipment related to the installation, with equipment schedule, conduit and conductor schedule, string calculation, MCI, optimizer, microinverter, inverter, combiner boxes, and load center specifications.
- All calculations will be provided to the inspector on the job site.

- The inspector shall be provided with a roof plan showing the location of all modules and pathways at the job site at every inspection.
- Do you agree to install the sealant method per the manufacturer's instructions for accomplishing weatherproofing?
- Are all power terminals rated to 75°C or greater, labeled for use with Copper Class B or Class C, and accept * AWG wire?
- A datasheet for modules shall be required to be on the job site for each inspection.
- A datasheet for optimizers shall be required to be on the job site for each inspection.
- A datasheet for micro-inverters shall be required to be on the job site for each inspection.
- A datasheet for MCI shall be required to be on the job site for each inspection.
- A datasheet for the inverter shall be required to be on the job site for each inspection.
- A datasheet for the Combiner Box shall be required to be on the job site for each inspection.
- A datasheet for Load Center shall be required to be on the job site for each inspection.
- A datasheet for the surge protection device shall be required for each inspection on the job site.
- A datasheet for the roof sealant used shall be required for each inspection on the job site.
- A datasheet for the racking system shall be required for each inspection on the job site.
- A datasheet for the rapid shutdown system shall be required for each inspection on the job site.
- A datasheet for the HCS shall be required for each inspection on the job site.
- The datasheets for all disconnecting devices shall be required for each inspection on the job site.
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- The datasheets for Energy Storage System (ESS) devices shall be required for each inspection on the job site.
- A floor plan showing the location of the (ESS) shall be provided to the building inspector at the job site.
- Provide Specifications for the ventilation system that will be installed.
- Provide engineering for any repairs to the roof structures.

Energy Storage Systems (ESS)

- If smoke alarms cannot be installed within dwelling units and attached garages due to their listing, an interconnected heat detector shall be installed so that all smoke alarms activate when the heat detectors activate. (2022 CRC Section R328.7)