Coalinga Fire Department

Standard #3

SOLAR PHOTOVOLTAIC INSTALLATIONS

INSTALLATION STANDARDS

Local Fire Departments and the solar photovoltaic industry have developed this standard for installations to ensure public safety for all structures equipped with solar photovoltaic systems.

This standard was developed with safety as the principal objective. The solar photovoltaic industry has been presented with certain limitations in roof installations due to firefighting suppression techniques. The intent of this standard is to provide the solar photovoltaic industry with information that will allow it to design, build, and install solar photovoltaic systems in a manner that meets the objectives of both the solar photovoltaic industry and the Fire Service.

The provision of this standard by local ordinance shall apply to the design, construction and installation of solar photovoltaic systems on buildings regulated by Title 24 the California Building Standards Codes.

If a solar photovoltaic system design does not meet the provisions in this standard the solar contractor should contact their local fire department to determine if alternate means or methods would allow for a safe installation that is acceptable to the fire department. For residential systems using modules mounted integrally with the roof of the building the modules are tested to and meet the requirements of ICC-ES AC365, Section 3.5 (Penetration Test).

GENERAL

As new products and methods become available, local fire departments may encounter solar photovoltaic systems that will require an alternative means of compliance. Solar contractors shall contact their local fire department to determine if alternate means or methods would allow for a safe installation that is acceptable to the fire department.

Authorities having jurisdiction alternative have means of compliance based on their authority HCD regulations 111.2.4 and 108.7. For example, if new products, designs, technologies or methods become available that provides sufficient alternative protection and access, pathways and ventilation opportunities for fire crews.

MARKING

Marking is needed to provide emergency responders with appropriate warning and guidance with respect to isolating the solar electric system. Materials used for marking shall be weather resistant. Use UL 969 as standard to weather rating (UL listing of markings is not required).

DC Roof Top Disconnects – There shall be a separate emergency DC Disconnect on the roof to disconnect solar panels from DC wiring running through and on the building to the Inverter.

This disconnect must be permanently labeled in reflective, fade-resistant material (*see Marking below*) that states "Emergency DC Disconnect". This provides a safety mechanism for firefighting ensuring that power has been disabled as close to the source as possible.

Disconnects (NEMA 3R) box shall be installed as close to the array as possible to eliminate any substantial length of energizing wiring that can not be shut down.

Commercial installation where multiple disconnects would be required will be evaluated on a case by case basis.

Main Service Disconnect – For residential applications, the marking may be placed within the main service disconnect. If the main service disconnect is operable with the service panel closed, then the marking should be placed on the outside cover.

For commercial application, the marking shall be placed adjacent to the main service disconnect in a location clearly visible from the location where the lever is operated.

Marking Content and Format

- Marking Content: CAUTION: SOLAR ELECTRIC CONNECTED
- Red Background
- White Lettering
- Minimum 3/8" Letter Height
- ALL CAPITAL LETTERS
- Arial or Similar font, Non-Bold
- Reflective, weather resistant material suitable for the environment (durable adhesive materials meet this requirement)

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

Shut off Marking for dc conduit, raceways, enclosures, cable assemblies, and junction boxes – Marking is required on all interior and exterior dc conduit, raceways, enclosures, cable assemblies, and junction boxes to alert the fire service to avoid cutting them. Marking shall be placed on all interior and exterior dc conduit, raceways, enclosures, and cable assemblies, every 10 feet, at turns and above and/or below penetrations and all dc combiner and junction boxes.

Marking Content and Format

- Marking Content: CAUTION SOLAR CIRCUIT
- Red Background
- White Lettering
- Minimum 3/8" Letter Height
- ALL CAPITAL LETTERS
- Arial or Similar font, Non-Bold
- Reflective, weather resistant material (durable adhesive materials meet this requirement).