The City of SAN DIEGO
Development Services Department

# Residential Solar Photovoltaic Systems

# Inspection Guidelines

The purpose of inspections by DSD staff is to ensure compliance with the California Electrical Code (CEC), other applicable codes and regulations, and approved plans. The intent of the regulations is the practical safeguarding of persons and property from hazards arising from installation of solar systems. The following guidelines were developed to assist you with the inspection process for the installation of solar photovoltaic (PV) systems.

It is the contractor or owner's responsibility to schedule and coordinate all required inspections and obtain approvals before concealing any work. The contractor or responsible party shall be available at the jobsite and provide proper access for the inspector.

The following inspections are required:

## A. Ground-Mounted Systems

1. Footing inspection
2. Underground electrical (raceway and conduits)
3. Final inspection of the complete system including modules, panel, wire terminations, grounding, etc.

## B. Roof-Mounted Systems

1. Rough electrical for concealed wiring
2. Array bonding and grounding
3. Final inspection of the complete system including modules, panel, wire terminations, grounding, etc.

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# I. Inspection Checklist:

## A. General

- ☐ Approved plans, inspection record card and manufacturers' installation instructions shall be made available on site.
- ☐ Installation of equipment shall be per the approved plans. If the installation differs from the approved plans, a construction change may be required. (See Information Bulletin 118 for more information.)
- ☐ Work shall be ready for the inspection requested.
- ☐ A ladder complying with CAL-OSHA requirements shall be made available and secured in place for the inspection.
- ☐ When a separate utility disconnect is required, a San Diego Gas and Electric (SDG&E) letter of approval shall be available on site.
- ☐ For projects with an electrical service upgrade, a SDG&E service order and completed City of San Diego Circuit Card shall be available on site.
- ☐ All required working clearances for electrical equipment must be provided and maintained.
- ☐ All required labels must be properly fixed in place.

## B. Service Equipment

- ☐ The service equipment and its verifiable bus rating shall be adequate and properly sized for the designed PV source.
- ☐ The service grounding and bonding connections shall be located and verified.
- ☐ All grounding requirements shall be verified on the PV installations involving detached structures.
- ☐ Install a placard for all customer self-generating electrical equipment as required by the California Electrical Code and in compliance with the San Diego Area Electrical Newsletter. These are available at www.iccsandiego.org.
- ☐ New circuit breakers shall be of the same manufacturer as the existing service equipment or listed to be used with the existing electrical equipment.
- ☐ When existing circuits are relocated to accommodate the PV breaker, a new panel schedule is required, and the loads shall remain balanced.

### C. PV Array Installed on Roofs

All roof-mounted PV arrays and racking systems require inspection of the wiring, attachments, and grounding. Inspectors must be provided a safe access path for this inspection.

- ☐ The racking system and the modules must be installed in compliance with the manufacturer installation instructions.
- ☐ The installed racking system and PV modules shall be the same as those identified on the approved plans.
- ☐ The racking system must be positively attached to the structure and the weather protection of the roof membrane shall be maintained.
- ☐ Roof-mounted arrays may not compromise or obstruct roof vents, plumbing vents, or chimneys.
- ☐ Class A fire rating shall be provided.

### D. Combiner Boxes, Junction Boxes, and Wiring Methods

- ☐ Source wiring conductors shall be of the approved type and properly sized.
- ☐ Metallic raceways containing DC source circuits over 250 volts shall be properly bonded through concentric knock-outs at boxes or enclosures (where applicable).
- ☐ Combiner boxes, disconnects and fusing used in DC source wiring shall be DC rated.
- ☐ Intermediate enclosures, boxes, and conduit body covers must be accessible for servicing and shall be properly grounded.

### E. PV Inverters & DC Disconnects

- ☐ The placard or label with the actual power source operating voltages and currents shall be affixed to or located immediately adjacent to either the inverter or the DC disconnect.
- ☐ The installed inverters shall be the same as those identified on the approved plans.
- ☐ A properly sized system grounding electrode conductor shall be installed to the appropriate grounding terminal.
- ☐ Metallic raceways and enclosures, enclosing system grounding electrode conductors, shall be bonded at each end of the raceways and at each enclosure.

### F. AC Overcurrent Protection and Required Utility Disconnects

- ☐ When a lockable AC disconnect is required by the utility (SDG&E), it shall be located at the service equipment unless the utility approves a remote location.
- ☐ When the utility disconnect is required, it shall be identified on the placard as “PV System Disconnect for Utility Operation.”
- ☐ All back-fed circuit breakers and disconnects shall be properly labeled.

**G. Service Upgrades Involving Scheduled Outages with the Utility Company**

The deadline established by the utility for receiving City approval to re-energize service equipment is 2:00 P.M. To avoid a lapse in electrical service during a service upgrade which requires a scheduled outage, please adhere to the following:

1. Schedule in advance a City inspection for the day of the outage and enter a note stating this inspection involves a scheduled outage for a disconnect/ reconnect.
2. On the morning of the outage, contact the inspector between 7:15A.M. and 8:00A.M. and inform him/ her that this inspection involves a scheduled outage for a disconnect/ reconnect.
3. Before the inspector will issue an inspection clearance to re-energize the service equipment, this equipment must be installed, grounded and bonded. Any required service entrance conductors and raceways shall be installed to the utility's service point. If the meter panel is a flush or semi-flush type, flashing around the panel must be installed for weather protection of the building.

Due to the narrow timeframe between the 8:00A.M. disconnection of power and the 2:00P.M. approval deadline, it is highly recommended that as much pre-wiring, grounding and bonding, and other preparation work be completed in advance. Cut over wiring, branch circuit modifications, and the PV system can be inspected later (if necessary) for final project approval.

## II. Additional Resources and Information

The following resources provide additional information on various aspects of a residential solar PV installation or design:

Applicable Codes

The current edition of the California Electrical Code, California Fire Code, and California Residential Code provide the minimum requirements for photovoltaic systems.

San Diego Area Electrical Newsletters

Developed and published by the San Diego Chapter of the International Code Council. The newsletters provide interpretations of the CEC requirements that are developed through a cooperative effort by the San Diego area jurisdictions.