City of Globe Solar PV/ESS Inspection Guidelines

Community Development-Building and Safety Department
150 N. Pine Street Globe, AZ 85501 (928) 425-7146 Ext.219

This document was developed to assist customers and in-house inspectors with field inspections of residential rooftop, ground mounted Photovoltaic (PV) systems and Energy Storage Systems (ESS) projects in the City of Globe, AZ. This document may be a helpful resource for Solar PV installers as a reminder of the City of Globe inspection requirements and other guidelines. This document was developed in 2022 and includes relevant code requirements from the following City of Globe adopted codes; 2002 NEC, 2003 IBC, 2003 IRC. Please note that the City of Globe may have additional requirements in place to include ordinances and code amendments as part of their permitting processes, inspection requirements and zoning ordinances. This document is not inclusive to all requirements for permitting, installation requirements or inspection points/requirements and shall only be used as an aid in conducting field inspections.

Please note: The City of Globe requires a minimum of two (2) inspections for Solar PV installations, (1st) Framing/Rack Inspection or Photo Inspection and (2nd) Final Inspection. These installations sometimes require additional permitted work to be completed and those items may require further additional field inspections, i.e., electric panel upgrades.

City of Globe Solar PV Installation Inspections Schedule:

Ground-Mounted Systems

1st Ground Rack Inspection: Setbacks/Layout, Footers/Anchoring, etc.
2nd Array Framing/Rack Inspection: Setbacks/Layout, Grounding/Bonding, underground electrical (trench, raceway, and conduits), etc.
3rd Final Inspection: Inspection of the complete system including modules, panels, wire terminations, grounding, placards/labeling, an approved array enclosure/fence (where applies), etc.

Roof-Mounted Systems

1st Array Framing/Rack Inspection: Setbacks/layout, grounding and bonding, attachment points, flashing, raceways, conduit, etc. **No PV panels/ modules are to be installed at this inspection.**

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2nd Final Inspection: Inspection of the complete system including panels/ modules, wire terminations, wire management, grounding, placards/ labeling, etc.

Photo Inspections:

Photos shall be accepted for framing/racking inspections only. Photo inspections shall be reviewed by the Building Official and a "Pass" or "Fail notification will be provided. Photos taken by the installer/contractor must include the listed (5) below listed items along with the issued city of Globe permit card shown in photo, as indicated in item #1 below.

1. Roof Photos showing overall layout and setbacks of racking. Permit card must be legible and shown in this photo.
2. Grounding, grounding jumpers, micro converters
3. Attachment Points/Flashing
4. Raceways
5. Conduit

Photos must be submitted to www.building@globeaz.gov. Please include project address and permit number in email subject line.

A. General Inspection Requirements:

- Permit, Approved Building Plans, Manufacture installation instructions and Inspection Schedule Card shall be posted/available on-site for the duration of the project installation.
- Installation of equipment must be per the approved plans.

A. General (Prior to any work being conducted, the following must be completed/available)

- Permit, Approved Building Plans, Manufacture installation instructions and Inspection Schedule Card shall be posted/available on-site.
- Installation of equipment must be per the approved plans.
- Work must be ready for the inspection requested. **Inspection requests are to be submitted no sooner than 24 hours in advance, when work is complete and ready for inspection. An inspection shall be scheduled for the next business day. We cannot provide future pre-scheduling of inspection dates. The City of Globe provides inspections; Monday-Thursday 8-4pm.**
- A ladder complying with AZ-OSHA requirements must be made available and secured in place for the inspection. Inspectors shall not enter roofs on any structure above one (1) story in height due to safety.
- All required working clearances for electrical equipment must be provided and maintained.
- All required placards/labels must be properly fixed in place.

B. PV Array Installed on Roofs

- Setbacks/Layout
- All roof-mounted PV arrays and racking systems require inspection of the wiring, attachments, and grounding.
- The racking system and the modules must be installed in compliance with the manufacture installation instructions.
- The installed racking system and PV modules must 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 must be maintained.
- Roof-mounted arrays may not compromise or obstruct mechanical equipment, roof vents, plumbing vents, or chimneys.
- Class A fire rating must be provided.

C. PV Array Installed on the Ground

- Setbacks/Layout
- Inspection of footings/rebar before concrete is installed.
- Any Electrical Trenches prior to backfilling.
- Check mounting array for correct attachment.
- Check for electrical bonding of structural elements.
- Ensure wiring is protected and properly supported.
- Back feeding breaker to panel identified.
- Additional array electrode installed.

D. Combiner Boxes, Junction Boxes, and Wiring Methods

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

F. AC Overcurrent Protection and Required Utility Disconnects

- When the utility disconnect is required, it must be identified on the placard as "PV System Disconnect for Utility Operation."
- All back-fed circuit breakers and disconnects shall be properly labeled.

G. Energy Storage Systems-Batteries (ESS):

- Flexible battery cables do not leave the battery enclosure.
- Flexible, fine strand cables are only to be used with terminals, lugs, devices, and connectors that are listed and marked for such use.
- Area is well ventilated, and the batteries are not installed in living areas.
- Live parts of battery systems are guarded to prevent accidental contact by persons, animals or objects.
- Working space and illumination are provided around the battery installation.
- Proper diagrams or placards are provided at the building electric service equipment and other power source locations.

H. Service Equipment:

- Service equipment and its verifiable bus rating shall be adequate and properly sized for the designed PV source.
- The service grounding and bonding connections must be located and verified.
- All grounding requirements must be verified on the PV installations involving detached structures.
- New circuit breakers must 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 must remain balanced

I. PV Array Installed on Roofs

- Setbacks/Layout
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- The racking system and the modules must be installed in compliance with the manufacture installation instructions.
- The installed racking system and PV modules must 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 must be maintained.
- Roof-mounted arrays may not compromise or obstruct roof vents, plumbing vents, or chimneys.
- Class A fire rating must be provided.

J. PV Array Installed on the Ground

- Setbacks/Layout
- Inspection of footings/rebar before concrete is installed.
- Any Electrical Trenches.
- Check mounting array for correct attachment.
- Check for electrical bonding of structural elements.
- Ensure wiring is protected and properly supported.
- Back feeding breaker to panel identified.
- Additional array electrode installed.

K. Combiner Boxes, Junction Boxes, and Wiring Methods

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- The installed inverters must 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, must be bonded at each end of the raceways and at each enclosure.

M. AC Overcurrent Protection and Required Utility Disconnects

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N. Energy Storage Systems-Batteries (ESS):

- Flexible battery cables do not leave the battery enclosure.
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- Working space and illumination are provided around the battery installation.
- Proper diagrams or placards are provided at the building electric service equipment and other power source locations.