

NOTE: Most of the actions below should be performed by a qualified electrical technician.

PRE-STORM CHECKLIST

<input type="checkbox"/> Clear and/or Secure Debris and Loose Equipment	Remove loose debris and secure equipment or objects that can become airborne during high-wind events and pose a threat to life safety and nearby infrastructure.
<input type="checkbox"/> De-Energize PV System and Open all Disconnect Switches	De-energize PV electrical equipment to minimize electrical fault damage and shock hazard. At a minimum, check the following: combiner box fuses, inverters, switchgear, weather stations and metering specific to the PV system, all main disconnects at the point of interconnection where the utility service enters the buildings.
<input type="checkbox"/> Check Fastener Connections/Torque Tightening	Perform a torque audit, see directions below, and inspect for missing fasteners. PV system fasteners in high-wind environments often become loose.
<input type="checkbox"/> Clear Roof and Site Drains	Ensure drains are clear of debris to minimize the risk of flooding electrical equipment and conduit.
<input type="checkbox"/> Protect Exterior Electrical Enclosures	Securely cover exterior electrical enclosures (e.g. disconnect switches, service panels, dry-type transformers) with waterproof coverings and tie the coverings down with ratchet straps. Low-cost and thin-walled electrical cabinets without waterproof NEMA ratings cannot prevent wind-driven rain from intruding and causing damage to interior components.

POST-STORM CHECKLIST

<input type="checkbox"/> Render the Site Safe from Electrical Shock Hazards and Loose Debris	Make sure that there is no unintended current flow from damaged electrical equipment or conductors. Also, ensure that there are no loose objects that might fall (e.g. modules, racking assemblies).
<input type="checkbox"/> Dry and Clean Electrical Equipment	Dry and clean electrical equipment to help prevent short circuits and corrosion, especially when salt water is involved.
<input type="checkbox"/> Re-Check Fastener Connections/Torque Tightening	Perform a torque audit of a random sampling of between 1% and 2% of fasteners found in critical bolted joints and module-to-rail mounting assemblies. If more than 20% of those have loosened, check and tighten all remaining fasteners.
<input type="checkbox"/> Test for Electrical Faults	Test for electrical faults, including integrity of wire insulation (via Megger test) and ground faults.
<input type="checkbox"/> Identify and Replace Damaged PV System Equipment	Create a plan to repair and/or replace damaged equipment.
<input type="checkbox"/> Re-Energize PV System	Under NO circumstances should the PV system be re-energized before all electrical and structural repairs and/or replacements are implemented. If possible, re-energize in stages and sections.

TORQUE AUDIT OF THREADED FASTENERS

Follow torque auditing and re-tightening processes provided by the racking manufacturer or engineer of record (EOR). If no process is provided, use the "GO-NOGO" process described below.

1. Set the torque wrench between 70% and 90% of the minimum specified torque. Minimum values should be provided by a product manufacturer or EOR. If no values are provided, consult a contractor to determine values.
2. Turn the fastener in the counter-clockwise direction (or loosening direction).
3. If the torque wrench is able to loosen the fastener, then the fastener is considered "NOGO" and is loose.
4. If the torque wrench clicks or records full minimum specified torque value on the gauge before loosening, the fastener is deemed "GO" and is adequately tightened.

*Federal Solar Photovoltaic Arrays: PV System Owner's Guide to Identifying, Assessing, and Addressing Weather Vulnerabilities, Risks & Impacts, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Gerald Robinson (LBNL) December 2020, p. 120.