

Incident response tactics for solar photovoltaic systems



Potential PV hazards

- Contact with a PV system can cause **electrical shock**, serious burns and death.
- Fires involving PV systems with battery storage can generate **toxic and explosive gases**. Batteries **retain stored energy** and can reignite hours or days after the initial event.
- Firefighting operations are complicated by the additional weight of a PV array on a weakening roof and the inability to ventilate through PV panels or tiles.

PV operational considerations

- A PV array can generate electricity when damaged, during inclement weather and when illuminated at night by scene lighting, lightning or an active flame front.
- An array can accelerate fire growth and induce rapid structural failure.
- Most voltage detection devices used by fire service agencies cannot detect the DC present in PV components. Rely on National Grid for DC detection.

Critical operational tactics

- As you initiate response, always confirm that National Grid has been dispatched.
- Upon arrival, conduct a 360-degree size-up and note any PV systems.
- **Always assume PV arrays and system components are energized.** Work with National Grid to locate, identify and isolate all PV components and shut down the system.
- Update your team regularly about the PV system's status.
- Use the Incident Command System to coordinate tactical action.
- Use the DOT Emergency Response Guidebook for evacuation and shelter-in-place guidance.

Fighting a PV fire

- **Always wear full PPE and SCBA.**
- Position crews at the corners of the structure or beyond the collapse zone whenever possible. Ensure those operating on the roof or inside the structure have a clear escape route away from PV components.
- Never walk on or break PV panels or roof tiles. **Never open, touch or cut any PV components or wiring;** you could be shocked and seriously injured.
- Use **ONLY** tested opaque salvage tarps to stop a PV array's generation of electricity.
- Consider horizontal ventilation as an alternative to roof-top operations.
- **Never use a straight stream or foam;** contain small fires with Class C extinguishing agents. To control larger fires, apply water in a 30-degree fog pattern at 100 psi **at least 30 feet** from the energized source.
- **Always keep yourself and all tools and equipment at least three feet away from PV components.**
- Conduct thorough decontamination after any exposure to a PV component combustion.

