

WORKING AROUND SOLAR ARRAYS | **AUG. 2024**

In a world where green is no longer just a colour and buildings are expected to be high-performance, it's challenging to distill the best financial, technical, and environmental options for your facility. The expected usage of solar power is expected to quadruple over the next ten years. Many economic and tax incentives exist to encourage customers to trade their existing panels for newer, cheaper, more efficient models.

The replacement rate of solar panels is faster than expected, and precautions are needed when working around these systems. Over the past twenty years, the electrical standards and codes applicable to solar installations have been massively rewritten every three to five years. Therefore, many existing installations have obsolete design features, with safeguards being a critical deficiency in those older systems.



What is a Solar Array?

Solar cells – or photovoltaic cells – are grouped together to make solar panels.

Multiple solar panels create a solar array.

Solar equipment lives in the same harsh environment that we in the roofing industry understand well, and the wear and tear aging of the panels and equipment makes it likely that exposure to live conductors starts on installation and continues throughout the design life cycle. Most roofing professionals are not qualified solar/PV electrical experts in any form or fashion and are, therefore, not able to evaluate, operate, repair, or be closer than the clear, safe distance of ten feet. We do not have the qualifications to certify whether systems are de-energized, nor can we instruct clients, contractors, or others on how to accomplish the de-energization.

Many Fire and Emergency Service jurisdictions have a policy mandating this certification by a qualified person before they provide service to a building with solar panels. This situation could lead to the decision to evacuate the building and allow it to burn rather than risking the safety of emergency responders or firefighters, who could be endangered by potential electrocution or shock. Faults in the system, whether from design inadequacy or wear and tear, in addition to the electrical energy exposure, also typically cause fires. Any building owner with solar systems needs a qualified service program to inspect and update them, and they need to be available to certify de-energization when needed. When designing a solar system, it's essential to consider the setbacks of the solar arrays from the roof edges. Additionally, it's crucial to ensure that the array sizes allow firefighters to ventilate the roof effectively during a thermal event.


Accessing the roof around and under solar panels requires qualified technicians to de-energize your system. Use caution when accessing your facility's roofs and provide safe access for those who need to repair or maintain the roof system or roof-top equipment. Electrical shocks can occur when a short circuit is caused by corroded cables and connections, loose wiring, or improper grounding. These issues can lead to unexpected and potentially dangerous electrical currents.

Solar installations require conduit and framing supports on the roof, which can easily be a tripping hazard for any worker. Installing crossover platforms for your team to traverse the solar array during inspections and maintenance will improve their safety and reduce these trip hazards.

It's important to understand how to ensure a safe working environment, especially during solar installations. There are various hazards to consider beyond fall safety, and it's crucial to also check with your local fire code. This may impact where you can place fall protection, the size of openings in your fall protection, and the width of any crossover platforms you plan to use.

Improving rooftop safety begins with conducting a safety audit at your facility. This audit will help identify all potential slip, trip, and fall hazards that may be present.

⚡ Solar PV Electrical Safety



According to the U.S. Bureau of Labor Statistics, **solar photovoltaic installer jobs** are expected to **grow 51%** between 2019 and 2029, increasing at a much higher rate than the average of all occupations. **Learn how to stay safe** while working with or around solar panels.

Statistics*

51%

expected growth in solar PV installer jobs by 2029 making it the 3rd fastest growing occupation.


650

Between 2011 and 2019, 650 solar PV installers were injured on the job.


1-5 YEARS

51% of injured solar PV installers were employed for 1-5 years.


PV Installation Electrical Safety




Locate all overhead power lines.



Consider all overhead lines to be **live, energized and dangerous.**




Keep self and equipment **10 feet away** from all overhead lines.



Carry ladders and other equipment **horizontally** when on the ground to avoid overhead lines.


PV Panel Electrical Safety




Solar disconnects only disconnect building from PV panels. Panels can still generate power.



Never walk or climb on a solar PV panel.




Beware of **bi-directional power**, mark all bi-directional meters.




Stay at least **10 feet away** from solar installations.


In Case of Emergency Involving Solar Panels



Call **911** and notify first responders that PV are involved.





If possible, **turn off AC side of solar panels.** Solar panels may still generate DC power.





Remind first responders of the PV system.

Please **share** this **free** resource to save lives.




www.facebook.com/ESFI.org


www.twitter.com/ESFIdotorg


www.youtube.com/ESFIdotorg

*U.S. Bureau of Labor Statistics

At Tremco Roofing and Building Maintenance, we recommend having roof inspections and preventive maintenance performed twice a year by qualified experts for your roof system type. Our service division, Weatherproofing Technologies Canada, has teams across Canada to provide consistent maintenance and reporting for your facilities and keep your roofs in the best condition possible. We provide an asset management plan and an online portal to help you prepare and budget for your facility's future needs.

Tremco field advisors are equipped to conduct your Safety Audit and provide a comprehensive plan for safety solutions. For more information on Tremco Rooftop Safety Products: <https://info.tremcoroofing.com/safetysolutions>

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