



Construction

## Risky Business: Solar Energy

*Risky Business* is intended to help construction companies manage their professional/pollution liability exposures.

In this edition, we review solar energy.

### Solar Energy

Solar power is gaining impressive momentum as a source of alternative energy in North America. In short, solar power equipment collects the sun's energy, by using either photovoltaic (PV) panels or concentrated solar power technology, or both, and converts this energy into electricity.

Photovoltaic panels make use of the photovoltaic effect - simply defined as light exposure applied to a semiconducting material resulting in the generation of voltage and electric current. The PV panels are comprised of multiple solar cells which are linked together into solar modules, and these panels may be installed as wall-mounted, floating, rooftop-mounted or ground-mounted applications, depending upon geographic location and project purpose. The panels can be installed in a stationary (fixed) or "sun-tracking" (dynamic) orientation.

Concentrated solar power systems make use of mirrors and lenses to concentrate broad sunlight onto a receiver, and then a fluid is heated and used for power generation or energy storage. Examples of this technology are the Stirling dish, the parabolic trough, solar tower collectors, and the concentrated linear Fresnel reflector.

Regardless of the technology employed, there will be a need for thermal storage, be it battery or mechanical, to store the energy and account for sunlight variations.



## Potential Concerns

- In ground-mounted installations, improper geotechnical design and weather assumptions may lead to potential drainage and possible flooding issues.
- In roof-mounted installations, water intrusion may occur due to roof attachments/design errors in load calculations.
- Installation failures may occur if the design specs are not followed and/or field substitutions are made.
- Inadequate design of clips and torque tube teams associated with mounting system.
- Contractor, subcontractor and/or design team inexperience in the solar arena.
- Inadequate civil design of temporary and/or permanent storm water detention ponds and diversion controls.
- Performance guarantees and energy credit criteria not met.
- Supply chain issues, and the real possibilities of delay and economic loss.



## Claims

- Large-scale, ground-mounted single axis PV panels solar project: Inadequate civil design resulted in significant storm water runoff issues after a large rain event, leading to erosion and sediment problems on the job site and surrounding areas.
- Ground-mounted tilting PV panels solar project: Severe windstorm caused damage to thousands of PV panels. The panels were not adequately clipped and were dislodged and damaged during the windstorm. A redesign of the clips and torque tube beams was implemented to manage future weather events of this magnitude.
- Tilting roof-mounted PV solar project: Inadequate load calculation and structural design error caused overstressing of the roof, exacerbated by the fact that the installed system deviated from the designed system.
- Residential roof-mounted PV solar project: Installation of panels caused water leak to residence, leading to property damage claim and subsequent mold issues.

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**Severe windstorm caused damage to thousands of PV panels. The panels were not adequately clipped and were dislodged and damaged during the windstorm.**



### Action items

- Conduct comprehensive job site-specific geotechnical and climatological review to understand and plan for drainage trends and weather events prior to design activities.
- Ensure thorough management and oversight of solar project installation to assure compliance with design specifications.
- Perform contract review (prior to execution) with a particular eye toward client performance guarantees, subcontractor limitations of liability provisions, and who is responsible for procuring the panels / equipment.
- Partner with project teams and subcontractors who are experienced with solar work, if your company is relatively new to this project type.
- Develop an adequate storm water management plan for temporary and permanent works.



### Learn more

To learn more about effective risk management for solar energy, please contact your insurance broker or underwriter for additional details and insights.

Consider using one of the new technologies from the AXA XL Construction Ecosystem to utilize drones to inspect for damage and send reports indicating if/ where there are concerns, such as [SiteAware](#) or to get visual inspections, such as [DroneUp](#) or [DroneDeploy](#). For additional information on technologies, please visit our [Construction Ecosystem](#).

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