

SHEDDING LIGHT ON SOLAR POWER

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A source of potentially unlimited energy is the sun. Man has attempted to harness the sun's energy since the beginning of time. Its usage brings cheaper, more efficient energy, but also some concerns for underwriters and claims professionals. Recent improvements in technology and manufacturing methods have meant a reduced cost to the consumer and therefore a proliferation of "solar" installations both residentially and commercially.

Three methods are commonly employed to use the sun's energy:

- Passive solar entails a building design and structure that store the sun's energy as heat in the winter and reflect sunlight to cool the building in the summer.
- Solar thermal is the process of converting light to heat by using sunlight to heat a circulating system of fluids.
- Photovoltaic (PV) is conversion of light into electricity.

From an insurance underwriting and claims standpoint, solar thermal and PV are the methods that are of primary concern. One drawback is that the presence of sunlight is intermittent. A backup power supply is required, in the form of either battery backup or traditional fossil fuel systems.

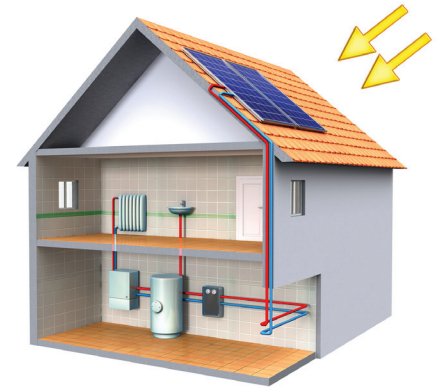
According to the Society of Fire Protection Engineers (SFPE), as of 2012 the growth rate in the use of PV systems exceeded 40 percent for six consecutive years. The capacity for PV in 2012 was 80 percent greater than in 2011. New installations amounted to enough energy to power 3.5 million homes. The trend continues. In 2014, a record number of new solar PV installations were completed. Solar power represented nearly a third of all new generating capacity, surpassing both coal and wind systems, and only exceeded by new natural gas installations. When



properly installed, solar photovoltaic (PV) systems are one of the safest and most environmentally-friendly methods of generating electricity.

Both solar thermal and PV systems are typically roof-mounted.

Solar panels may increase the combustibility of the building's roof. This poses a problem since the roof is outside the typical range of fire/smoke detection and suppression systems, such as smoke detectors and sprinkler systems. On the plus side, a 30-year study by the National Fire Protection Association found that there are very few reports of fires that have been caused by solar panels.



From a claims standpoint, fires in buildings that have PV systems present a challenge. Firefighters are hesitant to enter a building that is solar-powered unless they know how to turn the system off. Even at night, the light from the firefighting equipment or street lights could charge the solar panels. The manufacturing firm Dietz and Watson had a large warehouse in Delanco, New Jersey, covered with 7,000 solar panels. When fire broke out, the local fire chief refused to send his firefighters into the building. Reasons cited included the risk of electric



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shock due to the inability to turn the system off, as well as not having a clear path to cut a hole in the roof. Other concerns include tripping and falling on the panels, as well as building collapse due to the weight of the panels.

Improper installation may increase the hazards

associated with PV systems. Care must be taken in the installation and operation of solar systems to ensure continued safety for the occupants of solar-powered homes and businesses, as well as the employees who work with and maintain the solar power systems. For example, the hot fluids in solar thermal systems present burn and scald hazards to residents, employees who operate or maintain the system and emergency responders. In addition, chemicals such as glycol may be added to the system to prevent freezing, creating a pollution or poisoning hazard.

The extra weight can lead to collapse—and not just in the case of a fire. The roof structure itself can be damaged when the PV system is attached. The age of the roof is another consideration. PV systems should only be installed on newer roofs. Workers on the roof may be at risk of electric shock from overhead power lines.

Another underwriting concern is ensuring there is adequate ventilation. Battery backup is needed to provide power when the sun is not shining. Batteries give off heat and have been blamed for a number of fires.



From an insurance company point of view, it is essential for solar installers and firefighters to work together to develop not only adequate construction codes but also standard procedures for dealing with these systems. As a consumer, it is important to hire licensed and reputable contractors to reduce the risk of electrical malfunction. In addition, adequate safety precautions for those who work with PV systems from the manufacturing process to installation, maintenance and eventual decommissioning and disposal, will reduce the chance of injury and loss.

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