

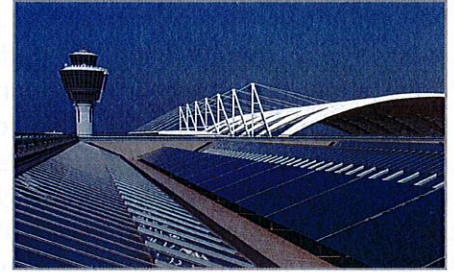
MORE SOLAR ENERGY MYTHS

4 MORE MISCONCEPTIONS ABOUT SOLAR PV

MYTH: SOLAR CAUSES TOO MUCH GLARE.

FACT: MODERN PV PANELS REFLECT AS LITTLE AS 2% OF INCOMING SUNLIGHT.

As with swimming pools, decks, and garages, the aesthetics of solar panels sometimes raise concerns for some neighbors. One potential concern is glare. However, solar panels are designed to absorb radiation, not reflect it. Solar PV panels are constructed of dark-colored (usually blue or black) materials and are covered with anti-reflective coatings. Modern solar PV panels reflect as little as 2 percent of incoming sunlight, about the same as water and less than soil or wood shingles.^{1,2} PV Projects can be analyzed and adjusted to mitigate potential glare issues and a number of solar installations have been successfully located at or near several US airports (Boston, New York, San Francisco, and Denver to name a few). The Federal Aviation Administration (FAA) has been actively reviewing the impact of glare from solar panels at airports and has partnered with Sandia National Laboratories to release a tool that analyzes potential glare impacts from a proposed solar installation.³ In instances where glare may be a concern, minor adjustments to the tilt, direction, and location of the panels can often alleviate any issues.



MYTH: SOLAR IS UNSAFE FOR FIREFIGHTERS.

FACT: SMART REGULATIONS ENSURE FIREFIGHTER SAFETY.



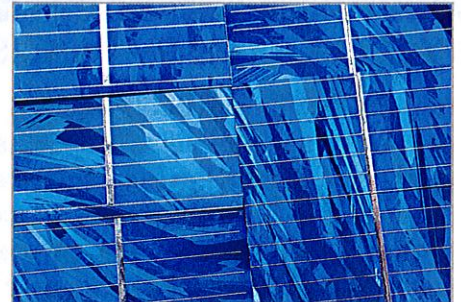
While solar installations that do not adhere to basic fire safety standards may interfere with fire-fighting procedure, posing a safety hazard to both firefighters and the general public, smart regulations can ensure that solar installations are strategically placed such that they do not inhibit firefighter operations.⁴ A number of reputable organizations have evaluated fire safety issues related to solar PV installations and have developed relevant guidelines. In 2012, a new version of the International Building Code and International Fire Code was released along with the latest National Fire

Code published by the National Fire Protection Association (NFPA). These codes address setbacks and pathways for flat and pitched roofs, marking and labeling requirements, the location of wiring and other electrical equipment, and ventilation options. By marking hazardous equipment, ensuring sufficient rooftop access, moving electrical wiring and equipment to safe locations, and creating space for smoke ventilation, firefighters can safely and effectively fight fires with a solar PV installation on site. Educating firefighters on the risks solar technology can pose during a fire and precautions that can be taken when a solar PV installation is present can further help to ensure their safety. A number of training resources exist to assist Fire Departments in training firefighters, including a NFPA approved lesson plan developed by the State of California.⁵

MYTH: SOLAR PANELS CONTAIN TOXIC METALS THAT CAN POLLUTE.

FACT: MOST PV PANELS DO NOT CONTAIN TOXIC SUBSTANCES.

The two most common photovoltaic (PV) cell technologies, monocrystalline and polycrystalline cells, are constructed of silicon (glass), aluminum (frame) and copper (wiring), and do not usually contain embedded heavy metals or other potentially toxic substances. Thin-film photovoltaic modules may contain heavy metals such as cadmium or telluride; however, numerous studies show that there is little to no evidence of any toxic leaching from these types of solar modules. Additionally, thin film companies such as First Solar offer robust recycling programs to reclaim such modules at the end of their useful lives.⁶ The European Union requires that 85% of all used PV modules be collected and at least 80% of the module must be recycled.⁷ The majority of PV producers in the EU offer voluntary take-back and recycling of PV panels.⁸ In the US, the Solar Energy Industries Association (SEIA) is collaborating with its European counterpart to develop a recycling program model for the US.⁹



MYTH: SOLAR PANELS ARE FRAGILE AND HAVE HIGH FAILURE RATES.

FACT: PV PANELS ARE DESIGNED TO WITHSTAND EXTREME WEATHER.



Recent reports of defective and underperforming panels have raised questions regarding solar panel quality and their useful lifespan.¹⁰ A number of international rating agencies including Underwriter Laboratories (UL) and the International Electrotechnical Commission (IEC) have developed standards and certifications specific for PV panel manufacturers and models and include rating standards for extreme weather conditions, including hurricane force winds and hail storms. There are two types of warranties for PV modules: materials and power. The materials warranty

covers module parts and workmanship while the power warranty guarantees that the panels will produce a certain percentage of its rated power. Home Power Magazine reviewed warranties for over 830 modules in 2012 and found that 500 modules carry at least a five-year materials warranty with about 250 having warranties of 10 years. Typical solar manufacturer power warranties are for 80% of the rated power for 25-30 years.¹¹ In addition, a number of solar installers and developers offer performance guarantees that cover production losses from defective panels.¹² Measurements of many modules put into service in the 1980s show that it's unusual to see even 10 percent degradation of the output from panels over the past 30 years with many of these modules still performing to their original specifications.¹³ As with any product, consumers should research warranties, quality, reputation, and performance of prospective panels before making a purchase decision.

SOURCES

1. American Planning Association: Solar Community Engagement Strategies for Planners (2012)
2. Airport Cooperative Research Program: Investigating Safety Impacts of Energy Technologies on Airports and Aviation (2011)
3. Sandia National Laboratories: Solar Glare Hazard Analysis Tool (2013)
4. Home Power Magazine: PV Safety and Firefighting (June/July 2009)
5. Brooks Engineering Understanding the Cal Fire Solar Photovoltaic Installation Guideline (2010)
- 6, 7, 8, 9. Home Power Magazine: PV Reincarnation (June/July 2013)
10. New York Times: Solar Industry Anxious Over Defective Panels (May 28, 2013)
11. Home Power Magazine: 2012 PV Module Guide (December/January 2012)
12. Solar City, Sungevity
13. Home Power Magazine: Ask the Experts: PV Longevity & Degradation (October 11, 2012)