

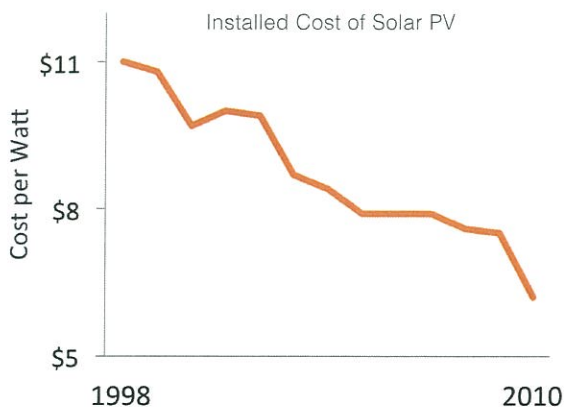
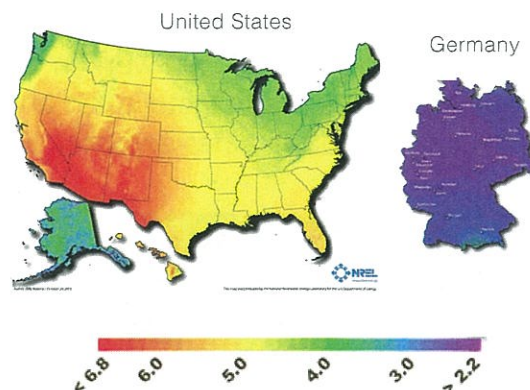
SOLAR ENERGY MYTHS

7 MISCONCEPTIONS ABOUT SOLAR PV

MYTH: IT ISN'T SUNNY ENOUGH WHERE I LIVE.

FACT: SOLAR WORKS IN EVERY STATE.

While solar irradiation levels vary across the United States, a homeowner can produce a significant portion of their electric load from their roof space no matter what state they are in (assuming un-shaded, proper tilt, orientation and installation). Germany, with a solar resource equivalent to Seattle and Alaska (illustrated in the figure to the right), has six times the installed capacity of the United States.¹



MYTH: SOLAR IS TOO EXPENSIVE.

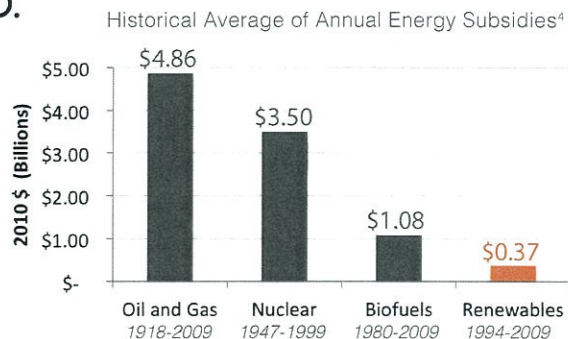
FACT: SOLAR IS COST COMPETITIVE.

While solar power isn't free, global solar industry growth has reduced costs steadily and rapidly in recent years, dropping 36% in the past two years.² Combined with recent technological advancements, solar is cost competitive with natural gas peaking plants today and is predicted to be cheaper than coal within the next five years.³

MYTH: SOLAR IS ONLY AN OPTION BECAUSE OF LAVISH SUBSIDIES.

FACT: ALL ENERGY SOURCES ARE SUBSIDIZED.

Every energy technology takes advantage of subsidies. Fossil fuel and nuclear power enjoy loan guarantees, accelerated depreciation, tax credits, caps on producer liabilities, and even bankruptcy protection. In the case of renewable energy, subsidies have only been in place in recent years, whereas the majority of fossil fuel and nuclear subsidies have been in place up to a century.⁴



This brief is supported by the following team of organizations: ICLEI-USA; International City/County Management Association (ICMA); Solar Electric Power Association (SEPA); Interstate Renewable Energy Council, Inc. (IREC); North Carolina Solar Center (NCSC); Meister Consultants Group, Inc. (MCG); The Solar Foundation (TSF); American Planning Association (APA); and National Association of Regional Councils (NARC).

MYTH: SOLAR DOESN'T CREATE JOBS AND WE CAN'T COMPETE WITH CHINA.

FACT: SOLAR CREATES 7 TIMES MORE JOBS THAN COAL⁵

Over 100,000 Americans work in the solar industry today, and in 2010 solar employment grew 6.8% while the general economy grew 0.7%. By way of comparison, 79,500 Americans work in iron & steel manufacturing and 84,000 work in coal mining. Solar creates 7 times more jobs per MW than coal.⁵ Many solar jobs are in installation and maintenance—jobs that cannot be outsourced to China. Furthermore, the US is a net-exporter of solar technologies.



MYTH: SOLAR TAKES UP TOO MUCH LAND.

FACT: SOLAR WORKS ON UNDERUTILIZED SPACES.

There is plenty of available roof space, landfill, and brownfield space to install significant amounts of solar. Cities and towns across the country are developing solar projects on landfills and other unused brownfield sites, and businesses can take advantage of large roof spaces.

MYTH: SOLAR TECHNOLOGY IS NEW AND WILL QUICKLY BECOME OUTDATED

FACT: SOLAR IS A MATURE TECHNOLOGY.

Basic solar photovoltaic technologies have been around for more than 30 years. While efficiencies have increased and costs have decreased, solar PV systems built in the 1970s still produce the same product (kWhs of electricity) as any modern solar PV system. The solar industry, like other electricity generating industries, does not evolve in the same way that the electronics industry has. If solar makes sense for you today, then there is no reason to wait to take advantage of the benefits of solar power's benefits.



MYTH: SOLAR IS ONLY FOR ENVIRONMENTAL ADVOCATES.

FACT: SOLAR IS FOR EVERYONE.

90% of Americans think that it's important to support the development of solar power.⁶ Everyone from firefighters to the US military and NASCAR have adopted and are using solar power. In addition, large companies like Google, Wal-Mart, Toys-R-Us, Staples and others have installed large amounts of solar to power their operations.

SOURCES

1. REN21 Renewables 2012 Global Status Report.
2. GTM Research Solar Market Insight 2011 Year-in-Review
3. PV Prices from DOE, Advanced Research Projects Agency - Energy, \$1/Watt Photovoltaic Systems, May 2011.
4. DBL Investors, 2011.
5. Energy Policy, vol 38, issue 2, February 2010. Solar Foundation 2011 National Jobs Census. U.S. Bureau of Labor Statistics: May 2010 National Industry-Specific Occupational Employment and Wage Estimates.
6. Schott North America, 2010.

This material is based upon work supported by the U.S. Department of Energy under Award Number DE-EE0003525.

This fact sheet was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

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

This brief is supported by the following team of organizations: ICLEI-USA; International City/County Management Association (ICMA); Solar Electric Power Association (SEPA); Interstate Renewable Energy Council, Inc. (IREC); North Carolina Solar Center (NCSC); Meister Consultants Group, Inc. (MCG); The Solar Foundation (TSF); American Planning Association (APA); and National Association of Regional Councils (NARC).

This material is based upon work supported by the U.S. Department of Energy under Award Number DE-EE0003525.

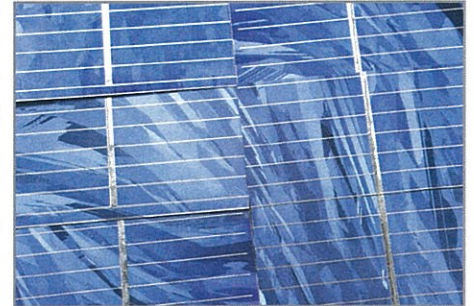
Powered by
SunShot
U.S. Department of Energy

 **MEISTER**
CONSULTANTS GROUP

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.

This paper was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

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 & Degredation (October 11, 2012)