Better Buildings Series

A Winning Combination—Design, Efficiency, and Solar Technology

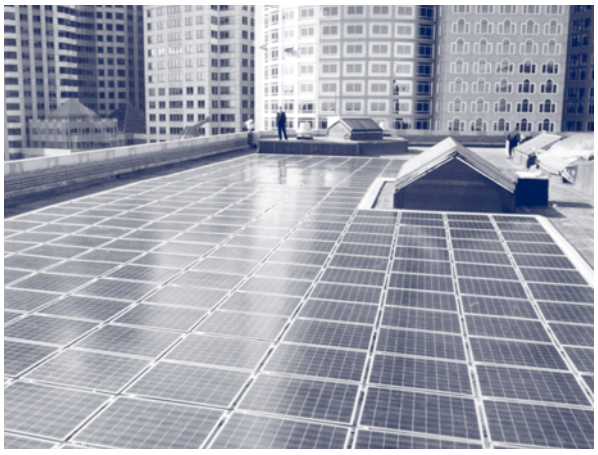
# Myths about Solar Electricity

Solar electric systems are an important part of the whole-building approach to constructing a better home or commercial building. Although these systems have delivered clean, reliable power for more than a decade, several myths have evolved that confuse the real issues of using solar electricity effectively.

## Myth #1

**Solar electricity cannot contribute a significant fraction of the nation's electricity needs.**

Solar electric panels can meet electricity demand on any scale, from a single home to a large city. There is plenty of energy in the sunlight shining on all parts of our nation to generate the electricity we need. For example, with today's commercial systems, the solar energy resource in a 100-by-100-mile area of Nevada could supply the United States with all of its electricity. If these systems were distributed to the 50 states, the land required from each state would be an area of about 17 by 17 miles. This area is available now from parking lots, rooftops, and vacant land. In fact, 90% of America's current electricity needs could be supplied with solar electric systems built on the estimated 5 million acres of abandoned industrial sites in our nation's cities.



PowerLight Corporation/PIX08466

*The area required for PV systems to supply the United States with its electricity is available now from parking lots, rooftops, and vacant land.*

## Myth #2

**Solar electricity can do everything—right now!**

Solar electricity will eventually contribute a significant part of our electricity supply, but the industry required to produce these systems must grow more than tenfold over the next 10 years. In 2001, about 400 megawatts of solar electric modules were produced worldwide. According to an industry-planning document, in order to supply just 10% of U.S. generation capacity by 2030, the U.S. solar electricity industry must supply more than 3,200 megawatts per year. Most experts agree that with continued research, solar electric systems will become more efficient, even more reliable, and less expensive.

## Myth #3

**Producing solar electric systems creates pollution and uses more energy than the system can produce over its lifetime.**

Producing solar electric systems uses energy and produces some unwanted byproducts. However, most solar electric systems pay back the energy used to produce them in about one year. Because the systems generally last 30 years, during the 30 years of a system's life, it is producing free and clean electricity for 29 of those years.

Production of solar electric systems is regulated by rigorous safety and pollution control standards. In addition, during the lifetime of a solar electric system, pollution that would have been emitted by conventional generation of electricity is avoided. For each kilowatt of solar electric generating capacity, the pollution avoided by not using fossil fuels to produce electricity amounts to 9 kilograms of sulfuric oxide, 16 kilograms of nitrous oxide, and between 600 and 2,300 kilograms of carbon dioxide per year. The annual amount of carbon dioxide offset by a 2.5-kW rooftop residential solar electric system is equal to that emitted by a typical family car during that same year.

## Myth #4

**Solar electric systems make sense in only a few applications.**

Solar electric systems make sense nearly anywhere electricity is needed. Homes and businesses that are already using electricity from the utility, such as homes, businesses, and electric-vehicle charging stations, represent nearly 60% of the market for solar electric systems. The number of these grid-connected applications is growing because they make sense economically, environmentally, and aesthetically. Solar electric systems make economic sense because they use free fuel from the sun and require little upkeep because they have no moving parts. Every bit of electricity produced is used in the home or sold back to the electric utility for use by other customers. Solar electric systems also make sense for the environment and can blend seamlessly into the design of a building.

## Myth #5

**Solar electric systems are unreliable and produce substandard electricity.**

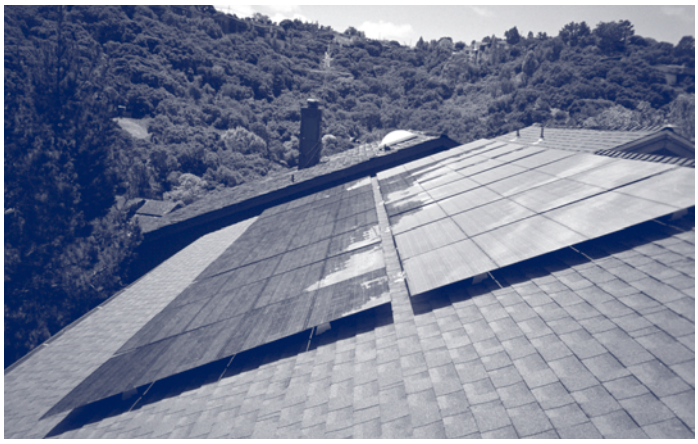
Solar electric systems are some of the most reliable products available today. They are silent, have no moving parts, and have been tested to rigorous standards by public and private organizations. Many solar electric products have been tested and listed by Underwriters Laboratories, just as electrical appliances are. Warranties of 20-25 years are standard for most modules.

Solar electric systems connected to the utility grid generate the same kind of power as that from the power line. Today's systems must meet the requirements of the National Electrical Code, the local utility, and local building codes. Once these systems are installed according to these requirements, the owner of a solar-electric-powered home has electricity of the same quality as any other utility customer.

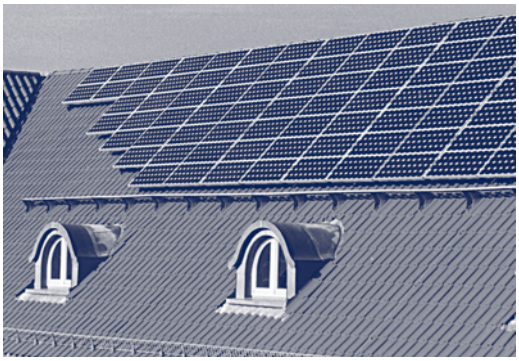
## Myth #6

**It is difficult to make solar electric systems aesthetically pleasing and functional for homes and businesses.**

The buildings shown here include solar electric systems serving dual functions: building structure and generation of electricity. These photos represent only a small sample of the beautiful, functional, and energy-efficient buildings being designed with solar electric components.



AstroPower, Inc./PIX08969



BP Solarex/PIX08857

*Solar electric systems are manufactured in a variety of module types, colors, and sizes. They can serve a dual function: building "skin" and electricity production.*

Wayne Appleyard/PIX09690

In the future, people will reflect on our current solar electric technology much as we reflect on the technology of the Model T Ford: with admiration for the pioneering visionaries of the day and perhaps amusement at the technology that seems so primitive compared to what we now enjoy. Researchers believe that in the future, new physics and technologies will be developed that will greatly improve solar energy technology. As for the present day, clean, reliable solar electricity is increasingly popular with home and business owners, which helps to dispel the myths surrounding this technology.

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