

Frequently Asked Questions About Solar Electric Technology

FAQs

- [What is a solar cell and a solar module?](#)
- [Are solar cells a new technology?](#)
- [Do solar cells store energy?](#)
- [How well do solar modules withstand, and operate in, inclement weather?](#)
- [What are the different types of solar technologies?](#)
- [What does photovoltaic or PV mean?](#)
- [What is a PV cell?](#)
- [What is a PV array?](#)
- [What is a PV system?](#)
- [What does PV conversion efficiency mean?](#)
- [Are solar electric systems safe?](#)
- [Are solar power systems good for the environment?](#)

What is a solar cell and a solar module?

A solar cell, also called a photovoltaic (PV) cell, is the smallest element that converts light into electrical energy. Each cell is made of silicon like a computer chip. The silicon is treated so that it generates a flow of electricity when light shines on it. Solar modules are series of solar cells wired together.

Are solar cells a new technology?

Modern solar cells with practical efficiency were invented in the early 1950s, and have been used to power satellites since 1959. They became popular for terrestrial applications in the mid-1970s, mostly for remote telecommunications, navigational aids and other rugged, remote industrial uses including microwave, TV, radio and cellular repeater stations. They have been powering urban applications such as roadside emergency telephones and traffic sign boards since the mid-1980s. With prices dropping steadily, they are now becoming affordable for urban homes and businesses.

Do solar cells store energy?

No. Solar cells just convert sunlight into an electric current that must be used immediately or stored in batteries to be used later.

How well do solar modules withstand, and work in, inclement weather?

In cloudy weather, solar modules work, although they produce less electricity than on a sunny day. Under a light overcast, the modules might produce about half as much as under full sun, ranging down to as little as five to ten percent under a dark overcast day. If the modules become covered with snow, they stop producing power, but snow generally melts quickly when the sun strikes the modules; if you brush the snow off, they resume operation immediately. Our modules

can withstand one inch (2.5 cm) hailstones at 50 mph (80.5 kph).

What are the different types of solar technologies?

The four types of solar technologies are:

- Photovoltaics: Photovoltaic solar cells, which directly convert sunlight into electricity, are made of semiconductor materials. This can include very simple cells that power calculators and watches, and complex systems that can light houses.
- Passive solar heating: Buildings designed for passive solar and daylighting combine building materials that absorb and slowly release the sun's heat with design features such as large south-facing windows. No mechanical means are employed.
- Concentrating solar power: This technology uses reflective materials such as mirrors to concentrate the sun's energy and convert it into electricity.
- Solar hot water and space heating and cooling: Solar hot water heaters use the sun to heat either water or a heat-transfer fluid in collectors.

What does photovoltaic (PV) mean?

The direct conversion of light into electricity.

What is a PV cell?

The smallest semiconductor element that converts light into electrical energy (DC voltage and current).

What is a PV array?

An interconnected system of PV modules that function as a single electricity-producing unit. The modules are assembled as a discrete structure, with common support or mounting. In smaller systems, an array can consist of a single module.

What is a PV system?

A PV system is a complete set of components for converting sunlight into electricity by the photovoltaic process, including the array and the balance of system components.

What is PV conversion efficiency?

The ratio of the electric power produced by a PV device to the power of the sunlight shining on the device.

Are solar electric systems safe?

Yes. Solar cells are mostly silicon, the primary component of sand. There is no exhaust and no toxic materials to leak out of the system. The electricity coming through the inverter is just like

the electricity coming from household wall sockets; you should use the same care you would with utility power. All components are approved for utility interconnection and are installed according to standard construction practices.

Are solar power systems good for the environment?

Yes! Energy created through our solar electric system produces no pollutants. Our smallest system typically cuts greenhouse gas emissions as effectively as 50 trees.