

Solar 101

What is solar energy?

Solar energy is electromagnetic energy transmitted from the sun (solar radiation). A solar energy system, or solar PV system (photovoltaic system), uses solar panels to capture sunlight and convert it into energy. Producing energy with a renewable resource like solar is an important part of our clean energy future.

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How is solar energy measured?

Electricity is measured in watts (W), with one thousand watts in a kilowatt (kW). The capacity (size) of a solar system is typically measured in kilowatts. Using one thousand watts of electricity in one hour is a kilowatt-hour (kWh), the measurement on your utility bill.

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Is solar safe?

Definitely! Solar panels must meet inspection and testing standards. Through the Illinois Solar for All program, an Approved Vendor will install the solar panels. Approved Vendors must meet rigorous program requirements, including quality workmanship, participant savings, and consumer protections.

What does “photovoltaic” mean?

Photovoltaic (PV) refers to the process of converting the sun’s energy into energy you can use in your home or on your property. It is common to see a solar system referred to as a “solar PV system.”

How does a solar PV system on my home or property work?

- When the sun shines onto a solar panel, photons from sunlight are absorbed by the cells in the panel, which convert sunlight into direct current (DC) electricity.
- The DC electricity flows to the inverter, which converts the DC electricity into AC electricity.
- This AC electricity flows through the existing electrical panel in your home or on your property to power air conditioning, lights, appliances, and anything else powered by electricity.



What are the environmental benefits of solar?

Using solar power instead of conventional forms of energy reduces the amount of carbon dioxide and other pollutants that are emitted into the atmosphere. Reducing carbon dioxide emissions means less pollution and cleaner air and water.

How can I benefit from solar energy?

Solar energy is an efficient, affordable, and clean source of energy that protects the environment and creates jobs. With available incentives and tax credits, solar can provide significant energy bill savings for both property owners and renters. Solar energy also helps to protect against future energy cost increases.

What happens to excess electricity that a solar system creates?

Most homes or properties that install a solar system are going to stay connected to the electrical grid, which means there is a flow of electricity to and from the grid.

Sometimes the system will create more electricity than is needed at that time. For most homeowners the excess electricity is sent back to the power grid. If the homeowner has a standardized net metering agreement with their electricity supplier, they can sell back excess energy for a credit on their electricity bill.

What is net metering?

Net metering is a standardized agreement that electricity suppliers are required to offer to their customers. Net metering allows you to sell back any excess energy generated but not used at your home to your supplier each month with each kilowatt-hour (kWh) you sell appearing as a credit on your electricity bill.



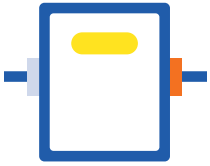
What are the main components of a solar system?



Solar Panels

Solar panels are the most visible component of the system. They are composed of many small cells that convert sunlight into DC electricity.

Several cells are wired together to form a solar module. A group of modules are physically connected to make a panel. A group of solar panels wired together in a series is called a string. A group of strings wired in parallel is called a sub-array. A group of sub-arrays wired in parallel is called a solar array.



Inverter

The inverter turns DC electricity from the solar cells into AC electricity that can be used in your home or on your property.



Mounting System

The mounting system is what attaches and positions solar panels to the roof of the building or to the ground.



Performance Monitoring System

The monitoring system is typically a web-based tool that provides detailed information about the performance of a solar PV system. It allows system owners to track electricity production and identify performance issues.

For more information about ILSFA:

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