



3 types of solar energy

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With home electricity prices skyrocketing (+11% from June 2022 to June 2023 in New York), there has never been a better time to take control of your energy costs with a solar energy system. With so much information out there, it can be confusing to navigate the different types of solar panel systems available and decide which is right for you. By understanding how a standard solar photovoltaic system works and the varieties that are available to you, you can feel confident in your decision to save with a customized solar array for your home.

At the heart of a solar system, or solar array, is the solar panel itself. Solar panels are made up of photovoltaic (PV) solar cells which include semiconductor material, commonly silicon. When sunlight hits the solar cells, energy from the photons in the sunlight is absorbed by that semiconductor material, generating electric current in the form of direct current (DC) electricity.

However, most household and business electricity appliances require alternating current (AC) electricity. That's why each solar system also has an inverter device which is used to convert the DC electricity into AC electricity. Once the energy is converted, this AC electricity is now ready to power your home.

Grid-connected solar energy systems, also known as grid-tied or on-grid systems, are the most common and widely adopted type of solar system. These systems are directly connected to the electrical grid, which is the utility company's equipment that brings electricity generated from power plants to your home. This grid connection allows for the flow of electricity from the panels your home generates to the grid and back.

Stand-alone solar energy systems, commonly known as off-grid systems, are designed to operate independently of the electrical grid. These systems are often deployed in remote locations where grid access is challenging or economically unviable.

It's important to note that while off-grid solar arrays are an option for going solar, they're typically not a feasible option for New Yorkers with the amount of energy today's home tend to use. While energy storage solutions can help homes run on backup electricity when the power grid is down, this is a temporary solution until the grid regains power and not meant as a replacement for net metering with a grid-tied system. Homeowners in New York City and on Long Island go for the grid-tied solar systems while off-grid systems are reserved for more remote areas of the world.

Hybrid solar energy systems, also known as battery backup systems, combine the features of grid-connected and stand-alone systems. These systems integrate solar panels, battery energy storage, like the Tesla Powerwall battery, and grid connectivity to maximize efficiency and provide a reliable power supply.

Like there previous two systems, a hybrid system also uses PV panels to collect and convert sunlight to energy. Instead of just routing this energy to the grid like in a grid-connected system, a hybrid system routes to



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the home's backup energy battery. If the backup battery is full, then electricity routed to the electricity grid.

For batteries like the Tesla Powerwall, it will turn on automatically in the vent the power grid goes down. Then the home will run on the previously stored backup energy until the grid's power is restored. As the battery uses electricity to power the home, the solar system is able to recharge the battery in the event of an extended grid outage.

For thousands of New Yorkers, the decision to go solar and lower their energy costs is clear. Your customized solar panel system can help your home generate its own clean energy to reduce reliance on the power grid and lower your monthly electricity bill all year long.

Have questions about whether a battery backup energy system is the right choice for your solar system? Talk to our talented team of solar experts and we'll help you create a customized system that works specifically for your home's energy needs and budget.

Contact us for free full report

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