CONSIDERING A RESIDENTIAL SOLAR INSTALLATION?

10 Steps to take BEFORE installing solar

1. Make your home more energy efficient.
2. Research, research, research.
3. Understand how a solar system works with your cooperative's system.
4. Review your current energy use so you can determine what size system to install.
5. Tally upfront costs.
6. Search for incentives, rebates and tax credits.
7. Accept short- and long-term responsibilities.
8. Follow all safety precautions.
9. Choose a reputable contractor/installer.
10. Maintain good records of research, contracts, inspection paperwork, etc.

Solar Systems: What size is right for you?

All solar systems begin with a series of small photovoltaic (PV) cells that produce electricity directly from sunlight. These PV cells are combined to form a module or panel. Several panels are connected together to form an array or a solar system. Arrays can be small—from a few panels to power a roadside warning sign or a remote cabin—up to a large array covering hundreds of acres as part of a utility-scale solar farm. The best location for any solar sytem is free of shade trees or other obstructions and faces the south.

ROOFTOP SYSTEMS

This type of system is most often thought of as a residential system, although rooftop systems may also be installed on commercial and industrial facilities., However, for the most part, rooftop systems are smaller in scale, and for practical purposes, have far less capacity to produce solar than other types.

- As the name suggests, rooftop systems are mounted on a roof. This may be a home or building on your property.
- The actual amount of energy produced depends on the location. Typical home rooftop systems are sized to produce between 2 and 10 kilowatts (kW). On average, 75 square feet of solar panels are needed to produce each kilowatt of direct current (DC) power during peak solar periods.
- Ownership of rooftop systems can vary: The system may be owned by the homeowner. A leased solar system may be owned by the company installing the leased system.
- The energy produced by the rooftop solar system helps offset energy use of the home or building on which it is installed. During some times of the day or months of the year, it may produce more energy than is used within the home or building.
- The number of solar panels installed on your home or building can be expanded over time, depending on the size and configuration of the building, and your desire to install additional capacity and your energy consumption.

Solar Energy: Frequently Asked Questions

HOW DO WE GENERATE ELECTRICITY FROM THE SUN?

Solar energy systems work when sunlight hits a solar photovoltaic module (solar panel or PV panel) and causes electric current to flow. The current produced from the PV panels is controlled and regulated by an inverter, which converts direct current (DC) to alternating current (AC), needed for use by household appliances. The electrical panel is where the power gets distributed throughout your house; any excess electricity may be sent from the panel back to your cooperative's power grid.

HOW MUCH ELECTRICITY CAN I GENERATE?

That depends on several factors. 1) The size of your system. You can determine how much electricity you want to produce; then size your system accordingly. Note that you can start out small and add on. A system that will generate 100% of your energy needs is expensive, so most systems are sized to generate only a portion of your home's needs. 2) Your site. If you have a shade-free area from 9 a.m. to 3 p.m., you'll be able to collect more sun and produce more energy than if your site is shaded. 3) Your region. The more sunny days in your area, the more electricity you'll be able to generate. For example, systems in the southwest produce more electricity per year than in the northeast. You can find online calculators to help answer this question in more detail, and installers can provide details about your situation, too.

WHAT HAPPENS WITH A SOLAR PV SYSTEM AT NIGHT AND ON CLOUDY DAYS?

Battery-backed or grid-independent systems use on-site energy storage to store excess energy produced during the day for use at night or when the sun is not producing enough power. Choosing this option will add significant cost and maintenance to your system. Most people opt for grid-connected systems for reduced cost, maintenance, and high reliability. With this type of system, Pioneer continues to provide energy to you when you need it 24-7. Your PV system will produce energy, and even excess energy, on sunny days. Your system will not collect sunlight at night and on cloudy days. That means, you will continue to draw electricity from your cooperative during these times.

WHAT HAPPENS WITH A SOLAR PV SYSTEM DURING POWER OUTAGES?

Most grid-connected PV systems shut down to prevent back-feeding electricity into de-energized power lines that may have fallen or that line crew members may be working on. It's important to have this shut-down feature to prevent injuries—and even death—to those working on the line.

WILL PIONEER BUY ANY EXCESS ENERGY I PRODUCE WITH A SOLAR PV SYSTEM?

Grid connected PV systems are connected to the Pioneer's power lines. That means electricity can flow both ways (to your home from your cooperative, and from your PV system back to the electrical grid). Particularly on sunny days, when your energy use may be low, your system may produce excess energy that can flow back to the grid and may be purchased back by Pioneer. Many cooperatives purchase energy generated by a PV system above what the homeowner uses. Check with Pioneer to get specific details, including requirements for interconnection, safety, metering, and applicable rates.

HOW LONG IS THE PAYBACK PERIOD ON A SOLAR SYSTEM?

The payback period can range from fewer than 10 years to more than 20 years, depending on the system cost, available rebates and incentives, the amount of electricity produced, and the retail price of electricity you purchase from your cooperative. Check with Pioneer Electric for more information.

HOW LONG DO SOLAR PV SYSTEMS LAST?

Certified PV products and systems are generally reliable, with a life expectancy of about 30 years. Manufacturers test PV panels for hail impact, high wind, and freeze-thaw cycles to represent real-life situations. Most manufacturers offer 20- to 25-year warranties for panels; extended warranties may be available at an extra cost. Little maintenance is required; occasionally it may be necessary to rinse modules off with water to remove dust and grime. Other components like inverters may have a shorter life. PV panels may outlast the roof they are attached to. **Make sure your roof is in good shape or budget for replacement during the life of the system.**

HOW CAN I KNOW IF A SOLAR PV SYSTEM WILL WORK ON MY HOUSE?

To begin, you can look at factors such as which direction your home faces, the condition of your roof, and obstructions such as trees and other buildings that may block the sun during the peak generation period of 9 a.m. to 3 p.m. Solar contractors can provide a more detailed analysis on what to expect, and your Pioneer representative can offer advice, too.

HAVE ADDITIONAL QUESTIONS? REACH OUT:

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Want to go green, but unsure if residential solar is right for you?
Ask about OurSolar, our community solar program or scan the code to learn more.