

Solar FAQs

Energy Production Questions

How is solar energy generated?

Photovoltaic (PV) systems generate solar energy using semiconductor cells to convert sunlight into electricity. PV systems contain solar panels to absorb and convert sunlight and inverters to change direct current (DC) into alternating current (AC). AC is the standard electrical power that we use in our homes and businesses. PV cells connect into solar panels mounted in an orientation to take the most advantage of the sun. That can be on rooftops, canopies, the ground, or integrated into roofing shingles or other building materials.

Does a PV system produce electricity all the time?

No. Depending on the season, a PV system typically generates power from 8 a.m. to 6 p.m., reaching its maximum output between noon and 1 p.m. when the sun is at its peak. When PV systems are not producing power, LUS and TVA provide other resources to deliver reliable electricity to homes and businesses.

Can PV systems produce power on cloudy days?

Yes. However, a PV system generates less electricity when the weather is cloudy. A PV system might receive only 5 to 10 percent of the usual amount of sunlight on an overcast day, so the power output decreases proportionately.

How much space on my roof will a solar system require?

Solar panels vary in size, wattage, and technology. A typical solar panel produces 250 watts of electricity and measures 3.25 ft x 5.4 ft, or about 17.5 sq ft. A 5-kW solar system requires around 400 sq. ft. of usable south/south-west facing roof area by applying typical solar panel specifications. This includes additional space to comply with fire safety standards.

Do cold temperatures impact PV systems?

PV systems generate more power at lower temperatures. Like most electronic devices, they operate more efficiently when it's cooler. PV systems generate less energy in the winter than in the summer, but that's due to the combination of fewer daylight hours and lower angles of the sun, not to cooler temperatures.

What factors impact the performance of my solar system?

Many factors can affect the efficiency of your solar panels. These include:

- The shading on your house
- The orientation and tilt of your solar panels
- How many sunlight hours your house receives during the day
- The quality of your inverter
- The temperature

Any combination of these factors can significantly impact the amount of solar energy your panels generate.

Financial Questions

What is the ITC, and how does it impact my solar estimates?

ITC is the Federal Investment Tax Credit (ITC) Program issued by the government to support solar energy development in the United States. The ITC is a tax credit and not a tax rebate — before buying a solar PV system, check with your tax professionals about the implications ITC has on your finances.

Currently, the ITC allows residential and commercial members to claim a 26% tax credit towards the total investment of their system. This tax incentive as of today will end on December 31st, 2023, when it ceases to exist for residential members.

What other solar rebates and incentives are available?

In addition to the ITC and accelerated depreciation (for commercial members), there are varying rebate and incentive offers, depending on the state where you live.

How long will it take to recover my costs?

The time to recover the cost of your solar system installation can vary significantly based on several factors. With the current rate structures and incentives provided, an average residential solar system in the Tennessee Valley is about 10 kW and requires at least 26 years to pay off even with the ITC applied. Some customers may not break even on their installation depending on their energy usage, PV system size, and maintenance costs.

What is the MACRS solar depreciation, and how does it impact my solar estimates?

The Modified Accelerated Cost Recovery System (MACRS) is a tax advantage mechanism that allows commercial members to accelerate depreciation of their solar investment over 5 years and thereby reduce their tax burden. This can result in a quicker return on investment for applicable commercial members.

Can I finance my solar system purchase?

Yes. You can set up personal financing for your solar system installation through your bank or preferred loan company. Your interest rate and loan terms impact your return on investment. If you decide to finance your solar PV system, we recommend shopping around to find the best interest rate and loan terms for your situation.

Can I sell power from my solar system to TVA?

Through the Dispersed Power Production (DPP) program, TVA may allow a qualified solar PV system to sell excess generated power. Members can sign a contract with TVA to sell excess solar generation to TVA for roughly 2 cents per kilowatt-hour. The contract process can take 2-3 months, so we recommend starting this process before you have finished installing your system. Additional costs, hardware, and construction might be required before your solar PV system can safely connect to the LUS electric grid.

To find out the current details of the DPP program and how to set up your PV system to participate in this program, as well as to find information on other TVA Renewable programs, visit www.tvagreenconnect.com.

Maintenance & Ownership Questions

How long does a typical solar system last?

A typical solar system has a useful lifespan of 25 to 30 years, depending on the local environment and the system's durability. After this period, your solar panels will continue to generate electricity but at a lower efficiency.

Solar inverters have a typical lifespan of around 10-12 years, and you can expect to replace them at least once over the lifespan of a solar system.

Source: <http://news.energysage.com/how-long-do-solar-panels-last/>

What type of warranty is provided with my system, and what does it cover?

PV systems typically have two types of warranties provided by panel manufacturers: a product warranty and a performance warranty. The product warranty usually covers 10-12 years of manufacturing defects, wear and tear, and environmental issues of the panels. Since panels become less efficient over time, the performance warranty guarantees a certain amount of solar production for up to 25 years. You can expect to get 90% of the advertised production for the first 10 years and 80% production until the system is 25 years old.

A solar inverter warranty should be a significant consideration when purchasing a system. Warranties may vary widely by manufacturer, so please contact your solar installer for specific warranty details.

What kind of maintenance does my system require?

Solar panels generally don't require much ongoing maintenance throughout the system's lifespan, as there are no moving parts like tracking systems. However, inverters and other connected components may require periodic maintenance or inspection. LUS recommends annual routine inspections and maintenance to ensure your system functions properly and efficiently.