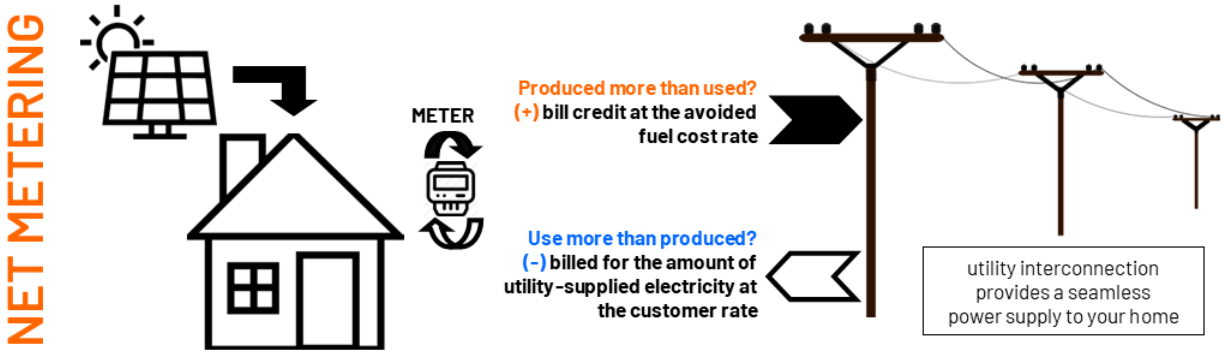
Installing a solar energy system?

do your research for the best possible return on your photovoltaic (PV) investment



How big of a PV system do I need and what will it cost?

Evaluate your energy usage: Contact your local utility for your annual electric consumption and ask for the past three years. A multiple year analysis will provide you with a better idea how much of your usage will be covered by your PV system. The average residential customer, with natural gas heating, uses about 1,000 kilowatt hours each month during a year.

Electric production amounts: In Missouri, one kilowatt of solar panels will offset at a maximum around 1,350 kilowatt hours of electricity each year. The location of the panels and shading can drastically reduce the optimal output of electricity. From your annual electric usage (kWh) you can determine how much you want to offset with your PV system.

Cost: In 2019, the average cost in Missouri, not including tax credits, to install 1kW of solar PV was around $2,500.

- The cost of your PV system will depend on the size, efficiency and complexity of the system and its components. You should check the reputation of the solar installer you are working with by asking for recommendations from people in your community and consult with several different suppliers for more cost estimates.
- If installing rooftop panels, have a professional roofing company evaluate the condition of your shingles. You want the roof to be in excellent condition before installing any PV panels.

Payback: When calculating the payback of your solar panel investment, carefully evaluate the predicted utility electric rate increases. Many solar installers use examples of national trends that can differ from costs in Missouri. Contact your local utility for your current electric rate and ask about any expected future rate increases.

What is net metering and what laws apply?

- Net Metering: A transaction between a utility and a customer generator where energy is transferred back and forth.

Net metering is an arrangement where you produce some of the energy used in your home. The 'net' is the ending balance each billing cycle. It can either be negative which means you will owe some money to your electric utility for the power supplied to your home. If the net is positive where you produce more electricity than you use, you will receive a credit to your utility account at the avoided fuel cost rate. This rate is established by your utility on the average price for generating the electricity, not the other items your electric rate includes, like maintaining and operating the electric system, metering systems, administrative costs, etc.

The State of Missouri has a net metering law - Chapter 386 (386.890) known as the "Net Metering & Easy Connection Act" that utilities must follow. An electric customer can enter into a net metering agreement with a PV system that has a generating capacity of not more than 100 kilowatts. The PV system must meet safety codes outlined in the law. The system must operate in parallel and synchronized with the utility's electric system with an automatic disable switch if utility service is interrupted. Customer-generator systems of 10 kilowatts or less shall not be required to purchase liability insurance beyond what is required by the city.

Invest in energy efficiency before installing solar

If you are making an expensive investment in a solar energy system, it is recommended to first make energy efficiency improvements. The cheapest way to reduce your electric consumption is to not waste it. Projects like air sealing, insulation, and installation of an efficient heating and cooling system should be completed before you make a more costly solar investment. Taking a whole house approach with the Home Performance with Energy Star program will earn customers the highest savings. For more information on how to conserve the most energy and receive the most savings from your electric bill: consult energystar.gov.

What is the best location for a solar system?

PV generates electricity from the sun, so the best locations are consistently sunny throughout the year. In general, the most important factors are clear and unshaded roof space. These conditions simplify the PV installation and will produce the most energy. Which way your roof is facing will determine what part of the day your solar panels will be most exposed to the sun. South-facing solar systems are traditionally the most popular because they have the highest potential to capture solar energy throughout the day. The location of the solar panels and shading issues may decrease production; therefore, they may increase system payback time.

Tax credits for solar panels

How much:	30% of the cost (including installation costs), with no upper limit (Credit decreases to 26% for tax year 2020; drops to 22% for tax year 2021)
	Tax credit in effect through 2021
Timing:	Must be installed in a home you own and use as a residence (no rentals, but second homes qualify) between January 1, 2009 and December 31, 2021.
Details:	Photovoltaic systems must provide electricity for the residence and must meet applicable fire and electrical code requirement.
How to apply:	File Tax Form 5695 with your tax return

Six steps to installing your solar system

Step 1: Educate yourself. Study solar systems and evaluate your energy consumption history. This will give you an idea of what type of system will work best for your location, and the size and cost of the system.

Step 2: Choose your contractor. Contact several solar installation contractors. It is important to ask the contractors for references, licenses, and certifications.

Step 4: Submit a Net Metering Agreement with your local utility. You will be contacted by your utility on whether your application is approved. If it is not, you will be instructed on what needs to occur for approval.

Step 5: Obtain an electrical permit. Check with your local city government on what permits are required to install a PV system, at the least, you will probably need an electrical permit. After the solar installation is complete, you might need to schedule a final code inspection.

Step 6: Finalize the interconnection with your electric utility. There are serious safety concerns for your local electrical linemen if the PV system is not installed properly. It is important to work with your electric utility to ensure the system is safe for your home and for the community.

- Solar panels that are installed without going through the proper procedures with your utility can cause project delays and can be a serious safety hazard.