

Considering a home solar energy system?

Associated Electric Cooperative Inc.

A Touchstone Energy® Cooperative 

Residential solar solutions

As the price for solar equipment decreases and members look for ways to reduce their energy costs, the question of whether to install a solar energy system on a home comes up more frequently. Members should consider multiple factors and ask key questions when researching and making the right decisions for their households.

Q. What motivates your decision?

Do you want to install solar energy because you believe it's an environmentally sound decision or because you want to save money? If you're looking to save on electric bills, carefully examine all financial aspects first. In the Midwest, the cost of residential electricity from a local cooperative is low compared to many other parts of the country. This lower electric rate can translate into a longer return on investment. The National Renewable Energy Laboratory (NREL) has an online calculator to help you figure estimated energy output and compare estimated costs of the proposed system compared to your current electric provider. Access the calculator at <https://pvwatts.nrel.gov>.

Q. Where do I start?

Before installing a solar energy system, consider reducing your energy use by making your home more energy efficient. Many efficiency measures have a faster return on investment, and the initial investment is often less. If you decide to install solar, make sure you are aware of all state and federal regulations. Verify the solar system under consideration meets national electrical code. Review all aspects of any system before investing and determine how it will work with your cooperative.

Q. How can my cooperative help?

Your local cooperative can help in the initial planning stages. They can assist you in determining necessary safety equipment required for connecting your system to the grid and provide you with a copy of the cooperative's policies and metering agreements on solar energy.

Q. Does solar fit your budget?

According to the Missouri Department of Natural Resources, the total installed cost of residential photovoltaic ranges from \$3.5 to \$5/watt or about \$35,000 to \$50,000 for a 10-kilowatt grid tie-in system. In addition, there may be other costs to consider beyond just the panels: liability and homeowners'



insurance as well as property taxes. It's also important to calculate years required to pay for the system using the cost of kWh from a panel system versus your cooperative. Check with your cooperative about how it will account for and credit your account for any excess energy generated by the system. In some cases, it can take 17–25 years or more to recoup your costs, even with a tax credit.

The Federal Residential Renewable Energy Credit of 30 percent is in effect until Dec. 31, 2019. If you need information about state tax credits, visit www.dsireusa.org.

Q. How big of a system do I need?

The average residential system is around 10 kilowatts; however, consider a number of factors when determining size. What parts of your home do you want to run with the system? Does that include air conditioning and heat? What is your average monthly kilowatt-hour usage and how much of that do you want your system to cover? A reputable dealer will be able to provide that information.

Q. What are my home's physical requirements?

A typical individual residential solar panel measures about 18 square feet. An average size installation of a 10-kW array will require about 800 square feet of space, depending on rated wattage and technology. Consider these factors: age of your roof, roof replacement timeline, ability of your roof to support the weight of the panels, amount of shade on your roof, community or subdivision restrictions, etc. Roofs facing south generate maximum wattage.

Q. How do I pick the right vendor?

Do your homework. Check out a list of reputable, long-term providers. Always get references and learn as much as possible about the companies you are considering. Because there are often a variety of systems and payment plans, it is always a good idea to get multiple quotes before choosing a vendor.

Q. Is solar as reliable as my cooperative?

The great news is your co-op is more than 99.99 percent reliable. You will be able to rely on your cooperative to back up your solar generator and provide all your electricity needs. Remember, your system will only produce power while the sun shines and the power is on from the cooperative.

If you choose to go off the cooperative's grid and do not install backup storage batteries, you will not have electricity when the sun isn't shining. A backup battery system can easily double the cost of installation and add ongoing maintenance costs, but may offer solutions to preventing loss of power.

Also check repair policies with your solar contractor. Your cooperative is on call 24/7 no matter the weather, at no additional

cost. There may be times when your co-op experiences a power outage, but co-op employees respond any time of day – weekdays, weekends and holidays – to get your power restored.

Residential solar payback examples 10 kW DC standard fixed array

Example #1

North-central Missouri and southern Iowa

Inverter efficiency: 96%
Installation & equipment cost: \$35,000*¹
Average kWh/year: 13,910
Average savings/year: \$1,390²
Estimated payback: 25.2 years³

Example #2

Southwest Missouri and northeast Oklahoma

Inverter efficiency: 96%
Installation & equipment cost: \$35,000¹
Average kWh/year: 14,214
Average savings/year: \$1,422²
Estimated payback: 24.6 years³

Example #3

Southeast Missouri

Inverter efficiency: 96%
Installation & equipment cost: \$35,000¹
Average kWh/year: 13,625
Average savings/year: \$1,362²
Estimated payback: 25.7 years³

¹Cost is based on 3.5 cents per watt installed. Does not include 30 percent federal tax credit.

²Based on an average Missouri rate of 10 cents per kilowatt-hour (kWh).

³Does not include varying maintenance costs, which will increase payback time.