

# Considering a home solar energy system?



White River Valley Electric Cooperative

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 the right questions when completing their research and making the right decision 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 your electricity 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 calculate estimated energy output and compare estimated costs of the proposed system compared to your current electric provider. Access the calculator at [www.nrel.gov/rredc/pvwatts/](http://www.nrel.gov/rredc/pvwatts/).

### **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 \$17,500 to \$25,000 for a 5-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 12–17 years or more to recoup your costs.

The Federal Residential Renewable Energy Credit of 30 percent is in effect until Dec. 31, 2016. If you need information about state tax credits, visit [www.dsireusa.org](http://www.dsireusa.org).

### Q. How big of a system do I need?

The average residential system is around 5 kilowatts, however consider a number of factors when determining size. What parts of your home do you want to be able 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 the physical requirements on my home?

A typical individual residential solar panel measures about 18 square feet. An average size installation of a 5-kW array will require about 400 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. 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

### Example #1 - Cameron, Mo.

**Installed:** September 2010

**Maximum output:** 9 kW

**Panel size:** 2.5' x 5.45' (44 panels)

Inverter type: Micro-inverter

Installation & equipment cost: \$35,000\*<sup>1</sup>

Total output since install: 50,788 kWh

Total energy savings since install: \$5,078.80<sup>2</sup>

Average kWh/year: 15,236.4

Average savings/year: \$1,523.64<sup>2</sup>

Estimated payback: 23 years<sup>3</sup>

\*Actual costs today may be less as solar hardware costs have decreased since 2010.

### Example #2 - Republic, Mo.

**Installed:** Fully installed May 2012

**Maximum output:** 2.85 kW

**Panel size:** 2.47' x 5.04' (15 panels)

Inverter type: Micro-inverter

Installation & equipment cost: \$8,400<sup>1</sup>

Total output since fully installed: 8,270 kWh

Total energy savings since fully installed: \$827.00<sup>2</sup>

Average kWh/year: 5,223.2

Average savings/year: \$522.32<sup>2</sup>

Estimated payback: 16.1 years<sup>3</sup>

### Example #3 - Whitewater, Mo.

**Installed:** July 2012

**Maximum output:** 7.56 kW

**Panel size:** 3.25' x 6.42' (27 panels)

Inverter type: Micro-inverter

Installation & equipment cost: \$13,300<sup>1</sup>

Total output since install: 14,729 kWh

Total energy savings since install: \$1,472.88<sup>2</sup>

Average kWh/year: 10,396.8

Average savings/year: \$1,039.68<sup>2</sup>

Estimated payback: 12.8 years<sup>3</sup>

<sup>1</sup>Cost includes 30 percent federal tax credit, available until Dec. 31, 2016.

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

<sup>3</sup>Does not include varying maintenance costs, which will increase payback time.