

# Power for your life

## Can I save money by installing a solar energy system?

This question is being asked more and more as members look for ways to reduce energy costs. The answer is maybe, depending on many factors, and how fast you want to see a return on your investment.

### Start with energy efficiency

Before installing a solar energy system, consider reducing your energy use by making your home more energy efficient. Many energy efficiency measures have a faster return on investment, and the initial investment is less than that of a renewable energy system. Contact your local electric cooperative for energy efficiency rebates as well.

### Is solar energy right for me?

If you have made your home as energy efficient as possible and now want to install a solar energy system, contact your electric cooperative in the initial planning stages. Conduct thorough research on all aspects of any system before making the investment. Determine what your goal of the system is. For example, do you want to install solar energy because you believe it is the right thing to do? Or are you looking to save money? If you want to save money, carefully examine all the financial considerations first.



### Consider this:

*If you want to ensure you have power even if your cooperative has an outage, a battery system is required. This is an added expense, and will take about 30 percent of the solar system's power to keep the batteries charged.*

## Keep safety in mind

Most solar systems are connected to the grid. Because of the two-way flow of electricity, excess energy the system collects during the day flows into your cooperative's lines. Improper connection and maintenance may endanger people and the reliability of the grid. There are also safety considerations for rooftop solar you should discuss with your local fire department prior to installation, such as the layout of panels.

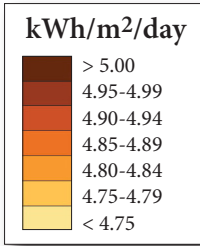
## Financial considerations

When evaluating the potential of installing a solar electric system at a home or business, considerations should include:

1. *Solar access: Missouri is fairly good in comparison to other parts of the country. Site specific access depends on installing the system so it is not shaded. See your location on the back page map for average output.*
2. *Retail cost of residential electricity: Missouri is low in comparison to many other parts of the country. A lower electric rate makes the return on investment length longer than a higher electric rate.*
3. *Available incentives: Solar energy systems may qualify for a federal tax credit of 30 percent until 2019, 26 percent in 2020 and 22 percent in 2021.*
4. *The total cost of the system: The average installed cost of residential solar photovoltaic (PV) is \$2.89/watt, or \$28,900 for a 10-kilowatt grid tie-in system.<sup>1</sup> In addition, there may be other costs to consider, such as liability, homeowners' insurance and property taxes.*

Given the information listed above, evaluate your situation to ensure installing a solar system makes sense financially for you. Talk to your electric cooperative and qualified, reputable solar contractors to help evaluate your feasibility for solar energy.

# Residential solar system installations



## Missouri photovoltaic solar resource

This map is measured in kilowatt-hours per square meter per day (kWh/m<sup>2</sup>/day), which represents insolation, the total energy on a surface over a specific time interval. Examples use the location's solar resource to determine average output and savings per year, and were calculated using the National Renewable Energy Laboratory's (NREL) PV Watts calculator using the default settings, including inverter efficiency of 96 percent. For more information, visit [pvwatts.nrel.gov](http://pvwatts.nrel.gov).

*Your output may vary depending on site specific factors and regular maintenance such as washing the panels several times per year. Output also may drop about 1 percent per year through the average 20-25 year lifespan of most systems.*

### Example #1 - North-central

Solar radiation (kWh/m<sup>2</sup>/day): **4.89**  
 Installation & equipment cost: **\$28,900<sup>1</sup>**  
 Average kWh/year: **13,802**  
 Average savings/year: **\$1,379<sup>2</sup>**  
 Estimated payback: **21 years<sup>3</sup>**

### Example #2 - Central

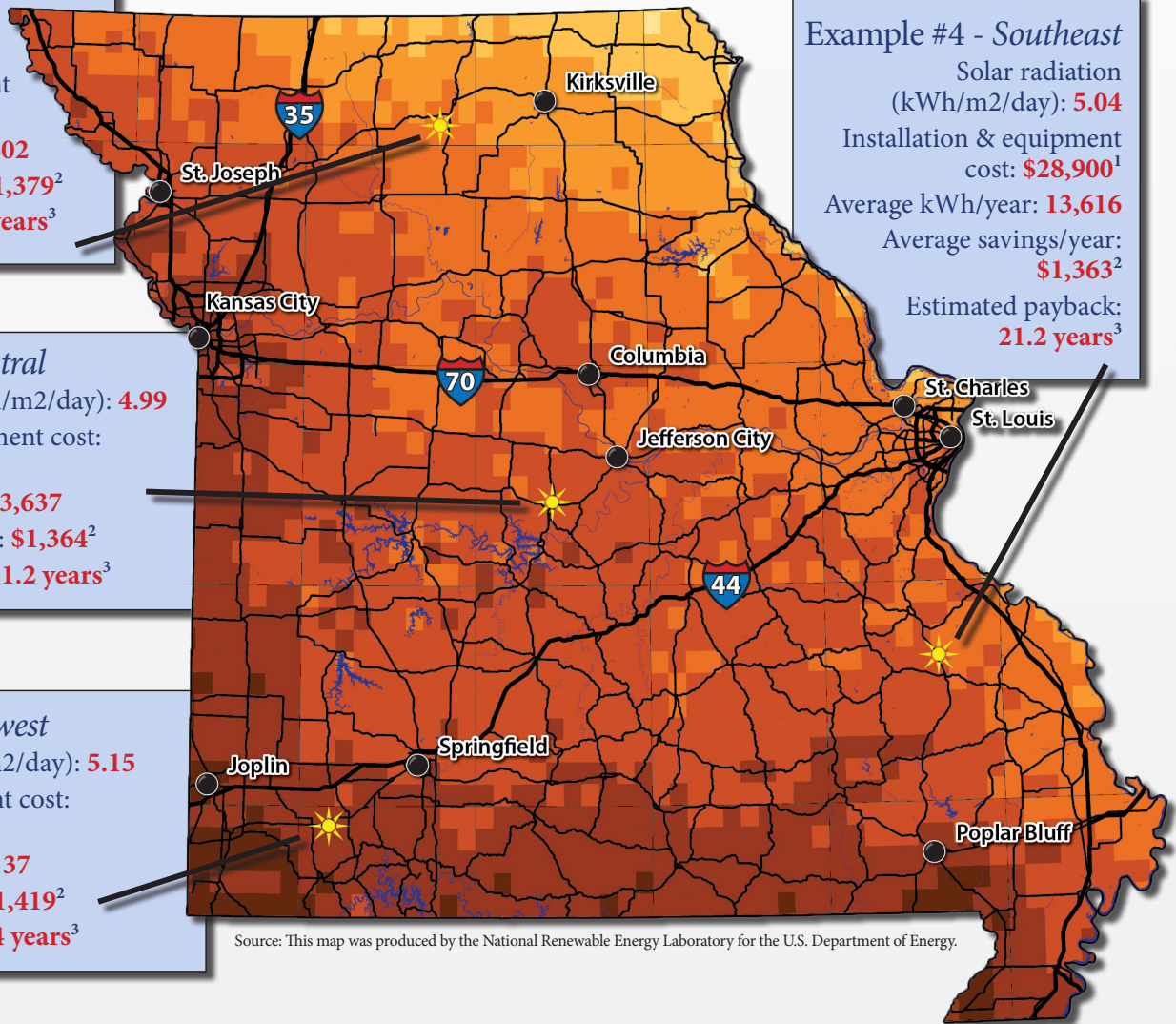
Solar radiation (kWh/m<sup>2</sup>/day): **4.99**  
 Installation & equipment cost: **\$28,900<sup>1</sup>**  
 Average kWh/year: **13,637**  
 Average savings/year: **\$1,364<sup>2</sup>**  
 Estimated payback: **21.2 years<sup>3</sup>**

### Example #3 - Southwest

Solar radiation (kWh/m<sup>2</sup>/day): **5.15**  
 Installation & equipment cost: **\$28,900<sup>1</sup>**  
 Average kWh/year: **14,137**  
 Average savings/year: **\$1,419<sup>2</sup>**  
 Estimated payback: **20.4 years<sup>3</sup>**

### Example #4 - Southeast

Solar radiation (kWh/m<sup>2</sup>/day): **5.04**  
 Installation & equipment cost: **\$28,900<sup>1</sup>**  
 Average kWh/year: **13,616**  
 Average savings/year: **\$1,363<sup>2</sup>**  
 Estimated payback: **21.2 years<sup>3</sup>**



Source: This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy.



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<sup>1</sup>Cost is based on \$2.89 per watt installed. Does not include 30 percent federal tax credit.

<sup>2</sup>Based on an average Missouri retail rate of 10 cents per kilowatt-hour (kWh); not avoided fuel cost.

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