

Solar 101:

What you need to know

Grayson Rural Electric
A Touchstone Energy Cooperative 

www.graysonrecc.com



Solar 101:

Points to ponder before purchasing a solar system

As private solar installations become more prevalent, cooperative members are seeking information before making a major investment. If you are considering an energy investment for your home, we suggest a good place to start is energy efficiency. We have programs and experts who can help. If you are seeking the assurance that your home's energy comes from green, environmentally friendly sources, please consider the options available from our cooperative.

If you wish to install a private system, remember that even if nature provides energy from the sun, there are significant costs to install solar panels. Prices vary significantly based on system size, location and much more. Take time to ensure your long-term expectations are reasonable, you understand available options and choose an option that meets your energy needs. **Here are eight important points to consider:**

1. Know your goals

Are you trying to save money? Are you trying to offset all the energy you use with renewables or are you trying to offset just a portion? Do you want backup sources to ensure your power stays on during storm outages?

Knowing these answers will impact what options are best for your situation.

2. Get the biggest bang for your energy buck

Before investing in solar, consider that most homeowners can immediately reduce their electric bills 15 to 20 percent by adding weather stripping, sealing ducts, caulking, adding insulation or upgrading their HVAC

system. Before installing your own energy source, it is a great idea to eliminate current energy losses. Why pay for more energy when you could be using less?

Our cooperative has decades of experience helping members use energy as efficiently as possible, and we know that members can see large reductions in their monthly bills by plugging the air leaks that infiltrate their homes and businesses. Ask one of our experts about ways you can save electricity.

3. Use realistic assumptions about power from the sun

The average U.S. home uses about 10,000 kilowatt-hours of electricity

each year. A few solar panels will not power your home. "Most homeowners need between 25 and 35 panels to achieve energy independence," according to Consumer Affairs.¹

¹ Kathryn Parkman, "How much do solar panels cost?" *Consumer Affairs*, 5/5/21, <https://www.consumeraffairs.com/solar-energy/how-much-do-solar-panels-cost.html>

If you are seeking energy independence by installing solar power, here are some points to consider:

1. Even if you power your entire home, you will still have an electric bill as long as you are connected to the grid.
2. If the power produced exceeds usage, you will not receive a cash payment.

Under Kentucky's net metering law, when you generate more energy than you consume, the value of the excess energy is credited on your bill, but the energy credits are never converted to cash payments. Unused credits will be carried forward to future bills to offset times when you use more energy than you make.

Your monthly power bill will still include a service fee to pay for the poles and wires, as well as the people to maintain them, so they are ready to provide energy if your panels aren't making the power you need, like at night.

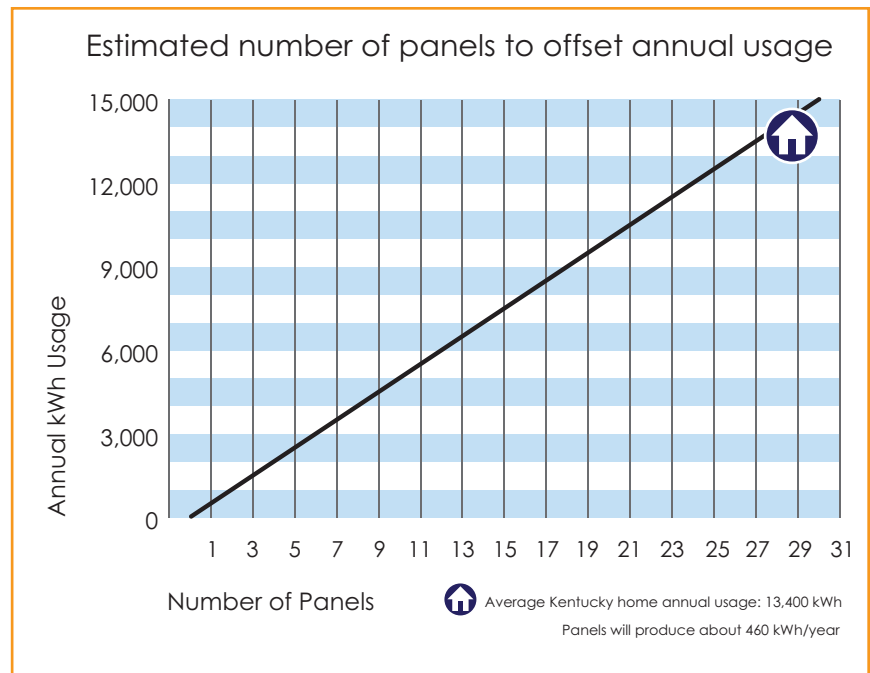
There are good third-party sites like PVWatts Calculator (<https://pvwatts.nrel.gov>) from the National Renewable Energy Laboratory you can use to estimate production of a system using your address.

A single panel at our Cooperative Solar Farm in Winchester produces about 460 kilowatt-hours (kWh) a year. The graph to the right from www.cooperativesolar.com shows the number of panels that would be needed for different levels of annual energy usage.

4. Calculate solar panel payback accurately

Make sure your solar power investment will not cost more to own and finance than simply continuing to pay your current electric bill. Unfortunately, this can happen. To avoid that, answer these key questions:

- What is the cost per watt of the system?
- If I finance the system, how much interest will I pay?
- Is it sized correctly? If the system is too large, the extra investment is lost.
- What is my monthly service charge from my co-op?
- How long has the installer been in business? Will they honor their warranties?
- What are the maintenance costs?
- What is the lifespan and replacement costs of the inverter?
- Will my home's insurance rates increase?



Ask your private solar installer what assumptions they use for their payback calculations. For example, many solar panel installers will incorrectly use a 3 to 5 percent annual increase in your current electric bill for each future year. That is not only too high, it makes the installer's payback look better.

5. Use the federal solar tax credit to defray installation costs

The federal Residential Renewable Energy Tax Credit can help you save significantly on costs. According to the Solar Energy Industries Association, an average-sized residential solar system— about 400 square feet of solar panels — costs \$18,000. For 2021, the federal credit is worth 22 percent, which would reduce the cost of the average system by \$3,960.

Compare that with the Cooperative Solar program, where 400 square feet of panels would be equivalent to about 22 Cooperative Solar panels. That would offset the energy of a home using about 10,000 kWh per year. The up-front cost for 22 panels on Cooperative Solar would be \$10,120, which is much lower than the average-sized private residential system, even including the federal tax credit.

6. Include all costs in your estimate

If you want backup power, you will need batteries or other equipment. To keep line workers safe from potentially deadly backfeeding, your home will not be powered by solar panels during outages. Two electrical standards (IEEE 1547 and UL 1741) prevent properly installed net-metered systems from pushing electricity through the meter during outages.

Batteries typically add \$7,000 to \$10,000 to system costs. Emergency generators powered by fuel will cost from \$500 to \$10,000. These costs should be included in any payback calculations if you intend to purchase them.

7. Get warranty promises in writing

Key warranty questions to ask private installers include:

- For roof-mounted systems, is there a warranty against my roof leaking?
- If it does leak, who pays for roof repairs?
- What is the warranty for the solar system components such as panels, inverters and wiring? What is the length of the warranty for each component?
- Under the warranty, will the replacement of my solar panel components be 100 percent or does the replacement value decrease over time?
- If so, what is the replacement percentage schedule for each component?
- Are labor costs for installation included in the warranty for failed components?
- If you go out of business, does the solar panel manufacturer honor the warranty?

8. Consider our co-op's renewable options

You don't have to install a system at your home to have renewable power. Our Cooperative Solar and enviowatts programs are two options to consider. Learn more at www.cooperativesolar.com and <https://www.enviowattsky.com>.

Participating in either of these programs is affordable and much more convenient than installing private renewable power systems, and there is no hassle with the maintenance and expense of owning your own system.

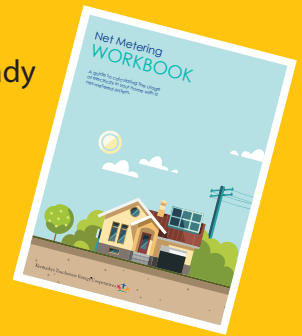
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We have renewable power resources and two great options



More people are investing in solar energy than ever before. That's a good thing.

For members with a net-metered system already installed, we have a workbook to track the amount of power that the panels produce and how much energy you are using. Get a copy of our "Net Metering Workbook" at www.togetherwesaveKY.com or stop by our cooperative for a copy.



Before installing solar panels at your home, please take a look at these two great affordable options offered by our co-op:



Cooperative Solar: For a one-time fee of \$460, you get a 25-year license for a single solar panel, located at our 60-acre solar farm near Winchester. Each panel produces between 23 and 50 kilowatt-hours of solar energy monthly, and you can license as many panels as you need to offset your annual usage. Every month, the energy output of your licensed panels is credited to your bill. Learn more at www.cooperativesolar.com.



Enviowatts: You can select energy generated from environmentally friendly solar, wind, biomass and/or hydro sources for as little as \$2.75 monthly. Learn more at <https://www.enviowattsky.com>.

If you have questions, call us. We're your trusted energy advisor!