

## COMMONLY ASKED SOLAR QUESTIONS

### What is the difference between nonrenewable and renewable energy?

Nonrenewable energy resources are available in finite supplies and cannot be readily replaced by natural means. Some of these nonrenewable resources include: coal, nuclear, oil, and natural gas. Renewable resources are replenished naturally over relatively short periods of time and do not need to be extracted from the earth. Some of these renewable resources include: solar, wind, water (hydro), biomass, and geothermal.



### What are the different categories for solar technologies?

There are three different categories for solar technologies. The most used system is the photovoltaic (PV) system. This system is composed of one or more solar panels, an inverter, and mechanical hardware that uses energy from the sun to generate electricity to offset electrical energy use. The second category is a solar thermal hot water system that reduces the demand for fuels needed to heat water. The third category is a solar thermal air heat system that reduces the demand for fuels needed to heat buildings. Any of these technologies may be right for you depending on your energy use and the solar resources available at your site.

### How do I start going solar?

Before adding solar energy production, limit your need for additional energy by making your building as energy efficient as possible. Getting an energy assessment from a trusted company is a great way to find more ways to opportunities to make your home more energy efficient. Work with a trusted solar installer to decide which solar technologies are right for your needs and your budget. Also, check in with your local unit of government about ordinances that might be in place that would impact your solar project (your installer should also know these ordinances). See our “Selecting a Solar Installer” handout to learn more. Once you select your installer and sign the contract, you are ready to have your solar production installed! For more information see our “Simple Steps to Solar” handout.

### Why should I start with energy efficiency before going solar?

Energy efficiency is a way of using all kinds of energies in order to reduce the energy consumption. Energy efficiency is related to adopting green energy technologies. The goal of energy efficiency is saving costs both in energy production and energy consumption. If you are planning to buy a PV system, start with increasing the energy efficiency of your property because saving energy is less expensive than producing energy. The more energy you need for your property, the more energy must be generated by the solar system. This means that to meet your daily electricity needs, you must buy a large and expensive system regarding both the initial and maintenance costs. This is valid especially for off-grid systems, most of which are battery-based. Achieving energy efficiency means reducing and/or eliminating all the devices comprising a great part of your electricity bill. ‘Eliminating’ can be done in various ways:

- Replace incandescent light bulbs (where most of the energy used turns into heat rather than light) with LED bulbs.
- Update old appliances (such as your refrigerator and freezer) with new, high-efficiency models. Look for devices labeled with the Energy Star label.
- Upgrade your heating, ventilation, and air conditioning systems.
- Managing your Phantom Loads: Unplug any appliances or electronic devices that are not in use. If you can't unplug, utilize power strips, devices with timers, and/or other home automation systems.
- For more information, see our “Simple Steps to Solar” handout.

### **What are Phantom Loads?**

Have you ever heard of the term, “phantom load”? This term is used to describe any appliance or electronic that still uses electricity or “standby power” when turned off. Electricity products such as televisions, DVD players, microwaves, and personal computers all use standby power to keep the clocks, timers, remote controls, and other features on electronics working and ready to start the instant we press the button. It also means they’re constantly drawing electricity. So, what can be done about phantom loads in your property? The only way to completely stop phantom loads is to simply cut power to the device that is causing the load. Here are some tips to reduce phantom loads on electronics or appliances:

1. The first step to reducing your exposure to phantom loads is to identify appliances and devices in your property that continue pulling electricity from the grid even when nominally off. A quick look through your property for appliances that only have standby mode is a great place to start.
2. Unplug appliances and electronics when you’re not using them. For example, if you are not charging your cell phone or other battery-operated device, unplug the charger from the wall.
3. Use power strips that allow you to unplug several electronics by flipping a single switch. This is especially important for televisions, DVD players, microwaves, and computers. In fact, the worst offenders of phantom loads in your house are typically related to entertainment system.

### **How big of a system will I need for a 2,000 sq. ft. house?**

Solar system sizing for your home is determined more by electrical usage than the size of your home. The average U.S. homeowner uses approximately 875 kWh per month or just under 10,500 kWh per year. Many factors affect your usage including the types of appliances you have and the energy habits of your household. For example, do you turn the lights off when you leave a room? Do you have electronic devices plugged into a power strip that can be turned off when not in use? Many electronic devices continue to draw electricity when turned off. A solar site assessment by a qualified solar professional may include an energy audit of your home and they may make energy efficiency recommendations. Investing in energy efficiency measures can help reduce your energy requirements and the size of your solar PV system.

### **How long do solar panels last?**

Most solar modules are guaranteed to last 25-30 years, and even after that, we are seeing efficiency output of 80+%. The kilowatt output degrades slightly each year yet can continue to provide consistent output. Most solar manufactures provide a performance warranty of 25-30 years. Other PV system components, such as an inverter, could possibly need replacing during the lifetime of your array. Inverters often carry a warranty of around 10-12 years. Depending on the product, you may be able to extend your warranty for an additional fee.

### **Is there enough sunlight in my area to make solar work?**

Several factors influence the solar resource, but in general, the U.S. has enough sun to power PV modules. A common misconception is that solar does better in warmer climates, however solar doesn't rely on heat, but light to product effectively. Your selected installer will perform a site assessment of your property to analyze the solar resource at your site, and the optimal placement of your PV array. If you have a low solar resource at your site due to shading by trees or surrounding buildings, other options like community solar subscriptions may be available in your area.

### **How do solar modules handle snow?**

Any shading to a solar panel will reduce electrical output. Solar panels can still produce covered by a very light snowfall, but any more than that and the panel will not generate electricity. Solar panels have a slippery surface and are positioned on an angle. This can help snow slide off as the sun melts it. Ground mounted solar arrays can easily be brushed clean after a snowfall. If you have an off-grid system and depend on every photon, getting on the roof and dusting off your panels with a broom may be necessary (with proper safety restraints of course).

### **How durable are modules, and will they stand up to hail?**

Solar PV modules are considered to be hail resistant and damage from hail is extremely rare. Tempered glass used in solar panels is designed to withstand a direct vertical impact of hail up to one-inch in diameter, traveling at approximately 50 miles per hour. Additionally, most standard roof and ground mounted panels are tilted and do not receive direct hail impact. Overall, modules are very strong.

### **How long does it take to install solar panels?**

There are many factors that could influence the installation time. Once you select an installer and sign the contract, it could take from four to six months to complete the project, depending on the type of solar technology. Although, a residential solar array could physically be installed in as little as one or two days, permitting, local ordinances, and utility interconnection processes can have an impact on how long your system takes to be installed and fully operational.

### **What kind of maintenance does a solar system require?**

Solar systems require little maintenance due primarily to having no moving parts. A tracking system of a pole mount array does contain moving parts and has the potential to require maintenance. Many battery backup systems also require maintenance to ensure battery longevity. Work with your installer to set up an operation and maintenance plan to ensure that the system is operating at optimal capacity.

### **How much does solar PV cost?**

The cost of solar system involves several system design variables including, but not limited to, module size, mounting type, inverter selection, and the balance of the system components. Before any installation occurs, the installer performs a detailed site assessment to determine your renewable energy goals and needs, energy efficiency measures, and solar window among other things. The installer will recommend a system size and an initial estimate for the solar system based off of your energy off-set goals.

Solar module prices and components have fallen dramatically in the last few years. Many banks and credit unions offer low-interest solar loans making a solar purchase as easy as buying a car. Rebates and other financial incentives may be available in your area to further reduce costs. Your installer will be able to outline the current incentives, you can also visit the Database of State Incentives for Renewables (DSIRE) online to see available incentives in your state: [www.dsireusa.org](http://www.dsireusa.org). MREA Members also have access to financing through the Clean Energy Credit Union. Please consider supporting our work and joining as an MREA Member today!

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