



# **Residential Consumer Guide to Solar Power**

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# SEIA® RESIDENTIAL CONSUMER GUIDE TO SOLAR POWER

## Introduction

Solar energy use across the U.S. has grown rapidly over the past decade. Costs have dropped and new ownership and financing models allow more Americans than ever to choose solar. Solar is now available as a power choice in all fifty states. Going solar is a significant decision, similar in scope to getting a car. You should understand the basics of solar energy, your options to go solar, and what questions to ask solar professionals. You are more likely to be satisfied as an informed consumer.

## How Solar Works

Today, most residential solar systems are photovoltaic ("PV") systems. PV systems generate electricity through two main components:

- Panels (or modules) that convert sunlight to electricity; and
- Inverter(s) that convert(s) direct current (DC) to alternating current (AC) for use in your home

## Generating Electricity

The amount of electricity (measured in kilowatt-hours, or kWh) produced by any solar system depends on two factors:

- The power rating of the system (measured in kilowatts, or kW); and
- The amount of sunlight that the system receives, which depends on several factors:
  - Location of your home (for example, homes in Phoenix receive more sunlight on average than those in Seattle)
  - Orientation of the planned PV system (the roof angle/pitch, and compass direction impact how much of the sunlight in your area hits the panels)
  - Shading from nearby objects (such as chimneys, trees or neighboring buildings)

## Your Ownership Options

Today, Americans have ownership options for solar similar to those for cars. It's important to understand the differences and choose the one that's right for you. The main options available today are below.

- Purchase a system with cash or a loan and own both the system and all the power it produces
- Lease a system and own only the power it produces
- Enter a "power purchase agreement" (PPA) to buy power from a system owned by a solar company at an agreed-upon rate

## PURCHASE

Like buying a car, you can purchase a solar system outright with cash or with a loan. When you buy the solar system, you are the owner and benefit from all electricity the system produces. You are usually responsible for system upkeep, although some providers offer maintenance services on purchased systems. In most jurisdictions, you also are the beneficiary of any tax credits or other incentives that promote solar energy.

## LEASE

You can lease a solar system for a certain period of time. The solar company owns the system and leases it to you to use it and benefit from the electricity it produces. The solar company is responsible for upkeep. You make monthly payments to the solar company at the agreed upon rate specified in the lease for use of the system. Some solar companies will allow you to lease with no initial costs (“no money down”). Some companies also give you an option to purchase the system after a certain amount of time.

## POWER PURCHASE AGREEMENT (PPA)

Some consumers prefer just to pay for the electricity generated from the system rather than entering into a lease for the system itself. In a PPA, you agree (i) to allow the solar company to install and own a solar system on your property, and (ii) to purchase the electricity produced by that system for a set rate and agreed-upon terms specified in a contract. Some companies give you an option to purchase the system after a certain time.

## Moving Forward

When evaluating your options to go solar, do your homework, talk to friends and neighbors who have chosen solar, use common sense, and be active and engaged in dealing with solar companies. Below are some suggestions on how to become an informed consumer.

## KNOW YOUR SITUATION

- *Know your electricity usage.* You should understand how much electricity your home uses. Your utility bill will show your electricity usage in kilowatt-hours (kWh) and the amount you pay for that electricity. Are you planning any changes that will affect your electricity use (such as buying an electric vehicle, planning an addition to your home, or improving your home’s energy efficiency)? Discuss your usage with the solar companies you interview to get a system sized for your needs.
- *Know your roof.* Is your roof appropriate for solar? Look at its physical features and discuss with a solar professional. A solar professional can calculate the amount of sunlight expected to reach a planned system over the course of a year. Does it receive a good amount of sunlight or is it mostly shaded? What about the age of the roof? If you plan on replacing it soon, you may want to replace it prior to a rooftop solar installation. In America, roofs facing due north are not good candidates for solar because they don’t receive direct sunlight.
- *Know your finances.* Like any major decision for your home, it’s wise to understand your finances when shopping for solar systems. Although sunlight is free, buying or leasing solar systems, or paying for electricity under a PPA, are not.

## DO YOUR HOMEWORK

- *Get the best deal.* As with any major purchase, make sure to get multiple bids for your solar system. Many Americans will find the market quite competitive, with multiple solar companies competing for your business. Use this guide and other resources, and compare costs and terms from different firms.
- *Research your solar company.* Before entering an agreement with a solar company, do your homework. Ask for references of solar installations in your area and call them. Ask for proof of licensure, and check with your county or state to ensure the firm is in good standing. Ask if they are a member of the Solar Energy Industries Association (SEIA), the national trade association for solar that requires all its members to abide by a Code of Ethics. Check with your local Better Business Bureau or other consumer entities.
- *Understand tax credits or other incentives.* There is a 30 percent federal tax credit available through 2016 on the total cost of the solar system, but only if you own the system. Other state and local incentives may be available, as well as programs from your local utility. Many can be found on the Database of State Incentives for Renewable Energy (see *Additional Resources*, below).
- *Understand any potential tax implications of credits or incentives.* Remember, only a CPA can give tax advice and only an attorney can give legal advice. When consulting such professionals, choose ones who have proven experience with solar.

## UNDERSTAND THE AGREEMENT

- *Understand the terms.* Contracts are legally binding and should be read carefully. Make sure you understand what you are receiving from the solar company and how much you are paying for it. Remember: make sure terms important to you are included in the official signed contract documents.
- *Separate estimates from guarantees.* Many Americans can save money by choosing solar, but savings depend on the cost of the electricity from your solar system compared to cost of electricity from your utility. If a solar company promises savings, or states that electricity costs from your utility will increase in the future by a certain amount, ask them to explain. According to the U.S. Department of Energy, national residential electricity rates increased on average by 3.4 percent annually between 2004 and 2014. Rates in your area may have increased more or less, and may increase more or less going forward. For more information, check with your utility or state utility regulatory office for any planned increases.
- *Don't hesitate to ask questions.* The best transactions are ones where the consumer and the contractor both fully understand the deal. Asking questions upfront can avoid misunderstandings later in the process. On the next page are some key questions consumers ask when entering into a solar transaction.

## Key Questions to Ask Before Entering an Agreement

*For all solar systems:*

- What is the total cost of the solar PV system?
- Will this transaction create a short term arrangement or a long-term asset?
- How much do I pay upfront, how much over time, and for how long?
- What is the size of the PV system (in watts or kilowatts)?
- How much electricity will the system generate each year? Do you guarantee a minimum amount (a production guarantee)?
- Will I save money with this system? If so, how much? Based on what assumptions?
- Is your company licensed and insured?
- What will the system look like once installed? Will I receive a system design for my review and approval before installation?
- Will I be required to make any changes to my home (e.g., roofing upgrades)?
- What's covered under warranties? For how long? Are parts and labor under separate warranties?
- What type of maintenance or cleaning is required? Are any maintenance services included?
- Whom do I contact with questions right after system installation? What about a year from now?
- In many states, laws prevent homeowner associations (HOAs) from restricting rights to install a solar system. What are the rules in my state and can you help me work with my HOA?

*For leases and PPAs only:*

- What is the length of the lease or PPA?
- Who receives any solar tax incentives and how are they factored into the cost?
- Will my payments increase over time? If so, how does the rate of increase compare to expected or historic utility rate increases?
- What happens if I wish to end the lease or PPA early?
- Can I purchase the system, either during our agreement or when it ends?
- What are my options when I sell my home?
- Am I free to sell my home or do I need the system owner's permission?
- Are there fees to transfer the PPA or lease agreement to the new homeowner?
- Do I have to pay off the lease when my home is sold?
- Who is responsible for repairs and maintenance on the system?

## Working out Differences

As with any other service or product provider, consumers may encounter issues in dealing with a solar company. In general, solar companies want satisfied customers and are willing to resolve problems that arise.

- First, try to resolve problems directly with your solar company.
- Your contract or lease may have a dispute resolution section and process.
- If you are still having issues, SEIA member companies are bound by the SEIA *Code of Ethics*. If you choose a SEIA member solar company, SEIA may be able to help you resolve your issue.
- You can contact private consumer organizations (e.g., your local Better Business Bureau) about your issue.
- In addition, state and local governments have resources to promote consumer protection.

## Additional Resources

- Solar Energy Industries Association (SEIA) – [www.seia.org](http://www.seia.org)
- Official SEIA State Chapters - <http://www.seia.org/about/seia/official-state-chapters>
- Better Business Bureau (BBB) – [www.bbb.org](http://www.bbb.org)
- Database of State Incentives for Renewable Energy (DSIRE) – [www.dsireusa.org](http://www.dsireusa.org)
- National Renewable Energy Laboratory (NREL) – [www.nrel.gov](http://www.nrel.gov)
- U.S. Department of Energy (DOE) – [www.energy.gov](http://www.energy.gov)
- Your state or local consumer agency – [www.usa.gov/directory/stateconsumer/](http://www.usa.gov/directory/stateconsumer/)

Note that this guide covers transactions for residential photovoltaic (PV) systems installed onsite at a consumer's home. It does not cover commercial transactions, certain community solar purchases of power involving solar located offsite, or other solar technologies, such as solar water heating & cooling. Additional information may be found by visiting [www.seia.org](http://www.seia.org).

Through advocacy and education, SEIA is building a strong solar industry to power America. As the voice of the industry, SEIA works with its member companies to champion the use of clean, affordable solar in America by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy. For additional information, please visit [www.seia.org](http://www.seia.org).

