

SOLAR FAQS

EVERYTHING YOU WANTED TO KNOW ABOUT SOLAR



HARNESS THE POWER OF THE SUN

Solar photovoltaic (PV) systems are a great option for your pocketbook and for the environment.

A federal tax credit can help **bring down the initial cost of a system significantly**, and Net Energy Metering (NEM) allows solar customers to **accumulate bill credits for the excess solar energy** that is fed onto the grid.

These programs make going solar an excellent investment.



HOW MUCH DOES SOLAR COST?

The price of your system depends on your electricity usage. To size a system, solar installers will look at your monthly electricity usage over a year or more. They will then size the system based on your needs and how much you would like to reduce your electricity bills. **Average purchase costs range from \$9,000 to \$20,000 before applying the 30% federal tax credit.**

ARE THERE ANY INCENTIVE PROGRAMS THAT MAKE SOLAR MORE AFFORDABLE?

Yes. **There is a 30% federal tax credit available for solar system purchases made before the end of 2019.** Upon filing your taxes, you can receive 30% of the cost of your system back in a federal tax credit. For example, if you spend \$16,000 on a solar system, at the end of the year you will be eligible for a \$4,800 tax credit. In 2020, the credit drops to 26%, in 2021 to 22%, and disappears in 2022.

HOW LONG DO PHOTOVOLTAIC (PV) SYSTEMS LAST?

Solar panels are typically guaranteed to perform for 25 years, but the panels will likely last an additional five to 10 years. Panels and inverters also carry a minimum 10-year workmanship guarantee. This means that if a panel or inverter breaks down after 10 years, parts will be covered, but you will need to pay for the labor associated with replacing the panel or inverter. If problems occur in less than 10 years, both materials and labor will be covered.

HOW MUCH MAINTENANCE DO SOLAR ENERGY PANELS REQUIRE?

Solar panels **require very little maintenance** and rarely, if ever, break down. Maintenance consists of cleaning the panels once or twice a year. Cleaning can be as simple as hosing the panels off.



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HOW DO I KNOW IF A RESIDENTIAL SOLAR ELECTRIC SYSTEM WOULD WORK ON MY HOME?

You need a sunny place on your roof about 120 square feet (10 by 12 feet) for smaller systems, and up to 1,000 square feet for very large systems. A south-facing roof area is optimal, but solar panels can be mounted on west- or east-facing roofs as well.

If you don't have sunny roof space available, you can also install a **ground-mounted system**.

SHOULD I PURCHASE THE SOLAR ENERGY SYSTEM OR LEASE IT?

If you have the capital available, or are interested in financing, and can take advantage of the federal tax credit, it is generally advisable to purchase the system outright.

Purchasing the system will provide you with the best return on investment.

If you have the capital available, but cannot take advantage of the tax credit (for example you are retired and have limited tax liability), you might be better off with a pre-paid lease.

If you can't afford the upfront cost, are not interested in financing a system, and have a credit score of 650 or higher, a lease is a good option.

I DON'T PLAN ON BEING IN MY HOME FOR 25 YEARS. WHY WOULD I ADD SOLAR?

If you install a solar system, you are adding value to your house. According to research by the Lawrence Berkeley Laboratory in 2015 (Hoen et al), "Home buyers consistently have been willing to pay more for a property with PV across a variety of states, housing and PV markets, and home types." The study found that, **on average, houses with solar systems sold for \$15,000 more than comparable homes**. In addition, the solar system that you installed is exempt from property tax, which may result in a higher pay back if you put the house back on the market.

DO I NEED BATTERIES WITH THE SYSTEM?

The vast majority of solar homes and businesses do not need batteries because they maintain a connection to the electrical grid. By maintaining a connection, you don't need to worry about electric outages when your panels are not producing electricity (i.e. at night). Instead, you pay a small monthly fee to your utility company for the ability to take electricity from the grid when you need it and to deliver excess electricity when you produce it.

Although battery systems are not required, and the cost of batteries is significant, there are some financial reasons to consider adding batteries to your grid-connected solar system. Energy prices in California are shifting to new Time-of-Use (TOU) rates, so residents will be charged higher prices in the evening (4-9pm), during times of the highest total energy demand. Batteries paired with solar are now emerging as a favorable option for shifting your energy "load"; batteries can be charged by solar systems during the day, and then discharged in the evening, when grid energy is more expensive. There are also programs that make battery purchases more affordable. Battery systems tied to solar are eligible for the same 30% tax credit as the solar equipment. Southern California Edison also offers a "Self Generation Incentive Program" (SGIP) for customers who agree to use their batteries to shift their energy "load", as described above. Through the SGIP program, incentive payments are proportional to the size of your battery.

You can determine the incentive that you will receive from the SGIP program by multiplying the rated kWh energy capacity of your battery by the incentive rate the utility will return. The incentive rate for the current round of SGIP funding is priced at 35 cents per watt-hour. For example, if you have a 10kWh storage system, by multiplying the rated capacity of 10,000 watt hours by 35 cents/watt-hour, the incentive amount you will receive is \$3,500, in addition to the 30% federal tax credit.

Battery options also include emergency back-up applications, to be used only when the electrical grid is not functioning, and off-grid applications that are most appropriate in rural settings where grid tie is not easily available.



DO I GET PAID FOR MY EXTRA ENERGY PRODUCTION?

Through a program called **Net Energy Metering (NEM)**, the utility will give you credits for any excess electricity that your solar panels produce beyond your home's electrical consumption. In the summer months of abundant sunshine, you are more likely to over-produce and build these credits; whereas in the winter months you are less likely to accumulate credits. Through NEM, the utility tracks your home's electrical production and consumption over the course of 12 months, and you pay your bill just once a year for the net amount of energy you've used over those 12 months.

In July of 2017, the NEM program was revised with a few programmatic changes, but the program is still beneficial for solar system owners. With the new iteration of the program, new solar energy system owners are automatically switched to time-of-use rates, which means they will be billed a higher rate for the energy used in the evening, and they will have to pay a few additional fees for using energy from the utility. Although there are a few additional costs, this NEM 2.0 program is still a major

incentive that allows homeowners to bank credits when your solar system generates excess energy.

Once you go solar, you will receive a monthly statement from the utility, including your net energy use for that month. The utilities' residential minimum charge is \$10/month. If you use \$10 of electricity each month from the grid (after using up your NEM credits), then the residential minimum charge will not affect your bill. However, if you use less than \$10 of electricity from the grid, you will still be charged \$10 that month as a charge for maintaining your grid connection.

If over a year your system generates more electricity than you have used, you get paid for your excess production. Unfortunately, you only get compensated for that excess electricity at the wholesale price of electricity (about 3 cents/kwh) which is much lower than retail prices. For this reason, it doesn't pay to oversize your system in order to sell electricity back to the grid.





WHAT ARE MY FINANCING OPTIONS?

Financing the solar system may be the best option for customers who cannot pay for the system upfront, because you will own the system and receive the tax credit. Since you receive the 30% tax credit the first year, this savings may pay for the first few years of your solar loan. A solar loan can be structured so your payments are similar to, or lower than those of your pre-solar electricity bills. Once you pay off the loan, you receive free electricity from the system. In addition to unsecured solar loans, customers may consider taking a home equity line of credit (HELOC) to purchase their solar system. With a HELOC, you can take advantage of your home equity and good credit score to keep interest rates low (5% or lower) which leads to lower monthly payments and more savings in the long-run. An additional benefit of HELOC financing is that the interest paid on these secured solar loans is often tax deductible.

HOW DOES A SOLAR LEASE OR A POWER PURCHASE AGREEMENT (PPA) WORK?

A solar lease is generally a 20-year contract between you and the leasing company in which the leasing company owns and maintains the solar energy system and you pay a monthly fee for the electricity that the panels generate to power your house. The leasing company is responsible for the operation and maintenance of the panels for the duration of the 20-year lease.

In all lease agreements, you still must pay the utility a basic monthly connection fee and a yearly true-up bill for your net electrical consumption beyond what your solar system generates. There are a few ways that a lease can be set up:

PRE-PAID LEASE You pay a single upfront amount for the electricity that the panels will generate over 20 years. No additional payments are needed to the leasing

company over the course of the lease. This arrangement is generally only beneficial if you cannot take advantage of the federal tax credit.

SOLAR LEASE A solar lease specifies a fixed price you will pay each month to the leasing company for all of the electricity produced by the solar panels during that month. Your monthly lease payments remain constant throughout the year, and do not vary with the seasonal variation of solar electricity output. *This payment structure is not common.*

POWER PURCHASE AGREEMENT (PPA) You pay the leasing company a predetermined price per kilowatt hour (kWh) of electricity that is produced by the solar panels. This price is usually lower than the average price per kWh that you were previously paying to the utility.

With a monthly solar lease or PPA, you can go solar for \$0 down and see a 20 to 25% reduction in electrical bills in the first month of going solar. Your actual savings will depend on your credit score and how you decide to structure your lease. For example, both solar leases and PPAs usually have escalator rates associated with their fees. In a solar lease, an escalator raises the monthly rate each year. In a PPA, the escalator raises the price per kWh each year. A higher escalator rate results in higher electricity costs over the life of the lease agreement. It is prudent to negotiate the lowest escalator rates possible in order to lower the costs of solar leasing.

