Solar 101 Primer

As time has passed, solar power has gotten more and more reliable, accessible, efficient, and most importantly, affordable. The industry has grown rapidly recently, allowing for prices to fall, and many more people can both save money on their electric bills, and help the environment at the same time! The best part- solar will work just about anywhere, even if you aren't in the sunshine of the Southwest or California, so don't worry!

How Does it Work?

Solar panels use Photovoltaic (PV) cell technology. This tech allows for "photons", which are light particles, to knock electrons free from their bonds, and moved into wires, where they can be used like any other source of electricity.

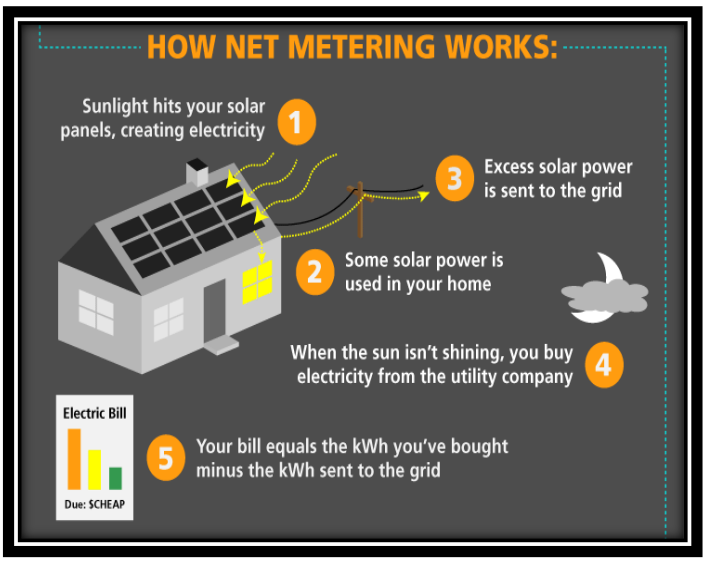
Solar works very differently in every different states. There is not a lot of set federal policy on solar (check out our page on Federal Incentives for the policies they do have in place), so it is greatly up to state governments. For example, states such as Massachusetts and New Jersey have top solar policies, which gives you a fantastic return on investment. Other states, like Mississippi or Louisiana, offer much less financial incentive to get solar installed, so the benefits aren't quite as obvious. (Yet! This can be changed- it's up to your representatives!) Some counties or utility companies also offer incentives, adding to your savings. (Look at our page for your state to see what other incentives you can get)

Source: SolarPowerRocks.com

A lot of the difference between states is because of a policy that some states enact called a Renewable Portfolio Standard (RPS). These laws require that utility companies must generate a certain percent of their energy from renewable sources (like solar) by a certain year. This percentage and timeline also varies- but states with more ambitious RPS's tend to have much better incentives for you to install solar. In addition to federal incentives, and any other offers your utility company or county give, can lead to huge savings for you!

What Can You Do With Your Solar Power?

There are two different ways that you can install solar- "Behind the meter", or “self-supply”, where the panels are wired to the building’s electric panel, and the energy is used for your own electric consumption. You are still connected to the grid, so on rainy days, or during the night, you will still have a source of power. The panels you have installed will just produce electricity which is subtracted from the cost from your monthly bill. If you generate more electricity than you can use at any point, this can be sent back to the grid.



Source: SolarPowerRocks.com

In some states, a policy called "net metering" is in place. This allows for you to send excess generation back energy to the grid, which will be subtracted from your use. This means your bill will be the cost of the energy you took from the grid, minus whatever you generated and sent to them - which can leave your monthly bill at $0 or less! Depending on your state programs you may still have to pay for delivery and grid upkeep, but your bill will be significantly smaller. In states without net metering, utilities will generally buy back your energy at a discounted wholesale price, still saving you money, but not as much. Again, this is very dependent on your states policies.

A large solar “Stand alone” array

The other method is called “stand alone generation”- which doesn't directly impact your current electricity bill, but rather earns you money for what you generate. This is generally used for larger systems. Many states offer something called a "Feed-in Tariff", which means that your utility will pay you a certain amount, per kilowatt-hour (kWh) that you send to them. This way, you basically become a mini power plant, and sell the energy to utilities, instead of them buying it from coal plants. You'll still get the same tax incentives and benefits, but instead of decreasing your bill, you'll get a check for the clean energy that you make!

Where Can You Put Solar Panels?

There are also multiple different ways to install solar- the most common that you'll see is rooftop solar. This lets you generate energy, using space that you likely weren't going to use anyways. How it is installed depends on the slope of the roof- if it's flat, you won't even have to penetrate the roof in most cases. If it's sloped, racking systems will generally be installed. These impact the roof minimally and attach the panels securely to your roof. Before the installation, there will be a site visit to look at your roof, to make sure that panels can be easily installed while maintaining the integrity of the roof.

A commercial “Behind the meter” installation

Another option is ground mounted arrays. These are generally used for larger projects, with a large amount of land space to generate a large amount of energy every day. This method will often involve a siting review, to make sure that we are in compliance with all zoning and building laws and regulations.

Other options are canopies and carports. These installations act as a sort of garage for parking lots, driveways, and even coverage for crops like cranberry bogs, which benefit from the shade provided. This method gives your vehicle protection from the elements, as well as providing energy. Oftentimes, a solar carport can be installed connected to an electric vehicle charger, letting you both protect and charge the vehicle, at the same time! Canopies can be installed on any scale, from single-car to large parking lots, allowing for great flexibility in options. Canopy structures are expensive however, so these installations are typically seen where energy prices or incentives are high to compensate for the added cost.

What Are Your Payment Options?

There are multiple ways to pay for your panels. The greatest return on your investment, over time, will be from buying the system yourself. This often requires a large down payment, however, so it is unappealing to those who cannot afford to put the money aside all at once. However, you get to collect all tax benefits and incentives, so you will likely to be able to make the down payment back, and then some, very quickly.

Another method is getting a loan for your solar project. This way, you start with little to no money down, and collect all incentives for installation. In most 'good' solar states, you start saving money in the first year - even when paying back the loan over a typical 10 to 20 year period. This allows you to save a lot of money immediately.

Source: SolarPowerRocks.com

The other popular option available is leasing your system. This method completely avoids the up-front costs, and you start your savings from no deficit. Your provider will own the panels, and collect the tax benefits, but you still benefit from the generation of clean energy, over a contracted period. The provider will oftentimes sell you the electricity generated at a rate much below retail prices. This option is a way for you to save money on your electricity bill, without paying any of your own money!

How Long is the Installation Process?

Your solar system won't install itself overnight, unfortunately. The process takes roughly 4-6 months for smaller projects, with that time increasing the larger the project. This includes time for project development and approving, permitting, a site visit for a structural and engineering review, as well as an environmental analysis if necessary. It also takes time to apply for interconnection with your electric grid, which can be relatively easy, or very difficult depending on your states regulations. The installation is oftentimes one of the shortest parts of the process, taking just 1 week or so, depending on project size (larger projects will take a longer time to install, particularly ground-mounted projects, due to digging and other processes).

Luckily, most of this process isn't up to you to figure out. Here at Associated Energy Developers, we are experienced in the solar industry. We are not afraid to get creative in the design of your system, or in the financing approach, so we can find an ownership strategy and financing program that fits your needs. We know the ins and outs of the permitting and development processes, so we can make your solar experience run as smoothly as possible. We actively employ cutting- edge tech and methods, from racking to panel design, and will work hard to design a project that will work perfectly for you.