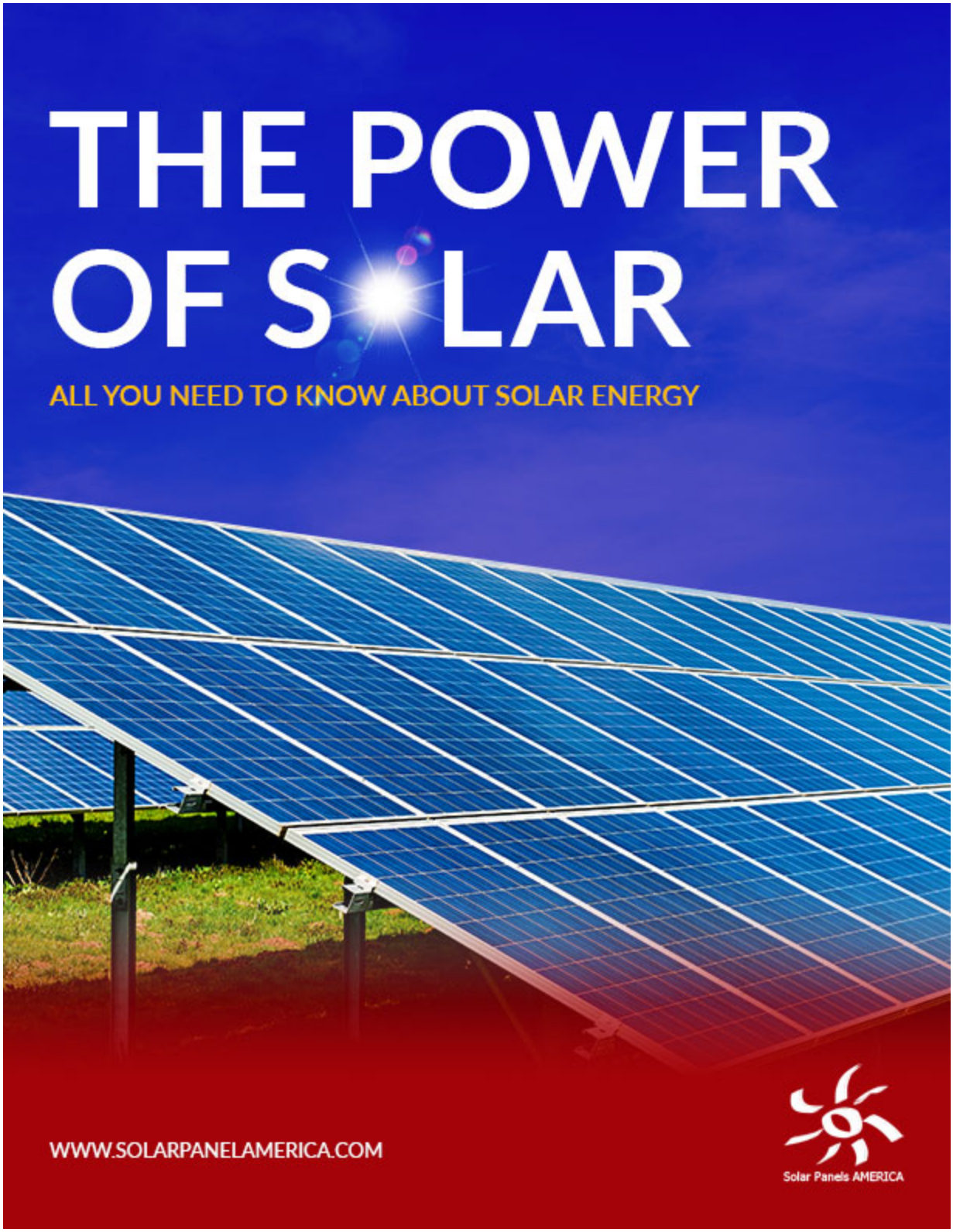
THE POWER OF SOLAR
ALL YOU NEED TO KNOW ABOUT SOLAR ENERGY
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Solar Energy: Everything You Need To Know

Solar electricity is usable energy generated from sunlight in the kind of electrical or thermal energy. Apart from using photovoltaics to generate electricity, solar power is usually utilized in thermal applications to warm indoor spaces or fluids. Residential and commercial real estate owners are able to install solar hot water systems and design their buildings with passive solar heating in your mind to take advantage of the sun's energy using solar technologies.
Interested in profiting from solar power? Solar panels are set up at three chief scales: residential, commercial, and utility. Commercial solar energy projects are usually installed at a larger scale than solar. Though individual installations may vary greatly in size, commercial-scale solar functions have a constant purpose: to present on-site solar power to companies and nonprofits. In the end, utility-scale solar projects are generally large, many megawatt (MW) installations which provide solar power to a significant number of utility customers.
For many solar shoppers who might not have the ability to install solar on their own property, community solar is a viable solar alternative that directly connects utility-scale solar power projects to residential customers. Therefore, community solar farms are generally built in a central location instead of on any single client's property. Residential customers can subscribe to a community solar project to get lots of the advantages of solar energy without installing solar panels on their own property.

Watch Video From National Geographic
https://www.solarpanelamerica.com/solar-energy-video-what-is-solar-power/

How Does Solar Energy Work?

A solar panel (also called a solar module) includes a layer of silicon cells, a metal frame, a glass casing unit, and wiring to transport electrical current from the silicon. Silicon (atomic #14 on the periodic table) is a nonmetal with conductive properties which let it absorb and convert sunlight into usable power. When light strikes a silicon cell, the light causes electrons from the silicon to be put in movement, initiating a flow of electrical current. This is referred to as the"photovoltaic effect," and it describes the overall functionality of solar panel technicians.
The science of producing electricity with solar panels boils down to the photovoltaic effect. It was first discovered in 1839 by Edmond Becquerel and could be thought of as a land of particular substances (called semiconductors) which lets them make an electric current when they're exposed to sunlight.
The silicon photovoltaic solar panel absorbs solar power.
Once the sun's rays interact with the silicon cell, electrons begin to move, creating a flow of electrical current.
Wires catch and nourish this direct current (DC) power to a solar inverter to be converted into alternating current (AC) power.

A Brief History Of Solar Energy

In 1954, Bell Labs developed the first silicon photovoltaic cell. Although solar energy had been seized and transformed to usable energy through various procedures,only after 1954 failed solar power started to develop into a viable source of power to power devices over extended periods of time. The initial solar cells convert solar power to electricity with an efficiency of 4% - for reference, many widely available solar panels now can convert sunlight into solar energy at above 20% efficiency, a number continuously on the increase.

Although adoption of solar energy was slow initially, numerous federal and state incentives and policies led to driving down the cost of solar panels much enough to become more widely adopted. At this time, solar energy accounts for sufficient capacity to power 11 million of those 126 million families in the nation.

The Price Of Solar Power

In the past decade alone, the cost of a solar panel installation dropped over 60 percent, and many industry experts predict that costs will continue to fall in the years to come:

Furthermore, depending upon where you live, several rebates or incentives for solar energy may lead towards lowering the price of solar energy even further. Nationwide, the federal Investment Tax Credit (ITC) is one of the principal incentives available to anyone interested in solar power, as it permits you to subtract 26 percent of the cost of installing a solar system from the federal taxes. This incentive will not last forever - in 2023, the national ITC measures down to 22%, and then goes off entirely for residential solar installations in 2024.

Many states and utilities provide further incentives (for example, net metering) along with the national ITC, dropping the price of solar power even farther.

Solar Energy Is A Renewable Power Source

Solar power is a clean, inexpensive, renewable energy source that's harnessable almost everywhere in the world - any point where sunlight strikes the surface of the planet is a possible location to create solar power. And because solar energy comes from sunlight, it signifies a limitless supply of power. Renewable energy technologies generate electricity from sources which are infinite. Compare, for example, generating electricity with renewable sources to doing this with fossil fuels. With a renewable source - such as wind, solar and hydropower - to create electricity, doesn't deplete that source. There'll always be consistent sun shining on the planet's surface, and turning sunlight into power, there's still an infinite quantity of sunlight to become power in the future. That's what makes solar energy, by nature, renewable energy.

While the current electricity mix in america is still composed largely of fossil fuels such as oil and gas, renewable energy resources such as solar are steadily becoming a bigger portion of the nation's energy profile. Since the cost of solar and other renewable technologies has been competitive.

Solar Energy + Battery Storage, Electrical Vehicles And Much More

The rapid proliferation of solar energy nationally and internationally has led to parallel expansion in many adjacent areas. Notably, energy storage systems and electric vehicles are just two sectors poised to burst alongside solar power by strengthening the advantages of solar.

Given that solar panels can only produce electricity when the sun is shining, keeping produced renewable energy throughout the day to be used at a later period has become more and more important. As an example, solar batteries store power and could be drawn on during periods of low solar generation.

Electric vehicles are another product poised to ride the tide of solar energy adoption. With increasing electric car adoption also comes an increasing need for power to operate the vehicles, a perfect match for solar energy. Distributed solar installations offer cheap and reliable power for electric vehicles straight from sunlight. In a world of greater electrification throughout the house, solar energy is one of the most inexpensive, reliable, and most economical ways to fuel our electrified future.

Why Go Solar?

1- Eliminate Electric Bills

Eliminate or significantly reduce your electric bill with Solar Power
Among the greatest reasons to go solar is that it is possible to eliminate or significantly reduce your electric bill. More than 20 years, that same $100 monthly bill balloons to $24,000 paid for your utility, which is before factoring in power rate increases which will probably make your 20-year energy costs much higher. Installing a solar panel system in your house or business takes you out of the cycle.
Moving to solar may eliminate your electric bill completely or reduce it so radically that electricity prices are no longer an important element in your budget. Your savings with solar rely on a few different things, such as how much energy your system generates and how much you consume, but the biggest factor is the prices you'd pay for the utility.
Since your savings are equivalent to the prices you avoid by going solar, you will save even more if electricity prices are high in your area. And, since electricity costs will continue to grow, your savings will continue to rise annually over the 25+ year lifespan of your own solar panel system.
Reducing one of your biggest monthly expenses makes perfect sense, but the advantages of solar are not just economic. Because electricity costs can be unpredictable, they make handling your budget difficult. By installing a solar panel system, you also restore your electricity costs and make them more predictable. This is particularly beneficial for anybody using a fixed income, as well as for companies who stand to profit from a more stable cash flow. If you make

your energy costs more predictable by going solar, you also improve your expense forecasting and management capacities.

2- Earn Great Returns

In various ways, your solar energy system is a financial product -- one that's capable of producing annual returns ranging anywhere from 10 percent to greater than 30 percent. The normal EnergySage shopper pays off their solar buy in only seven to eight years and earns a solid solar ROI, getting free power for the rest of the solar panel system's 25+ year lifespan.
It is possible to calculate your yearly returns by dividing the monetary benefits you receive annually by your first investment in your solar energy system. Many factors can impact your solar panel ROI, such as: This determines your savings over the lifespan of your system. The higher your prices, the more you can save with solar.
Financial Incentives: Are there any state or local tax programs or rebates in your area which encourage solar adoption? Are you a company or other organization that could benefit from depreciation tax benefits, such as accelerated depreciation? Higher incentives imply lower upfront costs and a shorter payback period.
Solar Renewable Energy Certificates (SRECs): Does your utility or state have a marketplace at which you could sell the SRECs connected with your solar power system's electricity? What type of income can you make by selling these SRECs? New income from SRECs can allow you to break even in your own solar investment more quickly.
Price: Can you compare your choices to get the ideal price?
Tech: How efficient is the own system, i.e. is it generating electricity at optimum levels? A more efficient system will cancel a larger portion of your monthly electric bill.
Property Attributes: How bright is it where you are? All these factors can influence your production levels.
Home Value Increases: How much does the value of your house increase when you set up a solar panel system? Solar panel system ownership tends to increase your property resale value, while third party ownership (e.g. leasing) doesn't.
Business Benefits: How much will your earnings grow because of your lower prices? What's the value of the goodwill your solar energy system generated? What level of earnings is attributable to your green credentials? All these factors can increase your organization's return on solar investment.
Taking all the above factors into account, you can find an idea for what your solar payback period may be, that's the best way to put a number in your solar panel ROI. A solar panel payback period is the period of time it takes you to make back the money you spend upfront on a solar power system, typically in the form of avoided electricity prices.
By way of instance, if your solar panel payback period is 7 years, then it is simple to compute your actual monetary solar panel ROI simply by looking at your energy usage and local electricity prices. If you generally use 1,000 kilowatt hours (kWh) of electricity a month at $0.15 per kWh, that is $150 you'd spend on power per month without solar. With solar installed (and

following your payback period is up), every month you pocket $150. This money saved ends up being even more per month over time, as energy prices historically rise through the years.

3- Avoid Utility Inflation

Protect yourself from rising utility Prices

Undeniably, the long-term tendency for electricity costs is upwards. Over the last ten years, energy prices have risen by an average of three percent every year. Eliminating or significantly reducing these prices will save you plenty of money in the long term. By going solar, you also protect yourself against rising costs and make your monthly bills more predictable. With solar you create your own energy, so it takes away the anxiety associated with rising and fluctuating energy rates.

4- Increased Property Values

Increase home worth 3-4Percent by installing a solar panel system

Early studies focused on solar markets like California found that home values increase by four percent or more when houses are equipped with solar panels.

The Laboratory's 2015 Selling in the Sun report examined sales of solar-equipped houses in eight distinct countries over 11 years with the objective of determining exactly how much value solar adds to a home's sale price. The key finding: on average, homebuyers are"always willing to pay PV home premiums" of roughly $4 a watt of installed solar power (note: this analysis only covered homes where the solar PV system was owned(not leased). For a conventional 6-kilowatt solar PV system, this implies that solar can add $24,000 to your home's resale value.

A number of the very same things that drive your overall financial returns also drive gains in real estate values. Unsurprisingly, the biggest increases are in locations where electricity prices are high and powerful solar incentive programs exist. All this is fantastic news for property owners using solar PV systems: they not only recoup the initial expense of the systems when they market, but also get a premium that will boost their returns on their investment.

Recognizing that solar energy systems add value to a house, the real estate market is working to make more sophisticated procedures for accurately determining the market value of solar energy, in addition to the financial value of possessions equipped with solar energy systems.

5- U.S. Energy Independence

The sun is a near-infinite supply of energy and among the world's best resources. One recent study found that 25,000 square miles of solar panels (an area roughly the size of West Virginia) would generate enough electricity to power the whole world. By investing in solar energy, you

can help make the most of the sun's abundant resources and deliver the United States one step closer to energy independence.

Global energy markets are notoriously unstable, and cost fluctuations can have a significant effect on the U.S. market. When we expand our capability to create solar power within the U.S., we also insulate ourselves from these price fluctuations and ensure a sustainable supply of energy for the future. Even Saudi Arabia, one of the world's biggest petroleum producers, recognizes the political and economic advantages of solar energy: in 2012, the nation announced a goal to construct 41 gigawatts of solar power by 2032.

6- Create Jobs

Help grow your local Market with Solar Power
The financial advantages of going solar create a persuasive argument for homeowners and businesses, and the total effect of solar on the market is just as positive. The solar energy industry is a national business that offers high-quality jobs throughout the country.

Findings in The Solar Foundation's 2019 Solar Jobs Census underscore that expansion:
Since 2010, solar sector employment has increased by 167 percent, reaching almost 250,000 jobs in 2019.
8% of solar work in the country is held by veterans, a greater proportion than in the total economy.
The clean energy market offers more opportunities and better cover low-and middle-skilled employees than the national economy as a whole. Wages for solar work in the U.S. will also be higher than comparable sectors: the median wage for a mid-level solar installer in 2019 was $23 per hour, compared to $18.58 throughout the overall U.S. workforce. Many solar companies are small locally owned companies, and encouraging them brings more money into local economies.

Solar power is an integral source of energy in the U.S., and since the price of solar energy continues to collapse, all signs point to it becoming an even bigger part of the U.S. energy source. That's great news for the economy and the environment.

7- Protect the Environment

Solar Power delivers environmental benefits

Many homeowners, businesses and non-profits go solar since they're focused on minimizing environmental problems like climate change and health issues associated with carbon emissions. According to the U.S. Environmental Protection Agency, the average family emits approximately 20 metric tons of carbon pollution every year. By installing a solar energy system, a normal two-person household reduces their carbon emissions by a few tons annually.

Moving solar helps to reduce these effects. While each home, business or non-profit that adopts solar energy produces a dent in our pollution levels, the cumulative impact of property owners embracing solar across the country is what actually makes a lasting effects.

The power that solar panels create is completely emissions free. When you utilize renewable solar energy to fulfill your energy requirements, you lower the demand for electricity from your utility. Because of this, your utility plant emits less carbon when generating the power required to meet customer demand. Based on the resources your utility uses to generate energy -- many continue to be reliant on fossil fuels such as coal--the effects of your decision to go solar can be quite significant.

Solar 101

10 Things you Need to Know

1. Solar panel systems are a great way for you to save money, no matter what your budget is.
If you can afford to pay your electricity bill every month, you can afford to install a solar panel system. With a $0-down solar loan, solar lease or PPA, you can finance your system and see immediate savings.

2. Installing a solar panel system is a great investment.
Investing in a solar panel system can deliver better returns than stocks and bonds – and now is the right time to make that investment. While solar photovoltaic technology is improving incrementally each year, financial incentives and rebates will decrease as solar becomes more popular.

3. Solar photovoltaic systems have been around for a long time.
Solar photovoltaic systems are a well-proven technology first invented in 1954 by scientists at Bell Labs. Today, solar panels are installed on over two million homes in the U.S.

4. Solar panel systems are highly durable.
Solar photovoltaic panels are made of tempered glass and can withstand hail, snow, rain, and high winds. They can even extend the life of your roof by protecting it from daily wear and tear.

5. Solar power systems can produce electricity for 25 or more years.
Most solar panel manufacturers offer a 25-year power production warranty guaranteeing that their solar panels will continue to generate electricity at a certain capacity for the warranty’s duration.

6. Solar power systems are practically maintenance-free.
Solar panel systems are incredibly durable. Except in extreme circumstances, they don't need to be washed or cleaned.

7. Solar panels can be installed almost anywhere in the United States.

Most locations in the United States get enough sunlight to produce sufficient electricity from solar panels. The most important factors to consider when you evaluate your solar panel options are the rates you pay for electricity and the rebates and incentives available to you.

8. Solar energy systems are tied to the electric grid and do not require batteries to store power.
When you install a solar energy system on your property, you remain connected to the electricity grid. At times when your system produces more electricity than you use, you receive credit for the electricity you send to the grid; if you need more electricity than your solar energy system is producing, you can draw it from the grid.

9. Solar power systems can eliminate most of your electricity bill.
With the right planning, your solar panels can generate enough electricity to meet your needs over a 12-month period. As long as you have enough roof space to install the right size solar panel system, the power that your panels will produce will effectively eliminate most of your electricity bill.

10. Solar photovoltaic panels can be installed on the roof of your home or commercial property, on the ground or on a solar canopy.
Solar panels can be installed practically anywhere that receives direct sunshine for most of the day and is not shaded by trees or buildings. Panels that face south will produce the most electricity, but your panels can also face east or west.

What Are Solar Panels?

In 1954, scientists at Bell Telephone found that silicon, an element found in sand, generated an electrical charge as it was exposed to sunlight. This discovery resulted in the development of solar cells which caught the sun's energy and turned it into power. Since then, the technology has evolved, and solar energy systems today provide incredibly attractive financial benefits for homeowners, businesses and nonprofits across america.

As a result of solar panels, we've got access to an inexhaustible supply of electricity -- the sun. Through the day, the cells onto your solar panels absorb the energy from the sun. The DC power is passed through a device called an inverter to convert it into the alternating current (AC) power used by the majority of homes and businesses. It is possible to use that power in your house, store it with a solar battery, or send it back to the grid.

Microinverters vs. Power Optimizers

Inverters are a really important element of any solar panel system: while solar panels convert sunlight into power, inverters guarantee that the power they produce is usable in your dwelling. There are three primary kinds of inverters: series inverters, inverters + power optimizers and microinverters. String inverters are the earliest technology: they are a proven, durable and cost-effective alternative which were installed for decades across the world. Microinverters and power optimizers are newer technologies and are on the increase in popularity during the last

ten years, particularly on the residential marketplace, due to their capacity to enhance the performance of systems which experience shading or which are on complicated roofs.

It's important to remember that power optimizers aren't inverters, while microinverters are. But given that the advantages and disadvantages of series inverter systems are well understood, we concentrate in this article specifically about the performance offered by incorporating power optimizers into a central inverter and compare this to the performance of microinverters on rooftops.

String Inverters, Power Optimizers, and Microinverters

If you are thinking about a solar panel system for your house, one of the important decisions you will need to make is the kind of inverter to set up. Inverters convert direct current (DC) electricity generated by your solar panels to usable alternating current (AC) electricity. Given the intricate power electronics and applications contained inside, inverters are very important to the success of your solar energy system.

Advantages and Disadvantages of Microinverters and Power Optimizers

Centralized string inverters are still the most frequent technology alternative for rooftop solar panel systems in america. But, microinverters and power optimizers (frequently known as module-level power electronic equipment, or MLPEs) have recently gained in popularity.

Micro-inverters and power optimizers offer similar benefits but function in various ways. Both are mounted alongside individual solar panels and protect against performance issues if at least one of your solar panels are shaded. The key distinction is that microinverters convert the DC power generated by your solar panels to the AC electricity your household appliances use, while optimizers"condition" the DC power before sending it to a central inverter.

The two microinverters and power optimizers are superior products which come at a premium cost. If a roof receives little to no shading, or if your panels are being put on just a couple of different roof planes, they might not be worth the additional price.

Monocrystalline vs. Polycrystalline Solar Panels

When you assess solar panels to your photovoltaic (PV) system, you may encounter two chief sorts of panel options: monocrystalline solar panels (mono) and polycrystalline solar panels (poly). Both kinds of panels create energy from sunlight, but there are a few fundamental differences to know about.

Types of Solar Panels

The majority of the solar panel choices currently accessible one of 3 different types: monocrystalline, polycrystalline (also called multi-crystalline), and thin-film. These solar panels

change in how they're created, look, functionality, expenditures, and the installments are best suited to.

Based upon the kind of installment you are contemplating, 1 alternative might be more appropriate than others.

What are various solar panels manufactured from?
To create power, solar cells are created from a semiconducting material that converts light to electricity. The most common substance used as a semiconductor through the solar cell production procedure is silicon.

To create a monocrystalline or polycrystalline panel, wafers are constructed into columns and rows to create a rectangle, coated with a glass sheet, and then framed together.

While both these forms of solar panels possess cells made of silicon, monocrystalline and polycrystalline panels change in the makeup of the silicon itself. Monocrystalline solar cells have been cut out of a single, pure crystal . Alternately, polycrystalline solar cells consist of fragments of silicon crystals which are melted together in a mould before being cut into wafers.

Unlike monocrystalline and polycrystalline solar panels, thin-film panels are created from a range of substances . The most common kind of thin-film solar panel is made of cadmium telluride (CdTe). To produce this kind of thin-film panel, producers put a layer of CdTe between translucent conducting layers which help catch sun. This sort of high-tech technology also includes a glass coating on the top for security.

Thin-film solar panels may also be produced from amorphous silicon (a-Si), which is like the makeup of monocrystalline and polycrystalline panels. Although these thin-film panels utilize silicon in their makeup, they're not composed of strong silicon wafers. Instead, they are made up of non-crystalline silicon set in addition to plastic, glass, or metal.

CIGS panels have four components placed between two reflective layers (i.e. glass, aluminum, plastic, or steel), and electrodes are placed on the front and the rear of the substance to catch electric currents.

What do distinct solar panel kinds look like?
The differences in production and materials cause differences in look between every Kind of solar panel:

If you find a solar panel with black cells, then it is probably a monocrystalline panel. These cells look black due to how light interacts with all the pure silicon crystal.

Even though the solar cells are black, monocrystalline solar panels have many different colors due to their backpacks and sheets. The rear sheet of the solar panel will often be silver or white, while the metallic frames are generally silver or black.

Contrary to monocrystalline solar cells, polycrystalline solar cells have a tendency to get a bluish colour to them because of the light reflecting off the silicon fragments from the cell in another manner than it reflects off a pure monocrystalline silicon wafer.

Likewise to monocrystalline, polycrystalline panels have various colours for rear frames and sheets.

The largest differentiating aesthetic element in regards to thin-film solar panels is the way lean and low-profile the tech is. As their name implies, thin-film panels tend to be thinner than other board ty[es. That is because the cells inside the panels are approximately 350 times thinner compared to the crystalline wafers used in monocrystalline and polycrystalline solar panels.

It is important to remember that while the polyunsaturated cells may be a lot thinner than conventional solar cells, an whole thin-film panel might be comparable in depth to a monocrystalline or polycrystalline solar panel when it features a thick framework. There are glue thin-film solar panels which lie as-close-as-possible into the face of a roof, however you will find far more durable thin-film panels which have frames around 50 millimeters thick.

So far as color goes, thin-film solar panels may come in both black and blue colors, based on what they are made from.

Maintenance

Worried about solar panels and hail? Fret not, solar panel systems are incredibly durable and require little to no maintenance over their productive life -- that may span 25 years or longer. In case something goes wrong, your solar PV system components have long guarantees that would cover replacement and repair costs. If you lease your solar panel system, repairs and maintenance would be the leasing company's responsibility, not yours.

Where to Install

To optimize your solar panel system's energy generation, your system should be installed where the panels will be exposed to the most sunlight. This is the reason why rooftop home solar installations are so common. If your roof is not acceptable for solar panels, you might also set up the panels on the floor .

In a perfect house solar installation, your house would have a large, bright, weatherproof roof using a 30-degree pitch. However, you do not need perfect conditions to benefit from solar energy. Solar panels can be installed on most roofs so that you can save on your energy costs and help the environment, too.

Should You Cut Down Trees to Improve Solar Panel Performance?

When we talk about the environmental advantages of solar power, we often compare the total carbon offset of a solar panel system into the ecological impact of planting trees. Ironically, maximizing the benefits of solar energy may mean cutting down a tree or two before installation. It's a difficult truth, but sadly, solar trees and power don't really get along. Branches and leaves can block sunlight from hitting your roof, which means your solar panels aren't generating as much clean power as they could otherwise be in a sunny area.

The fantastic news is that most homeowners with trees on their property can usually get away with just trimming back a couple of branches prior to putting up a solar panel system. However, some people may need to accept that solar isn't feasible for their property unless they remove trees. Understandably, many homeowners hesitate to sacrifice trees for solar power as it doesn't seem like a particularly environmentally friendly or cost-effective alternative. But ultimately, the net advantages of removing trees to install solar might be well worth it.

Environmental impact of removing trees for solar
According to American Forests, one tree in the woods can store about 0.6 metric tons of carbon dioxide equivalent (CO2-eq) over its lifetime. Considering the cradle-to-grave environmental impact of a solar panel system--from manufacturing, to installation, to disposal--the lifecycle emissions of a normal 6-kilowatt (kW) solar panel system comes out to approximately 11 metric tons of CO2 emissions. Given this, the total CO2 emissions related to removing one tree and installing a residential solar energy system are roughly 11.6 metric tons.

For the removal of the tree to make sense from a carbon reduction standpoint, the net CO2 reduction should exceed 11.6 metric tons. That looks like a lot at first, but a 6 kW solar panel system should create at least 6,000 kilowatt-hours (kWh) of electricity annually for 30 years.

This implies that over the lifetime of your panels, you will create more than 180,000 kWh of emissions-free electricity.

Subtracting the first 11.6 metric tons of CO2 emissions needed to install the panels in the 127 metric tons of CO2 benefits they will create results in a net benefit of 115.4 metric tons of CO2 offsets -- that's the equivalent of planting more than 100 trees! While this isn't excellent news for your tree in question, it is good news for the environment -- and for your wallet.

Net Metering for Home Solar Panels

Net metering (also referred to as net energy metering or NEM) is a solar incentive which lets you store energy in the electrical grid. When your solar panels produce more power than you need, that electricity is delivered to the grid in exchange for credits. Then, at night or other times when your solar panels are under production, you pull energy from the grid and then use these credits to offset the expenses of that energy.

With the ideal size solar power system, you can create enough electricity to meet your home's electricity use for the whole year. However, the total amount of power your solar panels produce

will vary through the year. Net metering makes it possible to account for these differences by alerting you for the extra electricity your panels create so that you can use it afterwards.

While net metering is only one way that utilities compensate homeowners for going solar, it's by far the most common: as of 2016, 41 states and Washington D.C. have compulsory net metering rules, and two have utilities that enable the clinic. To figure out the policies in your state, use the Database of State Incentives for Renewables and Efficiency (DSIRE®), which monitors net metering and other policies.

Is My Home a Good Fit for Solar?

Thankfully, while not every property is ideal, most homes are well-suited for a solar energy system. Here are seven questions that will help you figure out if solar panels are a great match for you and your dwelling.

#1. Do you own your home?
First of all, it's generally more challenging to install solar panels on your home if you do not own it. You can certainly ask the owner of the house whether they would consider installing a system and assist as a solar advocate, but ultimately, they'll be the last decision-maker.

Speak with your landlord about how solar can help increase the value of their property, the environmental advantages of solar power, tax credits and other incentives they take advantage of, and much more.

#2. Are there any nearby trees or buildings shading your property?
If your house only experiences a bit of shade throughout the day, don't worry -- contrary to popular belief, your house does not have to be perfectly sunny all of the time to gain from a solar panel system. While it's true that the sunnier your roof or property is, the more electricity you can create with solar panels, the perfect equipment (for example, microinverters and power optimizers) and a well-designed system from your solar installer can help minimize the negative impact of shade hitting your system.

Having said that, if your house is shaded for nearly all the day, it's not a good idea to put in solar panels without removing or trimming trees: no matter the solar technology used, a solar panel covered in color cannot produce electricity.

#3. Is your roof acceptable for solar?
Age
Solar panel systems persist for a very long time (often more than 30 years!) If your home's roof is towards the end of its life, you should replace it before any solar installation. This will add to the upfront cost of this project, but replacing your roof prior to installing solar certainly has its benefits: for one, you avoid the trouble and costs related to uninstalling and reinstalling your solar panel system so as to work on the roof. Furthermore, solar panels can help prolong the life

of the part of your roof that they cover, as they're durable and protect the roofing material from the components.

Material
Thanks to continuing innovation and variety in solar mounting gear, you can install solar panels on most roofing materials, including standing seam metal, clay tile, asphalt, and rubber.

Two of the more difficult roofing materials to install on are slate and wood: given how fragile both substances are, the installation procedure is more delicate than with other substances and requires specialized equipment (which can be expensive). Because of this, most installation businesses don't install solar panels on these types of roofs, so it may be tricky to find a company to work with.

Space
Solar panels come in a fixed, rectangular shape, and most residential installations utilize at least 10 solar panels. In order to maximize your solar savings, you'll need adequate space on your roof. With more uniquely-shaped roofs, different structures such as dormers, chimneys, vents, or widow's walks can cut off specific parts of your roof from installation, making it more challenging to fit enough solar panels for a viable installation.

Tilt
It's possible to install solar on a flat roof, but installing solar panels on a flat roof typically requires more space since you want to tilt and stagger the rows of panels for optimum electricity production. Tilted solar panels are also vital for the self-cleaning of their gear.

As a guideline, anywhere between 30 to 45 degrees is the optimal tilt for many solar panel systems.

Orientation
Your roof's orientation, or the way your roof faces, will affect how much electricity your solar panel system creates. Generally, solar panels that face due south obtain the most exposure to sun (note: this is the opposite for properties located in the Southern Hemisphere.) However, whilst south-facing is ideal, it is certainly not a requirement for solar: panels facing east and west can often receive more than sunlight to make your installation a rewarding investment.

#4. . .and if your roof isn't suitable, do you have sufficient sunny land available for an alternative installation type?
If you can't or don't need to install solar panels on your roof, consider doing this on available, sunny land space -- with a ground-mounted system, you are not as likely to have space limitations and can set up your array in the perfect tilt and direction, as opposed to being restricted by the size of a roof surface.

Ground-mounts are not your only alternative to consider -- while less common, some homeowners decide to put in a solar carport, shed, patio cover, and much more.

#5. How much can you spend on energy?
There are a lot of factors that go into how much you can save with solar energy, but none so much as your energy costs: how much electricity you use and how much you pay for it play an integral role in eventual solar energy savings.

If you're a homeowner in a state that experiences high power rates, you will save big by switching to solar energy. Instead, if you use very little electricity over the course of a year or reside in an area with particularly low electricity prices, it is still possible to save money with solar, but it'll take more time to see significant savings and break even on any upfront investment.

#6. Does your state or utility company offer solar-friendly incentives?
There's no doubt that it's certainly easier to go (and save with) solar in some countries more than others because of local policies and incentives.

One of the most important solar incentives to keep a look out for is net metering. Launched in most states, net metering allows you to send any excess electricity your solar panel system creates into the grid in exchange for credits on your electricity bill. You can then use these credits when your solar panel system is not generating the energy you need (like at night).

Outside of net metering, many states and utility companies provide tax credits, rebates, or performance-based incentives to assist you save with solar. The federal investment tax credit (ITC), available to everyone in the U.S., allows homeowners who purchase and install a solar panel system to claim a percentage of solar prices as a credit towards their federal taxes.

#7. How much does it cost to go solar locally?
It is more expensive to install solar in some regions of the country than others depending on the availability of incentives, labor and permitting costs, and more. However, irrespective of solar prices in your nation, you don't need to pay for the entire system upfront -- there are many financing alternatives available that allow you to go solar with no money down.

Solar Financing

Your Financing Options

The financial, environmental, and community benefits of solar power systems make them very appealing.

However, a solar photovoltaic (PV) system is a substantial upfront investment. Even if you choose not to buy your solar PV system in money, solar funding choices like a $0-down solar loan or solar lease/PPA can help you go solar and save money on your electric bill.

Should You Buy or Lease Your Solar Panels?

The decision about how to fund your solar power system is dependent upon your particular financial targets.
If you purchase a solar panel system, you own the machine, either (if buying with cash) or after repaying your solar loan. If you rent the machine or signal a power purchase agreement (PPA), a third party owns the solar panel system.

This distinction impacts the price, maintenance, provisions, fiscal offsets, and savings/returns on investment of your solar panel system. Moreover, not all companies provide solar rentals and/or PPAs--confirm that your chosen supplier provides the financing option that you need most. Note that PPAs aren't legally permitted in some areas.

Solar Loans

A financing option to maximize your solar savings
Cash purchases and solar rentals (or PPAs) are no longer the only options for property owners who wish to go solar. For solar shoppers that lack the funds to get a cash purchase but would like to maximize the financial advantages of their solar power system, the solar loan provides the best solution.

Secured vs. Unsecured Solar Loans

There are an assortment of solar loan products which you may use to fund the installation of your solar panel system. Keep reading to determine which one is ideal for you.

Secured solar loans

Having a secured solar energy loan, your lender will probably need you to promise an asset, usually your home, as collateral for the money you're borrowing. Your home provides"safety" to the creditor in case you can not repay the loan. Should you take out a secured loan, the creditor retains a lien on your property, and can take ownership to pay back the loan should you default. Organizations that provide secured solar loans comprise Admirals Bank, Matadors Community Credit Union, and Ygrene Energy Fund.

Unsecured solar loans

With an unsecured loan, you can borrow money from a lender to install a solar PV system without needing to use your home as collateral. The penalty for defaulting on the loan is smaller -- they don't require collateral, and the lender can't foreclose on your property. However, they're also riskier for the lender than guaranteed loans, and this may lead to higher rates of interest. Examples of organizations offering unsecured solar loans comprise SunPower, Green Sky Credit, and EnerBank USA.

Solar Leases & Solar PPAs

Solar financing options for a low-maintenance solar energy system

Many solar companies advertise solar rentals or electricity purchase agreements (solar PPAs) as a simple way to lower your electricity bill. If you're interested in an easy, low-maintenance alternative for installing a solar power system on your house, leasing solar panels is a fantastic option for you.

Types of Leases and PPAs

Solar lease and PPA Choices
Solar leasing companies offer three types of solar rentals and solar energy purchase agreements (PPAs):

$0-down Lease/PPA

- speed per kilowatt hour (expressed as Cents/kWh) for the solar power
- Average speed over the life of the solar rental / PPA contract
- Discount on current electricity prices

Custom down-payment solar leases/PPAs

- Cents/kWh for solar power
- Average speed over the life of the solar rental / PPA contract
- Discount on current electricity prices
- Rate of return on your investment (or IRR)

Prepaid solar lease/PPA

- Cents/kWh for solar power
- Net cost expressed in terms of dollars per watt of the installed system
- Rate of return on your investment (or IRR)

Comparing Solar Loans vs. Solar Leases

Assessing if a solar Rental or loan is right for you
Both solar loans and solar leases/PPAs provide benefits for homeowners, and there are a number of factors to consider when creating your solar funding choice.

Money flow within the length of the arrangement
The two $0-down solar loans and $0-down solar leases/PPAs lead to immediate savings, with no cash out-of-pocket, because your monthly loan or lease/PPA payment will be significantly less than your current monthly utility bill. The monthly savings from a solar loan, however, will probably be greater than the savings from a solar rental or PPA. This is because solar loans are generally paid down in 7 to 15 years, whereas rentals require regular payments over the term of the arrangement.

A prepaid or down custom payment lease/PPA will need some money out-of-pocket, but could also lead to lower monthly expenses.

Solar panel system owners are entitled to a solar investment tax credit (ITC) equivalent to 26 percent of the expense of the machine upon installation. Many states have additional rebates and incentives such as Solar Renewable Energy Certificates (SRECs) accessible, as well as the interest paid on secured loans may also be tax deductible. If you register a solar lease/PPA, the owner of this machine is the solar company, plus they get the monetary incentives instead.

Monthly payments: Just how large?
Solar rentals and PPAs are usually offered for a 20- or 25-year term, and the conditions for solar loans may vary from 5 to 20 years. The monthly payments for many solar rentals and PPAs increase at a predetermined rate of 1 to 3% annually, while solar loans typically have fixed monthly payments.

The monthly payments for a 20-year solar loan will probably be lower than those of a 20-year lease or PPA. How much lower depends on if your solar loan is unsecured or secured .

System maintenance is usually not a problem -- solar energy systems demand little upkeep over their lifetimes. Most solar panels take a 25-year guarantee, and inverters carry a 10 to 25-year guarantee. Solar installers also often provide a guarantee to cover the setup itself.

If you pick a solar rental or PPA, the leasing company owns the PV system and typically will provide a service program to cover any maintenance problems that arise during the rental term. If you take a solar loan to obtain your PV system, you, as the owner, will be responsible for its upkeep.

Time to procedure financing applications
Solar lease and PPA software can be accepted and signed in one meeting with the solar installer or solar leasing company at your dwelling. Solar loans generally take more time to approve, as there could be additional administrative measures like property appraisals, title searches, and mortgage filings that may take several weeks.

Home sellers who used solar rentals or PPAs either have to buy out the lease/PPA in the third party owner or transfer the lease over to the new homeowner. If you decide to use a solar loan to fund your system, your choices differ depending on whether your loan is unsecured or secured . No matter the form of solar loan, solar-equipped houses sell faster and at a premium, so you might even recover a greater amount than what you owe on the system.

When there are lenders offering solar loans in all 50 states, PPAs aren't legally permitted in many places.

Loans and Leases: Solar Compared to the Auto Industry

The automobile industry has been supplying the identical choice -- lease or loan? -- for ages, and there are some high profile similarities in these fund products in both sectors:

- With both solar loans and automobile loans, the borrower will have the item at the end of the period.
- In both businesses, in the event the lessee wants to escape the lease before the end of its duration, he or she is subject to an early termination fee.
- For the two businesses, the economics of rentals can be ambiguous compared to the relatively simple terms and conditions of loans.

Solar Financing Companies

Types of Companies That Lease Solar Panels

Companies Supplying solar Rentals or Power Purchase Agreements (PPAs) are organized in one or more of the following Manners:

1. Vertically integrated

   These companies own all the significant areas of the solar industry, including funding, sales, installation, and after-sales service and maintenance.

2. These companies use their own funds or supply funds from a financial institution or a private investment fund to provide solar financing programs. They've assembled a nationwide installer network that provides their funding program exclusively to customers. Examples of such businesses include SunRun, SunEdison, Sungevity. Some solar panel makers are also providing financing using this business model. They comprise SunPower, Brightlease and CentroSolar.

3. Solar Financing Company

   These are mainly financing companies that any installer may use to supply a solar lending solution to land owners. Firms like Clean Power Finance, Graybar Financial, Tech Credit corp. are examples of the business model.

4. Some bigger installers have lined up a credit line at a financial institution or in a private investment fund. Some have put their own funds to fund commercial installations.

Cost-Benefit

Savings with Solar

Normally, EnergySage solar shoppers reach revenge on their system in only seven and a half years, and they continue to save for the remainder of their system's 25+ year lifespan. There are a few major factors that affect what you can save:

Electricity prices: if you reside somewhere with higher electricity rates in comparison to other areas, your solar energy savings will be higher thanks to avoided electricity costs.

Local financial incentives: If your local or state government provides cash rebates, tax credits or credits for example SRECs, you will save even more.

Solar funding: There are three primary solar financing options: money purchases, solar loans, and solar leases/PPAs. Each option provides a different value proposition and long-term yield.

Cost of Solar

Solar panel systems are eligible for lots of rebates, tax incentives and credits. These incentives can cut the price of your system by 26 per cent or more, depending on where you live.

Advantages of a solar panel system

Besides the environmental advantages of going solar, your solar panel system is a smart financial investment.

- Free power for 25 to 35 years
  In the case above, in the event you continued purchasing power from your utility, you would have paid them more than $1,200 annually, which amounts to more than $25,000 more than 20 years. By going solar, your energy prices will end up near $0 for another 20 years, and your actual savings will increase annually as you will prevent utility rate hikes.

- If you reside in a country with a marketplace for SRECs, you might have the ability to create extra income by selling the SRECs generated by your solar panel system. Countries with SREC markets have a legal mandate to receive a certain percentage of their electricity from solar electricity, and utilities will purchase your SRECs so as to satisfy the mandate.

- Going solar is an investment in your house
  Installing a solar panel system really raises the value of your house . But this only applies in the event that you buy, rather than lease, your solar panel system.

  Various studies show that possessions equipped with solar energy systems market faster than average, and often sell at a premium too -- oftentimes this superior more than pays back the original costs of the system. Lawrence Berkeley National Laboratory's 2015 report, Appraising in the Sun: Six-State Solar Home Paired-Sales Evaluation , discovered that solar PV systems included a value of $3.78/Watt, normally, to home sale rates. That is the equivalent of adding $22,680 for a normal 6kW system -- considerably more than the system's net price.

Solar Incentives & Rebates

Solar power delivers positive ecological effects, contributes to our country's energy independence, and provides more jobs compared to coal or upstream oil & gas industries in america. To promote the continued expansion of solar, authorities, utilities and other businesses provide solar tax breaks and financial incentives to make solar more accessible for today's homeowners. Because of this, you can lower the net cost of your solar panel system by anywhere from 26 to 50 percent.

Federal ITC for Solar

The investment tax credit (ITC), also called the federal solar tax credit, enables you to subtract 26 percent of the cost of installing a solar power system in the federal taxes. The ITC applies to both residential and commercial systems, and there's not any cap on its worth. The normal EnergySage Solar Marketplace shopper saves almost $9,000 on the expense of going solar because of the ITC.
The cost of solar is falling across the country. See prices in your area and get free solar estimates on the EnergySage Marketplace.
The foundation of the solar investment tax credit As a result of the popularity of the ITC, and its success in supporting the United States' transition to a renewable energy market, Congress has expanded its expiration date multiple occasions, including most recently in December 2020 to extend the ITC by 26% for two years. Here are the particulars.

Solar Renewable Energy Certificates

What's an SREC?
Solar Renewable Energy Certificates (SRECs) are a solar incentive which allows homeowners to sell certificates for electricity to their utility. A homeowner earns one SREC for each 1000 kilowatt hours (kWhs) made by their solar panel system. SRECs exist as a consequence of a regulation referred to as the renewable portfolio standard (RPS). Renewable portfolio standards are state laws that require utilities to create a particular proportion of their power from renewable sources . To meet their RPS requirements, electricity suppliers must get renewable energy certificates (RECs), which serve as evidence they have either generated renewable power themselves or paid somebody who's generating renewable power for the right to"count" that power themselves. Many renewable portfolio standards have a solar carve-out, which requires a minimum percentage of electricity sales in this state come especially from solar energy. In those situations, SRECs are utilized to account for solar energy generation.SRECs are just like RECs, but specific to power that comes from solar panels. For each megawatt hour (MWh) of electricity a solar power system generates, a corresponding SREC is made. Just as RECs are purchased and offered to transfer the right to count renewable energy, SRECs can be bought and sold to move the right to count solar power.

When to Go Solar

Factors for when to buy a solar panel system
The most obvious factor when assessing whether to go solar is the upfront cost of the solar panel system . Assuming that recent pricing trends persist, you can stand to save money by setting your solar buy for a year.But every year you delay your solar choice is another year that you lose out on the fiscal benefits your solar power system provides. What you save on your upfront costs by waiting could be outweighed by the monetary benefits you would have received at the time. To determine your opportunity cost, consider the following into account:Solar protects you from increased energy costs Should you wait to go solar, then you are stuck paying your utility power bill each month, which is an increasingly expensive proposition: electricity costs are climbing by a few percentage points each year lately .The normal U.S. house spends about $1,300 a year on electricity. If you purchase a system that meets 100 percent of your energy needs now, you can remove your utility energy prices and have an additional $1,300 in your pocket annually from now. The next year, when prices go up, you will save up to $1,400 -- and the savings will continue growing for the 25 to 35 years your system is operational.When there are significant rebates, tax credits and other incentives set up to encourage homeowners to go solar, incentives programs usually get phased out as solar becomes more popular and prices decrease. The present national renewable energy tax credit is 26 percent through 2019 -- but after that point, it'll be phased out for residential systems. Some local and state governments provide similar programs which will be lowered over time. A Couple of examples: But as a result of the popularity of solar in the Golden State, those rebate programs are eliminated. In New York, the Megawatt Block Incentive Structure provides solar energy system owners a lien based on the size of the system (in dollars per watt). As more land owners install solar, the value of the rebate is reduced. Massachusetts had a solar rebate program that originally gave rebates from the 9,000 range. Now, the rebate program has finished and homeowners are only entitled to a tax credit, which will be capped at $1,000.

Solar Panel Payback Period

The financial advantages of going solar are now well documented. Solar panel systems actually are investments with strong rates of return, and homeowners generating solar power can avoid paying increased utility rates by eliminating their power bills.

According to a 2015 report from the Lawrence Berkeley National Laboratory, installing solar panels on your house can even increase your house values. If you're reviewing many quotes, there are loads of metrics that can help you make a decision about which solar solution is right for you, but studies show most solar shoppers rely on a single metric specifically: the solar panel payback period.

What's the solar panel payback period?
Greater utility electricity prices and reduced equipment prices are making it easier and less costly for homeowners to have, as opposed to lease, their solar panel systems. Assessing the revival period of different quotes from solar contractors is a simple way to comprehend the financial merits of each choice, and establish the point in time where your solar investment will begin to earn you money.

Decision Guide

Why Compare Multiple Quotes for Solar

If you're contemplating purchasing a big-ticket item, you will probably want to shop around before making your purchase. Take an airline ticket for instance. It's not as straightforward as finding the cheapest flight -- there are a number of factors which produce a specific ticket the ideal option for you. You will also need to know: What time does the flight leave? Or what is their record of on-time arrivals?

By utilizing a comparison-shopping strategy, you can make certain you have all the relevant information before you before making a purchase. The exact same is true when looking for solar energy systems for your home or business. At EnergySage, we invite each solar shopper to get and compare multiple solar setup choices on our site first, instead of solely talking to one solar installer.

EnergySage recommends that you participate with 3 to 4 solar installers and funding providers in your area so as to comprehend the trade-offs between each choice, and make certain you maximize your return on solar investment. Take some time to review all your solar energy quotes and ask questions about the critical differences between the proposals.

Evaluating Solar Panel Quality

Solar panels are a favorite product nowadays, and there are several criteria to consider when deciding which panels to buy for your solar power system. As you explore solar panel reviews, it's necessary to incorporate solar cell efficiency, solar panel evaluations, durability, and manufacturer assurances on your choice. Below, EnergySage has summarized the factors to bear in mind when you're assessing solar panel quality and performance.

Criteria for choosing solar PV panels
You do not need to understand precisely how solar panels convert sunlight into electricity to generate a solar buying decision. However, understanding the way the solar panel will do is important to determining how much you can save to your solar power system.

There are lots of factors that influence how successful a panel is at converting sunlight into electricity.

How Much Power Does a Solar Panel Produce

Installing a solar energy system on your home or commercial property is a smart financial investment which could dramatically reduce your electricity bills. The solar savings you gain are tied to the amount of electricity that your system can create, so when contemplating your equipment options, among the first questions you should ask is,"how much power does a solar

panel create?"All solar panels receive a power rating based on the amount of direct current (DC) power they can create. Ratings are expressed in watts and signify the power that the panel generates under ideal lab conditions. Most solar panels on the market now have power ratings that range from 200 to 350 watts.

Certifications and Testing

Solar panel testing is important to assuring the quality and security of a module. Solar panels have a very long lifespan: correctly constructed and installed equipment should create usable electricity for at least 25 years. Given the longevity of your investment, you need to be certain any equipment in your roof will function well and operate safely in your roof.

With solar getting more and more popular every day, many nations, local governments, and utility companies have come out with new hires that require any grid-tied solar gear to hold certain certifications. The same is true for a few solar incentive programs; if you're engaging in a state-funded incentive program, do not be surprised if they have particular testing or certification requirements for your preferred equipment.

Frequent solar panel testing & certification criteria

While reviewing a solar panel spec sheet, you will likely notice a whole lot of acronyms and arbitrary numbers listed under security and evaluation certifications -- what do these mean?

The IEC is a nonprofit that determines international assessment criteria for a whole lot of electronics, such as photovoltaic (PV) panels. Importantly, the IEC doesn't test or certify panels -- they set the criteria for additional testing centers to adhere to when assessing solar panel quality.

IEC 61215 is one of the core testing criteria for residential solar panels. If a solar panel module successfully meets IEC 61215 standards, so it finished several pressure tests and performed well with regard to quality, functionality, and security.

IEC 61215 standards apply to both monocrystalline and polycrystalline PV modules, which are the most frequent types of solar panels. The IEC sets different testing criteria for different kinds of solar electric technologies, such as thin-film solar products (IEC 61646).

Solar panels which meet IEC 61215 standards are analyzed on the following (and more!) :

- Electrical characteristics (wet leakage current, insulation resistance)
- Mechanical load test (snow and wind)
- Climate tests (hot spots, UV exposure, humidity-freeze, moist heat, hail impact, outside exposure)

IEC 61215 tests also help determine a panel's performance metrics at standard test conditions (STC), such as temperature coefficient, open-circuit voltage, and maximum power output.

Selecting Solar Panels

All solar gear --from solar panels to inverters to batteries--includes a long list of specifications that will assist you understand its performance, quality, and durability. But individual technical specifications and warranties do not offer you a comprehensive picture of how a single panel, inverter or battery compares to another, which makes it tough to pick the best solar equipment for your special needs.

In cooperation with the National Renewable Energy Laboratory (NREL), EnergySage developed a simple, industry-standard method for classifying and comparing the best solar panels, inverters and batteries by assessing key criteria.

The classifications are displayed on each panel, inverter and battery in the EnergySage Buyer's Guide, and are supplied alongside every quote that's submitted through the EnergySage Solar Marketplace to assist shoppers compare their choices and pick the best solar panels to their requirements.

There are scores of solar panel, inverter and electricity storage makers in the marketplace in the U.S., and each provides many versions of products. The most research-oriented consumer could be overwhelmed by the task of reviewing, aggregating and comparing the technical specifications for all these products. But at EnergySage, we believe that picking the best solar panel for your solar power system doesn't have to be a harrowing or time-consuming encounter.

Our objective, fact-based classification system was created in order to help quickly notify your solar buying decision. We compiled and assessed technical specification sheets, service agreements, warranties, and other publicly available documents, and used that information to assign a rating to all solar equipment available from the U.S. market.

How to Choose a Solar Installer

While solar equipment can be categorized byproduct specification, and funding choices have costs and benefits which could be calculated and compared with consistent premises, solar firm testimonials with standard metrics are hard to discover.

The fantastic thing is that there are loads of solar installers out there with well-trained and expert staff. Solicit many quotes from pre-screened solar installers free of charge from the EnergySage Solar Marketplace to find local businesses active in your region. Then, use these suggestions to comprehend how to pick a solar installer.

Questions to Ask During Your Solar Installation

Solar FAQ: Things to ask when you receive a solar Estimate The huge majority of solar companies should supply you with a quote for your solar power installation before they run a site visit. You should not need to provide them private information -- such as your Social Security number or date of birth -- in order to obtain this quote. Use your early discussions with them as an opportunity to ask questions that confirm their business practices and experience level:EnergySage ensures that all solar contractors at the EnergySage Solar Marketplace possess the necessary credentials and insurance policies in the nations where they operate. If you are not searching for solar with EnergySage, make certain to inquire installers about their permits and credentials.Do they have all the essential business licenses and insurance coverages to your state and area? What's their permit number? Can they design and install the systems , or do they subcontract to local businesses? If they do utilize subcontractors, are the subcontractors accredited? Will there be a master plumber on-site once the system is installed? Whether you're shopping throughout the EnergySage Solar Marketplace or not, ask these questions to get an idea of a professional's experience degree.How long have they been operating? Can they operate in a number of countries, or are they a local firm? How many solar power programs have they installed? Can they provide you with customer testimonials, references and examples of the other installments? Do they have references with customers who've had post-installation service requirements? Warranties and replacement/repair processes While most solar panels will require almost no upkeep and will operate with no problems due to their 25- to 35-year lifespan, you should be familiar with your installer's replacement or repair processes in the unlikely event that something will go wrong.Who should you contact if there's a problem with the system? Where are they found? Who's responsible for ensuring that guarantees are serviced in a timely way? How many diverse guarantees are there total for the system's parts, and do they cover shipping and labour costs in the event that a part has to be replaced? Does their guarantee also cover your roof? If your roof needs repairs in the long run, what's the procedure for removing and replacing the solar panels? What happens when the system doesn't produce as much electricity as was promised? Does the company provide a performance guarantee? Solar FAQs about solar rentals & electricity purchase agreements (PPAs)If you opt for a solar rental or PPA, you'll have an ongoing relationship with the installer for the duration of this arrangement. Ask these questions to make certain that you know the specifics of your rental. A lien can make it hard for you to sell your house if you don't create your solar payments. Is there an insurance plan which accompanies the machine, or do you will need to take out additional homeowner's insurance? What usefulness inflation speed do they use to calculate your projected savings? Many companies use an estimated rate of 4.5percent each year. How would a conservative estimate (e.g. 3 percent annually) affect the value proposition of going solar with their program? What's the minimal performance guarantee of this system and how are you going to be compensated if the machine doesn't produce as much electricity as promised in the contract? What happens when the system generates more power than you require? Do you have to pay for it? As soon as you get a quote from a solar installer via the EnergySage Solar Marketplace, you can schedule a site visit to discuss your choices and confirm your quotation. The site visit is a fantastic opportunity to confirm that your solar installer is somebody that you trust and like. Meeting your installer in person is a opportunity to interview your installer face and start to construct a relationship.During the site visit, your installer will:Take measurements of your roofConduct a

shade evaluation to confirm the quote that they provided for you is true Answer some questions about the equipment which they recommend, and why they chose it for the propertyWhen you have any concerns about the condition of your roof, you may also confirm during the site visit your installer will run a roof inspection before installation and allow you to know whether any work has to be done.Respectable installers recognize that moving solar is a major decision and shouldn't force you to sign a contract on the same day as your website trip -- be wary of the ones using high-pressure sales tactics. Use your site visit as an opportunity to seek clarifications from the installer in-person, answer some outstanding questions regarding your quotation, and confirm that the business is one you're comfortable doing business with.

Solar Batteries

How Do Solar Batteries Work?

Solar panel systems have become among the fastest-growing sources of energy in america. According to the Solar Energy Industries Association, the solar market is forecast to double in size by 2023, getting a $4.5 billion market at the time.

The prevalence of solar power has resulted in the growth of another renewable technology: solar cells that can store additional solar power for later use. Firms like Tesla are developing batteries which may be set up with solar panels to make"solar-plus-storage" systems for your residence. Keep reading to find out more about residential solar batteries, and discover when you should consider installing a solar-plus-storage system for your dwelling.

The cost of solar is falling across the country.

Should You Install Solar Batteries for Home Use?

Energy storage technology has existed for decades, but solar batteries used in house solar-plus-storage systems are relatively new to the marketplace. While solar batteries can provide a substantial financial advantage for homeowners in certain conditions, their cost means they do not make financial sense for everyone. Continue reading to our rundown on what solar batteries can and can not do for your dwelling. Whether you'll save more money by installing a solar-plus-storage system depends upon how your electrical utility charges its clients. You can use these credits in the future when you want more power than your solar panels are generating. For homeowners in this circumstance, installing a solar battery will not raise their savings: the electrical grid is providing the identical monetary benefit as a solar battery.However, some electric utilities are shifting their prices in ways which produce solar batteries a wise investment for homeowners. Electricity rates are reduced during the day when home electricity usage is reduced and solar panels are in their most productive. If your utility uses TOU rates, you may benefit from house energy storage with electricity from the solar batteries during peak hours when utility energy prices are at their greatest.TOU rates are becoming more prevalent in the U.S., with California leading the way: all homeowners in the Golden State are slowly being changed to TOU rates rather than a single per-kWh pace.How demand costs affect

solar battery economicsIf your utility has demand charges for residential clients, you will be charged a fee which varies depending on how much power you use. The fee may depend on how much power you purchase during peak hours when electricity demand is the greatest. It might also be decided by the whole quantity of power you use in a month. If your utility uses require charges, you will benefit from solar batteries since you might have the ability to prevent a higher fee by relying upon your electricity storage system instead.While demand charges are more common for industrial clients with large electricity bills, some utilities and states are thinking about the inclusion of demand charges to their power rates to inspire individuals to reduce their electricity usage. Utilities in Arizona and Illinois, amongst others, are assessing residential demand charges.How low or no net metering credits impact solar battery economicsIn nations with true net metering, you will be given a per-kWh credit equal to the price of electricity on your invoice for the energy that your solar panels produce. For example: if you pay $0.11 per kWh for power from your utility, you will find a $0.11 charge on your bill for each kWh of solar energy your panels create and send back to the grid.However, in certain states, you'll be given a credit for the wholesale or"avoided cost" rate, which is normally equal to the speed your utility would have paid to get the power somewhere else. Because of this, the financial value of one kWh of solar energy that you use at home is greater than one which you send back to the grid. For instance, if you pay $0.11 per kWh for power from your utility but your utility only provides a $0.04 charge for electricity delivered back to the grid, your solar power will be worth $0.07 less if you do not use it at home. In such nations, installing solar batteries makes economic sense since you are able to maximize the value of the energy that you create in your property. In Hawaii, where more than 10 percent of houses have rooftop solar, the PUC has also reduced net metering credits in a manner which produces energy storage, a rewarding investment.

Solar Battery Economics

The costs and benefits of solar batteries will decide whether you ought to set up a solar panel system which includes energy storage. With a normal solar power system, the economics are quite easy to understand: if you've high electricity bills, installing solar panels to make your own power is an investment which will pay off in just a couple years. As soon as you put a solar battery into the mix, the economics become more complicated.

The cost of solar is falling across the country. See prices in your area and get free solar estimates on the EnergySage Marketplace.
Before you can ascertain if installing a solar battery makes sense, you will need to know the purchase price. Like solar, you can consider the prices as both a gross cost and a cost per comparative capacity. Note that these rates are just for the battery itself, not for the cost of installation or additional equipment that is necessary.

Like solar panels, the listing price of solar batteries is mainly determined by the materials that they're made of and how much electricity they can provide you. Installing a battery which can function off-grid typically also costs more than installing a battery designed to operate while connected to the grid. Very similar to how solar panel costs have fallen dramatically in the last

couple of years, experts predict that solar cells will become less expensive in the years to come also. As a reference, here are the 2016 list deals for two top solar battery products:

The 13.5-kilowatt-hour (kWh) Tesla Powerwall has a list price of $6,500, but you will also have to obtain the Gateway and cover installation, which include $4,500 to the cost of one Powerwall. This indicates an installed price of roughly $11,000. The installed price of a RESU ranges from $11,000 to $13,000, based on estimates on EnergySage.
List costs for solar batteries are just part of this narrative. Unless your battery includes an integrated inverter, it has to be installed using a specialized inverter that's capable of handling the flow of electricity to and from a battery. (Note that if you pair a solar panel with solar panels, you may just need to install 1 inverter.) Additionally, solar batteries will need to be installed by a certified electrician.

For more information specifications about specific energy storage products, have a look at EnergySage's database of solar battery manufacturers.

Tax Credits and Incentives for Energy Storage

The federal solar tax credit, also referred to as the investment tax credit (ITC), is among the finest financial incentives for solar in america. It enables you to subtract 26 percent of the expense of a solar power system from the federal taxes, and there is no cap on its worth. The normal EnergySage Solar Marketplace shopper saves almost $9,000 on the expense of going solar due to the ITC.With the growth of solar batteries such as the Tesla Powerwall, solar-interested homeowners are considering including energy storage with their installation. Please note: In EnergySage, we're solar specialists, not tax specialists! Tax codes are complex, so consult your tax adviser before deciding what's best for you.

What is the Best Battery for a Solar Panel System?

As you think about your solar-plus-storage alternatives, you will come across a great deal of complex product specifications. The main ones to use during your test are the battery's capacity & power ratings, depth of discharge (DoD), round-trip efficacy, guarantee, and manufacturer.

Ability & power
Capacity is the whole quantity of power that a solar battery can save, measured in kilowatt-hours (kWh). While capacity lets you know how large your battery is, it will not tell you how much power a battery can provide at a certain moment. To get the complete picture, you also should take into account the battery's power rating. In the context of solar batteries, a power rating is the quantity of power that a battery can provide at once. A battery with a high capacity and a low power rating would provide a very low quantity of power (enough to run a few crucial appliances) for quite a long time. A battery with reduced capacity and a high power rating could run your entire house, but just for a couple hours. Most solar batteries will need to keep some control at all times because of their chemical composition. The depth of discharge

(DoD) of a battery refers to the quantity of a battery's ability that's been used. By way of instance, if a 10 kWh battery includes a DoD of 90 percent, you should not use more than 9 kWh of the battery before recharging it. Broadly , a higher DoD means you'll have the ability to use more of your battery's capacity.

Round-trip efficiency
A battery's round-trip efficiency represents the total amount of energy which can be utilised as a proportion of the total amount of energy it took to keep it. Broadly , a greater round-trip efficiency means you'll receive more economic value from your battery.

Battery life & guarantee
For many uses of home energy storage, your battery will"cycle" (drain and charge) daily. The battery's capacity to hold a charge will slowly decrease the longer you use it. This manner, solar batteries are similar to the battery in your cell phone -- you charge your phone each night to use it throughout the day, as well as your phone gets old you will begin to notice that the battery is not holding as much charge as it did when it was brand new. By way of example, a battery may be warrantied for 5,000 cycles or 10 years at 70 percent of its initial capacity. This means that in the conclusion of the guarantee, the battery will have lost no more than 30 percent of its initial ability to store energy. Your solar battery will have a warranty that guarantees a specific number of cycles or years of useful life. Since battery performance obviously degrades over time, most producers will also guarantee that the battery retains a certain amount of its capacity over the duration of the warranty. Therefore, the simple response to the question"how long will my solar powered battery last?" Is that it depends upon the brand of battery you purchase and also how much capacity it will lose over time.Many diverse sorts of organizations are developing and manufacturing solar battery products, from automotive businesses to tech startups. While a significant automotive company going into the energy storage market probably has a history of product manufacturing, they may not offer you the most revolutionary technology. By comparison, a tech startup may have a brand-new high-performing technology, but less of a track record to demonstrate the battery's long-term operation. Whether you pick a battery fabricated by a cutting edge startup or a manufacturer with a long history is dependent upon your priorities. Evaluating the warranties related to each item may offer you additional advice as you make your choice.

Adding a Battery to Your Solar Panel System

The market for home energy storage options such as the Tesla Powerwall has taken off recently, and prices are falling quickly. Many homeowners and businesses are considering including a battery backup to their own solar panel system.The benefits of a house battery can be large, especially when you've got solaryou can use more solar energy onsite, or save it to use as backup power in case the grid goes down. In case you have time-of-use (TOU) rates for your power or pay monthly demand charges, you can save money with power from your battery when prices are high. Shoppers using the EnergySage Solar Marketplace to compare solar estimates often ask a selection of questions when thinking of the inclusion of battery storage.

Solar + Storage for Resiliency

One of the numerous reasons to think about storage when moving solar is the degree of energy resiliency you may achieve from a storage plus solar system. When the electrical grid goes down because of technical errors or extreme weather events, solar panels and energy storage supply resiliency by ensuring that you have electricity in your property even if the grid can not provide power, and offer a persuasive alternative to conventional in-house production .

What happens to solar panels throughout a grid collapse?
If the electric grid goes down, being ready with backup power is vital, particularly if the power outage was due to some natural catastrophe that will continue to affect the electric grid for a lengthy time period. Installing solar panels on your premises is a superb way to make certain you won't get rid of energy, but only if you have a battery installed to save energy generated by your solar panels. Standard grid-tied solar panel systems do not work during a power outage for 2 reasons. First, solar panels are continuously producing variable amounts of power because of varying sunlight conditions and places. Because of this, your solar panels produce quantities of electricity that do not depend on the amount of energy that your home needs at the instant. Because of this, if you enter your house during a power outage, this power might direct your lights to blink and potentially harm your electrical devices. During a power outage, your electric utility will ship out repair crews to find and fix the point(s) in which the grid collapsed. Although solar panels do not normally function when the grid is down, there are ways to keep on generating power off the grid. Pairing your solar panel array with battery storage is a powerful resiliency measure that can supply you with backup power and off-grid generation once the electrical grid is not operational. This sort of setup is often known as a hybrid system because it can both use the electrical grid and its microgrid structure with the addition of a solar battery.There are multiple advantages of a hybrid system. As an example, having a battery hooked up to your solar array permits you to store extra energy created by the system for use once the sun is not shining in your panels. Above all for building a resilient residence, obtaining a hybrid system using a battery provides backup power to your house when the electric grid fails. By getting your solar panels to charge a battery over time, you may create accessible power that's even available once the electricity goes out. Home batteries have a limited capability, and several only save energy to operate basic home systems for a short time period. Although grid-tied solar panels turn off for safety and practical reasons during a grid , using a hybrid system can, sometimes, let you keep on generating power to run your dwelling. Many solar power systems with batteries may have a physical change or software setting which enables your panels to continue to function independent of the grid, thus recharging your house battery once the sun is shining.

Is a hybrid plus storage system best for you?
Should you experience power outages or reside in a place where weather-related damages to the electrical grid are common, ensuring you have reliable power once the electrical grid is down or damaged could be possibly life-saving. High winds, flooding and heavy rain, and snow storms are a few of many weather events which do damage to power lines and other areas of

the electric grid and being built to self-generate and find electricity from places aside from the grid is vital.

Solar for wind disasters

Weather events such as hurricanes are accompanied by wind speeds around 200 mph, and tornadoes can bring even higher rates that threaten to harm rooftop and ground-mounted solar power systems. It's necessary that you learn how solar panels hold up, and if they may be a trusted resiliency tool in case of extreme wind events which may knock out portions of the electrical grid.Normally, solar panels are highly resistant to damage from blustery conditions. In actuality, most in the EnergySage panel database are rated to withstand substantial pressure specifically from end (and hail!) . The limiting factor for solar panel end resistance is virtually not the panels themselves. In most cases where wind causes harm to a solar array, failures occur because of flaws in the racking system or at the roof your panels are mounted to. When wind blows across a roof with solar panels, it moves through the small space that typically exists between the panels and the roof (or between your panels and the floor in the event of ground-mounted systems), causing lots of uplift into the panels. This phenomenon is capable of ripping panels out of their mounts, or the mounts out of the roof or floor. Even more unpredictable than wind alone, because of the number of sizes and kinds of materials which may be blown around in a storm, solar panels have been shown to be remarkably resistant to impact from wind-blown debri previously. In the National Renewable Energy Laboratory (NREL) campus in Golden, Colorado, a severe hailstorm led to a single broken panel from 3,000 in a huge rooftop array.

Building codes encourage wind resistant solar arrays
If you reside in a place with frequent hurricanes (such as Florida) or tornadoes (such as Texas or Oklahoma), the regional government may have policies which mandate a level of durability for rooftop solar arrays. By way of instance, in certain regions of southern Florida where hurricane season brings intense winds each year, solar panels must be installed to withstand winds up to 170 mph. This requires solar contractors to check their panels and racking equipment to ensure that they will stay anchored to a roof in hurricane-level winds. Most solar installers follow technology guidelines determined by the American Society of Civil Engineers (ASCE) within their Minimum Design Loads standards book. While ASCE does not mandate a particular degree of wind resistance, they outline a standard procedure for analyzing solar panels to get a wind resistance evaluation. This guarantees that solar panel installations nationally are compared to a common standard, and is a fantastic way to confirm that your solar installer is putting their equipment through appropriate and accepted testing procedures. Municipalities will frequently include ASCE 7-10, the wind-specific ASCE standard, as part of their regional building codes to make sure local solar installers are abiding by federal construction standards and calculations.

Solar Operations and Maintenance

You've got solar panels on your roof -- now what? Your solar power system doesn't need much maintenance, but there are still a few services and products to consider as soon as you've installed solar on your premises.

Solar Monitoring Systems

How solar monitoring systems operate

How solar monitoring systems operate Companies will often provide solar inverters that include a proprietary tracking software setup.As your solar inverter converts DC current into AC current to be used in your home, information about power levels and generation is collected and delivered to cloud-based monitoring systems and their company programs. Some monitoring systems provide on-site monitoring also, and cable information from the inverters right to a tracking device on your premises.Most tracking systems can be set up to have mobile capabilities, letting you access system information stored in the cloud from mobile devices without having to connect to a WiFi network. Because of this, if your personal online connection is lost, you might still have the ability to access your solar tracking system.Systems using power optimizers do not rely on a wireless link to transmit data, so tracking continues during net outages. Based on the interface you've set up, you might also have the ability to access your observation data even if your internet is down. But this is not true for microinverter tracking systems. They rely on a WiFi connection to track each panel separately, in real time. It follows that if the net goes down, so do your observation capabilities.Apart from displaying energy consumption and production data, monitoring systems provide many tools that will assist you understand your solar power setup. Tracking software frequently can help detect problems and flaws with panels, and recommend repairs to your own setup. By way of instance, monitoring systems provide data on historic weather-based performance, so it is possible to understand how the weather has influenced your solar energy generation before, and what you could expect in the future.

Independent Monitoring For Solar

Producing solar energy is based on getting functioning, efficient equipment, and there are quite a few factors which can decrease your system's effectiveness. Shade, dirt, damaged components (such as wiring, inverters, or panels), and much more can cause your system to create less electricity than it is capable of.It is important to carefully watch your solar panel manufacturing so you can identify issues as soon as your system is not performing as it should. Your solar inverters provide information regarding system performance. Independent solar monitoring companies take advice from the solar inverters regarding the energy generation of your system and translate that data to be certain that your solar project is functioning at its finest.Independent monitoring businesses are mostly data aggregation and management specialists. Solar tracking: inverter monitoring vs. separate tracking serviceA frequent misconception concerning independent monitoring services is that you can find the information they supply yourself, right out of your solar system. This is only partly correct. While firms like Enphase and SolarEdge create inverters with built-in monitoring capacities, they do not

necessarily provide the information that you may need. By way of example, you might have the ability to see raw numbers demonstrating decreased production from a specific panel, but unless you're an experienced solar tech, it'll be tricky to understand what is wrong with this panel without external aid.This is where independent tracking comes in: tracking services companies like Locus Energy take the information your inverters collect from the panel installation and translate it for you. This makes it possible to know if something is wrong, what's not working properly, and what steps will need to be taken to get your system functioning properly.Independent monitoring services have the exceptional benefit of having the ability to actively monitor your system, meaning tracking companies will port with an operations and maintenance company to assist proactively address problems that their technology explains. Knowing what your solar array is performing is just 1 step of the monitoring procedure. Through active monitoring strategies, you can be certain problems with your panels are identified and recognized quickly and properly, so as to execute a plan of action to bring your equipment back up to speed.Significantly, an independent solar tracking service doesn't necessarily involve a strategy for physical repairs to your system if a problem is detected through information analytics. Additionally, take a look at our solar tracking system overview to find out more about built-in inverter monitoring.

Community Solar

Key Considerations

Locating a community solar project
At this point in time, with neighborhood solar still a relatively new concept in most regions of the country, there might not be many community solar alternatives available in your own community.However, as its name suggests, one of the things which makes community-owned solar interesting and unique is they may be constructed in virtually every community. If you are considering kick-starting a neighborhood solar project for your community, reading through NREL's report on the subject is a fantastic place to start. Community-owned solar gardens are different from green electricity programs, which charge a premium price for shifting a house or company's power supply to renewable energy. The objective of a community solar energy project should be to help save you money--if you obtain a share of the solar panels or a stake in the project, or you subscribe to purchase the electricity produced in the solar garden. VNM ensures that participants get on-bill solar credits for every unit of solar energy their share of this solar project generates --even if the panels aren't located on their property. Credit values depend on your condition and the community solar system; typically, it is either a volumetric credit (i.e. a kilowatt-hour), or a financial credit on your invoice. As time continues, however, an increasing number of project utilities and developers will figure out ways to create community-owned solar a viable option even without VNM, mainly by assigning alternative values into the solar energy generated by the job --speeds that aren't connected to your power tariffs.In case you've obtained a share in the community solar project, your panels will cover for themselves since the system generates power and reduces your monthly utility bills. While the expense of constructing a large solar installation is significantly less than the cost of installing a tiny solar PV system in a house, the overhead cost could be higher if the property where panels

are installed is leased or bought. Moreover, the solar farm operator may continue to be responsible for keeping the solar installation. They could either charge you upfront fees or yearly fees to keep the system. A point to keep in mind, you will still have the ability to profit from the tax credits that are available.

Subscription

If you don't own, but instead register for a subscription to a community-owned solar system, your savings could be lower. The upside, of course, is you won't be required to buy the system up-front, and can begin saving from day one.Subscription to a neighborhood solar farm might have similarities to a solar rental or PPA arrangement: the project developer/administrator accounts for the solar installation and maintenance costs, and offers the power to you at a speed that is lower than that which the utility offers. It's important that you understand how much you will pay for the solar power from the solar farm and how much you'll save each year. Solar energy, being a fuel-free electricity supply, isn't subject to the cost increases associated with electricity generated by power plants that run on coal or gas. The neighborhood solar system developer / administrator might decide to charge you a higher rate annually you subscribe to power from them. These increased costs more likely reflect an increase in their earnings than a need to pay increasing costs.This is particularly true in cases where the price you pay is related to the electricity rates charged by the utility --for instance, the community solar system may provide you with a 5% or 10 percent reduction on the prices from the utility. As the utility costs increase each year, the price you pay for power in the solar garden will also increase. Some applications may instead lock ' a set rate for solar within the length of the contract, with or without slow increases tied to an agreed-upon electricity cost inflation rate. Of the available apps, fixed-rate arrangements are definitely the most beneficial for you. Because of this, it's reasonable to think about electricity from the solar garden as having been sent directly to you. The neighborhood solar company will probably request a copy of your electricity bills from the past 12 months. The allowable size of your share in the job --no matter whether you have or sign up --will typically be restricted under program rules so that your solar generation doesn't exceed your actual electricity requirements.

What happens in the event you sell your home or move?

Should you relocate within the same utility area, you'll have the ability to maintain your share of the garden. But if you go away from the utility service area in which the solar garden is located, you might need to sell your share in the solar job or cover an early departure fee if you've signed up for a subscription.

Does the program provide a performance monitoring alternative?

It's important that you're able to measure and monitor the quantity of power your share of this community solar project is generating. This will offer you a greater feeling of certainty and satisfaction about the advantages. This is very significant with neighborhood solar, in which the flow of value and electricity is more abstract than using a rooftop system. If you reside in a country with an SREC marketplace, you need to inquire as to who receives the money from the sale of these certificates. Based upon the pricing structure, they may be bundled into upfront costs related to the solar garden, paid out to you on a continuous basis, or kept by the solar firm

operating the solar garden.Does the project encourage involvement among low-income families? State policies designed to facilitate community solar jobs frequently mandate a percentage of a job be carved out and allotted specifically for low-income families to be able to be certain that the advantages of solar are shared by a broad section of the populace.

Community Solar Pricing Models

As you consider a neighborhood solar offer, it is important to realize how it provides value to you. This article breaks down the two chief types of pricing models -- possession and subscription - to be able to help you accurately compare and choose between various offers.

Things to look for in a neighborhood solar offer
Ownership of this solar garden: Pay cash or fund with a solar loan
If you have a share in a community solar farm, you may pay a set price for this -- that you can either cover upfront with money or fund with a solar loan.If you reside in a country with virtual net metering, after the solar farm is operational you will start to get solar net metering credits in your monthly electricity bill equivalent to your share (e.g. 2%) of the neighborhood solar project's total electricity output. As soon as you recoup your initial investment by means of these savings, you may continue to get free electricity in the kind of solar credits until you sell your share or the project is decommissioned (which could be 25 years or longer). Community solar is best suited for men and women who aren't able to install solar on their roof but wish to take advantage of some of their financial and environmental advantages of solar power.

Things to bear in mind for ownership-based community solar programs
It is important to look closely at the complete size or wattage (W or kW) of the share which you're signing up for. Wattage is the step that indicates power output. Knowing the $/watt price will let you compare offers apples-to-apples.

- How much power will your share create? If you're comparing different supplies, you can discover that one claims more solar power per watt than another--possibly because it utilizes solar monitoring equipment, or as it's otherwise more optimally designed. How much value will this add in power savings over time?
- What's the projected payback period for your share? How much can you save annually?
- The expense of a share comprises not only panels, but also all of the other gear which makes up the solar project, also monitoring software (if provided), project management and continuing operations & maintenance costs. Does the offer take all these into account?

Incentives

- Though you might qualify for some state-based tax incentives, federal tax credits will usually go to the company that develops the job.
- In nations where they're offered, you might also have the ability to obtain SREC payments. Check the contract for specifics. Exit from the program will entail either promoting your share or gifting it to somebody else.

What to Look For

Up to now, there are only a few community solar-friendly countries that have niches which could be described as aggressive. Consumer choice is still limited, with the majority of shoppers having at most one neighborhood solar system offering available to them, if any.But neighborhood solar markets are poised for growth in roughly a dozen key states: Massachusetts, Colorado and Vermont are one of those where choices are quickly growing.This report can allow you to evaluate community solar supplies, providing advice on what to search for as you are comparing options.

Why Use a Community Solar Marketplace

Most homeowners and tenants have to pay electricity bills in their utility every month. In many states, power customers do not have a choice about which provider they use. Community solar provides an easy, sustainable approach to take your energy use into your own hands. With solar panels that are shared, you may decide to utilize the solar energy generated by a large solar array located in your own community.As you begin to consider investing in neighborhood solar, you will encounter new and unfamiliar language and policies. The best way to understand all the terms and conditions which are included in your community solar options would be to comparison-shop.When you research your options through EnergySage's Community Solar Marketplace™, you can make certain you have all the relevant information before you make a purchase. In EnergySagewe encourage every homeowner or company considering shared solar to compare several offers, as opposed to working with just one community solar supplier. Our online platform will offer a list of jobs in your region.EnergySage recommends that you engage with 2-3 suppliers of roofless solar options so as to comprehend the trade-offs between each choice and make certain you maximize the return on your own solar investment. Take some time to review all your community solar supplies, and do not be afraid to ask questions about the critical differences between the proposals.

Project place
One of the primary advantages of community solar is that it is possible to promote a shared solar project locally without installing panels on your roof. Typically, you want to discover a community solar project that's located in precisely the exact same area as your electricity supplier. (There are a few exceptions to this condition, such as Arcadia Power's community solar)

Pricing arrangement
Community solar providers typically provide one of two community solar pricing models: possession or subscription. If you decide to get your share of the solar farm, then you purchase the share in cash or take out a loan. As soon as you break even on your investment, you will get free solar power for the duration of your solar panels' lifespan. Comparing offers from several neighborhood solar suppliers with different contract types can allow you to recognize the relative costs and benefits of each choice.If you subscribe to a community solar system, your

savings will be based on the structure of your contract. Some contracts guarantee a set discount in the utility rates, either in pennies per kilowatt-hour or as a percent. Others will require that you pay a predetermined rate, either per kilowatt-hour or a month. Pricing will vary based on the community solar supplier you select, the location of your job, and how big your share. Many community solar programmers have an"offer" that exemplifies your projected monthly savings.

Term duration

The duration of a community solar arrangement typically ranges from 10 to 25 years depending upon your provider. You may lock in lower prices by choosing a contract with an extended contract term, or choose to register for a job offering a shorter duration if you anticipate moving in the not too distant future.You might not be able to take your community solar share with you in case you move or sell your dwelling. If you have your share, you'll have to market it if you move beyond your utility's service territory. Others will just need you to provide advanced notice, or that you move your share to another customer. You'll find this information in your supplier's neighborhood solar contract or on the Community Solar Marketplace™.

Resources:

https://www.energysage.com/
https://www.seia.org/
https://en.wikipedia.org/wiki/Solar_energy
https://science.nasa.gov/
https://www.nrel.gov/
https://www.energy.gov/
https://www.nationalgeographic.com/