



**GREEN  
POWER  
ENERGY**

# **GREEN POWER ENERGY'S "GOING SOLAR" GUIDE**



**About This Guide:** This guide was created by Green Power Energy, LLC, a solar installation company based in the Northeast Region. The intent of this guide is to educate the public on solar energy so they can make the best decision when installing solar panels for their own home or business.

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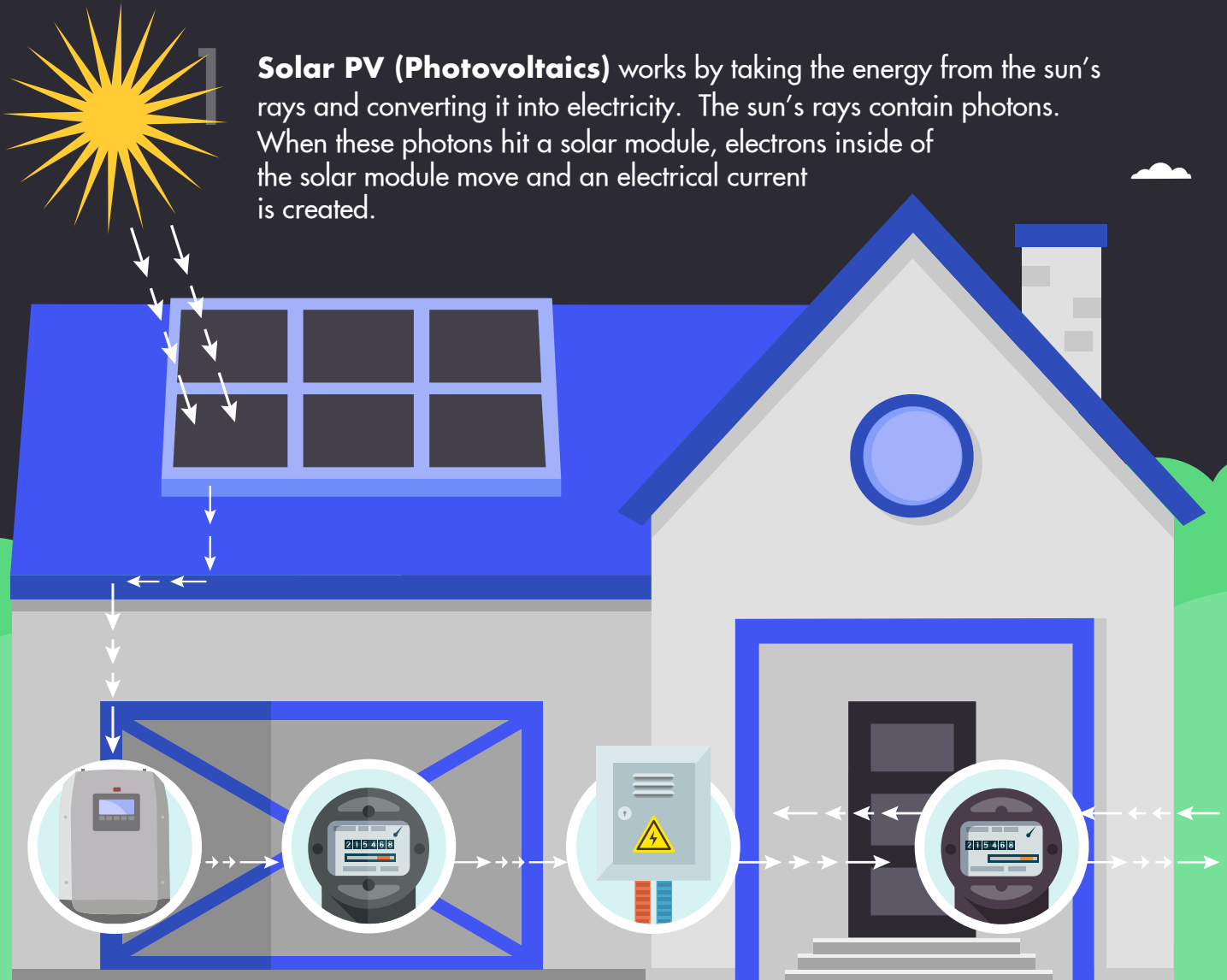
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# How Solar Works



**2** The first stop for the solar energy is the **solar inverter**. This device transforms the DC power produced by the solar into usable **AC electricity**.

**3** The power then travels from the inverter to the **Solar Production Meter**. This meter records the solar production of the system. This is the data that can be used in selling energy credits in certain states.

**4** Once the power is in AC form it is sent to the **main electrical panel** where it can provide power to the home.

**5** If the site demands more power than what is provided by the solar it will pull from the grid. If the solar produces more than the site needs, then that over production is put back into the grid for a credit in a process known as **net metering**.

## a. How Is Solar Attached to My Roof?

Solar modules are mounted on top of solar rails which run across the roof as the mounting system for the solar array. The solar rails will have several penetration points throughout their span which connect directly to the rafters of the home. Before receiving the approval to build from the township, we must submit an architectural letter with our permits proving the structure's integrity.

This letter shows that the roof can not only withstand the weight of the solar modules, but also the weight of the modules in hurricane force winds and under extreme snow loads. The penetrations into the roof are protected by a flashing mechanism which is guaranteed to protect against leaks.

The space between the solar modules and the roof is approximately four inches.



## b. Types of Solar Installations

### Roof Mount

The most common solar solution and the most economical. Solar flashing and solar rails are attached directly to the roof.



Installed on the ground on top of solar rails and piping. solar power is trenched back to the utility meter.

Ground mounts can have a higher upfront cost, but greater returns because they can be orientated at the ideal pitch and azimuth.

### Ground Mount

## Flat Roof

The most common commercial solar installation. Solar panels are mounted on non-penetrating, ballasted rack.



## Car Port

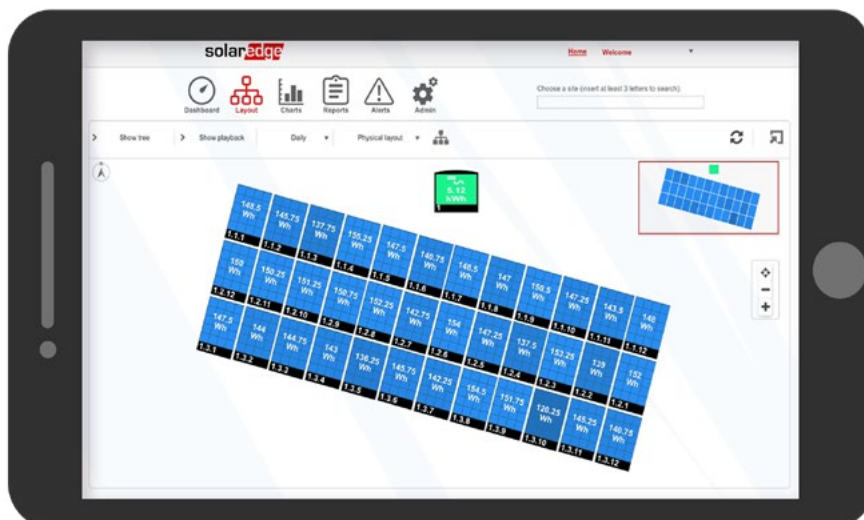
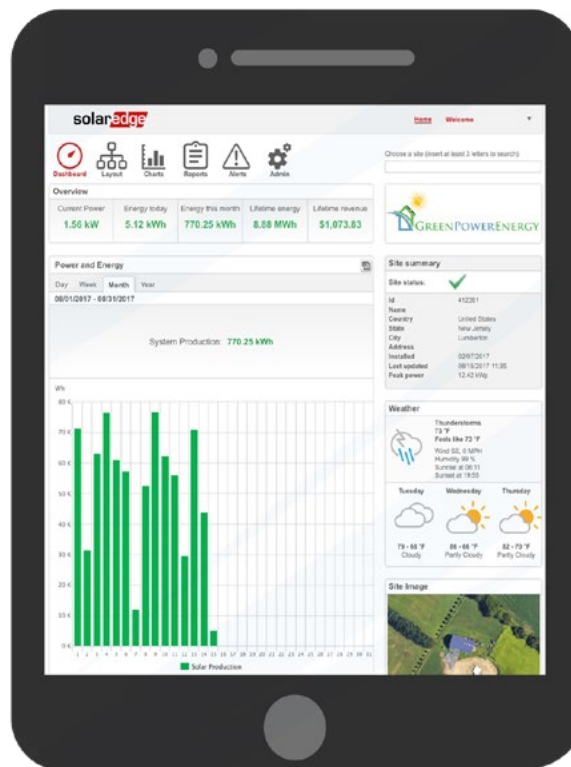
Great for commercial properties with limited roof space. The added benefit is protection for vehicles.



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# Solar Monitoring

Green Power Energy's solar installations come with panel by panel system monitoring so you can review the daily, weekly, monthly, yearly, and lifetime solar production from your computer, phone, or tablet.



# How Do You Save Money with Solar?



## Net Metering

Net Metering is a billing mechanism which allows grid-tied solar producers to put electricity that they do not use from their solar array back into the grid. When the solar produces more power than the site needs, the utility meter spins backwards, and the account holder will have a credit against future energy use. The solar producer is then billed for their total “net” usage at the end of the month, which is the balance between the power pulled from the grid and the power put back into the grid.



## Transition Program Renewable Energy Certificate “TRECs” (NJ)

TREC stands for Transition Program Renewable Energy Certificate. It is the successor program to NJ’s SREC program. A TREC is a sellable certificate that represents all the clean energy benefits of the electricity generated by a solar electric system. Each time a solar electric system generates 1,000 kilowatt hours (1 MWh) of electricity, a TREC is issued which then can be sold for cash. A grid-connected solar electricity system in New Jersey is eligible to collect TRECs on all energy produced by the system for a 15-year period. The price of a TREC is fixed at a predetermined price based on sector. For residential solar systems, the TREC is fixed at \$91.20 and commercial roof mounted systems are fixed at \$152 for 15-years.





### **Residential Solar Investment Program (CT)**

The Residential Solar Investment Program in Connecticut, also known by its acronym the RSIP, is a solar rebate administered by Connecticut Green Bank. The rebate is valued at \$0.358/watt up to \$3,580 for a 10 KW system and \$0.207/watt for any additional wattage up to 20 KW. Max rebate amount is \$5,650.



### **Renewable Energy Growth Fund (RI)**

The Rhode Island Grant is valued at \$0.85/watt installed up to \$7,000. The Grant is installer assigned and paid out to the installer after the system is interconnected. The installer applies for The Grant on the homeowner's behalf and can pay the homeowner back The Grant amount. The Grant is available for both cash purchase and solar loan jobs.



### **Solar Massachusetts Renewable Target "SMART Program" (MA)**

The SMART Program pays you a fixed rate per kWh of solar energy produced for 10 years. On average, homeowners can earn between \$3,000 and \$13,000 over the course of the 10-year program. The amount earned depends on the size of your solar system and the current incentive block for your utility company. Massachusetts also offers the owner of renewable energy systems a 15% coverage of the system cost against his or her MA income tax with a \$1,000 maximum credit amount.



### SRECs (PA)

Similar to TRECs in NJ, SRECs in PA are also generated each time a solar electric system generates 1,000 kilowatt hours and can be sold for cash. In PA however, the price is not set and can fluctuate based on the supply and demand for energy certificates in The State.



### Solar Tax Credit (ITC)

The Solar Investment Tax Credit (ITC) is a dollar-for-dollar federal tax credit which reduces a person or business' tax liability based on the amount they have invested in a solar energy project. The residential and commercial ITC are both worth 26% of a solar project's cost through 2022. For example, a \$10,000 solar electricity system will be eligible for a \$2,600 federal tax credit. permanently. Customers that purchase or finance their system through a solar loan are eligible for this incentive.

#### **The ITC then steps down according to the following schedule:**

- 26% for projects that begin construction in 2021 and 2022
- 22% for projects that begin construction in 2023
- After 2023, the residential credit drops to zero while the commercial credit drops to a permanent 10%

# Solar Purchasing Options

## a. What Is The Return on Investment (ROI) of Solar?

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A solar loan or lease can be obtained for no money down. Despite not paying upfront, the borrower in most instances will be cash flow positive when the electric savings and incentives come out to more than the total solar payments. For outright solar purchase across our service areas in the Northeast, the average solar buyer pays off their solar panels in less than eight years. After the return on investment is reached, additional savings from incentives are possible as well as securing free electricity for the remainder of the solar panels' 25+ year lifespan.

## b. What is Free Solar?

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"Free Solar" or "\$0 Down Solar," refers to financing a solar installation through a third-party financier. This option is "free" in the sense that there is no upfront financial obligation, although it is possible to put money down. Once a solar agreement is signed, the homeowner will generally not have to pay until one month after the installation is complete. From that point on, they are expected to pay monthly for the system through the contracted term. In a Solar Lease or Solar PPA, the homeowner should expect to save monthly because their contracted solar price should be less than the price from the utility company. With a Solar Loan, the homeowner will generally experience utility savings plus available incentives which should show monthly savings.

## c. What Is the Difference Between a Solar Lease, Solar PPA, and Solar Loan?

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The three types of finance solar options are a Solar Lease, Solar PPA, and Solar Loan. A solar lease allows you to pay monthly for your solar array. A solar lease can be as low as \$0 down with recurring monthly payments for what is generally a 20 or 25-year contract. Most homeowners can expect to save a considerable amount of money throughout the term of their solar lease since their monthly solar lease payment will in most cases be less than the cost to purchase power from the utility. Many solar leases also have a production guarantee to help ensure these savings. However, with most solar leases, homeowners are not entitled to the SRECs and the Tax Credit.

A solar PPA is similar to a solar lease, except the monthly payment can vary based on the amount of energy produced by the system in a given month. Also known as a Solar Power Purchase Agreement, a PPA allows the homeowner to purchase the power produced by the solar panels at a fixed kWh rate.

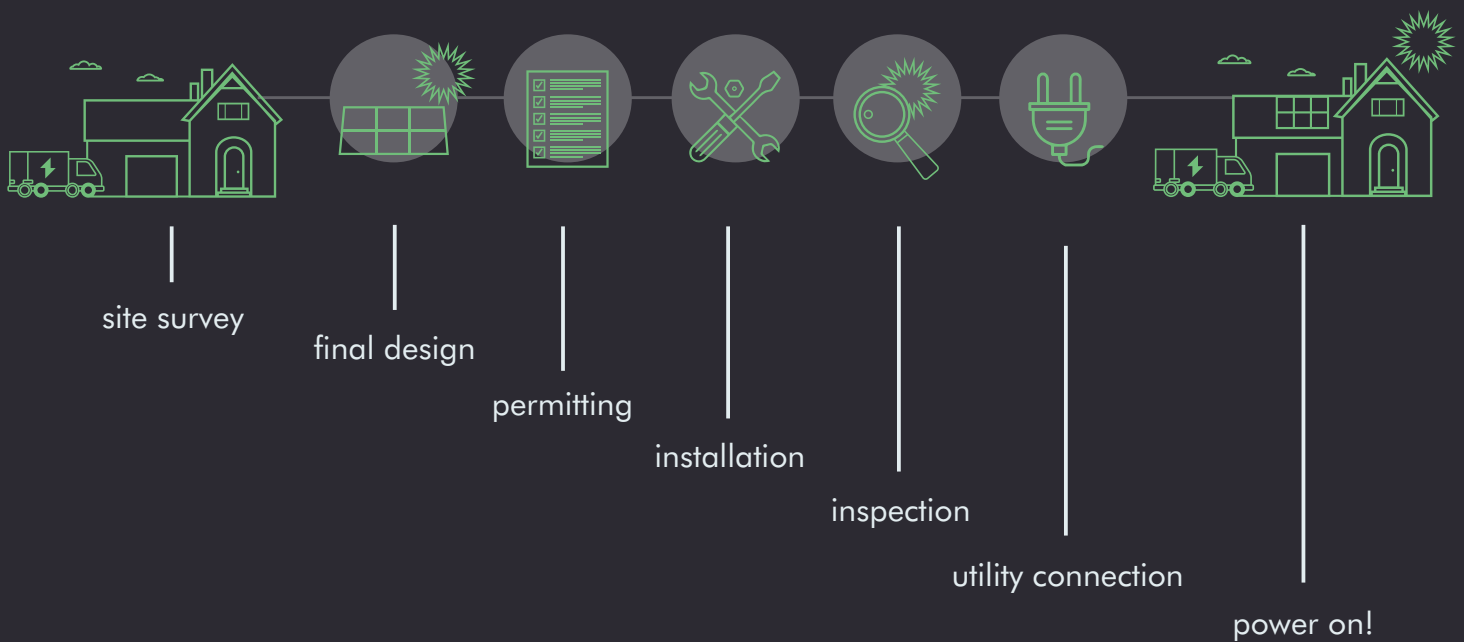


### **A solar loan is becoming the most popular finance option available.**

With a solar loan, you pay no money upfront but do make payments over a specified term. In a solar loan, you own the system and are entitled to the SRECS, the RSIP, and the tax credit, making this the most financially attractive option available. For all three types of financing, you must own the home, have a site conducive to solar energy, and pass a credit check.

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# The Solar Installation Process



**With Green Power Energy, your solar installation is a turnkey package.**

We handle the permitting with the township and the approvals with the utility company. Generally, the time frame between sign up and installation is 12-16 weeks. This allows for time to engineer the system, obtain approvals, and procure equipment.

The actual installation will only take a few days. Be aware, it may take a few weeks after installation before you are issued your formal "Approval to Operate" from the utility company.

# Other Solar FAQs

## a. What Happens When My Power Goes Out?

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In order for the solar to operate and for the inverter to turn on, power must be detected from the solar array as well as the grid. This means that in the case of grid outage, the solar inverter and your solar array will shut down. This serves as a safety precaution. since your system can back feed to the grid, a live system can pose a hazard to utility workers down the line from your system. There are some inverters on the market that have a plug-in feature which allows you to use a small amount of power from the system while the sun is shining. The only way to have full power during an outage is to invest in a battery backup system which are available for sale from Green Power Energy and are becoming more and more cost effective and efficient each year.

## b. What Happens When I Sell My Home?

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When you own the system outright, the system can stay on the house and become the property of the new homeowner. You also can remove the components and ship them to your new location, although that may prove to be more trouble than it's worth. You can also retain the SRECS produced by the system even after you move since the SREC account is in your name. Some homeowners will leave the SRECs with the new homeowner and others will keep them for themselves. Most solar leases are completely transferable over to the new homeowner. Most loans are also transferable over to the new homeowner. Be sure to verify the transfer of ownership process of your financed solar array.

## c. What Is The lifetime of a Solar Installation?

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Most solar equipment is warranted for 20 + years. We expect the solar arrays we are installing today to be viable energy producers for more than 20 years. Inverters may need to be replaced between years 12-20, but this cost is minimal compared to all the other system components. A roof mounted solar array will extend the life of a roof, however, if the roof is already older than 15 years old we recommend reroofing beforehand.

## d. Will Solar Increase My Property Taxes?

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In NJ, CT, RI, and MA, solar is exempt from both an increase in property taxes and any sales tax.

## e. Why Should I Go Solar Today?

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Going solar creates a great investment and revenue stream on your home and has positive environmental implications. Going solar will provide a strong ROI for those looking for an investment, and can even provide monthly cash savings for those who finance. By going solar, you are creating clean power on your own property and reducing the need for electricity from power plants powered by fossil fuels. A solar array that produces 5,000 kWhrs annually will save the equivalent of 1.875 tons of coal from being burned each year.

# About Green Power Energy

Green Power Energy is a solar installation company serving the Northeast Region that has been in operation since 2009. Green Power Energy handles the complete turnkey solar installation process for homes, businesses, and farms alike. Green Power is based out of The Village Green at Annandale, a solar powered eco-village in Annandale, NJ, with its own 322 kW solar ground mount which powers Green Power Energy's office. In order to service our customers in New England, Green Power Energy has offices in Stamford, CT and Needham, MA.

Green Power Energy's process is completed only by in house employees. We handle everything from the initial sales consultation and design through permitting and installation. Green Power offers an industry leading 25-year warranty with complimentary follow up support. With Green Power Energy, the approach to each installation is customized and collaborative. Our consultants design the solar arrays themselves and develop a custom purchasing package

for each job. Our customers have the final say in system layout, components, and financing methods.

With experience in residential, commercial, and agricultural solar projects, Green Power Energy is capable of all scopes of work. We have installed on asphalt shingle roofs, metal roofs, flat roofs, ground mounts, and even carports and solar pergolas. In our 12th year in business, Green Power Energy is ranked the #63 best residential installer "of all time" across the USA by SolarReviews.com.

Green Power Energy operates a full-time dedicated service department. This is a crucial part of searching for a solar company that will provide you with assistance long after the original installation.

With Green Power Energy, you have the peace of mind of going solar with a reputable and accomplished solar installation company.



To Contact Green Power Energy for a Custom Solar Quote for Your Home or Business:  
**Call (844) 584-0008.** Visit us on the web [www.GreenPowerEnergy.com](http://www.GreenPowerEnergy.com)