

## **Home Solar Electricity Systems (PV) – Facts, Incentives and Other Information**

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To invest in your own home solar PV system is to invest in an asset that will reduce your electricity bills and could provide a small income as well. Prices of components have fallen; federal and state incentive programs are very generous; resulting in very rapid paybacks. This information handout will help you to begin to understand today's market. We recommend that you do your own research, and that you seriously consider investing in a solar photovoltaic system.

### **AN EXTREMELY BRIEF DESCRIPTION OF HOW HOME SOLAR PV OPERATES:**

Your home solar array produces DC power that is converted by an inverter to AC and conditioned to match voltage, phase, and power factor with the electricity coming into your home from the lines on the street. At times, you will need power coming in from the street, and at other times, you will produce more than you need. At these times, the extra electricity goes out to the street, and your meter counts it. Monthly, the electric company reads the net result on your meter and calculates your bill. If you made less electricity than you used, then you have a small bill. If you made more electricity than you used, then you have a credit, called a Net Metering Credit. The credits are calculated in dollars, not kilowatt-hours, and they are the sum of the basic service default price, as well as the transmission, transition and distribution charges at the time the credit is earned.

In the summer months, you will make more electricity than you use. You will be banking the credits on your account with the electric company until the winter months, when you will be using more electricity than you make. If you build a larger system than you need, you can allocate a portion of the credits to any customer in your local distribution company's territory. Visit <https://sites.google.com/site/massdgc/home/net-metering>

Meanwhile, one SREC (Solar Renewable Energy Credit) is minted for you every time you produce another 1,000 kilowatt-hours of electricity from the solar array. These SRECs are sold at periodic auctions or sold directly to Electric Distribution Companies. You will want to sell them to an aggregator who will peddle them for you and charge you 2-10% for their efforts. The State has created a clearinghouse auction with a price of \$285/SREC. After you subtract a 5% aggregator's commission, this is like being paid a bonus of 27 cents per kilowatt-hour for your solar electricity. Beginning in 2017, the clearinghouse auction price begins to decline at ~5%/year until 2026 when it reaches \$171. You will be able to sell your SRECs for ten years; after that, your system will be awarded a similar type of certificate that lately tends to sell at a price of \$30 to \$50. Not as lucrative, but an incentive, nevertheless. Visit <http://programs.dsireusa.org/system/program/detail/5679>

The amount of electricity you can produce will depend not only on the weather, but also on factors that are specific to your location. In a perfect world, your site will face due south; your array will be tilted to the perfect compromise angle for our latitude; and there will be no trees or hills blocking any sunlight. In that situation your system could pay for itself in less than four years if you qualify for all of the incentives. However, you do not need a perfect site in order break even in a reasonable period of time. If your site can provide at least 70% of the electricity of a perfect site, you will want to investigate further.

You will still be subjected to power outages unless you invest in energy storage. If a power line is down, then your system controllers will automatically shut it down also. Just like with home emergency generators, you do not want to be producing electric power, sending it out to the street, and electrocuting linemen and frying your neighbors' appliances. Your

system will shut down and isolate itself from the power lines until power is restored. You can still use your emergency generator if your transfer switch is properly wired into the system. If you want to use your solar array during power outages, then you will need to buy batteries and different controls and wiring.

You may have read about possible changes in the incentives for solar energy that could be arriving in the future. The Federal Investment Tax Credit has been extended another 3 years until 12/31/2019. After that it gradually steps down to 10% after 2022. The recent solar energy bill reduced the net metering credit for some arrays, but not for systems the size of home solar systems and small commercial systems. (<10 kw, 1  $\phi$ , <25 kw, 3  $\phi$ .) The SREC program is maxed out for commercial systems, but homeowners and small businesses will continue to be able to use today's favorable SREC incentives this year. The Department of Energy Resources will institute a new SREC program beginning sometime next year, probably in late winter or early spring.

### **REASONS FOR OWNING A HOME SOLAR PHOTOVOLTAIC ARRAY:**

You will be generating electricity using clean, renewable solar power.  
You will own an asset that will reduce your electric bills and also earn income for you.  
Your SRECs and net metering credits will more than cover the payments on a Mass Solar Loan, or will provide an attractive return should you choose to finance the system yourself.

### **HOWEVER:**

You will still be subject to power outages unless you invest in a more expensive system.  
The economics of the deal depend upon state and federal incentives.

### **INCENTIVES:**

Federal Investment Tax credit of 30% on your federal income taxes.

Massachusetts Investment Tax credit of \$1,000 on your state income taxes.

Mass. Solar Loan program reduces the interest rate by 3% regardless of income, and pays 30% of the loan if your family income is less than \$66,866, and 20% if your income is less than \$80,240. visit <http://www.masssolarloan.com>

Components of your system are exempt from sales tax.

Your system is exempt from local property taxes for 20 years.

You can sell Solar Renewable Energy Credits & Certificates (SRECs).

### **BANKS PARTICIPATING IN THE MASS. SOLAR LOAN PROGRAM IN OUR AREA:**

North Brookfield Savings & Loan, North Brookfield  
UMASS Five College Federal Credit Union, Amherst  
Franklin First Federal Credit Union, Greenfield

### **LOCAL SOLAR CONTRACTORS: (This is *not* a complete list)**

(PV)<sup>2</sup>, Greenfield

Berkshire PV Services, Adams

The Solar Store, Greenfield

Northeast Solar, Hatfield

### **AGGREGATORS THAT WILL BUY YOUR SRECs OR SELL THEM FOR YOU:**

Visit <http://www.mass.gov/eea/docs/doer/renewables/solar/aggregators.xls>

We suggest HCOG or Rural Aggregators of New England. Both charge 5% commission and do not require a long term contract.