

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

(Orange Town Energy Committee – Ad Hoc – 12/07/2016)

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 generous; resulting in 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. This sum is then multiplied by the excess electricity you produced, and stored on your account as a credit.

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. Another way of thinking about net metering credits is to visualize the distribution grid as your personal gigantic storage battery. Excess electricity produced when you are not using many appliances is sent out to the grid and returned to you when you need it, and the monthly bookkeeping and accounting is done with dollars. 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. For a complete explanation, visit <https://sites.google.com/site/massdgc/home/net-metering>

The Commonwealth also has another incentive program to reward you for producing solar electricity. You will receive a bonus of money for every kilowatt-hour of solar electricity that you produce. At the present time, this is accomplished by awarding you Solar Renewable Energy Credits (SRECs.) These credits are then peddled through a broker to electric distribution companies or sold at an auction. This system will be replaced by a direct tariff payment program sometime in 2017. The Department of Energy Resources is still in the process of developing and promulgating this new program, so exact prices are not yet fixed. However, it is their intention to provide you with a ten-year program of incentive payments that will more than repay your investment. Your reputable solar installer will be able to explain the incentive payments that you will qualify for when you install your new system. But it is safe to say that a correctly sited, sized, and priced solar system will repay construction and installation costs well within the ten year period of incentive payments. Your system will then continue to produce electricity for another 15 or 20 years.

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 very quickly if you qualify for all of the incentives. However, you do not need a perfect site in order to 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 and compare a few bids.

You will still be subjected to power outages unless you invest in energy storage. If a power line is down, then your system will also automatically shut down. 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.

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 incentive payments and the value of the electricity you produce 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 for systems installed before 12/31/2019, after which it declines to 10% after 2022.

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

Mass. Solar Loan Program caps your interest rate at 4.75% regardless of income, and pays 30% of the loan if your family income is less than 80% of State Median, and 20% if your income is less than 120% of State Median. 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.

All of the electricity that you produce will either be immediately used by you or credited to your account to cover future use.

You will receive incentive payments for every kilowatt-hour of electricity that you produce.

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

Franklin First Federal Credit Union, Greenfield

Greenfield Coop Bank, Greenfield

UMASS Five College Federal Credit Union, Amherst

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

Berkshire Photovoltaic Services, Adams, 413-743-0152

Domestic DC Systems, Orange, 978-515-8303

Northeast Solar, Hatfield, 413-247-6045

(PV)², Greenfield, 413-772-8788

The Solar Store, Greenfield, 413-772-3122

These and other reputable contractors will be able to give you a free and accurate assessment of your site.