**Home Solar Electricity Systems (PV) – Facts, Incentives and Other Information**
(Orange Town Energy Committee – Ad Hoc – 6/13/2017)

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 calculated by taking 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/massdgic/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 1,000 kilowatt-hours of solar electricity that you produce. At the present time, this is accomplished by awarding you Solar Renewable Energy Credits (SRECs.) These credits are peddled through a broker to electric distribution companies or sold at an auction. These incentives will be replaced by a declining block "Solar Tariff" incentive program; it may begin on January 1, 2018. This program is presently in the public comment period and could possibly be amended, so we will not predict how much the incentive will be reduced. 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 commenced before 12/31/2019, after which it declines in three steps to 0% after 2021.
Massachusetts Investment Tax Credit of $1,000 on your state income taxes.
Mass. Solar Loan Program caps your interest rate at 5.25% 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 the electricity that you produce.

**BANKS PARTICIPATING IN THE MASS. SOLAR LOAN PROGRAM IN OUR AREA:**
Franklin First Federal Credit Union, 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.