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NARI MEMBER

Data Sheet
Solar Electric (Photovoltaic) Systems

Photovoltaic (PV) systems harness the energy from the sun to produce electricity that can be used by homes and businesses. Many options are available today for the type and mounting method of the solar modules that convert the sun's energy into electricity.

Traditionally, rectangular modules of approximately 2' by 4' have been mounted onto roof structures or on racking systems mounted on the ground. Building-Integrated Modules serve a dual purpose such as forming an awning that provides shading for a building. "Thin-film" modules are rolled-out onto flat roofs or onto the flat areas of raised-seam metal roofing.

When assembled, and mounted to point towards the sun, the grouping of solar modules is called an array. To maximize the energy harvest the array should be oriented to face as close to true south as possible, with a tilt angle of approximately 30-40 degrees from horizontal. Some racking systems provide tilt adjustments so the array can be adjusted to follow the seasonal changes in the angle of the sun's rays, and thus increase the energy harvest.

As a general rule of thumb, in this part of the country, with an array facing true south, one can expect about one kilowatt-hour of electricity per square foot of array, per month. So, for example, an array with 24 modules would provide about 400 square feet of surface area, and would generate approximately 400 kilowatt-hours per month.

The cost of PV systems varies depending on the type of installation and the size of the system. A medium sized system can replace 30%-60% of the electricity required for a residential dwelling or small office, and would cost approximately $25,000-$45,000. The payback period can be 8-12 years, and can yield monthly savings in as little as two years.

For commercial applications, additional tax benefits apply, and the payback period for commercial PV systems can be as short as 5-9 years. Because of the rising cost of electricity, the monthly savings will continue to increase over the life of the system.

The benefit of "Net Metering" is available to customers of PPL Electric and PECO Energy. With this benefit, any electricity generated by one's system, in excess of that used in the home or business ("Net Excess Generation"), will be credited to the owner's account, for later use. The excess electricity generated during the day is recorded by the electric meter as it flows back into the electric grid. After the sun sets, the electricity used in the evening is free (up to the amount generated previously).

Financial incentives include a State Rebate up to 35% of the system cost, a Federal tax credit of 30% of the system cost, and an advanced depreciation schedule over 5 years for businesses. Additional savings can be realized by the production and sale of Alternate Energy Credits, which can generate a stream of income to help pay for the project.

Alternate Energy Credits (AEC's) are generated when one megawatt-hour of clean energy is produced. Each credit is documented and recorded with Pennsylvania's Alternative Energy Program Administrator, Clean Power Markets, Inc. When enough credits are collected, they can be sold on the open market. The typical buyers are the Utility companies who are now required by the State to either produce (or purchase credits for) a specified amount of "clean energy" each year. Blosser Electric is a registered aggregator of the AEC's, which means we are authorized to track the energy production and manage the collection and processing of Alternate Energy Credits from our customers. When there are enough credits collected, we complete the sale through an energy broker and issue a check to each of our customers for the value of their credits sold.

In addition to the financial benefits of solar electricity, there are also environmental benefits. For each kilowatt-hour of clean electricity that is produced there is a reduction of approximately 2 lbs. of carbon dioxide (and other pollutants) that would have been released during the electricity generation process of coal-fired power plants. Over the 25-year life span of an average system, the reduction in carbon dioxide would be approximately 200,000 to 400,000 pounds.

Blosser Electric Inc. is a full-service electrical contracting business, and is now offering design and construction services for renewable energy systems. We offer site assessment, energy consultation, design services, and installation.

Call Blosser Electric at 215-721-9700 for a free "desk-top" estimate.

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