

Photovoltaic (PV) Solar Energy
General Information
Maryland Energy Administration (MEA)
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What is a photovoltaic system?

A utility interconnected (also called grid-tied) photovoltaic (PV) solar energy system is made up of solar electric panels that convert sunlight to electricity, an inverter that adapts the electricity for home use, and system components designed to ensure safe connection to the utility power lines.

Off-grid systems are not connected to the electric utility supply and typically include a bank of batteries. These can be configured to power AC or DC loads.

What are the costs of PV?

PV is still quite expensive and costs vary with the types of PV technology and site conditions. The cost to install a 1.0 kW system can range from under \$9000 to over \$12,000.

What are the incentives for PV in Maryland?

Grants are available through Maryland's Solar Energy Grant Program when funds are available. For details see MEA's solar grants Web site www.energy.state.md.us/programs/renewable/solargrant/. For utility interconnected systems, Maryland residents can take advantage of the Maryland Net Energy Metering Law. Federal Income Tax Credits are available in 2006 and 2007. They are for 30% of the net system cost after other incentives. There is a cap of \$2000 for residential installations and no cap for commercial installations. Information on the State and federal incentives can be found at the Database for State Incentives for Renewable Energy (DSIRE) Web site www.dsireusa.org.

What will it save?

Actual savings vary based on site conditions, the efficiency of the system, quality of installation, and variances in weather patterns. Estimated annual output for a grid-tied 1 kW PV system in the Baltimore area is approximately 1000 to 1250 kWh. The solar array should perform for at least 30 years so if the price of electricity rises, the annual dollars saved will increase.

What are the other benefits of PV?

There are considerable environmental benefits from generating pollution-free electricity over the life of the PV system. Systems with energy storage can also provide power independent of the electric utility during power outages.

What kind of space is needed for PV?

A 1 kW PV system requires from 100 to over 300 square feet of unobstructed southern exposure. The size requirements vary depending on the type and efficiency of the modules.

Where can I find a qualified installer of PV?

Local trade associations such as the Maryland-DC-Virginia Solar Energy Industries Association (MDV-SEIA) www.mdv-seia.org are good resources for installers as well as consultants, manufacturers and distributors

How much maintenance is required on the PV system?

Any energy system requires maintenance, but experience shows that PV systems require less maintenance than other alternatives.

Will the PV system provide electricity at night or during electric utility power outages?

Utility interconnected PV systems require no storage systems and therefore will not provide electricity at night or during power outages. At additional costs, a battery storage system can be integrated into a grid-tied PV system which will enable the PV system to provide electricity at night or during outages.

Where can I find additional information about PV?

MEA's website www.energy.state.md.us/programs/renewable has information on Maryland's solar programs. The U.S. Department of Energy's (U.S. DOE) Energy Efficiency and Renewable Energy (EERE) website www.eere.energy.gov/solar is a good source of information on a variety of solar energy topics.