

Solar PV (PhotoVoltaic) Frequently Asked Questions

What is PV?

PV stands for *Photovoltaics*, or *Photovoltaic*. **Photo** is derived from the word “photon” which means “a particle of light”, and **voltaic** is derived from the word “volt”, which is the unit of measurement for the intensity of electrical discharge potential. Consequently, “photovoltaics” means a voltage produced by turning particles of light into electrical voltage. This is accomplished by collecting the sun’s rays on a photovoltaic panel.

What kind of roof can support a PV array?

A solar PV array can be installed on pretty much any roof surface, including flat, tar and gravel, bitumen, composite shingle, cement tile, or metal roof top. Solar panels are usually installed parallel to the roof surface, but can be installed using a tilt-up kit to optimize sun angle.

Can my roof take the weight load of a PV array?

Solar panel and mounting equipment adds very little load to your roof. In most cases the solar array will add less than 4lbs per square foot to the roof load. Most modern construction is designed to support loads far greater than this. Some older homes or less expensive commercial and industrial roof structures may require some structural work prior to installing a system.

Is solar electricity really cost-effective?

Yes. Under the rules of Ontario’s new Feed-In-Tariff program, a roof or ground-mounted PV array will pay for itself in 10 years or less, after which time it will generate a profit. Solar PV is a low-risk, high-return investment that is very competitive with other types of investments such as stocks, bonds, and real estate. EcoAge Technologies can calculate your return on investment and the income you can generate over the life of your purchase.

Is solar electricity really good for the environment?

Yes. Your system will reduce the demand on existing fossil-fuel power plants, thereby reducing pollutants and global-warming CO2 emissions. In Ontario, Nuclear also plays a large role in power generation. Although it releases few pollutants into the atmosphere, Nuclear has potential security and radioactive pollutant issues with storage of spent nuclear fuel. Every megawatt of solar energy means one less megawatt of coal or nuclear energy is needed.

What happens to the solar electricity I produce but do not use?

Any excess solar electricity produced will be fed into the grid. Keep in mind that whether you use the power or not, any solar power your PV array produces will be purchased at above market, guaranteed price rate through the Feed-In-Tariff program.

What happens at night?

Your solar electric system will not produce electricity without direct or diffused sunlight. At night, you will draw electricity from the grid. Solar PV is meant to complement other forms of energy, such as other renewables like wind energy, hydroelectric, and biogas.

What are the major components of a solar PV system?

A grid-tied solar electric system designed and installed by EcoAge Technologies requires solar modules and one or more inverters. AC safety disconnects are the other necessary components, as well as a new production meter to complement your existing revenue meter.

What does the inverter do?

The electricity produced by the solar modules is direct current, or DC. The inverter changes this electricity to alternating current, or AC. Most electrical devices in homes and businesses currently run on AC electricity.

What if there is a power failure?

If there is a power failure, or blackout, you will lose power from your grid-tied PV array for safety reasons. Local utility workers working on distribution grid lines near your PV array could be injured by the electrical current your PV array is feeding into the grid. For this reason, it is equipped with a safety mechanism which shuts it down automatically when it detects a blackout condition. With a battery backup system you could still have power. This application is also useful for any application when you want to be "off grid", such as at a remote location or cottage.

Are batteries required?

You do not need batteries if you are tied into a local distribution company (LDC) grid. Batteries would only be necessary if you need power during blackouts, or if you are not connected to the grid.

Which appliances and other circuits can I power with my PV system?

PV-produced electricity can be used for any loads. The electricity produced by your PV array works the same way as the electricity from the grid. Your solar electricity will provide power for all of your uses.

Will my PV system provide heating?

Many homes in Ontario use forced air furnaces which run on natural gas. If your furnace has a blower fan, the PV array will provide electricity to run the blower fan, and the heat itself will be provided by natural gas. If you have an electric heater, such as a baseboard, the PV array will provide power to it.

What is solar thermal?

Solar Thermal Systems (also called Solar Hot Water) heat hot water for a pool or domestic hot water use. The sun heats an insulated copper piping system. This type of system does not produce electricity, and is therefore not subject to the benefit of the Feed-In-Tariff program, but has its own very positive uses, and can be used in conjunction with a PV array, where site conditions allow.

How much power do I use?

You can find out how much electricity you use by looking on your utility bill or calling your electric utility. It is very helpful to get the last 12 months of electric usage in kilowatt hours (kWh). Your local distribution company (LDC) utility can provide you with this information over the phone.