

Solar Energy Glossary

Photovoltaic(s) (PV) - Pertaining to the direct conversion of light into electricity.

Photovoltaic (PV) cell - The smallest semiconductor element within a PV module to perform the immediate conversion of light into electrical energy (direct current voltage and current). Also called a solar cell.

Photovoltaic (PV) module - An assembly of solar cells and ancillary parts intended to generate direct current power under unconcentrated sunlight. A **PV panel** is an example of a PV module.

Photovoltaic (PV) array - An interconnected system of PV modules that function as a single electricity-producing unit.

Photovoltaic-thermal (PV/T) system - A photovoltaic system that, in addition to converting sunlight into electricity, collects the residual heat energy and delivers both heat and electricity in usable form. Also called a total energy system or solar thermal system.

Solar thermal electric systems - Solar energy conversion technologies that convert solar energy to electricity, by heating a working fluid to power a turbine that drives a generator. Examples of these systems include central receiver systems, parabolic dish, and solar trough.

Thermophotovoltaic cell (TPV) - A device where sunlight concentrated onto an absorber heats it to a high temperature, and the thermal radiation emitted by the absorber is used as the energy source for a photovoltaic cell that is designed to maximize conversion efficiency at the wavelength of the thermal radiation.

Alternating Current (AC) - The form in which [electric power](#) is delivered to businesses and residences. In this form the flow of [electric charge](#) periodically reverses direction.

Direct Current (DC, also dc) — The form of electric power produced by solar panels. In this form the flow of electric charge is only in one direction. DC power must be converted to AC power using an **inverter** before connecting to a business's or residence's electrical system.

Utility-scale grid connected system — A solar electric or photovoltaic (PV) system that is connected to the grid and operates in parallel with the grid. Such a system usually requires an interconnection process with the local utility to insure safe operation. This can be of any scale and operational objectives and not just a central plant approach.

Distributed systems — Systems that are installed at or near the location where the electricity is used, as opposed to central systems that supply electricity to [grids](#). A residential [photovoltaic system](#) is a grid-tied or grid connected distributed system.

Hybrid system — A solar electric or photovoltaic system that includes other sources of electricity generation, such as wind or diesel generators.

Life-cycle cost — The estimated cost of owning and operating a photovoltaic system for the period of its useful life.

Group net energy metering – NH RSA 362-A:1, defines “net energy metering” as “measuring the difference between the electricity supplied over the electric distribution system and the electricity generated by an eligible customer-generator which is fed back into the electric distribution system over a billing period.” Net energy metering, is a special billing arrangement that provides credit to customers with solar PV systems for the full retail value of the electricity their system generates. Under NEM, the customer's electric meter keeps track of how much electricity is consumed by the customer, and how much excess electricity is generated by the system and sent back into the electric utility grid. Over a 12-month period, the customer has to pay only for the net amount of electricity used from the utility over-and-above the amount of electricity generated by their solar system (in addition to monthly customer transmission, distribution, and meter service charges they incur).

British thermal unit (Btu) — The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories

1 gigawatt (GW) = 1 billion Watts, 1 million kilowatts, or 1,000 megawatts.

1 megawatt (MW) = 1,000 kilowatts, or 1 million watts

1 kilowatt (kW) = 1,000 watts. The average 3’/5’ solar panel is about 300 watts (DC)

kilowatt-hour (kWh) — 1,000 watts acting over a period of 1 hour. The kWh is a unit of energy. 1 kWh=3600 kJ. Users of electricity are billed for kW. The average home uses 10,908 annually; an average of 909 kWh per month.

Estimated Annual Production – The annual AC kWh production of a solar system affected by things like the availability of the solar resource (how much sunlight a specific location receives), the tilt and orientation of the panels, shading impacts from nearby objects like trees and buildings, losses from the AC to DC conversion process, temperature and the amount of snowfall in a given year. Programs exist to estimate the production of a specific system after you input these variables. In NH, an average 1kW DC solar project would be expected to produce around 1,250 kWh’s (AC) per year.

Electric Renewable Portfolio Standard (RPS) - New Hampshire 's RPS statute, RSA 362-F, requires each electricity provider to meet customer load by purchasing or acquiring certificates representing generation from renewable energy based on total megawatt-hours supplied.

Regional Greenhouse Gas Initiative (RGGI) - The first market-based regulatory program in the United States to reduce greenhouse gas emissions. RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce CO₂ emissions from the power sector. For more information visit: <http://www.rggi.org/>

Definitions adapted from: <http://energy.gov/eere/sunshot/solar-energy-glossary>, and <https://www.puc.nh.gov> by Brendan Newell with assistance from Clay Mitchell, Joe Harrison, and Sherry Godlewski