

Glossary of Terms

AC – alternating current – The type of electricity used in homes and businesses, from the utility grid. Alternating Current electricity flows first in one direction, then in reverse, like tidal current. It repeats this cycle 60 times every second, or 60 cycles per second.

Amp – ampere – A unit of measure of electricity’s rate of flow, like the speed of water flow in a river. One ampere of electrical current will flow when a potential of 1 volt is applied across a resistance of 1 ohm. $I = V / R$. See Volt.

Batteries – Devices which store electrical energy in a PV system, and supply the inverter when the PV panels aren’t producing power. The batteries used for solar systems are similar to marine deep-cell batteries, but larger and longer-lasting.

“Balance of System” — Term used to refer to the pieces of equipment that complete the PV / solar electric system beyond the panels, inverters and batteries.

Cell – PV cell – A thin, round or square wafer of semiconductor material that generates electricity when exposed to sunlight. PV cells are typically 3"-4" across, with metal wires on each side to collect the solar-induced charge. They are wired together in groups, supported and protected in a frame (see PV panel).

Charge Controller – The electronic equipment used to charge the batteries, in a solar system designed for emergency backup power.

Collector – A device, panel or collection of same used to harvest solar energy - heat, electricity, photosynthesis, etc – see hot water collector, PV panel.

DC – direct current – The type of electricity produced by batteries and solar cells. Direct current flows only in one direction, like a river to the sea.

Domestic hot water – Refers to the use of hot water for residential washing, cooking, etc. This is distinct from the use of solar-heated water for space heating.

Hot Water Collector – Solar collector, hot water array - a device, panel or collection of panels used to harvest heat from solar energy. Hot water collectors consist of a dark-colored plate that absorbs heat from the sun, a tube or passage within the absorbing plate that carries a heat-transfer fluid, and a mechanical frame that provides stiffness and weather protection.

Installer – The individual that physically installs the equipment, from roof to utility room.

Interconnection agreement – An agreement between system owner and the local distribution utility before any solar system can be connected into the utility grid and/or net metered.

Inverter – The electronic equipment used in a PV system to convert DC power from the solar panels into AC power used by the household.

Joule – A unit of energy. One joule is the energy expended when 1 unit of force is applied to move an object a distance of 1 meter. See Watt.

Kilowatt/Kilowatt-hour – One thousand watts, or one thousand watt-hours. A typical Maine residence uses 6,000 kilowatt-hours/year. See Watt, Watt-hour.

Load – The total amount of electricity delivered by the utility grid, a solar PV system or another generator. Also, the total amount of electricity used by residential or business circuits, such as the “house load” or “building load.”

Megawatt/Megawatt-hour – One million watts, or one million watt-hours. See Watt, Watt-hour.

Name plate capacity – The maximum power in Watts produced by a PV module or system, under a defined set of standard test conditions. The name plate capacity of a PV system is determined by the number of solar panels it contains, times the capacity of each panel.

Ohm – A unit of electrical resistance - the property of a material, object or circuit to resist the flow of electricity. Materials that allow electricity to flow easily are called conductors; materials that resist the flow of electricity are called insulators. A material with 1 ohm resistance will allow 1 ampere of current to flow when 1 volt is applied. $R = V / I$.

Photovoltaic / PV – A description (adjective) meaning “the production of electricity from sunlight.”

PV panel or PV module – Many PV cells wired together and mounted in a frame to produce electricity. A typical size is 72 cells in a 2 1/2 foot by 5 foot frame.

PV array – The full group of PV modules, tied together physically and electrically, that make electricity for the solar system.

Retailer – The source (corporate or individual) for solar energy equipment, whether in Maine, over the Internet, etc. Retailers may or may not have installation services available.

Volt – A measure of electric force or potential, the force difference between two points of a conducting wire carrying a current of 1 ampere, with one ohm resistance. Volts are a measure of potential energy, like the height of water behind a dam (the higher the water, the more energy available). $V = I \times R$

Watt – A unit of power, the rate at which energy is supplied. One watt is the power of 1 joule of energy per second. A grown human climbing stairs uses about 100 watts; 1 horsepower = 736 watts. Named for James Watt, inventor of the modern steam engine. $W = V \times I$.

Watt-hour – A unit of work, which is power applied over time. A watt-hour is equal to 1 watt of power supplied to, or taken from, an electric circuit steadily for 1 hour. The electric utility measures and bills electricity in watt-hours.