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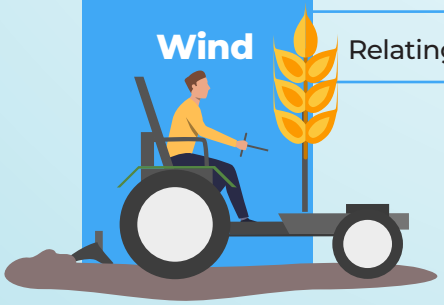
Renewable Energy and Energy Efficiency Dictionary

Definitions Of Abrreviations

Agri	Relating to agriculture.
Alc	Alcohol production or alcohol fuels.
Ani	Relating to animal power.
Arc	Archaic. Terms that are outdated but are still useful.
ICE	Relating to internal combustion engines or automobiles.
Bio	Relating to the field of biological science or a biological substance.
Biocon	Relating to bioconversion. Includes methane and woodfuel.
Chem	Relating to the field of chemical science or a chemical substance.
Constr	Relating to construction methods, materials, and structures.
Elec	Relating to the production and use of electricity.
Fos	Relating to fossil fuels.
Gen	General terms, which may apply to various areas of energy, particularly renewable energy technologies.
Geo	Geothermal power concepts and applications.
Heat	Relating to heating or the use of heat for space heating and to produce other forms of energy.
Hydr	Relating to water and the application of waterpower. Also closed hydraulic systems, which may use fluids other than water.
Impl	Implement. Tools, utensils, or devices that work in conjunction with other equipment.
Meas	Measuring instruments, scales, or types of measurement.
Ocean	Methods or devices for extracting energy from the ocean.
Prod	Relating to producer gas.
Refrig	Relating to refrigerants or methods of refrigeration.
Sol	Relating to the field of solar energy.
Wind	Relating to wind power or other aspects of air movement.



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ACTIVE SOLAR HEATING – *(sol)*
The warming of an interior space with heat collected mechanically through solar collectors. The collection and distribution of this warm air requires additional external energy collectors to operate pumps, motors, valves, etc.

AEROBIC - *(bio)*
Pertaining to micro-organisms that require oxygen to live.

AEROBIC DECOMPOSITION - *(biocon)*
The decomposition of organic matter in the presence of oxygen.

ALGAE - *(bio) (biocon) (gen)*
Fresh and saltwater aquatic plants including seaweed. They are valuable in waste treatment, as a protein source for humans, as animal feed, and as a feedstock for biogas digesters. They are capable of synthesizing their own food by photosynthesis.

ALTERNATIVE ENERGY SOURCES – *(gen)*
Sources of energy different from those generally employed by a user. The term usually refers to renewable energy sources such as solar energy, wind energy, geothermal power, hydropower, etc. The use of alternative energy sources is attractive because of the high price and limited availability of petroleum-based fuels; the pollution that is associated with the burning of fossil fuels; and the expense and dangers of nuclear power.

ALTERNATOR – *(elec)*
A generator that changes mechanical energy into electrical energy (alternating current, or AC) from the rotation of its rotor/shaft. They are commonly used in wind turbines, steam turbines and water turbines to generate electricity. Alternators are also used in motor vehicles to recharge and minimize the drain on the battery.

AMPERE - *(meas)*
An ampere is a basic unit of electric current in the International System of Units (IS). It is the unit of measure of the rate of electron flow or current in an electrical conductor. One ampere of current represents one coulomb of electrical charge moving past a specific point in one second.

AMPERE HOUR–*(meas)*
An ampere hour (abbreviated Ah or amp) is the amount of energy charge in a battery that will allow one ampere of current to flow for one hour. If a battery indicates that it has "20 amp-hours of capacity" this means that hypothetically, it can discharge any combination of amps and hours that equals 20 amp-hours, such as one amp of current for 20 hours, four amps for 5 hours or ten amps for 2 hours.

ANAEROBIC DIGESTION – *(Biocon)*
A process that produces methane. Natural bacteria are used to decompose organic matter in the absence of oxygen in closed reactors. Gas suitable for power production is produced, and possibly troublesome wastes (such as those at sewage treatment plants or feedlots) are converted into usable compost.

ANEMOMETER – *(wind) (meas)*
An instrument used to measure the speed of wind.

ANIMAL WASTE CONVERSION – *(biocon)*
The process of directly burning or obtaining energy products from animal wastes.

ANNUAL LOAD FRACTION - *(sol) (meas)*
That portion of annual heating that is supplied to a building by solar energy.

AQUATIC BIOMASS – *(biocon)*
Biomass grown in fresh or saltwater, including algae, seaweed, etc.

AQUEDUCT – *(hydr)*
A channel or trough built to convey water for irrigation, to operate a hydropower plant, or for household use. The water in aqueducts generally flows by means of gravity, although pumps may also be used.

ARTICULATED WINDMILL - *(wind) (arc).*
A windmill constructed to provide maximum efficiency in winds of various speeds and from different directions.

ASYNCHRONOUS GENERATOR - *(elec) (wind)*
An electrical generator that produces alternating current, typically rotating at a speed above the synchronous speed, and require connection to the power grid. These generators are often used with windmills to provide power to buildings that already receive power from an electric utility.
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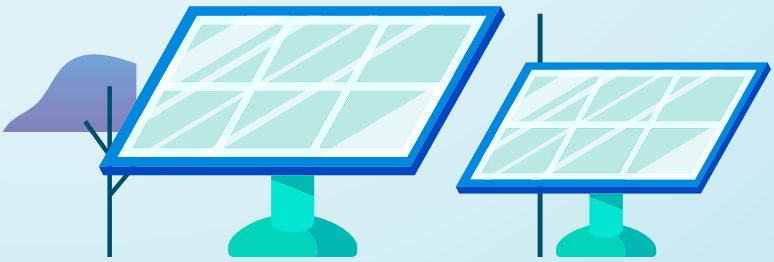

A lot of wind turbines use asynchronous induction generators, which can be classified into two types: (1) Squirrel Cage Induction Generators (SCIG) which operate at fixed speed, and (2) doubly-fed induction generators (DFIG) with wound rotors.

AUXILIARY GENERATOR *-(gen)(elec).*

A generator used to supplant unreliable sources of power to homes and businesses. An auxiliary generator may be small or of a larger size. Large auxiliary generators are used in larger commercial, industrial and critical facilities.

AVAILABLE ENERGY

- (gen) (meas)

That part of the total energy produced by a system that can be applied usefully. Efficiency is also a measure of available energy.

BAROMETER *– (meas)*

A device used to measure atmospheric pressure.

BATCH DIGESTION *– (biocon)*

A process of biogas production in which the material to be digested is loaded into the digester at the start of the process. A seed may also be added at this time. The digester is then sealed for the duration of the process and the contents left to ferment. At completion, the digested sludge is removed and the tank is reloaded. Daily gas production varies during the process. It is slow at the start, increases, and finally declines toward the end of the digestion cycle.

BATCH FEED *– (gen)*

A digester or still in which organic matter is loaded, allowed to generate gas or ferment, and then removed. The digester or still is then cleaned and prepared for a fresh load of biomass.

BATTERIES/BATTERY *- (elec)*

A group of two or more cells or accumulators electrically connected in series or parallel. Batteries are used to store electrical energy.

BATTERY ENERGY STORAGE SYSTEM *(BESS)*

A Battery Energy Storage System (BESS) is a technology developed for storing electric charge by using specially developed batteries, in order to utilize that stored energy at a later time. Battery Energy Storage Systems (BESSs) are a sub-set of Energy Storage Systems (ESSs). Battery energy storage (BES) is very beneficial as it can enable the transition to a sustainable and secure energy system based on renewable sources, with reduced greenhouse gas emissions and enhanced energy independence for the Caribbean and the wider world.

Find out more about BESS here. See also: Energy Storage.

BIOCONVERSION

- (chem) (gen)

The conversion of organic waste into energy products through the action of plants or micro-organisms, such as the conversion of biomass to ethanol, methanol or methane. Chemically, this is the reduction of complex organic compounds into simpler, more stable forms.

BIODIGESTER

A device or structure in which the digestion of organic waste matter by bacteria takes place with the production of a burnable biogas and a nutrient-rich slurry.

BIODIESEL *- (bio)*

An alternative fuel produced from used cooking oil, plant oils or animal fats. When combined with petroleum diesel, the biodiesel blend can be used in most diesel engines.
It is biodegradable and non-toxic.
Some Caribbean nations have an interest in biodiesel for import purposes as well as to secure their own energy supplies.

BIOFUEL *- (bio)*

Fuel derived from biomass (plant or algae material or animal waste). As these materials are readily replenished, biofuels are considered a source of renewable energy which is both cost effective and environmentally friendly.

Types of biofuels include wood, as well as liquid biofuels. One of the liquid biofuels that is in greatest production is Ethanol (ethyl alcohol) which is made by fermenting starch or sugar. Brazil and the United States are among the leading producers of ethanol.

In Brazil, ethanol biofuels are primary made from sugar cane. In the Caribbean, there are also great opportunities for ethanol to be produced from sugar crops across the region. The second most popular liquid biofuel is biodiesel, which is primary made from oily plants. *See also: Biodiesel.*

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BIOGASIFICATION – *(bio)*
The process of decomposing biomass with anaerobic bacteria to produce biogas.

BIOENERGY *(bio)*
A form of renewable energy that is derived from biological sources such as recently living organic materials. These sources are known as biomass. Biomass is any organic material which has stored sunlight in the form of chemical energy. It can be used to produce transportation fuels, heat, electricity, and products. As a fuel it may include wood, wood waste, straw, and other crop residues, manure, sugarcane, and many other by-products from a variety of agricultural processes.

BIOLOGICAL ENERGY CONVERSION *- (biocon)*
The use of biomass to convert one form of energy into another.

BIOMASS *–(bio)*
Any organic matter available on a renewable basis, such as wood, agricultural crops or wastes, animal manure and municipal wastes, when used as a source of fuel or energy. Biomass can be burned directly or converted to biofuels; any organic matter that can be used in bioconversion processes.

BLACKBODY *–(sol)*
A surface that completely absorbs all solar radiation falling on it.

BOILER *– (gen)*
A tank where heat produced from the combustion of fuels such as natural gas, fuel oil, or coal is used to generate hot water or steam for applications ranging from building space heating to electric power production or industrial process heat.

CELSIUS *- (meas)*
The international temperature scale in which water freezes at 0 degrees and boils at 100 degrees. To convert from degrees Celsius to degrees Fahrenheit, multiply the temperature in degrees Celsius by 9/5 (or 1.8) and add 32. To convert from degrees Fahrenheit to degrees Celsius, subtract 32 from the Fahrenheit temperature and then multiply by 5/9. Abbreviated as C. (Syn: centigrade)

CLIMATE CHANGE *- (gen)*
Climate change refers to a long-term shift in global or regional climate patterns. It often refers specifically to the rise in global temperatures from the mid-20th century to present. Climate change may cause weather patterns to be less predictable. These unexpected weather patterns can make it difficult to maintain and grow crops in regions that rely on farming because expected temperature and rainfall levels can no longer be relied on. Climate change has also been connected with other damaging weather events such as more frequent and more intense hurricanes, floods, downpours, and winter storms. In polar regions, the warming global temperatures associated with climate change have meant ice sheets and glaciers are melting at an accelerated rate from season to season. This contributes to sea levels rising in different regions of the planet which can in turn cause damage to coastlines as a result of increased flooding and erosion. Current climate change is largely due to human activity which causes increases in greenhouse gas emissions.

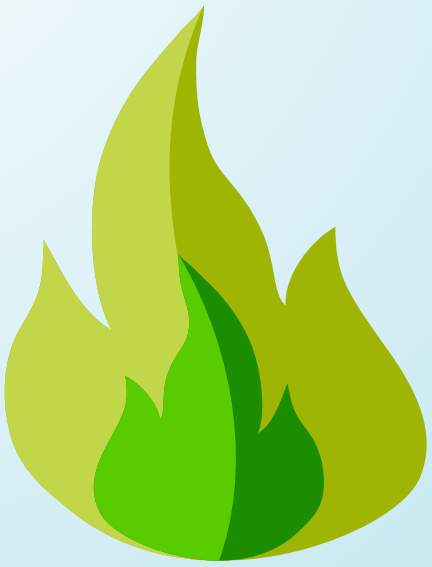
CLIMATE HAZARDS *– (gen)*
A physical process or event (hydro-meteorological or oceanographic variables or phenomena) that can harm human health, livelihoods, or natural resources. Climate and climate-related hazards include floods, tsunamis, storms, droughts, heatwaves and earthquakes.

CO2 - Carbon dioxide.

COLLECTOR *- (sol)*
A device used to trap solar radiation and convert it into usable heat. The term collector frequently refers to an insulated frame containing a panel made from an absorber plate and glazing. More broadly, a well-designed building with windows facing the equator may also be considered a collector, as can other solar devices that capture solar radiation in the form of heat.

COLLECTOR EFFICIENCY *- (sol) (meas)*
The ratio of solar energy/radiation absorbed by a collector, to the radiant energy falling on the collector.

COMBUSTIBLE GAS *-(biocon) (prod)*
Gas that will burn. This includes biogas and producer gas. .



COMPRESSED AIR ENERGY STORAGE SYSTEM (CAESS) *-(gen)*

Compressed air energy storage is a technique used to store energy generated at one time for use at another time. At the electric utility scale, energy generated during periods of low energy demand (off-peak) can be released to meet higher demand (peak load) periods.

Compressed air energy storage involves converting electrical energy into high-pressure compressed air that can be released at a later time to drive a turbine generator to produce electricity.

This means it can work alongside technologies, such as wind turbines, to provide and store electricity every day and at any time. Ideally the compressed air is stored in an existing geographical formation such as a disused hard-rock or salt mine. *Learn more about CAESS here.*

COMPOSTING *-(biocon)*

The process of degrading organic material by microorganisms in aerobic conditions. The resulting material is used as a fertilizer.

CONCENTRATING COLLECTOR *- (sol)*

A solar collector that uses reflective surfaces to concentrate direct radiation from the sun (sunlight) onto a small area such as a narrow absorber plate, where it is absorbed and converted to heat or, in the case of solar thermal devices, into electricity from steam produced by the heated boiler turning a generator.

CONCENTRATING PHOTOVOLTAIC ARRAY *-(sol)*

A series of lenses or mirrors used to concentrate solar radiation onto photovoltaic cells, which then convert the sunlight into electricity. The concentrated sunlight increases the output of each cell, thus reducing the total number of cells required to produce a given amount of electricity. *See also: Concentrating Solar Power (CSP) Technologies.*

CONCENTRATING/ED SOLAR TECHNOLOGIES *- (sol)*

CPS technologies use mirrors to concentrate (focus) the sun's light energy and convert it into heat to create steam to drive a turbine that generates electrical power.

CONDUCTION *- (heat)*

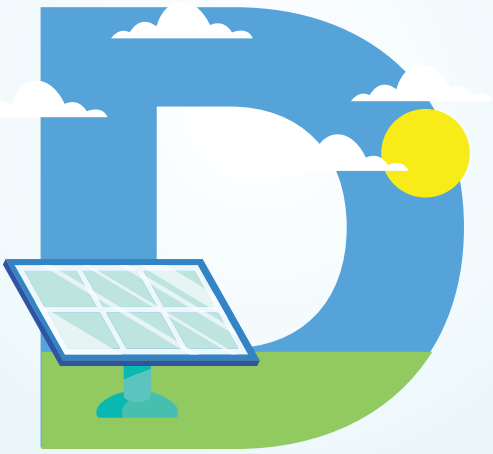
Heat transfer from direct contact between two bodies which are at different temperatures. For instance, a hot body and a cold body.

CONVECTION *- (heat)*

The transfer of heat between one location or surface and another by the motion of a heat-carrying fluid. It also refers to the transfer of heat within a fluid by movements within the fluid.

COOLING TOWER *- (gen)*

A structure used to cool power plant cooling water.



DEMAND-SIDE MANAGEMENT (DMS) *- (gen)*

This refers to the modification of consumer demand for energy through various technologies and initiatives such as financial incentives and behavioral change through education. The goal of demand-side management is to encourage the consumer to use less energy during peak hours, or to move the time of energy use to off-peak times such as night and weekends. Peak demand management does not necessarily decrease total energy consumption, but could be expected to provide cost-effective energy and capacity resources to help to reduce the need for investments in networks and/or new sources of power, including generating facilities, power purchases, and transmission and distribution capacity additions, for meeting peak demands. An example is the use of energy storage units to store energy during off-peak hours and discharge them during peak hours. Demand-side management programmes would therefore involve the planning, implementation and monitoring of those activities of electric utilities that are designed to encourage consumers to optimize their energy use.

DETENTION TIME *- (biocon) (meas)*

The amount of time that incoming material is retained in a biogas digester.

DIFFUSED SOLAR RADIATION *- (sol)*

Indirect, scattered sunlight, by atmospheric particles and gases so that it arrives at the earth's surface from all directions and cannot be focused and casts no shadow. It is the opposite of direct radiation.

DIRECT CONVERSION *- (sol)*

The transformation of sunlight to electricity without an intervening thermodynamic cycle. Thermodynamic cycles refer to any closed system that undergoes changes due to temperature, pressure and volume.

DIRECT CURRENT (DC) -

A type of electricity transmission and distribution by which electricity flows in one direction through the conductive medium.

DIRECT METHODS OF SOLAR HEATING *- (sol)*

Various solar heating techniques in which solar radiation enters a building through windows and skylight and is trapped inside to warm a room.

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DIRECT RADIATION - *(sol)*
Sunlight that has traveled a straight path from the sun. It is the opposite of diffused solar radiation.

DIRECT SOLAR ENERGY - *(sol)*
Energy acquired from conversion of direct radiation.

DISCHARGE PIPE - *(hydr) (biocon)*
[1] The pipe through which water exits from a water turbine. [2] The outlet for effluent (liquid waste) from a biogas digester.

DISTILLATION - *(alc)*
An evaporation and re-condensation process by which liquids are separated into various fractions according to their boiling points. Ethanol is separated by distillation from mash and water.

DRY BIOMASS - *(gen)*
Moisture-free biomass. It is valuable because it can be conveniently stored for long periods of time.

EFFECTIVENESS - *(heat) (meas)*
The ratio of actual heat transfer in a heat exchanger to the maximum possible heat transfer.

EFFECTIVE CAPACITY - *(gen)*
The maximum load that a device is capable of carrying.

EFFICACY - *(meas)*
The amount of energy service or useful energy delivered per unit of energy input.

ELECTRIC VEHICLE (EV) – *(auto)*
A vehicle that operates on an electric motor, instead of an internal-combustion engine that generates power by burning a mix of fuel and gases. Such a vehicle is seen as a possible replacement for internal combustion engine automobiles, in order to address issues such as increased pollution, global warming and depleting natural resources.

ENERGY - *(gen)*
The capacity of a body to do work; power in action.

ENERGY AUDIT - *(gen)*
According to the International Organization for Standards (ISO)50002:2014), an energy audit is a systematic analysis of energy use and energy consumption within a defined energy audit scope, in order to identify, quantify and report on the opportunities for improved energy performance of a building, process or system. Find out more information about energy audits here.

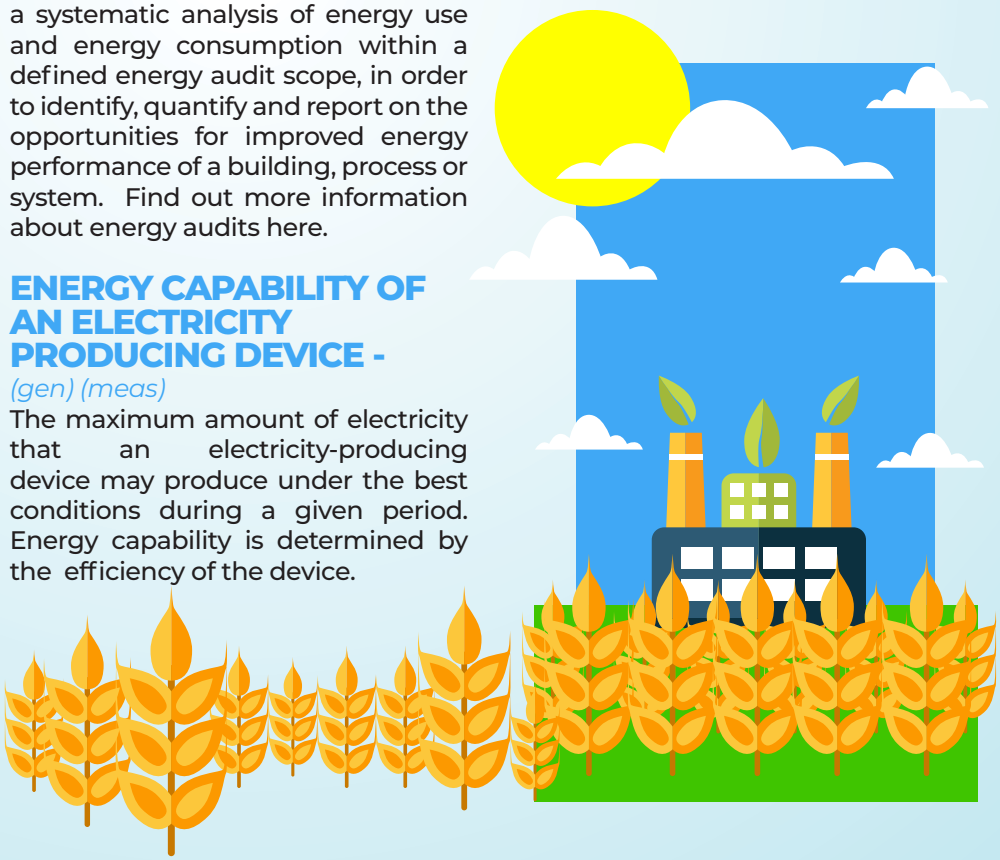
ENERGY CAPABILITY OF AN ELECTRICITY PRODUCING DEVICE - *(gen) (meas)*
The maximum amount of electricity that an electricity-producing device may produce under the best conditions during a given period. Energy capability is determined by the efficiency of the device.

ENERGY CONSUMPTION - *(gen)*
The amount of energy consumed in the form in which it is obtained by the user. This term excludes electrical generation and distribution losses. It also is called net energy consumption.

ENERGY CONVERSION - *(gen)*
The act of changing energy from one form to another (e.g., wind energy to mechanical energy).

ENERGY CROP - *(gen)*
crop grown specifically for its fuel value.

ENERGY EFFICIENCY - *(gen)*
The ratio of output of performance, service, goods or energy, to input of energy. It can be understood in terms of using energy in such a way as to obtain the maximum benefit, but can also imply shifting energy consumption to times when energy is abundant and cheap (for example at night, or during sunny and windy periods when renewable energy sources produce more energy).



ENERGY EFFICIENCY CLASS - *(gen)*

In the European Union, the energy efficiency of cars, light bulbs and household appliances is rated in a set of energy efficiency classes from A to G, A being the most energy efficient. *See also:EU Energy Label.*

ENERGY MANAGEMENT SYSTEM (EnMS) - *(gen)*

A set of elements of plans establishing energy efficiency objectives and strategies to achieve these objectives. More specifically, an EnMS is a suite of procedures and practices that ensure systematic tracking, analysis and planning of energy use for continuous improvement. Under the international standard ISO 50001, this follows a Plan-Do-Check-Act cycle to ensure this. Regular energy audits are an integral part of EnMS. *See also: Energy Audit.*

ENERGY MIX - *(gen)*

The distribution or proportion of different energy sources within the total energy supply.

ENERGY PRODUCTS - *(gen)*

Fuels that can be used to generate energy. Also, the by-products that result when fuels are produced.

ENERGY STORAGE - *(gen) (meas)*

The ability to convert energy into other forms, such as heat or a chemical reaction, so that it can be retrieved for later use. Also, the development, design, construction, and operation of devices for storing energy until needed. The technology includes devices such as batteries, pumped storage for hydroelectric generation and compressed gas. Energy Storage is important in helping to manage the supply of electricity. For example, when the wind blows, a wind turbine will produce power, but this power may have been produced when there was no demand for it. At this time, it becomes necessary to store that electricity so that it can be used when there is a peak in the demand for it. *See also: Battery Energy Storage System (BESS) and Compressed Air Energy System (CAES).*

ENERGY SECURITY - *(gen)*

The extent to which a nation's or region's energy supplies are robust against potential disruption, including factors such as depletion of natural resources, variability and the political stability of regions where the energy supplies are obtained or trans-shipped.

EU ENERGY LABEL - *(gen)*

In the European Union, cars, light bulbs and household appliances must have an EU energy label clearly displayed when they are offered for sale or rent. The EU energy label shows the energy efficiency class of the product. *See also: Energy Efficiency Class.*

FAHRENHEIT - *(meas)*

The temperature scale in which water freezes at 32 degrees Fahrenheit and boils at 212 degrees Fahrenheit. Temperatures of the Fahrenheit scale can be converted to equivalent temperatures on the celsius or Centigrade scale by first subtracting 32 degrees from the Fahrenheit temperature, then multiplying the result by 5/9 according to the formula: (F−32) 5/9=C.

FLOATING GAS CAP - *(biocon)*

A lid over a biogas digester that rises or falls with the production of methane.

FLUE GAS

Flue gases (also referred to as exhaust gases) are the gases entering the atmosphere via a flue, which is a pipe or channel used for conveying exhaust gases from a chimney, fireplace, oven, furnace, boiler or steam generator. Flue gas may contain oxides of carbon, nitrogen, and sulfur as well as fly-ash, other pollutants, and water vapor. These gases can however be captured and reused *(see Recovered Energy). Also see Flue Gas Treatment.*

FLUE GAS TREATMENT

The process of reducing the atmospheric pollutants (substances harmful to the environment and health) emitting from industrial facilities, power plants and other sources

FOCUSING COLLECTOR - *(sol)*

A type of solar collector that focuses the sun's rays on a single point.

FOSSIL FUELS - *(fos)*

Fossil fuels are hydrocarbons, primarily coal, fuel oil or natural gas, formed from the remains of dead plants and animals. Fossil fuel is a general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to hydrocarbons, primarily crude oil, coal, natural gas, or heavy oils, by exposure to heat and pressure in the earth's crust over hundreds of millions of years.

The burning of fossil fuels by humans is the largest source of emissions of carbon dioxide, which is one of the greenhouse gases that allows radiative forcing and contributes to global warming. In common dialogue, the term fossil fuel also includes hydrocarbon-containing natural resources that are not derived from animal or plant sources. These are sometimes known instead as mineral fuels.

The utilization of fossil fuels has enabled large-scale industrial development and largely supplanted

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water-driven mills, as well as the combustion of wood or peat for heat.

FOSSIL-FUEL POWER PLANT - *(fos) (gen)*

A generating station used for the burning fossil fuels such as coal, natural gas or petroleum (oil) to produce electricity.

FUEL CELL - *(elec)*

An electrochemical device that converts chemical energy directly into electricity.

FUEL EFFICIENCY - *(gen)*

The ratio of heat produced by a fuel for doing work to the available heat in the fuel.

FUEL OIL - *(elec)*

Any liquid petroleum product burned for the generation of heat or power.

FUEL RATE - *(meas)*

The amount of fuel necessary to generate one kilowatt-hour of electricity.

GAS DIGESTION - *(biocon)*

The second stage of biogas generation, during which methane (CH_4) is produced.

GASHOLDER - *(biocon)*

A container for holding the biogas produced in a digester. The size of the holder depends on the rates of gas production and gas use.

See also: Floating Gas Cap)

GASIFICATION - *(prod)*

The process in which a solid fuel is converted into a gas. Also known as pyrolitic distillation or pyrolysis.

GENERATOR - *(elec) (impl)*

A device that converts mechanical energy into electrical energy.

GEOTHERMAL - *(geo)*

Of or relating to the heat of the earth's interior.

GEOTHERMAL ENERGY - *(geo)*

Heat derived within the sub-surface of the earth. This thermal energy is generated and stored in the earth. Water and/or steam carry the geothermal energy to the earth's surface. Depending on its characteristics, geothermal energy can be used for heating and cooling purposes or be harnessed to generate clean electricity.

GEOTHERMAL FIELD - *(geo)*

A geographical region with known geothermal power sources that might be tapped to produce energy.

GREENHOUSE GAS (GHG)

- Greenhouse gases are gases in the earth's atmosphere that trap heat. They let sunlight pass through the atmosphere, but they prevent the heat that the sunlight brings from leaving it. GHGs are important in sustaining a habitable temperature for the planet.

If there were absolutely no greenhouse gases, the average surface temperature of the Earth would be about -18 degrees Celsius.

Greenhouse gases refer to the sum of seven gases that have direct effects on climate change: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). Human emissions of greenhouse have increased global temperatures by around 1 since pre-industrial times.

HEAD - *(hydr) (meas)*

[1] The vertical distance from the point where water enters an intake to the point where the water leaves a hydropower device. It is generally measured in feet or meters. The product of the head times the flow is a measurement of potential power. [2] The vertical distance a liquid must be pumped from its source to its point of use or storage.

HEAT ENERGY - *(heat)*

Energy in the form of heat.

HEAT STORAGE CAPACITY

- The amount of heat that can be absorbed and stored by a material.

HEAT TAX - *(heat)*

Referring to the heat energy that becomes unavailable for further use whenever energy is converted from one form to another.

HEAT EXCHANGER - *(heat) (impl)*

A device, such as a coiled copper tube immersed in a tank of water which is used to transfer heat from one fluid to another through a separating wall. One type of heat exchanger is a condenser.

HEAT STORAGE -
A device or media absorbing heat for storage for later use.

HEAT TRANSFER MEDIUM - *(sol)*
The fluid that is heated in a solar collector for conducting heat to another place or substance.

HELIO - ELECTRICAL PROCESS
- (sol)
A process by which photovoltaic modules convert solar energy into electricity.

HELIOTHERMAL - *(sol)*
[1] A process that uses solar radiation to produce useful heat. [2] A device that absorbs radiation on a blackened surface and converts it into heat.

HELIOTHERMAL PROCESS - *(sol)*
A process by which solar energy is used to provide thermal energy for space heating, space cooling, and domestic water heating.

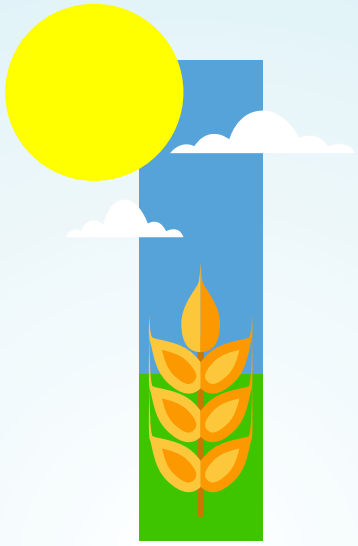
HELIOTHERMIC SITE PLANNING – *(gen)*
Site planning that explains natural solar heating and cooling processes and their relationship to building shape, orientation and siting.

HERTZ (Hz) - *(meas)*
The unit of frequency under the International System of Units (SI), defined as one cycle per second. Simply put, one hertz means "one per second" (1/s). Therefore, 100 Hz means "one hundred per second", 200 Hz means "two hundred per second" and so on. This unit may be applied to any periodic event. For example, a clock may tick at 1 Hz, or a human heart might be said to beat at 1.2 Hz.

HYBRID SYSTEM – *(gen)*
A dynamic renewable energy system including two different types of technologies that produce the same type of energy, exhibiting both continuous and discrete dynamic behavior.

HYDROELECTRIC ENERGY -
A form of renewable energy that uses the power of moving water to generate electricity.

HYDROPOWER - *(hydr)*
power produced by falling water. The term is used to identify a type of electricity-generating station or any energy output in which the main mover is driven by flowing water.



IMPULSE TURBINE - *(hydr)*
A turbine driven by high velocity jets of water or steam from a nozzle directed to vanes or buckets attached to a wheel, and they also change the direction of flow of a high velocity fluid or gas jet that are produced by forcing the water or steam through a nozzle.

INDIRECT CONVERSION
- (sol)
The indirect use of solar energy from such sources as solar-produced winds, thermal currents in air and water, and wave action.

INDIRECT SOLAR ENERGY
- (sol)
A system in which solar energy is collected and used through mechanical means.

INOCULATION - *(biocon)*
Adding a seed of anaerobic bacteria to a biogas generator.

INPUT POWER - *(meas)*
The power used by a device to produce useful work expressed in Watts, also called active power.

INSTANTANEOUS EFFICIENCY (OF A SOLAR COLLECTOR) - *(meas)*
- The amount of energy captured (or converted) by a solar collector (or photovoltaic cell or module) during a 15-minute period.

INTEGRATED HEATING - *(sol)*
A method of solar heating in which solar radiation is intercepted and absorbed by a massive exterior wall or roof pond, which usually doubles as a heat storage container. Heat flows to the rooms by conduction, or natural convection. This is a form of passive solar heating.

INTEGRATED RESOURCE PLAN (IRP) - *(gen)*
A plan typically developed by an electric power provider, sometimes as required by a public regulatory commission or agency, defining the short- and long-term capacity additions (supply-side) and demand-side management (DSM) programs that it will meet projected energy demands. *See also: Demand-Side Management.*

INTEGRATED RESOURCE AND RESILIENCE PLANS (IRRPs)
IRRPs have been designed as enhanced versions of the Integrated Resource Plan (IRP). IRRPs are plans for how countries can supply their need for electricity, in the future.

The plans will ensure reliable sources of power, minimize negative impacts on the environment and enhance the resilience of power systems to hazards and risks, while minimizing costs to consumers.

The Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE) has partnered with the governments of selected Caribbean territories to undertake

the development of IRRPs. Building resilience in this way guarantees energy security, as the Caribbean and the wider world seeks to adapt to climate change and reduce greenhouse gas emissions.

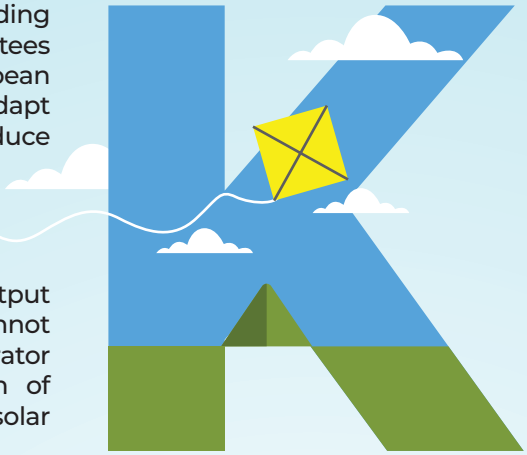
INTERMITTENT GENERATORS - Power plants in which output depends on a factor(s) which cannot be controlled by the power generator as the result of the utilization of intermittent resources such as solar energy or wind.

INVERTER (elec) (wind)
A device that converts direct current (dc) to alternating current (ac). It often is used with solar PV and wind generators.

ISOLATED SOLAR GAIN SYSTEM – (gen) A type of passive solar heating system in which heat is collected in one area for further use in another area.

JACKET - *(prod) (impl)*
An enclosure around a producer generator, such as a gas generator, through which cooling liquid flows. Elements of the jacket can also be found on other types of generators, such as the diesel engine which is popular around the Caribbean.

JOULE -*(meas)*
A unit of energy or work equal to one watt for one second or 0.737 foot pounds.

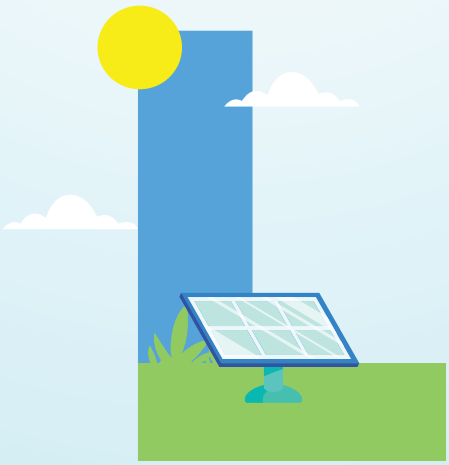


KILOWATT - *(elec).*
A unit of power equal to 1,000 watts or to energy consumption at a rate of 1,000 joules per second. It is usually used as a measure of electrical energy. Commonly abbreviated as kW.

KILOWATT HOUR
- (elec) (meas)
A unit of power consumption equal to the amount of power multiplied by the amount of time the power is used. A 100-watt light bulb burning for 10 hours uses one kilowatt-hour of energy.

KINETIC ENERGY - *(gen)*
The energy that a body possesses by virtue of its motion.

KNOT - *(wind)*
A measure of wind speed equal to one nautical mile per hour. One knot equals 1.15 miles
per hour.



LANGLEY - *(sol) (meas)*
A unit of solar radiation intensity equal to 1.0 gram calorie per square centimeter. It also refers to a unit of energy distribution over an area.

LAW(S) OF THERMODYNAMICS - *(gen)*
The first law stating that energy cannot be created or destroyed; the second law stating that if a free exchange of heat occurs between two materials, the heat always moves from the warmer towards the cooler material.

LIGHT TRAPPING
– (gen)
The trapping of light inside a semiconductor material by refracting and reflecting the light at different angles; trapped light will travel further in the material, notably increasing the probability of absorption and thus of producing charge carriers.

LIQUID-BASED SOLAR HEATING SYSTEM -*(sol)*
A solar heating system using a liquid as the heat transfer fluid.

LIQUID-TO-AIR HEAT EXCHANGER – *(heat)*
A heat exchanger device transferring heat contained in a liquid heat transfer fluid to air.

LIQUID-TO-LIQUID HEAT EXCHANGER – *(heat)*
A heat exchanger device transferring heat contained in a liquid heat transfer fluid to another liquid.

LOAD - (elec) (meas) The output of one or several electric machines or transformers. Load also refers to the power carried by a particular circuit.

LOADING RATE
- (biocon) (meas)
The amount of biomass added to a digester over a specific period of time.

LOCAL SOLAR TIME - *(sol)*
Apparent solar time (sundial time) which is used in a system of astronomical time where the sun crosses the true north-south meridian at 12 noon, and it is different from local time according to longitude, time zone, and equation of time.

LOW-EMISSIVITY WINDOWS AND (WINDOW) FILMS – *(gen)*
Energy-efficient windows with a coating or film applied to the surface of the glass in order to reduce heat transfer through the window.

MAGNETO - *(elec)*
A small, permanent-magnet, electric generator capable of producing periodic high voltage impulses.

MASH-*(alc)*
A mixture of water and crushed grains or other feedstocks that can be fermented to produce ethanol.

MAXIMUM FLOW RATE - *(hydr) (meas)*
The maximum amount of water that can flow past a point during a given period of time. This measurement is used to evaluate the hydropower potential of a site.

MEAN POWER OUTPUT – *(meas)*
the average power output of a wind energy conversion system at a given mean wind speed.

MEGAWATT - *(elec) (meas)*
One million Watts.

METHANE DIGESTER - *(biocon)*
A device that converts biomass into methane and fertilizer through biological activity.

MICROGROOVE- (gen) A small groove scraped into the surface of a solar photovoltaic cell that is filled with metal for contacts.

MILLIAMPERE - *(meas)*
A milliampere (mA) refers to a unit for measuring small electric currents, equal to an ampere divided by 1,000 or a thousandth of an amp. Milliampere hour is also equal to 3.6 coulombs. Milliampere hour is most often used in electrical applications for measurement. For instance, the electrical charge in the electric rechargeable batteries used in appliances is denoted by mAh or mA-h. For example, a battery that is said to be a 100mAh battery can release 100 milliamperes of current at a specific voltage, for one hour.

MINIHYDRO - *(hydr)*
Hydropower units that produce 100-1000 KILOWATTS.

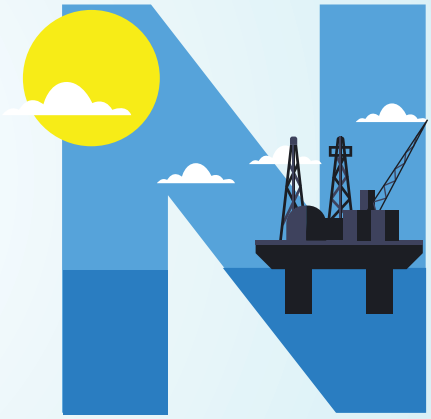
MINIMUM FLOW RATE - *(hydr) (meas)*
The least amount of water that will flow past a given point at any time. This measurement is used to help evaluate the hydropower potential of a site. This is the opposite of the maximum flow rate.

MIXING VALVE - *(sol)*
A valve operated by a thermostat installed in solar water heating systems to mix cold water with water from the collector loop in order to provide a safe water temperature.

MODULE - *(gen)*
The smallest self-sufficient, environmentally protected structure containing interconnected

photovoltaic cells and providing a single DC electrical output; also called a panel.

MULTIBLADE WINDMILL - *(wind)*
A windmill that has a large number of blades. It generally is used to pump water.



NACELLE - *(wind)*
The portion of a wind electric conversion machine that houses the electricity generating equipment. It is a cover housing for the gear box, drive train, generator, and other generating components of the wind turbine.

NATURAL COOLING SPACE –*(gen)*
Cooling obtained by shading, natural ventilation, conduction control, radiation, and evaporation; also called passive cooling.

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NATURAL HAZARD VS NATURAL DISASTER – *(gen)*

A natural hazard is a threat of a naturally occurring event having a negative effect on humans. This negative effect is what called a natural disaster. In other words, when the hazardous threat actually happens and harms humans, that event is called a natural disaster.

Among the natural hazards and possible disasters are: earthquakes, volcanic eruptions, tsunami, landslides, floods, droughts, hurricanes and tornadoes.

These processes have been operating throughout earth's history, but have become hazardous only because they negatively affect human beings. There would be no natural disasters if it were not for humans. Without humans these are only natural events.

NET AREA - (sol) (meas)

The area of the opening of a solar collector, through which solar radiation may pass.

NET ENERGY PRODUCTION (OR BALANCE) – (meas)

The amount of useful energy produced by a system, to the amount of energy required to produce the fuel.

NOMINAL CAPACITY - (meas)

The approximate energy-producing capacity of a power plant under special conditions.

NON-RENEWABLE FUELS - (gen)

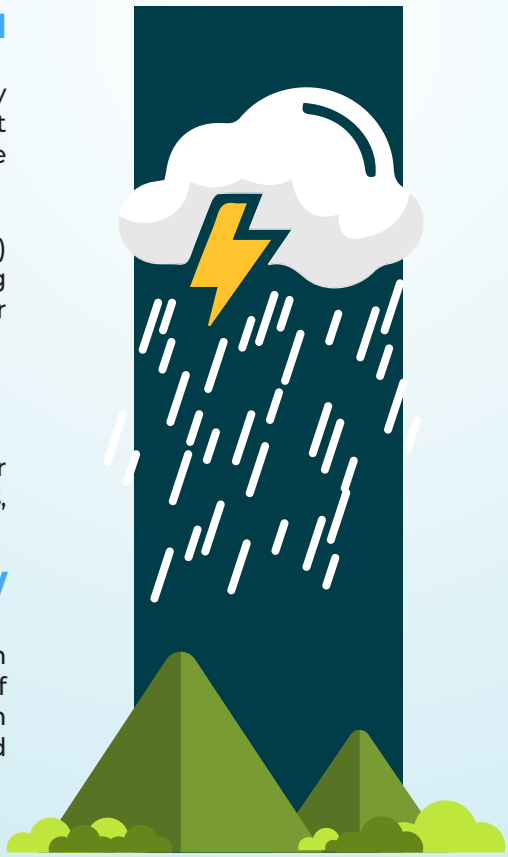
Fuels that cannot be easily made or "renewed," such as oil, natural gas, and coal.

NON-UTILITY GENERATOR/ POWER PRODUCER – (gen)

A class of power generator with generating plants for the purpose of supplying electric power required in the conduct of their industrial and commercial operations.

OCEAN ENERGY *- (oceans)*

Ocean energy is produced by converters which capture the energy contained in ocean waves and use it to generate electricity. Converters include oscillating water columns that trap air pockets to drive a turbine; oscillating body converters that use wave motion; and overtopping converters that make use of height differences.



OCEAN THERMAL ENERGY CONVERSION (OTEC) *- (oceans)*

OTEC is an electricity generation system. It refers to a method of using the ocean's thermal gradients, which is the temperature difference between the sun-warmed surface waters in the tropics and subtropics, and the cold waters found at great depths of the ocean, to run a heat engine and produce electricity.

The deeper parts of the ocean are cooler due to the fact that the heat of sunlight cannot penetrate very deep into the water. The efficiency of the conversion system depends on the temperature difference as greater temperature differences would lead to greater efficiency.

OTEC can only be done efficiently where the thermal gradient within the upper 1,000 meters of the ocean is more than 20° Celsius. The temperature difference between deep and shallow parts of the ocean is maximum in the tropical regions as the tropics receives a lot of sunlight which warms the surface of the oceans, increasing the temperature gradient. OTEC power is very appealing as it renewable and environmentally-friendly.

OCEAN THERMAL GRADIENTS *- (oceans)*

The temperature difference between deep and surface water in the ocean. These temperature variations may be used as an alternative energy source.

OCEAN THERMAL POWER *- (ocean)*

Energy acquired from differences in temperatures at different depths in the ocean. Also referred to as Ocean Thermal Energy Conversion (OTEC).

OPEN-CIRCUIT VOLTAGE (OCV) *- (meas)*

The difference of electrical potential between two terminals of a device when disconnected from any circuit, also the maximum possible voltage across a photovoltaic cell.

OPEN LOOP GEOTHERMAL HEAT PUMP SYSTEM - *(hydro)*

These types of "direct" systems circulate water drawn from a ground or surface water source; once the heat has been transferred into or out of the water, the water is returned to a well or surface discharge.

OPERATING FLOW - *(hydr) (meas)*

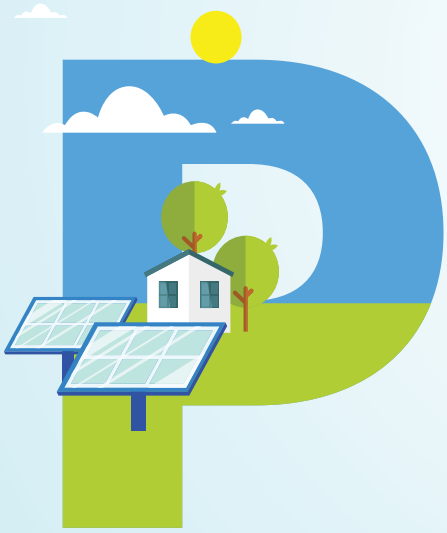
The flow rate needed by a hydropower device to operate at its rated load level.

ORGANIC MATTER - *(gen)*

Materials of animal or vegetable origin.

ORIENTATION - *(sol)*

The arrangement of windows on a building or solar device along a given axis to face in a direction best suited to absorb solar radiation. This is an essential element in planning passive solar heating systems for homes and other buildings.



PARABOLA - *(sol)*

The geometrically-curved shape used in the design of solar cookers to focus sunlight on a single point. A parabola is based on a family of quadratic curves.

PARABOLIC DISH - *(sol)*

A solar energy device shaped like a dish or bowl, with the characteristics of a parabola. It focuses sunlight on a point or a very small area.

PASSIVE SOLAR DESIGN - *(sol)*

A building design using structural elements of a building to heat and cool the building without the use of mechanical equipment, which requires careful consideration of the local climate and solar energy resource, building orientation, and landscape features.

PASSIVE SOLAR HEATING - *(sol)*

The solar heating of a building by use of architectural design, without the aid of mechanical equipment.

PEAK WATT -*(sol) (meas) (elec)*

A measuring unit used for the performance rating of photovoltaic converters, cells, modules or arrays. A system rated at one peak watt will deliver one watt at the specified working voltage under peak solar irradiation.

PEBBLE BED - *(sol)*

A large bin of uniformly-sized pebbles that is used to store heat in solar heating or solar cooling systems. A pebble bed is one type of heat sink. Also referred to as a rock bed.

PELTON WHEEL/ TURBINE - *(hydr)*

An impulse water turbine in which the pressure of the water supply is concentrated through a few stationary nozzles. The jets of water strike the buckets, which are mounted on the runner. Pelton wheels usually are limited to installations with heads that exceed 500 feet, or about 160 meters. (Syn: Pelton turbine)

PHOTVOLTAIC (PV) - *(sol)*

Of or pertaining to a material or device in which electricity is generated as a result of exposure to light.

PHOTOVOLTAIC ARRAY - *(sol)*

A number of photovoltaic modules that are electrically connected in a series and/or in parallel so as to provide the desired power and voltage. The modules are mounted on a sturdy framework that generally faces the equator. The array may be tailored to the requirements of a particular application and location. Such an array is valuable because it can generate electricity from sunlight without the use of moving mechanical parts.

PHOTOVOLTAIC MODULE OR PANEL - *(sol)*

The basic building block of a photovoltaic array, which consists of a number of interconnected solar cells; A solar photovoltaic product, generally consisting of groups of PV cells electrically connected together to produce a specified power output under standard test conditions, mounted on a substrate, sealed with an encapsulant and covered with a protective glazing.

PHOTOVOLTAIC PROCESS - *(sol)*

A process by which light rays are converted directly into electrical energy.

PHOTOVOLTAIC (SOLAR) SYSTEM - *(sol)*

A power system consisting of the module (or array) and balance-of-system (BOS) components including the array supports, electrical conductors/wiring, fuses, safety disconnects, and grounds, charge controllers, inverters, battery storage, etc.

POWER - *(gen)*

The rate at which energy is consumed or produced per unit time. Power is measured in energy (joules) divided by time. In the International System of units (SI), the standard metric unit of power is the watt (W) which is equal to one joule per second. The equation for power is: Power = Work/ time or P= W/t. As is implied by the equation for power, a unit of power is equivalent to a unit of work divided by a unit of time.

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POWER COEFFICIENT - *(wind) (meas)*
The ratio showing how efficiently a wind energy conversion device converts wind energy into electricity; The ratio of the power extracted by a wind machine rotor to the power available in a wind stream.

PREVAILING WIND - *(wind)*
The direction from which the wind blows most often. This is an important consideration in selecting a site for a windmill or wind turbine.

PYRANOMETER - *(meas) (sol)*
A device that measures the total global radiation.

PYROHELIOMETER - *(meas) (sol)*
An instrument that measures solar radiation from the sun, or from a small portion of the sky that surrounds the sun.

QUAD - *(meas)*
One quadrillion BTUs. It is expressed as either [1015] or 1,000,000,000,000,000 BTus. A quad is used to measure any large unit of energy such as wood, gasoline, coal, etc. For example, a quad can be used to describe the amount of thermal energy that is potentially available from burning a certain acreage of trees in woodstoves.

QUARTERING - *(wind)*
The action of turning a windmill broadside to the wind.

RADIANT ENERGY - *(sol)*
Energy in the form of electromagnetic waves that travels outward in all directions from its source.

RADIANT PANELS -*(sol)*
solar collectors with integral passages for the flow of heat transfer fluid. Heat from the fluid is conducted into a room or building by thermal radiation.

RADIAL FLOW - *(hydr)*
A type of hydropower device in which the water flows out radially from the power shaft.

RADIATION - *(sol)*
Electromagnetic waves that directly transport energy through space. Sunlight is a form of radiation.

RATED POWER CAPACITY - *(wind) (meas)*
The expected power output of a wind machine. It is equal to either the maximum power of the machine or to an output at some wind speed less than the maximum speed, but at which governing controls start to reduce the power.

RATED WIND SPEED - *(meas) (wind)*
The wind speed at which a wind machine delivers its rated power capacity.

RATE LIMITING STEP - *(biocon)*
Whichever stage in the anaerobic process that is slowest. Since each step in the digestion process requires the preceding one to be completed before it can begin, the overall gas production rate is limited by the slowest step.

REACTION TURBINE - *(hydr)*
A water turbine that uses the mass or weight of water hitting the runner as opposed to being driven by the velocity of the water.

REACTION WATER WHEEL - *(hydr)*
A water wheel that uses the mass or weight of water falling onto it rather than the flow.

RECEIVER – *(sol)*
The component part of a central receiver solar thermal system where reflected solar energy is absorbed and converted into thermal energy.

RECOVERED ENERGY - *(gen)*
Heat or other energy that normally would be lost during a process, but instead is captured and reused. For example, flue gases may be used for drying purposes.

RECYCLING – *(gen)*
The process of converting waste materials into a new (reusable) product.

REFLECTED RADIATION - *(sol)*
Solar radiation that has been reflected from such surfaces as the ground or buildings, and which ultimately becomes incident radiation.

REFLECTIVITY - *(sol) (meas)*
[1] The ability to reflect solar radiation, which is possessed to some degree by all materials. It is called the albedo in atmospheric references. [2] The ratio of radiant energy reflected by a body to that falling upon it.

REFLECTOMETER - *(sol) (meas)*
A photometer or other electronic device that measures reflectance or radiant energy.

REFLECTOR - *(sol)*
A device that can be used to reflect and focus solar radiation.

REFUSE-DERIVED FUEL (RDF)
A solid fuel produced by shredding or dehydrating municipal solid waste (MSW) with a waste converter technology.

RENEWABLE ENERGY - *(gen)*
Energy produced from sources that do not deplete or can be replenished within a human's life time. The most common examples include wind, solar, geothermal, biomass, and hydropower. This is in contrast to non-renewable sources such as fossil fuels.

RENEWABLE PORTFOLIO STANDARD (RPS) – *(gen)*
Regulation requiring the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal energy.

RESOURCE RECOVERY – *(gen)*
The process of converting municipal solid waste into energy and/or the recovery process of materials for recycling purposes.

RESPONSIBLE CONSUMPTION – *(gen)*
A joint effort to purchase and use goods and services with low environmental footprints and provide a positive economic impact where it is achievable.

RETROFITTING - *(sol)*
To retrofit means to outfit a device, vehicle, building or system with newly developed or previously unavailable parts, equipment or technology. Buildings may be retrofitted to increase energy efficiency. This may include upgrading energy-consuming systems, improving or replacing lighting fixtures, ventilation systems or windows and doors, or adding insulation or installing solar heating or solar cooling systems. Power plants can be retrofitted to upgrade systems for efficiency, and to add environmental safeguards (such as scrubbers). Additionally, infrastructure may be retrofitted to adapt to a future of increased hazards due to climate change.

RICE HUSK STOVE - *(biocon)*
A stove designed to use rice husks as its primary fuel.

RIVER GENERATOR - *(elec) (hydr)*
A hydroelectric generator that gets its power from a river or other flowing water.

RUNNER - *(hydr)*
The turbine wheel.

SAWDUST STOVE - *(biocon)*
A stove designed to use sawdust as its primary fuel.

SENSIBLE HEAT - *(heat)*
That heat, which, when added or subtracted, results only in a temperature change, as opposed to a chemical or other reaction.

SILICON SOLAR CELL - (sol) A solar cell made with the crystalline element silicon as part of its conductor.

SINGLE-AXIS TRACKING COLLECTOR - *(sol)*
A solar collector that follows the path of the sun on only one axis.

SITE SELECTION - *(gen)*
This refers generally to the process of locating the best available location for an anticipated use. Therefore, it can refer to the process of locating the best available site to build or place a power generation system, such as a wind machine, hydropower device, or solar power device etc.

SLURRY - *(biocon)*
The semisolid material in a biogas digester consisting of biomass mixed with water.

SOLAR ABSORBER - *(sol)*
A sheet of material, usually copper, aluminum, or steel that forms the surface of a solar collector. It collects and retains solar radiation, which is passed to a heat transfer medium.

SOLAR ALTITUDE - *(sol)*
The sun's angle above the horizon, as measured in a vertical plane.

SOLAR COOLING - *(sol)*
The use of solar thermal energy or solar electricity by means of concentrating solar collectors and absorption chillers to power a cooling appliance and to drive the cooling process.

SOLAR DISTILLATION – *(sol)*
the use of solar energy to evaporate water and collect its condensate within the same closed system, also the process of distilling (purifying) water using solar energy.

SOLAR ENERGY – *(sol)*
Heat from the sun that is converted into thermal or electrical energy. Solar energy is the cleanest and most abundant renewable energy source available. There are three main ways to harness solar energy: photovoltaics (PV), solar heating & cooling, and concentrating solar power (CSP).

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SOLAR MASS - *(sol)*
A standard unit of mass and a term used for materials that are used to absorb and store solar energy.

SOLAR SITE SELECTOR -*(sol)*
(meas) A circular transparency, similar to a map, that is used to determine solar positions and calculate shading.

SOLAR THERMAL ELECTRIC SYSTEM – *(sol)*
Solar energy conversion technologies converting solar energy to electricity, by heating a working fluid to power a turbine that drives a generator.

STEAM GAS - *(geo)*
Superheated steam that is used as an energy source. Steam gas is usually obtained from geothermal sources.

STEAM TURBINE - *(gen) (geo)*
A turbine that is driven by expanding steam or gas rather than by the velocity or weight of water.

SUN ANGLE CALCULATOR - *(sol) (meas)*
A set of transparent curves and overlays that tells where the sun is in the sky and gives other solar altitudes. *(See: solar site selector).*

SUSTAINABILITY
(gen)
The enduring capacity in ecology and the use of resources in an environmentally friendly, socially fair and economically viable manner by meeting current needs during the preservation process of the environment. Therefore, it maintains its potential to meet the needs and demands of both present and future generations.

SUSTAINABILITY MANAGEMENT SYSTEMS
- (gen)
Management systems (sets of interrelated elements) to establish a sustainability policy together with sustainability objectives in order to achieve them.

SUSTAINABLE CONSTRUCTION – *(gen)*
A relatively new aspect in construction by maximizing the use of renewable energy resources, and minimizing noise pollution, erosion, destruction of vegetation and negative impacts on air, soil, and water.

SUSTAINABLE UTILIZATION - *(gen)*
Feasible use of available natural resources in a way and at a rate that does not lead to the long-term degradation of the environment, therefore it maintains its potential to meet the needs and demands of both present and future generations.

SYSTEM MIX – *(gen)*
The proportions of electricity distributed by a power provider that is generated from specific available resources such as coal, natural gas, petroleum, nuclear, hydropower, wind, or geothermal energy.

THERM – *(meas)* -
A unit of heat energy containing 100,000 British thermal units (BTU).

THERMAL CONDUCTION - *(heat)*
Heat transfer by direct contact from one substance to another of a lower temperature. See also: Conduction.

THERMAL CONDUCTIVITY - *(heat) (meas)*
The ability of a material to conduct heat. It is commonly measured in units of thermal conductance.

THERMAL EFFICIENCY - *(heat) (meas)*
A performance measure or percentage that indicates the available heat that is converted to useful purposes. Thermal efficiency is used to evaluate wood-conserving stoves and numerous other devices.

THERMAL ENERGY- *(heat)*
Energy from heat.

THERMAL POWER - *(gen)*
Any type of power generated or developed through the use of heat energy.

THERMAL WINDS - *(wind)*
Winds that are caused by the heating of the ground by solar radiation.

THERMOCOUPLE
- (meas) (impl)
A device used to measure temperature. It is based on the principle that an electrical current is produced when two dissimilar wires are joined together and the junction is heated. Thermocouples are often used to measure temperatures at different levels in biogas digesters, wood stoves, kilns, or other devices where use of a conventional thermometer would be difficult.

TIDAL ENERGY *- (ocean)*
The kinetic energy existing in the tides by virtue of the moving mass of water.

TIDAL POWER *- (ocean)*
Mechanical power generated by the rise and fall of ocean tides, which may be converted into electricity.

TIDAL POWER PLANT/STATION *- (ocean)*
A plant capturing water in a basin at the peak of a tidal flow, then directing the water through a hydroelectric turbine as the tide falls.

TOTAL ENERGY HOUSE
- (gen)
A house that is heated, cooled, and receives its cooking and lighting power, completely from alternative energy sources.

TRACKED PHOTOVOLTAIC ARRAY *- (sol)*
A photovoltaic array that follows the path of the sun across the sky.

TRACKING *- (sol)*
Referring to adjustments that cause a solar cooker or a solar collector to "track" or follow the sun's path across the sky. This can be done either automatically or manually.

TRANSDUCER *- (gen)*
A device that converts energy from one form into another (e.g., photovoltaic cell).

TRANSFER MEDIUM *- (sol)*
A substance that carries heat from a solar collector to a storage area or from a storage area to be warmed in a collector. Transfer mediums are usually either air, water, or antifreeze solutions.

TRASH RACK *- (hydr)*
A protective "screen" made of vertical bars that catches leaves, grass, and debris, keeping clear the intake of a hydropower device.

TURBINE *- (gen)*
A rotary device converts kinetic energy into mechanical work. By passing the stream, air or fluid through a system of moving blades, a drive shaft is rotated; a rotary mechanical device extracting energy from the flow of a fluid (air, steam, water, or hot gases) and converting it into mechanical motion.

TURBINE WHEEL *- (hydr)*
The part of a water turbine that is attached to a drive shaft, and which holds the blades or cups that cause the wheel to rotate when struck by a stream of steam or water. The wheel rotates the shaft to produce mechanical or electrical power.

TURNAROUND EFFICIENCY *- (gen) (meas)*
The resulting efficiency when energy is converted from one form to another and then changed back again into its original form or state.

USEFUL ENERGY GAIN *- (sol)*
The energy absorbed by a solar collector that is not lost to the surrounding atmosphere and which may be used for space or water heating.

USEFUL SOLAR HEAT *- (sol)*
Heat delivered by a solar collector that can be applied for cooking, heating, or other purposes.

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VERTICAL-AXIS WATER WHEEL - *(hydr)*
A water wheel that drives a vertical axis instead of the more common horizontal axis.

VERTICAL-AXIS WIND MACHINE - *(wind)*
a wind machine in which the windshaft is on a vertical axis. This type of device may accept wind from any direction.

VIOLET CELL - *(sol)*
A type of silicon solar cell that is more effective than conventional photovoltaic cells in converting sunlight to electricity from the violet and ultra-violet range of the light spectrum.

VOLTAGE – *(meas)*
Electromotive force or potential difference in electric energy, that is expressed in volts.

WASTE HEAT - *(heat)*
Heat that is left after useful energy generation and which may be recovered in part through the process of waste heat recovery

WATER BED - *(sol)*
Shallow plastic bags that are filled with water and placed on roofs of homes or buildings. In cooler climates, the bags collect solar energy during the day, and radiate heat to the building during the day, and radiate this heat to the sky at night, thus cooling the building. In warmer climates, panels are placed over the bags during the day and removed at night so the bags can draw off heat from the building and keep it cool.

WATER MILL - *(hydr)*
A mill driven by a water wheel.

WATER TURBINE - *(hydr)*
A device that converts the energy of falling water into rotating mechanical energy. The turbine uses water pressure to rotate its blades and is primarily used to make an electric generator work. Water turbines are also usually smaller than water wheels and operate at the higher speeds required to generate electricity.

WATER WHEEL - *(hydr)*
A wheel with buckets or blades that allow it to be turned by the weight or velocity of falling water or by water moving underneath it.

WATER, ENERGY AND FOOD NEXUS - *(gen)*
The water, energy and food (WEF) nexus means that the three sectors — water security, energy security and food security — are inextricably linked and that actions in one area more often than not have impacts in one or both of the others. These three sectors are also necessary for the benefit of human well-being, poverty reduction and sustainable development.

WATER-AIR HEAT EXCHANGER - *(heat)*
A heat exchanger in which fluids may either be heated or cooled by water or air.

WATERPOWER - *(hydr)*
The energy in water as derived from its weight or momentum, and which may be used to drive machinery, generate electricity, or for other purposes. *(Syn: HYDROPOWER)*

WATT - *(elec) (meas)*
The unit rate at which work is done in an electrical circuit. One watt equals one joule of work per second. *The abbreviation for watt is: W.*

WAVE POWER - *(ocean)*
The production of electricity by harnessing ocean wave movements through the use of specialized turbines or other devices.

WEATHER STRIPPING - *(gen)*
Narrow strips of rubber, felt, metal or other material that are used to conserve energy by preventing air infiltration around doors or windows.

WIND CONCENTRATOR - *(wind)*
A device or structure that is used to concentrate a wind stream.

WIND DIRECTION - *(wind)*
The forward course along which the wind is blowing.

WIND ELECTRIC SYSTEM - *(wind)*
A system in which a wind turbine is used to generate electricity.
The electrical energy produced can either be stored in batteries or used directly to run appliances.

WIND ENERGY - *(wind)*
[1] Energy that is tapped from the natural movement of the air. Wind energy is considered a form of solar energy because wind is caused by variations in the amount of heat

that the sun sends to different parts of the earth. It may be converted into electrical or mechanical power through the use of a wind machine.

[2] Wind is used to produce electricity using the kinetic energy created by air in motion. This is transformed into electrical energy using wind turbines or wind energy conversion systems. Wind first hits a turbine's blades, causing them to rotate and turn the turbine connected to them.

That changes the kinetic energy to rotational energy, by moving a shaft which is connected to a generator, and thereby producing electrical energy through electromagnetism.

WIND ENERGY CONVERSION SYSTEM (WECS) - *(wind)*

The conversion of wind energy into electrical, mechanical, or thermal energy through the use of wind machines. It can be used to power machinery and also to operate an electrical generator. Commonly abbreviated as W.E.C.S. or WECS.

WIND FURNACE - *(wind)*

A wind machine that converts wind power into heat energy.

WIND GAUGE - *(wind) (meas)*

Any instrument that measures wind velocity. *(Syn: ANEMOMETER)*

WIND GENERATOR - *(wind)*

A type of windmill that extracts energy from the wind to produce electricity by driving a generator. It generally has two or three narrow blades that turn at a high speed, often using gearing to multiply the number of revolutions per minute up to a range required by the generator. Alternative terms include wind turbine and wind turbine generator.

WIND MACHINE - *(wind)*

Any of several types of wind-driven devices that are used to extract useful power from the wind.

WIND POWER - *(wind) (meas)*

Power available from the wind that can be used by various types of wind machines.

WINDMILL - *(wind)*

The term generally used to describe traditional wind machines of all kinds. A windmill is powered by wind pressure, and usually has a slowly turning rotor with two or more blades attached to it. The blades are turned by the wind, thus rotating the rotor and the wind shaft. In this way, wind energy is converted to mechanical energy.

Some typical windmill applications include water pumping, milling or threshing.The terms "windmill" and "wind turbine" are sometimes used interchangeably, but there are important differences.

Traditional Windmills generate mechanical energy, but they do not generate electricity. In contrast, modern wind turbines are highly evolved machines with more than 8,000 parts that harness wind's kinetic energy and convert it into electricity. Therefore, in modern power generation applications, the term "wind turbine" is most often used.

WIND-POWERED PUMP -*(wind)*

A water-lifting device driven by a wind machine.

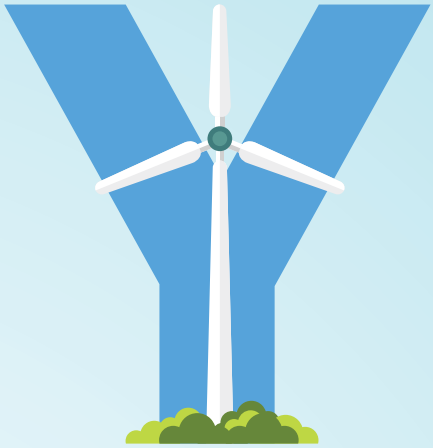
WIND SPEED DISTRIBUTION - *(wind) (meas)*

A two-dimensional graph that shows the total time or the percentage of time that the wind blows at each wind speed at a particular location. It can give a grand total of wind speeds, regardless of their directions.

WIND TURBINE - *(wind)*

A device which converts the wind's kinetic energy into electrical energy. Wind turns the propeller-like blades of a turbine around a rotor, which spins a generator, which in-turn creates electricity.

Wind turbines fall into two categories: vertical axis turbines and horizontal axis turbines. A wind turbine is also referred to as wind energy converter.



YAW AXIS - *(wind)*

The vertical axis about which a horizontal axis windmill rotates to align itself with the wind.

ZERO TILL - *(agri)*

An energy-conserving method of agriculture that requires little or no plowing or turning of the soil.

ZONAL WIND - *(wind)*

Winds that blow approximately along the local parallel of the latitude.

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