

Glossary: Electricity

Alternating Current (AC): Voltage forces electrons to flow in one direction and then quickly alternate to the opposite direction.

Ampere: The unit of measurement of electrical current produced in a circuit by 1 volt acting through a resistance of 1 Ohm.

Ammeter: A device to measure amperes (current).

Apparent power: The product of the voltage (in volts) and the current (in amperes). It both active and reactive power. It is measured in "volt-amperes" and often in "kilovolt-amperes" (kVA) or "megavolt-amperes" (MVA).

Base load: The minimum amount of electric power delivered or required over a given period time at a steady rate.

Base load capacity: The generating equipment normally operated to serve loads on an -the-clock basis.

Biomass: Organic non-fossil material of biological origin constituting a renewable energy .

Bituminous coal: A dense coal, usually black, sometimes dark brown, often with well-defined of bright and dull material, used primarily as fuel in steam-electric power generation, substantial quantities also used for heat and power applications in manufacturing and to coke. Bituminous coal is the most abundant coal in active U.S. mining regions. Its content usually is less than 20 percent. The heat content of bituminous coal ranges 21 to 30 million Btu per ton on a moist, mineral-matter-free basis. The heat content of coal consumed in the United States averages 24 million Btu per ton, on the as- basis (i.e., containing both inherent moisture and mineral matter).

Circuit: A conductor or a system of conductors through which electric current flows.

Coal: A readily combustible black or brownish-black rock whose composition, including moisture, consists of more than 50 percent by weight and more than 70 percent

by of carbonaceous material. It is formed from plant remains that have been compacted, chemically altered, and metamorphosed by heat and pressure over geologic time.

Cogenerator: A generating facility that produces electricity and another form of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes.

Conductor: A material that permits a very free exchange/movement of electrons from one atom to another.

Conventional Flow: This theory states that electrons flow from positive (+) to negative (-).

Current: The flow of electrons in the same direction from atom to atom.

Diesel fuel: A fuel used in motor vehicles composed of distillates obtained in petroleum refining operations or blends of distillates with residual oil. The boiling point and specific gravity is higher for diesel fuels than for gasoline.

Direct Current (DC): Voltage forces the electrons to flow continuously in only one direction through a circuit.:

Electromagnets: Do not retain their magnetism after a magnetizing force is removed.

Electromagnetic Induction: The creation of voltage in a conductor from movement of the conductor or the magnetic field.

Electron Flow: This theory states that electrons flow from negative (-) to positive (+).

Electricity: A form of energy characterized by the presence and motion of elementary particles generated by friction, induction, or chemical change.

Fossil fuel: An energy source formed in the Earth's crust from decayed organic material. The fossil fuels are petroleum, coal, and natural gas.

Frequency: The number of cycles in one second of alternating current. Expressed in hertz (Hz). For example, 60 Hz is 60 cycles in one

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second.

Geothermal energy: Hot water or steam extracted from geothermal reservoirs in the earth's . Water or steam extracted from geothermal reservoirs can be used for geothermal heat, water heating, or electricity generation.

Gigawatt(GW): One billion watts or one thousand megawatts.

Gigawatthour (GWh): One billion watthours.

Greenhouse effect: The result of water vapor, carbon dioxide, and other atmospheric gases radiant (infrared) energy, thereby keeping the earth's surface warmer than it would be. Greenhouse gases within the lower levels of the atmosphere trap this radiation, would otherwise escape into space, and subsequent re-radiation of some of this energy to the Earth maintains higher surface temperatures than would occur if the gases were .

Hydroelectric power: The use of flowing water to produce electrical energy.

Hydrogen: The lightest of all gases, occurring chiefly in combination with oxygen in water; also in acids, bases, alcohols, petroleum, and other hydrocarbons.

Insulators: Materials that don't readily give up electrons, thereby restricting the flow of current.

Kilowatt (kW): One thousand watts.

Kilowatt-hour (kWh): A measure of electricity defined as a unit of work or energy, measured 1 kilowatt (1,000watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu.

Lignite: The lowest rank of coal, often referred to as brown coal, used almost exclusively as for steam-electric power generation. It is brownish-black and has a high inherent moisture, sometimes as high as 45 percent The heat content of lignite ranges from 9 to 17 Btu per ton on a moist, mineral-matter-free basis. The heat content of lignite consumed the United States averages 13 million Btu per ton, on the as-received basis (i.e. containing inherent moisture and mineral matter).

Megawatt (MW): One million watts of electricity.

Mega-watthour (MWh): One thousand kilowatt-hours or 1 million watt-hours.

Nuclear fuel: Fissionable materials that have been enriched to such a composition that, when in a nuclear reactor, will support a self-sustaining fission chain reaction, producing heat a controlled manner for process use.

Ohm: A measure of the electrical resistance of a material equal to the resistance of a circuit in the potential difference of 1 volt produces a current of 1 ampere.

Ohm's Law: Current is directly proportional to voltage and inversely proportional to resistance.

Parallel Circuits: Loads are connected across the power line to form branches.

Percent difference: The relative change in a quantity over a specified time period. It is as follows: the current value has the previous value subtracted from it; this new value is divided by the absolute value of the previous value; then the result is divided is by 100.

Permanent Magnets: Retain their magnetism after a magnetizing force is removed.

Resistance: The restriction to the flow of electrons.

Right-Hand Rule: A current carrying conductor held in right hand will indicate the direction of lines of flux.

Solar energy: The radiant energy of the sun, which can be converted into other forms of, such as heat or electricity.

Substation: Facility equipment that switches, changes, or regulates electric voltage.

Sulfur: A yellowish nonmetallic element, sometimes known as "brimstone." It is present at levels of concentration in many fossil fuels whose combustion releases sulfur that are considered harmful to the environment. Some of the most commonly used fuels are categorized according to their sulfur content, with lower sulfur fuels usually at a higher price. Note: No.2 Distillate fuel is currently reported as having either a 0.05 or lower sulfur level for on-highway vehicle use or a greater than 0.05 percent sulfur for off-highway use, home heating oil, and commercial and industrial uses. Residual fuel, of use, is classified as having either no more than 1 percent sulfur or greater than 1 sulfur.

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Coal is also classified as being low- sulfur at concentrations of 1 percent or less high-sulfur at concentrations greater than 1 percent.

Switching station: Facility equipment used to tie together two or more electric circuits switches. The switches are selectively arranged to permit a circuit to be disconnected to change the electric connection between the circuits.

Terawatt-hour: One trillion watt hours.

Thermal rating (electric): The maximum amount of electrical current that a transmission line electrical facility can conduct over a specified time period before it sustains permanent by overheating or before it sags to the point that it violates public safety requirements.

Transformer: An electrical device for changing the voltage of alternating current.

Turbine: A machine for generating rotary mechanical power from the energy of a stream of (such as water, steam, or hot gas). Turbines convert the kinetic energy of fluids to energy through the principles of impulse and reaction, or a mixture of the two.

Watt (W): The unit of electrical power equal to one ampere under a pressure of one volt. A Watt is equal to 1/746 horse power.

Watt-hour (Wh): The electrical energy unit of measure equal to one watt of power supplied to, taken from, an electric circuit steadily for one hour.

Wind energy: Kinetic energy present in wind motion that can be converted to mechanical for driving pumps, mills, and electric power generators.