

# Electrical Terms

**Alternating Current (AC):** An electric current that reverses its direction of flow periodically. (In the United States this occurs 60 times a second – 60 cycles of 60 Hertz.) This is the type of current supplied to homes and businesses by utilities.

**Arcing:** The flow of electricity through the air from a conductor to another object that conducts electricity. Produces visible flashes and flames and a crackling sound.

**Busbar (Bus):** A rigid large conductor, often a metal bar or tube. Usually used in substations. Provides a quick, convenient means of rearranging circuit connections to keep power flowing or to restore power in case of equipment damage.

**Bushing:** An insulated fitting for carrying the conductor through the metal enclosure of electrical equipment such as transformers or capacitors.

**Cable:** A fully insulated conductor that can be installed underground or overhead.

**Circuit:** A continuous system of conductors providing a path for electricity.

**Circuit Breaker:** A switch that automatically disconnects power to the circuit in the event of a fault condition. Located in substations. Performs the same function as a circuit breaker in a home.

**Conductor:** A wire, cable, busbar, rod or tube that serves as a path for electric flow. The most common conductor is the overhead wire.

**Demand:** The total amount of electricity required at any given time by a utility's customers. (Also see Peak Demand.)

**Direct Current (DC):** Electricity that flows continuously in one direction. A battery produces DC power.

**Distribution Line:** Any line operating at less than 69,000 volts.

**Fault:** A failure or interruption in an electrical circuit.

**Feeder:** A distribution line (less than 69,000 volts) carrying power from a substation to customers.

**Ground:** When one or more conductors contact earth, causing the electricity to flow out of the circuit into the earth.

**Insulation:** The protective material covering the electric wire. Rubber and polyethylene are commonly used.

**Insulator:** The porcelain support used to insulate the conductors (wires) from the pole or tower.

**Kilovolt (kV):** 1,000 volts

**Kilowatt (kW):** 1,000 watts

**Kilowatt-hour (kWh):** A basic unit of electricity equal to one kilowatt or 1,000 watts of power used for one hour.

**Lightning Arrestor:** Protects lines, transformers and equipment from lightning surges by carrying the charge to ground.

**Load:** Amount of power delivered as required at any point or points in the system. Load is created by the power demands of customers' electrical equipment.

**Network:** A system of transmission and distribution lines cross-connected and operated to permit multiple power supply to any principal point on it. Usually installed in urban areas. Networks make it possible to restore power quickly to customers by switching them to another circuit.

**Open Circuit:** A condition produced when a circuit opens either intentionally with a switch or as a result of a fault.

**Peak Demand:** The maximum amount of electricity required to supply customers.

**Pole Mounted Transformers:** The transformer mounted on a pole that steps down primary distribution voltage (normal range: 4,160 to 23,000 volts for use by individual customers. A home typically uses a secondary voltage of 120/240 volts.

**Primary Circuit:** The distribution circuit (less than 69,000 volts) on the high voltage side of a transformer.

**Recloser:** A switch that functions like a circuit breaker, protecting primary circuits from fault conditions. A recloser will automatically restore the circuit in the event of a temporary fault. Temporary faults can be caused by something such as a tree branch falling onto the lines.

**Secondary Circuit:** The distribution circuit on the low voltage side of a transformer (usually 120/240 volts).

**Service Drop:** The lines running from the pole to the customer's house. Usually made up of two 120-volt lines and a neutral line, from which the customer can obtain either 120 or 240 volts of power.

**Short Circuit:** An accidentally established connection between two points in an electric circuit, such as when a tree limb or an animal bridges the gap between two conductors. This will cause

heavy currents to flow in the line (overload) and result in melting of line fuses and operation of protective devices such as reclosers and circuit breakers.

**Single Phase Line:** A conductor installation carrying electrical loads capable of serving the needs of residential customers, small commercial customers and streetlights.

**Substation:** A small building or fenced-in yard containing switches, transformers and other equipment and structures. Adjustments of voltage monitoring of circuits and other service functions take place in a substation.

**Switching Station:** A type of substation where connections are made between several distribution or transmission lines. Voltage is not changed.

**Tap:** A connection between conductors or between a conductor and certain equipment such as transformers.

**Transmission Line:** Any line operating at 69,000 or more volts.

**Transformer:** A device used to transform voltage levels to facilitate the transfer of power from the generating plant to the customer. A step-up transformer increased the voltage while a step-down transformer decreases voltage.

**Tree Pruning Crews:** Teams of workers skilled in trimming and removing trees in close proximity to energized power lines.

**Trip:** The action of breaking a circuit – usually refers to an automatic rather than a manual action.

**Underground:** Electrical facilities installed below the surface of the earth.

**Voltage:** A measure of the push or force that transmits electricity.

**Watt:** A measure of the work electricity produces.