RTO Task Force Glossary of Terms

Electricity

Alternating current (AC): An electric current that reverses its direction at regularly recurring intervals, 60 hz, or times per second, in the US.

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

British thermal unit (Btu): a unit of heat; it is defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. A Btu can be approximated as the heat produced by burning a single wooden kitchen match.

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

Direct current (DC): An electrical current that flows in one direction.

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

Gigawatt-hour (GWh): One billion watthours.

Kilovolt (kV): One thousand volts.

Kilowatt (kW): One thousand watts.

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

Megawatt (MW): One million watts of electricity.

Megawatt-hour (MWh): One thousand kilowatt-hours or one million watt-hours.

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

Power: The rate of producing, transferring, or using electricity. Power is measured in watts and often expressed in kilowatts (kW) or megawatts (MW).

Single-Phase Power: the typical power service to residential houses, typically at 120 volts.

Terawatt: One trillion watts.

Terawatt-hour: One trillion watt hours.

Three-Phase Power: the standard operating voltage for distribution and transmission systems and large electrical appliances, such as motors, ranging from 208 volts to transmission levels.

Volt (V): The volt is the International System of Units (SI) measure of electric potential or electromotive force. A potential of one volt appears across a resistance of one ohm when a current of one ampere flows through that resistance.

Voltage: The difference in electrical potential between any two conductors or between a conductor and ground. It is a measure of the electric energy per electron that electrons can acquire and/or give up as they move between the two conductors. Typical residential voltages are single phase 120 volts. Higher, three phase voltages are typically supplied to large customers.

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, or taken from, an electric circuit steadily for one hour. It is equivalent to 3.412 Btu

The Electric Power Grid

Balancing Authority: The responsible entity that integrates resource plans ahead of time, maintains load-interchange generation balance within a Balancing Authority Area, and supports interconnection frequency in real time.

Balancing Authority Area: The collection of generation, transmission, and loads within the metered boundaries of the balancing authority. The balancing authority maintains load-resource balance within this area.

Bulk Power System: The facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof), and electric energy from generating facilities needed to maintain transmission system reliability. The term does not include facilities used in the local distribution of electric energy.

Capacity: See Generator capacity.

Distribution: The delivery of electricity to retail customers.

Distribution System: That portion of an electric system that delivers electricity from the transmission system to retail customers.

Electric power grid: The combined electric transmission and distribution network is known as the “power grid” or simply “the grid.” North America’s bulk power system actually comprises of four distinct power grids, also called interconnections. The Eastern Interconnection includes the eastern two-thirds of the continental United States and Canada from the Great Plains to the Eastern Seaboard. The Western Interconnection includes the western one-third of the continental United States, the Canadian provinces of Alberta and British Columbia, and a portion of Baja California Norte in Mexico. The Texas Interconnection comprises most of the State of Texas, and the Canadian province of Quebec is the fourth North American interconnection. The grid systems in Hawaii and Alaska are not connected to the grids in the lower 48 states.

Electric generator: A facility that produces only electricity, commonly expressed in kilowatt-hours (kWh) or megawatt-hours (MWh). Electric generators include electric utilities and independent power producers.

Electricity demand: The rate at which energy is delivered to loads and scheduling points by generation, transmission, and distribution facilities.

Electricity generation: The process of producing electric energy or the amount of electric energy produced by transforming other forms of energy, commonly expressed in kilowatt-hours (kWh) or megawatt-hours (MWh).

Generating unit: Any combination of physically connected generators, reactors, boilers, combustion turbines, and other prime movers operated together to produce electric power.

Generation: The process of producing electric energy by transforming other forms of energy; also, the amount of electric energy produced, expressed in kilowatt-hours (kWh) or megawatt-hours (MWh).

Generator capacity: The maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load, adjusted for ambient conditions.

Grid: See Electric power grid.

Independent power producer: A corporation, person, agency, authority, or other legal entity or instrumentality that owns or operates facilities for the generation of electricity for use primarily by the public, and that is not an electric utility.

Independent System Operator (ISO) or Regional Transmission Operator (RTO): An independent, federally regulated entity established to coordinate regional transmission in a non-discriminatory manner and ensure the safety and reliability of the electric system.

Load: An end-use device or customer that receives power from the electric system; also, the total amount of power carried by an electric system at a point in time. Often used synonymously with "demand."

Maximum demand: The greatest of all demands of the load that has occurred within a specified period of time.

North American Electric Reliability Corporation (NERC): A nonprofit corporation formed in 2006 as the successor to the North American Electric Reliability Council established to develop and maintain mandatory reliability standards for the bulk electric system, with the fundamental goal of maintaining and improving the reliability of that system. NERC consists of regional reliability entities covering the interconnected power regions of the contiguous United States, Canada, and Mexico.

Open access: Federal Energy Regulatory Commission Order No. 888 requires public utilities to provide non-discriminatory transmission service over their transmission facilities to third parties to move bulk power from one point to another on a nondiscriminatory basis for a cost-based fee.

Order 890 expanded open access to cover the methodology for calculating available transmission transfer capability; improvements that opened a coordinated transmission planning processes; standardization of energy and generation imbalance charges; and other reforms regarding the designation and undesignation of transmission network resources.

Peak demand: The maximum load during a specified period of time.

Regional Transmission Operator (RTO) or Independent System Operator (ISO): An independent, federally regulated entity established to coordinate regional transmission in a non-discriminatory manner and ensure the safety and reliability of the electric system.

Retail sales: Sales made directly to the customer that uses the electricity.

Right-of-way: A corridor of land on which electric lines may be located. The transmission owner may own the land in fee, own an easement, or have certain franchise, prescription, or license rights to construct and maintain lines.

Sales for resale: A type of wholesale sales covering energy supplied to other electric utilities, cooperatives, municipalities, and Federal and state electric agencies for resale to ultimate consumers.

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

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

System: Physically connected generation, transmission, and distribution facilities operated as an integrated unit under one central management or operating supervision.

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

Transmission line: A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances.

Transmission system: An interconnected group of electric transmission lines and associated equipment for moving or transferring electric energy in bulk between points of supply and points at which it is transformed for delivery over the distribution system lines to consumers or is delivered to other electric systems.

Western Electricity Coordinating Council (WECC): The WECC promotes bulk power system reliability and security in the Western Interconnection. WECC is the NERC-designated regional entity responsible for compliance monitoring and enforcement of NERC reliability standards, and oversees reliability planning and assessments. In addition, WECC provides an environment for the development of reliability standards and the coordination of the operating and planning activities of its members as set forth in the WECC Bylaws.

Western Interconnection: The Western Interconnection is the geographic area containing the synchronously operated electric grid in the western part of North America, which includes parts of Montana, Nebraska, New Mexico, South Dakota, Texas, Wyoming and Mexico and all of Arizona, California, Colorado, Idaho, Nevada, Oregon, Utah, Washington and the Canadian provinces of British Columbia and Alberta.

Wholesale power market: The purchase and sale of electricity from generators to resellers (who sell to retail customers), along with the ancillary services needed to maintain reliability and power quality at the transmission level.

Wholesale sales: Energy supplied to other electric utilities, cooperatives, municipals, and Federal and state electric agencies for resale to ultimate consumers.

Wholesale transmission services: The transmission of electric energy sold, or to be sold, in the wholesale electric power market.