

## Glossary of Electrical Terms

<b>Adequacy</b>	The ability of a bulk electric system to supply the aggregate electrical demand and energy requirements of the customers at all time, taking into account scheduled and reasonably expected unscheduled outages of system components.
<b>Area Control Error</b>	The instantaneous difference between actual and scheduled interchange, taking into account the effects of frequency bias (and time error) or unilateral inadvertent, if automatic correction for either is part of the system's Automatic Generator Control.
<b>Banking</b>	Energy delivered or received by a utility with the intent that it will be returned in kind in the future. (See Storage, Energy Exchange)
<b>Cap &amp; Trade</b>	The Cap portion of this phrase means an industry, area or nation is allowed a not to exceed quantity of pollution credits or allowances. The Trade portion of this phrase is concerning a portion of the allowances that are not used. It becomes a commodity that can be sold or traded to others.
<b>Capacity</b>	The maximum load that can be generated, transmitted or consumed.
<b>Capacity Factor</b>	The ratio of actual output of a power plant over a period of time and its potential output if it had operated at full the entire time.
<b>Co-generation</b>	Utilization of one heat source for two purposes: process steam and electrical generation.
<b>Contingency</b>	The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker switch or other electrical element.
<b>Demand</b>	The maximum usage of electricity at a given instant. Demand is often measured in 15-minute increments and usually expressed in kilowatts. The primary source of "demand" is the power-consuming equipment of the customers.
<b>Demand Charge</b>	The specified charge to be billed on the basis of peak demand under an applicable rate schedule or contract.
<b>Distribution</b>	The locally-owned power system used to deliver electric energy to retail customers. Distribution facilities are low-voltage.
<b>Distributed</b>	Many small generation sources located in areas where fuel is

<b>Generation</b>	available and little or no transmission is required to get the electrical energy to the consumer.
<b>Diversity</b>	The benefit enjoyed by two or more electric loads when their maximum demand occurs at different times.
<b>Energy</b>	The ability to do work over time. In the electric utility industry, energy is measured by kilowatt hours or megawatt hours.
<b>Energy Imbalance Market</b>	An automated sub-hourly economic optimization to balance loads and resources by dispatching resources voluntarily bid into the system in order to mitigate imbalance pricing caused by intermittent resources.
<b>Firm Power</b>	An un-interruptible power supply to be delivered under terms of a contract.
<b>Gigawatt(GW)</b>	One billion watts, or one million kilowatts, or one thousand megawatts. Enough to light ten million 100-watt light bulbs.
<b>Gigawatt Hour</b>	Electric energy equal to one gigawatt of power supplied steadily for one hour, i.e. the amount of electricity needed to light ten million 100-watt light bulbs for one hour.
<b>Grid</b>	A system of high-voltage transmission and power-generating facilities that are interconnected with a number of bulk power supply sources.
<b>Hydro</b>	A term used to identify a type of generating station unit in which water power is used to turn a turbine.
<b>Intermittent Resource</b>	Any resources that is not continuously available due to some factor outside direct control.
<b>Independent System Operator</b>	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.
<b>Kilowatt (kW)</b>	One thousand watts. One kilowatt is needed to light ten 100-watt light bulbs.
<b>Kilowatt Hour</b>	The basic unit of electric energy equal to one kilowatt of power supplied steadily for one hour. One kilowatt hour is needed to light ten 100-watt light bulbs for one hour.

<b>Kilowatt/Month</b>	<p>A measurement carrying the same definition as kilowatt hour except as to the duration of time. Alternatively, this term may be used to express a function of billing, i.e., a charge per month for each unit of</p> <p>electric power either reserved by the customer or measured on the customer's Demand meter.</p>
<b>Largest Hazard</b>	A term used among power pool members that identifies their largest non-firm resource.
<b>Line Loss</b>	Electric energy lost in the process of transferring it over distribution and transmission lines.
<b>Load</b>	The amount of electric power required at any specified point or points on a system. Load originates primarily at the power consuming equipment of the customers.
<b>Load Curve</b>	A curve on a chart showing power (kilowatts) supplied, plotted against time of occurrence. A load curve illustrates the varying magnitude of the load during the time period covered.
<b>Load Factor</b>	A measurement showing how efficiently capacity is being utilized within a system. The higher the load factor, the better the efficiency. Load factor is the ratio of the average load in kilowatts supplied during a designated period to the peak load in kilowatts occurring in that period. Load factor is calculated by multiplying the kilowatt hours in the period by 100 and dividing by the product of the maximum demand in kilowatts and the number of hours in the period.
<b>Load Pattern</b>	The historical usage of electricity by a utility.
<b>Megawatt</b>	One million watts or one thousand kilowatts. The amount of power needed to light ten thousand 100-watt light bulbs.
<b>Megawatt Hour</b>	The unit of energy equal to one thousand kilowatts supplied steadily for one hour, or the amount of power needed to light ten thousand 100-watt light bulbs for one hour.

<b>Mercury Hg 80</b>	Mercury occurs in deposits throughout the world mostly as cinnabar (mercuric sulfide) which is the source of the red pigment vermilion, and is mostly obtained by reduction from cinnabar. Cinnabar is highly toxic by ingestion or inhalation of the dust. Mercury poisoning can also result from exposure to soluble forms of mercury (such as mercuric chloride or methylmercury), inhalation of mercury vapor or eating fish contaminated with mercury. This is a regulated toxic substance released from fossil fuel when combusted.
<b>Micron Size</b>	Referring to a particle size of air pollutant one millionth of a meter. Air quality standards refer to 10 micron and 2.5 micron sized particles suspended in air.
<b>Net Metering</b>	Electric energy metering that is capable of measuring incoming energy and outgoing energy and resulting in the net measurement.
<b>Nitrogen Oxides</b>	NOX, Nitrogen Oxides form when fuels are burned at high temperatures.
<b>Non-firm</b>	A power supply that may be interrupted. Because it is non-firm, it is usually cheaper.
<b>Peak</b>	The greatest load on an electric system during any prescribed demand interval.
<b>PM 10, PM 2.5</b>	Particles of air pollutant measuring 10 millionth of a meter and 2.5 millionth of a meter.
<b>Power Factor</b>	The ratio of real power (kW) to apparent power, kilovolt-amperes (kVa) for any given load and time. Expressed as a percentage, it is a measurement of electricity that can do work versus electricity that cannot do work.
<b>Public Power</b>	The term used to describe consumer-owned electric utilities, such as municipal electric utilities, rural electric cooperatives and electric service or public utility districts.
<b>Reserves - Operating</b>	That capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection. It consists of spinning and non-spinning reserve.

<b>Reserves - Spinning</b>	Unloaded generation that is synchronized and ready to serve additional demand.
<b>Smart Grid</b>	This phrase refers to many actions of economy taking place in energy storage, usage, transmission and consumption. Monitoring the movement and consumption of all aspects of energy to make better decisions and increase the efficient usage of products.
<b>Smart Metering</b>	Energy metering that provides real time energy consumption information to the customer and the provider so economic management decisions can be made.
<b>Substation</b>	A facility which changes or regulates the voltage of electricity.
<b>Sulfur Dioxide</b>	SOX or SO <sub>2</sub> Sulfur Dioxide is released primarily from burning fuels that contains sulfur like coal, oil and diesel fuel.
<b>Title V Operating Permit</b>	Operating permit for the source (UMPA) and Utah (DAQ) to discharge to the atmosphere Criteria Air Pollutants. Permit must be renewed every five years.
<b>Transformer</b>	An electromagnetic device for changing the voltage of alternating current electricity.
<b>Transmission</b>	The process of transporting electric energy in bulk from a source of supply to other principal parts of the system or to other utilities. Transmission refers to the high-voltage facilities which transport electric energy.
<b>Unscheduled Flow</b>	The difference between the scheduled and actual power flow on a transmission path.
<b>Wheeling</b>	Transmission of power over lines owned by one utility on behalf of another utility.

## **Glossary of Acronyms**

<b>AHP</b>	Available Hydro Power. The amount of hydro capacity and energy made available monthly as determined by WAPA
<b>APPA</b>	American Public Power Association, located in Washington, D.C. is the membership organization for municipal electric utilities.
<b>CA-ISO</b>	California Independent System Operator
<b>CDP</b>	Customer Displaced Power. Power Acquired or generated by the WAPA customer on its own behalf to be used as part of the CROD and transmitted over WAPA's system.
<b>CFR</b>	Code of Federal Regulations
<b>CREDA</b>	Colorado River Energy Distributors Association. An organization comprised of 117 consumer-owned electric utilities in Utah, Colorado, Wyoming, New Mexico and Arizona which purchase power from the Colorado River Storage Project. CREDA is the primary advocate for CRSP purchasers.
<b>CRSP</b>	Colorado River Storage Project. A federal water development project authorized by Congress in 1956. Major CRSP power-generating projects include Glen Canyon Dam and Flaming Gorge Dam.
<b>Co-op</b>	Rural electric cooperative. Consumer-owned electric utilities whose principal source of financing is the Rural Electrification Administration. Regulation is carried out by a board of directors, elected by the co-op members (customers).
<b>DG&amp;T</b>	Desert Generation and Transmission. A cooperative formed by six rural electric cooperatives in 197 to purchase a share of the Hunter II generating plant. Desert also built the 400 megawatt Bonanza generating plant near Vernal, Utah and associated transmission facilities.
<b>DSM</b>	Demand Side Management. Methods to reduce the need for additional generating resources by reducing the demand for power.
<b>EIM</b>	Energy Imbalance Market
<b>ESD</b>	Electric service district, such as Strawberry Electric Service District.
<b>FERC</b>	The Federal Energy Regulatory Commission, or FERC, is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines as well as licensing hydropower projects.

<b>IOU</b>	Investor-owned utility. An electric utility organized as a stock company whose source of capital is financed by the sale of securities. Utah Power producers who market the output of their power generating facilities to electric utilities or consumers. Utah Power and Light is an "IOU."
<b>IPA</b>	Intermountain Power Agency. Organized to finance the 1600 megawatt Intermountain Power Project near Delta, Utah. Participants include 23 Utah municipal electric utilities, six rural electric cooperatives, Utah Power and Light Company and six California municipalities.
<b>IPP</b>	Independent power producers.
<b>IRP</b>	Integrated Resource Plan. A formal consideration of supply-side and demand-side resources. UMPA is required by law to periodically submit a formal plan to the Western Area Power Administration.
<b>Munis</b>	Municipal electric utilities. Regulation is carried out by city council members elected by the municipality's residents.
<b>NERC</b>	North American Reliability Council. Comprised of all regional reliability councils throughout the U.S. and Canada. Provides centralized reporting for regional activity.
<b>NPP</b>	Northwest Power Pool. A reserve sharing pool comprising 23 utilities in the western United States.
<b>NRECA</b>	National Rural Electric Cooperative Association. The membership organization, office in Washington, D.C., representing rural electric cooperatives.
<b>OC</b>	Operations Center. The Operations Center schedules power.
<b>PMA</b>	Power marketing agency. A division of the U.S. Department of Energy which markets power from federal hydroelectric projects.
<b>PP&amp;L</b>	Pacific Power and Light. A division of PacifiCorp.
<b>PURPA</b>	Public Utilities Regulatory and Policy Act passed by Congress in 1978. The act enables independent power producers to sell their generating output to utilities and consumers.
<b>RFP</b>	Request for Proposals. An early stage of power supply procurement, plant construction, etc.

<b>RICE</b>	Reciprocating Internal Combustion Engines. Referring to EPA national emission standards for hazardous air pollutants for existing stationary compression ignition or spark ignition engines at area sources and major sources. This rule was effective May 3, 2010 and the compliance date is May 3, 2013.
<b>Rocky Mtn.</b>	Rocky Mountain Power. A division of Pacificorp.
<b>RTO</b>	Regional Transmission Organization. A concept whereby a centralized entity would manage transmission systems that would otherwise be managed by their respective owners
<b>SHP</b>	Sustainable Hydro Power. A level of long-term operable hydro capacity and energy determined by WAPA projected at an established risk and supplemented by power purchases due to hydrological conditions.
<b>SMP</b>	Standard Maintenance Procedures
<b>SOP</b>	Standard Operating Procedures
<b>UMPA</b>	Utah Municipal Power Agency. A political subdivision of the state of Utah organized under the Interlocal Cooperation Act. Comprised of six Utah municipal electric utilities in Utah, Sanpete and Juab Counties. (Provo, Spanish Fork, Salem, Manti, Levan and Nephi.)
<b>WCD</b>	Water Conservancy District. A public agency organized as a political subdivision of the state of Utah, such as Weber Water Conservancy District and Central Utah Water Conservancy District.
<b>WAPA</b>	Western Area Power Administration. WAPA, or Western, is part of the U. S. Department of Energy. WAPA operates and maintains federal hydroelectric projects throughout the western United States, including the Colorado River Storage Project.
<b>WECC</b>	Western Electricity Coordinating Council. Formerly Western States Coordinating Council (WSCC). The electric reliability council of the western U.S. and British Columbia. Provides and facilitates planning and reliable operation of transmission systems and generation resources.
<b>WRP</b>	Western Replacement Power. Energy offered for sale by WAPA, above SHP, in lieu of receiving the entire CROD. This energy is priced according to the market.

## **ELECTRIC UTILITY RATE MAKING TERMS**

### **I. ADJUSTMENT CLAUSES**

#### **Fuel Adjustment Clause:**

A clause in a rate schedule that provides for an adjustment of the customer's bill if the cost of fuel at the supplier's generating stations varies from a specified unit cost.

#### **Power Factor Adjustment Clause:**

A clause in a rate schedule that provides for an adjustment in the billing if the customer's power factor varies from a specified percentage or range of percentages.

#### **Ratchet Demand Clause:**

A clause in a rate schedule that provides that maximum past or present usage be taken into account to establish billings for a given period.

### **II. ALLOCATION, DEMAND RELATED COSTS**

#### **Average Annual Kilowatt-Hour Use Per Customer:**

Annual kilowatt-hour sales of a class of service divided by the average number of customers for the same 12-month period. A customer with two or more meters at the same location because of special services, such as water heating, etc., is counted as one customer, although some utilities count each meter as a separate customer.

#### **Average Number of Customers:**

The arithmetic average of customers in the month in each of 12 consecutive months. For those billed other than every month, the number of such customers is adjusted to a 12-month basis (e.g., for bimonthly billing" the number of customers billed, or counted, in each month is multiplied by two and the resultant averaged for the 12-month period).

#### **Average Revenue Per Kilowatt-Hour Sold:**

(Average price of electricity) Revenue from the sale of electricity (exclusive of forfeited discounts and penalties) for a particular class of service divided by the corresponding number of kilowatt-hours sold.

#### **Base Load:**

The minimum load over a given period of time.

**Capacity Factor:**

The ratio of the average load on a machine or equipment for the period of time compared to the capacity rating on the machine or equipment.

**III. CHARGE****Customer Charge:**

An amount to be paid periodically by a customer for electric serv' ice based upon costs incurred for metering, meter reading, billings, etc., exclusive of demand or energy consumption.

**Class of Service:**

A group of customers with similar characteristics (i.e., residential, commercial, industrial, sales for resale, etc.) which are identified for the purpose of setting a rate for electric service.

**Coincident:**

The sum of two or more demands which occur in the same demand interval.

**Company Use:**

Kilowatt-hours used by an electric utility company or the electric department of a utility company in the operation of its business, exclusive of station use and energy lost and unaccounted for.

**Cost of Service:**

A pricing concept traditionally used as the primary basis for designing electric rate schedules. This concept attempts to maintain correspondence between utility costs and utility revenues for the various classes of usage and customers served.

**Cost of Service Study:**

A study of the costs incurred by the utility in producing, transmitting, and distributing electricity to its customers, by customer class, in relation to revenues collected from each class or projected to be collected under existing or proposed rates. The costs analyzed may be the actual "embedded" cost of existing plant and expenses, or they may be the marginal cost or incremental cost of the utility's service.

**Costing Methodology:**

Use of fully allocated cost (historical or projected), incremental cost (short or long run), or some other method to allocate costs among customer classes or jurisdictions.

**Customer Class:**

A distinction between users of electrical energy. Customer class is usually defined by usage patterns, usage levels, and conditions of service. Classes are usually categorized generically by customer activity (i.e., residential, commercial, industrial, etc).

**Customer Cost:**

Costs that are related to and vary with the number of customers, such as meters, meter reading, service equipment, and a portion of distribution.

**Declining Block Rate:**

A pattern of unit charges within a customer class that assesses a lower unit charge on additional purchases (only) as usage increases.

**Demand:**

The rate at which electric energy is delivered expressed in kilowatts, kilovolt-amperes, or other suitable unit at a given instant or averaged over any designated, but typically short, period of time.

**Demand Charge:**

That portion of the charge for electric service based upon the electric capacity (KW or KVA) consumed and billed on the basis of billing demand under an applicable rate schedule.

**Demand Cost:**

Costs that are related to and vary with power demand (i.e., KW), such as fixed production costs, transmission costs, and a portion of distribution costs.

**Demand Factor:**

The ratio of the maximum demand over a specified time period to the' total connected load on any defined system.

**Demand Interval:**

The period of time during which the electric energy now is averaged in determining demand, such as 60-minute, 30-minute, 15-minute, or instantaneous.

**Demand Rates:**

Any method of charge for electric service which is based upon or is a function of the rate of use, or size, of the customer's installation or maximum demand (expressed in kilowatts, kilovolt-amperes, or horsepower) during a given period of time.

**Diversity:**

That characteristic of variety of electric loads whereby individual maximum demands usually occur at different times. Diversity among customers' loads results in diversity among the loads of distribution transformers, feeders, and substations, as well as between entire systems.

**Embedded Cost:**

Embedded cost represents monies already spent for investment in plant and in operating expenses.

**Energy Charge:**

That portion of the charge for electric service based upon the electric energy (KWH) consumed or billed.

**Instantaneous Peak:**

The maximum demand at the instant of greatest load.

**Non-coincident:**

The sum of two or more individual demands which do not occur in the same demand interval. Meaningful only when considering demands within a limited period of time, such as a day, week, month, or heating or cooling season, and usually for not more than one year. Also used to indicate the maximum demand of a customer.

**Non-coincident Peak:**

Demand related costs are allocated among the customer classes in proportion to the customer class maximum demand regardless of the time of occurrence with respect to one another or with respect to the system peak.

**Wheeling Charge:**

An amount to be paid for Transmission Service (defined herein).

**IV. ENERGY****Average:**

The total difference in energy input and output or power input and output (due to losses) averaged over a time interval and expressed either in physical quantities or as a percentage of total input.

**Energy Accounted For But Not Sold:**

This includes kilowatt-hours used by the company in its electric and other departments but not included in "sales", plus that furnished to others without charge.

**Energy Loss:**

The kilowatt-hours lost in the operation of an electric system.

**Fixed Charges:**

When used in connection with income statements, this term is usually synonymous with Interest Charges (defined herein). A concept, initiated by the Securities and Exchange Commission, includes in fixed charges one-third of significant rentals. .When used in its broader sense--particularly in cost studies--this term refers to the annual costs attached to the ownership of property such as depreciation, taxes, insurance, cost of money and in some instances rents, general and administrative expenses, and necessary regular maintenance.

**Kilovar (KVAR):**

1,000 reactive voltamperes.

**Kilovolt (kv):**

1,000 volts.

**Kilovolt-Ampere (kVA):**

1,000 voltamperes.

**Kilowatt (kW):**

1,000 watts.

**Kilowatt-Hour (kWh):**

The basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit steadily for one hour.

**Kilowatt/Month:**

A measurement carrying the same definition as kilowatt hour except as to the duration of time. Alternatively, this term may be used to express a function of billing, i.e., a charge per month for each unit of electric power either reserved by the customer or measured on the customer's Demand meter.

**Line Loss:**

Kilowatt-hours and kilowatts lost in transmission and distribution lines under specified conditions.

**Load Curve:**

A curve on a chart showing power (kilowatts) supplied, plotted against time of occurrence, and illustrating the varying magnitude of the load during the period covered.

**Load Diversity:**

The difference between the sum of the highest of two or more individual loads and the coincident maximum load, usually measured in kilowatts.

**Load Factor:**

The ratio of the average load in kilowatts supplied during a designated period to the peak or maximum load in kilowatts occurring in that period. Load factor, in percent, also may be derived by multiplying the kilowatt-hours in the period by 100 and dividing by the product of the maximum demand in kilowatts and the number of hours in the period.

**Loss (Losses):**

The general term applied to energy (kilowatt-hours) and power (kilowatt) lost in the operation of an electric system. Losses occur principally as energy transformations from kilowatt-hours to waste heat in electrical conductors and apparatus.

**Mega:**

Prefix used to denote 1,000,000 units.

**Megawatt MW:**

1,000 kilowatts, or 1,000,000 watts.

**Off-Peak:**

Energy supplied during periods of relatively low system demands as specified by the supplier.

**On-Peak:**

Energy supplied during periods of relatively high system demands as specified by the supplier.

**Power Factor:**

The ratio of real power (kW) to apparent power (kVA) for any given load and time. Generally, it is expressed as a percentage ratio.

**Rate Base:**

The value established by a regulatory authority, upon which a utility is permitted to earn a specified rate of return. Generally, this represents the amount of property used and useful in public service and may be based on the following values or combinations thereof: fair value, prudent investment, reproduction cost, or original cost; and may provide for the inclusion of cash working capital, materials and supplies, and deductions for: Accumulated Provision for Depreciation, Contributions in Aid of

Construction, Customer Advances for Construction, and Accumulated Deferred Income Taxes and Accumulated Deferred Investment Tax Credit

**Rate Class:**

A group of customers identified as a class and subject to a rate different from the rates applicable to other groups.

**Rate of Return:**

The ratio of Operating Income to a specified rate base, expressed as a percentage.

**Rate Structure:**

The design and organization of billing charges by customer class to distribute the revenue requirement among customer classes and Rating Periods.

**Reactive Power:**

The portion of "Apparent Power" that does no work. It is commercially measured in kilovars. Reactive power must be supplied to most types of magnetic equipment, such as motors. It is supplied by generators or by electrostatic equipment, such as capacitors.

**System Losses:**

The difference between the system net energy (or power) input and output, resulting from energy (or power) lost and unaccounted for between the sources of supply and the metering points of delivery on a system.

**Var:**

The unit of reactive power. For a two-wire circuit, the product of the voltage times the current times the sine of the angular phase difference by which the voltage leads the current. Vars and watts combine in a quadrature relationship to form voltamperes.

**Volt (V):**

The unit of electromotive force or electric pressure analogous to water pressure in pounds per square inch. It is the electromotive force which, if steadily applied to a circuit having a resistance of one ohm, will produce a current of one ampere.

**Voltage of a Circuit:**

The voltage of a circuit in an electric system is the electric pressure of that circuit measured in volts. It is generally a nominal rating based on the maximum normal effective difference of potential between any two conductors of the circuit.

**Voltampere (VA):**

The basis unit Apparent Power (defined herein under Power). The voltamperes of an electric circuit are the mathematical product of the volts

times amperes of the circuit. The practical unit of Apparent Power is the kilovolt-ampere (kVA), which is 1,000 voltamperes.

**Watt:**

The electrical unit of power or rate of doing work. The rate of energy transfer equivalent to one ampere flowing under a pressure of one volt at unity power factor. It is analogous to horsepower or foot-pounds per minute of mechanical power. One horsepower is equivalent to approximately 746 watts.