The Competitive Energy Market

Since the early days of the 20th century, control of the energy industry rested with a large group of regional monopolies—companies that were the sole providers of electricity supply and delivery for the areas they served. Because of the importance of these services to the public, these utilities were heavily regulated by the government.

Since the mid-1990s, a number of states and provinces have passed legislation deregulating these electricity markets, allowing competition in the industry. This means that customers in states and provinces that have undergone deregulation can now choose an alternative electricity provider (different from their utility) to seek competitive pricing and choose electricity products that make sense for their business.

Today, electricity choice is still going strong and it presents many businesses and organizations with decisions as to what energy strategy is best for their goals, business objectives, and most importantly, their bottom line.

There are three central components to electricity service:

**Supply:** Generation of electricity has been deregulated in your area. This means you have a choice about where to buy your electricity supply.

**Transmission:** This is the transportation of the large electricity supply from its source (e.g., a power plant) to the receiving station of the utility. This is still regulated, ensuring reliable delivery.

**Distribution:** This is the transportation of electricity from the receiving station to your business. It is also still regulated.

Energy deregulation is very similar to the deregulated telephone industry, in which you may choose different companies for your long distance service, while your local phone company continues to maintain the lines you use. The transmission/distribution portion of your electric bill (the cost to get the power to you) is still provided by the utility, but you have the ability to shop for the best prices and services available to you in the market for supply or generation.
The Move to Electricity Deregulation:
The Public Utility Regulatory Policies Act

The Public Utility Regulatory Policies Act (PURPA) was passed in 1978 in response to the unstable energy climate of the late 1970s in an effort to promote conservation of electric energy. The PURPA also created a new class of non-utility generators—small power producers—from which, along with qualified co-generators, utilities were required to buy power.

The PURPA was in part intended to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. Utility companies were required to buy all electricity from “qualifying facilities” at avoided cost. The PURPA expanded participation of non-utility generators in the electricity market and demonstrated that electricity from non-utility generators could successfully be integrated with a utility's own supply.


The law also mandated that the Federal Energy Regulatory Commission (FERC)—an independent agency with the Department of Energy that regulates the interstate transmission of electricity, natural gas, and oil—open up the national electricity transmission system to wholesale suppliers on a case-by-case basis. This opened transmission access to wholesale generators, who were not regulated under the PUCHA, to buy power at wholesale prices and sell it on a retail basis.

Let's Talk About Your Choice

If you are located in a deregulated market, you are not limited to taking supply from the utility so the question becomes, “Does it make sense for my business to change electricity providers?” In the deregulated electricity marketplace, making an informed decision about whether to switch and which energy provider to choose is critical to your business. There are many factors to consider when you are determining which electricity provider is best suited to fit the individual needs of your business.

Helpful Energy Terms for Energy Markets

**Adjustment Bid:** A bid that is used by the Independent System Operator (ISO) to adjust supply or demand when it is anticipating congestion on the transmission system.

**Aggregator:** Any marketer, broker, public agency, city, county, or special district that combines the loads of multiple end-use customers to facilitate the sale and purchase of electric energy, transmission, and other services on behalf of these customers.

**Ancillary services:** Necessary services that must be provided in the generation and delivery of electricity. As defined by the Federal Energy Regulatory Commission (FERC), they include: coordination and scheduling services (load following, energy imbalance service, control of transmission congestion); automatic generation control (load frequency control and the economic dispatch of plants); contractual agreements (loss compensation service); and support of system integrity and security (reactive power, or spinning and operating reserves).
**Baseload:** The minimum amount of electric power delivered or required over a given period of time at a steady rate.

**Baseload capacity:** The generating equipment normally used to serve loads on an around-the-clock basis.

**Baseload plant:** A plant, typically comprised of high-efficiency steam–electric units, that normally generates all or part of the minimum load of a system and that produces electricity at an essentially constant rate, running continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system-operating costs.

**Broker:** An entity that arranges the sale and purchase of electric energy, transmission, and other services between buyers and sellers, but does not take title to any of the power sold.

**Bundled utility service:** All generation, transmission, and distribution services—including ancillary and retail services—provided by one entity for a single charge.

**Capability:** The maximum load that a generating unit, generating station, or other electrical apparatus can carry under specified conditions for a given period of time without exceeding approved limits of temperature and stress.

**Capacity:** The amount of electric power delivered or required for which a generator, turbine, transformer, transmission circuit, station or system is rated by the manufacturer.
**Capacity charge:** An element in a two-part pricing method used in capacity transactions (energy charge is the other element). The capacity charge, sometimes called “Demand Charge,” is assessed on the amount of capacity being purchased.

**Co-generator:** A generating facility that produces electricity and another form of useful thermal energy (such as heat or steam) that can be used for industrial, commercial, heating, or cooling purposes. To receive status as a qualifying facility (QF) under the Public Utility Regulatory Policies Act (PURPA), the facility must produce electric energy and “another form of useful thermal energy through the sequential use of energy,” and meet certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC).

**Combined cycle:** An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines. The exiting heat is routed to a conventional boiler or to a heat recovery steam generator for utilization by a steam turbine in the production of electricity. This process increases the efficiency of the electric generating unit.

**Combined cycle unit:** An electric generating unit that consists of one or more combustion turbines and one or more boilers, with a portion of the required energy input to the boiler(s) provided by the exhaust gas of the combustion turbine(s).

**Combined pumped-storage plant:** A pumped-storage hydroelectric power plant uses two reservoirs, with one located at a much higher elevation than the other. During off-peak electricity periods, energy is stored by reversing the turbines and pumping water from the lower to the upper reservoir. The stored water can later be released to turn the turbines and generate electricity as it flows back into the lower reservoir.
**Commercial sector:** The commercial sector is generally defined as non-manufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores, and health, social, and educational institutions. Utilities may classify their commercial service/rates as all consumers whose demand or annual use exceeds some specified limit. The limit may be set by the utility based on the rate schedule of the utility.

**Competitive transition charge:** A non-bypassable charge levied on each customer of a distribution utility—including those who are served under contracts with non-utility suppliers—for recovery of a utility's transition costs.

**Congestion:** The situation that exists when requests for power transfers across a Transmission Facility exceed the transfer capability of the facility.

**Convergence bidding:** A mechanism whereby market participants can make financial sales (on purchases) of energy in the day-ahead market with the explicit requirement to buy back or sell back that energy in the real-time market (thereby arbitraging their expected differences between day ahead and real-time prices). **Arbitrage:** the simultaneous purchase and sale of the same securities, commodities, or foreign exchange in different markets to profit from unequal prices.

**Cost-of-service regulation:** Traditional electric utility regulation under which a utility is allowed to set rates based on the cost of providing service to customers and the right to earn a limited profit.

**Customer choice:** Allowing all customers to purchase kilowatt hours of electricity from any of a number of suppliers.

**Customer charge ("service charge"):** Part of the utility's monthly distribution charge to cover the basic administrative activities with maintaining a customer account, including billing, meter reading equipment, service line maintenance and equipment (a regulated charge).
**Day-ahead market:** The hourly forward market in which market participants may submit offers to sell and bids to buy electricity for the next day.

**Day-ahead schedule:** A schedule prepared by a Scheduling Coordinator or the Independent System Operator before the beginning of a trading day. This schedule indicates the levels of generation and demand scheduled for each settlement period that trading day.

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

**Demand-side management:** The planning, implementation, and monitoring of utility activities designed to encourage consumers to modify patterns of electricity usage, including the timing and level of electricity demand. It refers only to energy and load-shape modifying activities that are undertaken in response to utility-administered programs—not energy and load-shape changes arising from the normal operation of the marketplace or from government-mandated energy-efficiency standards.

**Deregulation (restructuring):** The process of replacing a monopoly system of electric utilities with competing sellers, allowing individual retail customers to choose their electricity supplier but still receive delivery over the power lines of the local utility. It includes the reconfiguration of the vertically-integrated electric utility.

**Direct access:** The ability of a retail customer to purchase commodity electricity directly from the wholesale market rather than through a local distribution utility.

**Distribution:** The delivery of electricity to retail customers (including homes, businesses, etc.).
**Distribution charges (non-bypassable):** Charges for the local wires, transformers, substations and other equipment used to deliver electricity for the electric distribution company to a home or business (a regulated charge).

**Divestiture:** The stripping off of one utility function from the others by selling (spinning-off) or in some other way changing the ownership of the assets related to that function. Divestiture is most commonly associated with spinning-off the generation assets so that they are no longer owned by the shareholders that own the transmission and distribution assets.

**Electric service provider:** An entity that provides electric supply to a retail or end-use customer.

**Electric utility:** A corporation, person, agency, authority, or other legal entity that owns and/or operates facilities within the United States for the generation, transmission, distribution, or sale of electric energy, primarily for use by the public. Facilities that qualify as co-generators or small power producers under the Public Utility Regulatory Policies Act (PURPA) are not considered electric utilities.

**Energy charge:** That portion of the charge for electric service that is based on the electric energy (kWh) consumed or billed.

**Excess mitigation credit (non-bypassable):** A credit applied as a discount to non-bypassable charges to recover past over-earnings of the utility (regulated).

**Federal Energy Regulatory Commission (FERC):** An independent agency within the Department of Energy that regulates the interstate transmission of electricity, natural gas, and oil. FERC has jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, oil pipeline rates, and gas pipeline certification.
**Forced outage:** The shutdown of a generating unit, transmission line or other facility for emergency reasons or a condition in which the generating equipment is unavailable for load due to unanticipated breakdown.

**Fossil fuel:** Any naturally-occurring organic fuel, such as petroleum, coal, and natural gas. A fossil fuel electricity plant uses coal, petroleum, or gas as its source of energy.

**Fuel expenses:** Expenses from the fuel used in the production of steam or driving another prime mover for the generation of electricity. Other associated expenses include unloading the shipped fuel and handling of the fuel up to the point where it is used.

**Futures market:** A trade center for quoting prices on contracts for the delivery of a specified quantity of a commodity at a specified time and place in the future. This futures market is a standardized, exchange-traded, and government-regulated hedging mechanism.

**Gas:** A fuel burned under boilers and by internal combustion engines for electric generation.

**Gas turbine plant:** A plant in which the prime mover is a gas turbine.

**Generating unit:** Any combination of physically connected generator(s), reactor(s), boiler(s), combustion turbine(s), or other prime mover(s) operated together to produce electric power.

**Generation (electricity):** The process of producing electric energy by transforming other forms of energy. The amount of electric energy produced, expressed in watt hours (Wh).

**Generation company:** A regulated or non-regulated entity (depending upon the industry structure) that operates and maintains existing generating plants.
**Gross generation:** The total amount of electric energy produced by the generating units at a generating station or stations, measured at the generator terminals.

**Generator:** A machine that converts mechanical energy into electrical energy.

**Geothermal plant:** A plant in which the prime mover is a steam turbine. The turbine is driven either by steam produced from hot water or by natural steam that derives its energy from heat found in rocks or fluids at various depths beneath the surface of the earth.

**Greenhouse effect:** The increasing mean global surface temperature of the earth caused by gases in the atmosphere—including carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons (also known as greenhouse gases or GHGs). The greenhouse effect allows solar radiation to penetrate but absorbs the infrared radiation and returns it to space.

**Grid:** The layout of an electrical distribution system.

**Gross generation:** The total amount of electric energy produced by a generating facility, as measured at the generator terminals.

**Heat rate:** A measure of generating station thermal efficiency—generally expressed in Btu per net kilowatt hour. It is computed by dividing the total Btu content of fuel burned for electricity generation by the resulting net kilowatt hour generation.

**Hedging contracts:** Contracts that establish future prices and quantities of electricity, independent of the short-term market.

**Henry Hub:** A pipeline hub on the Louisiana gulf coast. It is the delivery point for the natural gas futures contract on the New York Mercantile Exchange (NYMEX).

**Hydroelectric plant:** A plant in which the turbine generators are driven by falling water.
**Independent power producers**: Entities that are also considered non-utility power producers in the United States. These facilities are wholesale electricity producers that operate within the franchised service territories of host utilities and are usually authorized to sell at market-based rates. Unlike traditional electric utilities, independent power producers do not possess transmission facilities or sell electricity in the retail market.

**Independent system operators (ISOs)**: Independent, federally-regulated entities that coordinate regional transmission in a non-discriminatory manner and ensure the safety and reliability of the electric system.

**Industrial sector**: The industrial sector is generally defined as manufacturing, construction, mining, agriculture, fishing and forestry establishments. The utility may classify industrial service based on demand or annual usage exceeding some specified limit. The limit may be set by the utility based on the rate schedule of the utility.

**Intermediate load (electric system)**: The load range from baseload to a point between baseload and peak. This point may be the mid-point, a percent of the peak load, or the load over a specified time period.

**Internal combustion plant**: A plant in which the prime mover is an internal combustion engine. An internal combustion engine has one or more cylinders in which the process of combustion takes place, converting energy released from the rapid burning of a fuel-air mixture into mechanical energy. Diesel or gas-fired engines are the principal types used in electric plants. The plant is usually operated during periods of high demand for electricity.
**Interruptible load:** Refers to program activities that, in accordance with contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control of the utility system operator or by action of the consumer at the direct request of the system operator. It usually involves commercial and industrial consumers. In some instances the load reduction may be affected by direct action of the system operator (remote tripping) after notice to the consumer in accordance with contractual provisions. For example, loads that can be interrupted to fulfill planning or operation reserve requirements should be reported as interruptible load.

**Investor-owned utility (IOU):** A class of utility whose stock is publicly traded and who is organized as a tax-paying business—usually financed by the sale of securities in the capital market. It is regulated and authorized to achieve an allowed rate of return.

**Line loss:** refers to the volume of electricity that is lost to the system as electricity travels from source to load. The greater the distance, the greater the loss of electricity. Congestion and line losses cause the actual cost of delivering electricity to vary at various locations on the grid.

**Load:** The amount of electric power delivered or required at any specific point or points on a system.

**Load shape:** A method of describing peak load demand and the relationship of power supplied to the time of occurrence.
**Locational marginal pricing (LMP):** The calculation of electricity prices at thousands of pricing points, or nodes, within the electricity grid. LMP provides price signals that account for the additional costs of electricity caused by transmission congestion and line loss at various points on the electricity grid. Locational marginal prices (LMPs), which are employed in PJM, ISO-NE and CAISO, help to efficiently determine the interaction of energy supply and energy demand. Congestion and line losses cause the actual cost of delivering electricity to vary at various locations on the grid.

**Market-based pricing (market-based rates):** Electric service prices determined in an open market system of supply and demand under which the price is set solely by agreement as to what a buyer will pay and a seller will accept. Such prices could recover less or more than full costs, depending on what the buyer and seller see as their relevant opportunities and risks.

**Market clearing price:** The price at which supply equals demand for the day-ahead and/or hour-ahead markets.

**Metering charge (non-bypassable):** Part of the monthly distribution charge (regulated) to cover the costs of maintaining and reading the meter equipment.

**Net generation:** The amount of generation less the electric energy consumed at the generating station for station use.

**Non-bypassable charges:** Any of several types of charges applied to all customer billings in a given region whether they receive service from a local utility or from a competitive supplier. These charges include transition charges, access charges, regional levies and taxes, among others.
Non-utility power producer: A corporation, person, agency, authority, or other legal entity that owns electric generating capacity and is not an electric utility. Non-utility power producers include qualifying co-generators, qualifying small power producers, and other non-utility generators (including independent power producers) without a designated franchised service area.

Nuclear power plant: A facility in which heat produced in a reactor by the fissioning of nuclear fuel is used to drive a steam turbine.

Off-Peak: A period of relatively low system demand that can occur in daily, weekly, and seasonal patterns and that can differ for each individual electric utility.

On-Peak: A period of relatively high system demand that can occur in daily, weekly, and seasonal patterns and that can differ for each individual electric utility.

Open access: A regulatory mandate to allow others to use a utility's transmission and distribution facilities to move bulk power from one point to another on a non-discriminatory basis for a cost-based fee. Open access prevents a utility, which owns or controls a region’s transmission and distribution systems, from also controlling the energy supply.

Outage: The period during which a generating unit, transmission line, or other facility is out of service.

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

Peak load: The amount of power required to supply customers at times when the need is the greatest.
**Peak load plant:** A plant usually housing old, low-efficiency steam units, gas turbines, diesels, or pumped-storage hydroelectric equipment that is normally used during the peak-load periods.

**Peaking capacity:** Capacity of generating equipment normally reserved for operation during the hours of highest daily, weekly, or seasonal loads. Some generating equipment may be operated at certain times as peaking capacity and at other times to serve loads on an around-the-clock basis.

**Petroleum (crude oil):** A naturally occurring, oily, flammable liquid composed principally of hydrocarbons. Crude oil is occasionally found in springs or pools but is usually drilled from wells beneath the earth's surface.

**Plant:** A facility that houses prime movers, electric generators, and auxiliary equipment for converting mechanical, chemical, and/or nuclear energy into electric energy. A plant may contain more than one type of prime mover.

**Power:** The rate at which energy is transferred. Electrical energy is usually measured in watts. Also used for a measurement of capacity.

**Power exchange:** The entity that establishes a competitive spot market for electric power through day- and/or hour-ahead auction of generation and demand bids.

**Power marketers:** Business entities engaged in buying, selling, and marketing electricity. Power marketers do not usually own generating or transmission facilities. Power marketers, as opposed to brokers, take ownership of the electricity and are involved in interstate trade. These entities file with the Federal Energy Regulatory Commission for status as a power marketer.

**Power pool:** An association of two or more interconnected electric systems having an agreement to coordinate operations and plan for improved reliability and efficiencies. These resources can include generating facilities, transmission system access, emergency response capability and even accounting and billing databases.
**Pumped-storage hydroelectric plant:** A plant that usually generates electric energy during peak load periods by using water previously pumped into an elevated storage reservoir during off-peak periods when excess generating capacity was available to do so. When additional generating capacity is needed, the water can be released from the reservoir through a conduit to turbine generators located in a power plant at a lower level.

**PURPA:** The Public Utility Regulatory Policies Act of 1978 (U.S. Congress) required states to implement utility conservation programs and create special markets for co-generators and small producers who meet certain standards, including the requirement that states set the prices and quantities of power the utilities must buy from such facilities.

**Rate base:** The value of property upon which a utility is permitted to earn a specified rate of return as established by a regulatory authority. The rate base generally represents the value of property used by the utility in providing service and may be calculated by any one or a combination of the following accounting methods: fair value, prudent investment, reproduction cost, or original cost. Depending on which method is used, the rate base includes cash, working capital, materials and supplies, and deductions for accumulated provisions for depreciation, contributions in aid of construction, customer advances for construction, accumulated deferred income taxes, and accumulated deferred investment tax credits.

**Regulation:** The governmental function of controlling or directing economic entities through the process of rulemaking and adjudication.
Reliability: Electric system reliability has two components—adequacy and security. Adequacy is the ability of the electric system to supply the aggregate electrical demand and energy requirements of customers at all times, taking into account scheduled and unscheduled outages of system facilities. Security is the ability of the electric system to withstand sudden disturbances, such as electric short circuits or unanticipated loss of system facilities. The degree of reliability may be measured by the frequency, duration, and magnitude of adverse effects on consumer services.

Renewable Energy Credits or Certificates (RECs): Tradable environmental commodities in the United States that represent proof that one megawatt-hour (MWh) or 1,000 kWh of electricity was generated from an eligible renewable energy resource—such as wind, solar, low impact hydro, biomass, biodiesel or geothermal power—and delivered somewhere into a power grid. Consumers may purchase RECs to offset the environmental impact associated with the energy they use that comes from conventional sources. Each REC is given an identification number from a certification organization and can only be used/counted once.

Renewable portfolio standards (RPS): A regulation that requires the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal. RPS generally require that an electricity supplier’s total source energy, also referred to as its portfolio, must consist of a certain percentage of renewable fuels, preferably nonpolluting source energy such as wind and solar. The RPS varies from state to state (some have them, some don’t) since a national RPS has not yet been set.

Renewable resources: Naturally, but flow-limited resources that can be replenished. They are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time. Renewable energy resources include: biomass, hydro, geothermal, solar and wind. In the future, they could also include the use of ocean thermal, wave, and tidal action technologies.
**Reregulation:** When new or additional regulations are enacted after an industry or sector is deregulated or the process of reversing deregulation in regions where deregulation turns out to be impractical or unmanageable.

**Reserve margin (operating):** A measure of available capacity over and above the capacity needed to meet normal peak demand levels. For energy producers, it’s the capacity of a producer to generate more energy than the system normally requires.

**Residential sector:** The residential sector is defined as private household establishments which consume energy primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking and clothes drying. The classification of an individual consumer’s account, where the use is both residential and commercial, is based on principal use.

**Restructuring:** The process of replacing a monopoly system of electric utilities with competing sellers, allowing individual retail customers to choose their electricity supplier but still receive delivery over the power lines of the local utility. It includes the reconfiguration of the vertically-integrated electric utility.

**Retail competition:** The concept under which multiple sellers of electric power can sell directly to end-use customers and the process and responsibilities necessary to make it occur. A market environment in which customers can choose their own suppliers and service providers, and suppliers can choose to whom they wish to offer their services and how much they wish to charge.

**Scheduling coordinators:** Entities certified by the Federal Energy Regulatory Commission that act as a go-between with the Independent System Operator on behalf of generators, supply aggregators (wholesale marketers), retailers, and customers to schedule the distribution of electricity.
Scheduled outage: When a generating unit, transmission line, or other facility, must be shut down for a scheduled inspection or maintenance.

Spot market: The hourly electricity market where prices can change from hour to hour based on the time of the day, supply, demand, trading prices, etc.

Spot purchases: A single shipment of fuel or volumes of fuel, purchased for delivery within one year. Spot purchases are often made by a user to fulfill a certain portion of their energy requirements, to meet unanticipated energy needs, or to take advantage of low fuel prices.

Steam-electric plant: A plant in which the prime mover is a steam turbine. The steam used to drive the turbine is produced in a boiler where fossil fuels are burned.

Stranded benefits: Benefits associated with regulated retail electric service that may be at risk under open market retail competition. Examples are conservation programs, fuel diversity, reliability of supply, and tax revenues based on utility revenues.

Stranded costs: Costs incurred by a utility that may not be recoverable under market-based retail competition. Examples include undepreciated generating facilities, deferred costs and long-term contract costs.

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

Sustainable energy: Energy from renewable resources that can meet the needs of the present as well as future needs. Sustainable energy resources include renewable sources such as biofuels, solar power, wind power, wave power, geothermal power and tidal power.

System benefit fund (non-bypassable): A (regulated) charge to provide funding for customer education programs, programs to assist low-income electric customers and the property tax replacement mechanism.
Transformer: An electrical device for changing the voltage of alternating current.

Transition charge (non-bypassable): A charge (regulated) to recover the costs of refinancing stranded costs, or utility debt at lower interest rates so as to cut the total cost of the debt.

Transmission charges (non-bypassable): Part of the basic service charges (regulated) on every customer’s bill that cover transporting electricity from the generation facility over transmission lines.

Transmission cost recovery factor (non-bypassable): A regulated mechanism that allows transmission utilities to recover increases in transmission costs on an expedited basis.

Transmission: The movement or transfer of electric energy over an interconnected group of lines and associated equipment between points of supply and points at which it is transformed for delivery to consumers, or is delivered to other electric systems. Transmission is considered to end when the energy is transformed for distribution to the consumer.

Transmission congestion: The situation that occurs when demand for energy exceeds the capacity of transmission lines to transfer that energy. For example, when high demand from localized, highly-populated areas, or ‘load pockets,’ constrain the capacity of transmission lines and cause bottlenecks in the grid. Congestion and line losses cause the actual cost of delivering electricity to vary at various locations on the grid.

Transmission system (electric): 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 other electric systems.
**Transmitting utility:** A regulated entity that owns and may construct and maintain the wires used to transmit wholesale power. It may or may not handle the power dispatch and coordination functions. It is regulated to provide non-discriminatory connections, comparable service, and cost recovery.

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

**Unbundling:** The separating of the total process of electric power service from generation to metering into its component parts for the purpose of offering or pricing services/service offerings separately.

**Vertical integration:** An arrangement whereby the same company owns all the different aspects of making, selling, and delivering a product or service. In the electric industry, it refers to the historically common arrangement whereby a utility would own its own generating plants, transmission system, and distribution lines to provide all aspects of electric service to customers.

**Wholesale competition:** A system whereby a distributor of power would have the option to buy its power from a variety of power producers and the power producers would be able to compete to sell their power to a variety of distribution companies.
**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.

**Wires charge:** A broad term that refers to charges levied on power suppliers or their customers for the use of the transmission or distribution wires.

**Zone:** A portion of the Independent System Operator-controlled grid within which congestion is expected to be small or to occur infrequently.
Common Units of Measurement for Commodities

Barrels

**BBL** *Barrel (bbl)*
The unit of measurement used in the shipping of crude oil and petroleum products that contains 158.9873 liters or 42 US gallons. The abbreviations of 1 Mbbl and 1 MMbbl represent one thousand and one million barrels.

BTUs

**BTU** *British thermal unit*
A unit of measurement used for energy. It represents the amount of heat that is required to raise the temperature of one pound of water by one degree Fahrenheit. The term BTU is also used to describe the heat value of fuels as well as the power of heating and cooling systems. Under these circumstances, it is commonly measured in units of BTU/h.

**MMBTU** *One Million Btu*
A unit of measurement used for energy. New York Mercantile Exchange (NYMEX) Henry Hub natural gas futures market is measured in MMBtu.

Therm

A unit of measurement used for energy. It is approximately the energy equivalent of burning 100 cubic feet of natural gas. One Therm equals 100,000 BTU.

Quad

A unit of measurement used for energy. It is approximately the energy equivalent of burning 1,000,000,000,000 cubic feet of natural gas.
**Cubic Feet**

**Scf Standard Cubic Foot**
A unit of measurement used in the oil and natural gas industry. It represents a volume of one cubic foot. It yields approximately 1,000 BTU.

**Ccf One Hundred Cubic Feet**
A unit of measurement used in the oil and natural gas industry. It represents a volume of one hundred cubic feet. It yields approximately 100,000 BTU. It is also referred to as one Therm. This unit is commonly used in the billing of residential natural gas and water.

**Mcf Thousand Cubic Feet**
A unit of measurement used in the oil and natural gas industry. It represents a volume of one thousand cubic feet. It yields approximately 1,000,000 BTU.

**MMcf Million Cubic Feet**
A unit of measurement used in the oil and natural gas industry. It represents a volume of one million cubic feet. It yields approximately 1,000,000,000 BTU.

**Bcf Billion Cubic Feet**
A unit of measurement used in the oil and natural gas industry. It represents a volume of one billion cubic feet. It yields approximately 1,000,000,000,000 BTU.

**Tcf Trillion Cubic Feet**
A unit of measurement used in the oil and natural gas industry. It represents a volume of one trillion cubic feet. It yields approximately 1,000,000,000,000,000 BTU.
Watts and Watt Hours

**W Watt**
A watt is a unit of measurement of power. It measures the rate in which energy is converted. It is equal to one joule of energy per second. When one ampere flows through a potential difference of one volt, a rate of one watt is produced.

**kW Kilowatt**
A unit of measurement used for electrical energy that is equal to 1,000 watts.

**MW Megawatt**
A unit of measurement used for electrical energy that is equal to one million watts.

**GW Gigawatt**
A unit of measurement used for electrical energy that is equal to one billion watts. This typically is used in measuring large power plants or power grids.

**Wh Watt hour**
A unit of measurement used for electrical energy. It equals 1 watt of power supplied to or taken from an electric circuit steadily for 1 hour.

**kWh Kilowatt hour**
A unit of measurement used for electrical energy. It equals 1,000 watts of power supplied to or taken from an electric circuit steadily for 1 hour or one thousand watt hours.

**MWh Megawatt hour**
A unit of measurement used for electrical energy. It equals one million watts of power supplied to or taken from an electric circuit steadily for 1 hour or one million watt hours.

**GW Gigawatt hour**
A unit of measurement used for electrical energy. It equals one billion watts of power supplied to or taken from an electric circuit steadily for 1 hour or one billion watt hours.
Common Industry Acronyms & Jargon

The following acronyms often appear throughout energy industry discussions and materials.

ACP alternative capacity payment
ADR alternate dispute resolution
ALJ administrative law judge
AMI advanced metering infrastructure
APIR avoidable project investment recovery rate
APPA American Public Power Association
AREM Alliance for Retail Energy Markets
AREO Alliance for Retail Energy Options
ARES alternative retail energy suppliers (specific to Illinois)
AUI advanced utility infrastructure
BGS basic generation service
CBP capacity bidding program
CCM centralized capacity market
CC&ES carbon capture & storage
CHP combined heat & power
CIEP commercial & industrial energy pricing (rate class)
CONE cost of new entry
CPT capacity pass-thru
CONE Competitive Renewable Energy Zone
CRR congestion revenue rights
DA direct access (California)
DG distributed generation
DOER Department of Energy Resources
DRA Division of Ratepayer Advocates
DRAM demand response and advanced metering
DWR Department of Water Resources (California)
EAL estimated aggregate liabilities
ECAM energy cost adjustment mechanism
EDC electric distribution company
EE energy efficiency
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCPE</td>
<td>market clearing price for energy</td>
</tr>
<tr>
<td>MESP</td>
<td>mandatory electric service provider</td>
</tr>
<tr>
<td>MISO</td>
<td>Midwest Independent System Operator</td>
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<tr>
<td>MPA</td>
<td>market price adjustment</td>
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<td>MPC</td>
<td>market price charge</td>
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<td>MQS</td>
<td>market quality system</td>
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<tr>
<td>MRO</td>
<td>market rate offer</td>
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<tr>
<td>MRTU</td>
<td>Market Redesign and Technology Upgrade (California)</td>
</tr>
<tr>
<td>NEMA</td>
<td>Northeastern Massachusetts (load zone)</td>
</tr>
<tr>
<td>NEPOOL</td>
<td>New England Power Pool</td>
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<tr>
<td>NERC</td>
<td>North American Electric Reliability Council</td>
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<tr>
<td>NGDC</td>
<td>natural gas distribution companies</td>
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<tr>
<td>NOPR</td>
<td>notification of proposed rulemaking</td>
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<tr>
<td>NUGs</td>
<td>non-utility generators</td>
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<tr>
<td>NYISO</td>
<td>New York Independent System Operator</td>
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<tr>
<td>OASIS</td>
<td>open access same-time information system</td>
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<tr>
<td>OATT</td>
<td>open access transmission tariff</td>
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<tr>
<td>OIR</td>
<td>order institute rulemaking</td>
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<td>ORMD</td>
<td>Office of Retail Market Development</td>
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<td>PJM</td>
<td>PJM Interconnection (PA, Jersey, Maryland Regional Transmission Organization)</td>
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<tr>
<td>PLS</td>
<td>permanent load shifting</td>
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<tr>
<td>POLR</td>
<td>provider of last resort</td>
</tr>
<tr>
<td>POR</td>
<td>purchase of receivables</td>
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<tr>
<td>PRM</td>
<td>planning reserve margin</td>
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<tr>
<td>PUD</td>
<td>public utility district</td>
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<td>PURA</td>
<td>Public Utility Regulatory Act (Texas)</td>
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<tr>
<td>QIP</td>
<td>qualifying infrastructure plan</td>
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<tr>
<td>QRE</td>
<td>qualified reporting entity</td>
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<tr>
<td>QRT</td>
<td>quick response team</td>
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<td>RA</td>
<td>resource adequacy</td>
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<td>RAR</td>
<td>resource adequacy requirements</td>
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<td>RESA</td>
<td>Retail Energy Supply Association</td>
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<td>REP</td>
<td>retail electric provider (Texas)</td>
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<td>RMR</td>
<td>reliability must run</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<td>RPM</td>
<td>reliability pricing model</td>
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<td>RPS</td>
<td>renewable portfolio standard(s)</td>
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<td>RSG</td>
<td>regional sufficiency guarantee</td>
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<td>RTM</td>
<td>real-time market</td>
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<tr>
<td>RTO</td>
<td>regional transmission organization</td>
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<tr>
<td>RTP</td>
<td>real-time pricing</td>
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<tr>
<td>SCED</td>
<td>security constrained economic dispatch</td>
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<td>SCP</td>
<td>standard capacity product</td>
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<td>SECA</td>
<td>seams elimination costs/charge adjustment</td>
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<tr>
<td>SIBR</td>
<td>scheduling infrastructure and business rules</td>
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<tr>
<td>SOLR</td>
<td>supplier of last resort</td>
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<tr>
<td>SOS</td>
<td>standard offer service</td>
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<tr>
<td>SPP</td>
<td>state pricing pilot</td>
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<tr>
<td>SSO</td>
<td>standard service offer</td>
</tr>
<tr>
<td>TDU</td>
<td>transmission &amp; distribution utility</td>
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<tr>
<td>TREC</td>
<td>tradable renewable energy credits</td>
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<tr>
<td>UCB</td>
<td>utility consolidated billing</td>
</tr>
<tr>
<td>UOG</td>
<td>utility-owned generation</td>
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<tr>
<td>VBA</td>
<td>volume balancing adjustment</td>
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<tr>
<td>VESP</td>
<td>volunteer electric service provider (Texas)</td>
</tr>
</tbody>
</table>
Regional Transmission Organizations

Regional transmission organizations (RTOs) and independent system operators (ISOs) grew out of several Federal Energy Regulatory Commission (FERC) Orders (888/889) where the Commission suggested establishing independent system operators as a way for existing tight power pools to satisfy the requirement of providing non-discriminatory access to transmission. Subsequently, in FERC Order No. 2000, the Commission encouraged the voluntary formation of RTOs to administer the transmission grid on a regional basis throughout North America (including Canada) and outlined 12 characteristics and functions that an entity must satisfy in order to become an RTO.

RTOs/ISOs that operate in North America

Both ISOs and RTOs coordinate, control and monitor the operation of the electrical power system within their jurisdiction, but ISOs typically operate within one state and RTOs may operate across several states. ISOs and RTOs work in a non-discriminatory manner to ensure the safety and reliability of the electric system using governance models developed by FERC.

RTOs and ISOs operating in North America:

- Alberta Electric System Operator (AESO)
- California ISO (CAISO)
- Electric Reliability Council of Texas (ERCOT)
- Ontario Independent Electricity System Operator (IESO)
- New York ISO (NYISO)
- Midwest Independent System Operator (MISO)
- ISO New England (ISO-NE)
- PJM Interconnection (PJM)
- Southwest Power Pool (SPP)
Electricity Load Curves and On- and Off-peak Hours

The following graph illustrates how a typical business consumes energy. From early noon to the end of the business day (peak hours), the price of electricity is higher due to heating, cooling and other operations that increase the strain on the electricity grid. During the “off-peak” hours, such as during the night or early in the morning when less electricity is being used, the strain on the grid is low therefore the price is lower.

Another factor affecting price is the type of generation that must be dispatched to cover the electricity load, as not all generation sources are deployed at all times and each type has a different type of cost associated with it.