

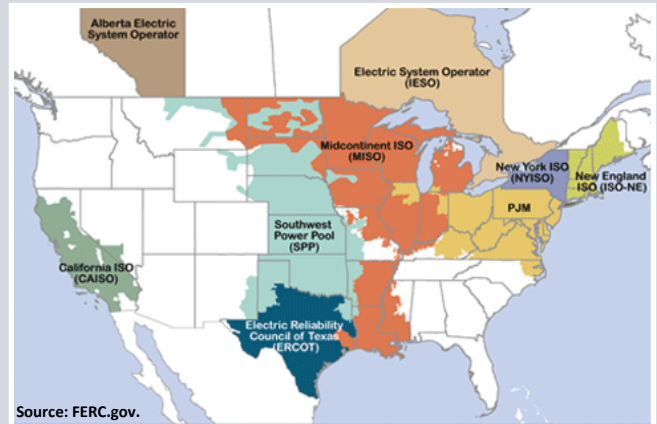
All About That Grid



The Electric Grid, Bulk Power System (BPS), or just the Grid, all refer to the same thing, the infrastructure and operations necessary to keep electricity flowing to the customers who use it. This includes the generation of electricity, the transmission system to transport electricity long distances to areas of load, the distribution system that takes the generated power and distributes it to homes and businesses, and retail suppliers/providers who sell and help schedule the load to their customers.

Independent System Operators (ISO) help keep the lights on. An ISO is an independent and federally regulated entity that coordinates regional transmission to ensure nondiscriminatory access to the electric grid and a reliable electricity system, they include:

- **CAISO:** Most of California and a small part of Nevada
- **ERCOT:** Most of Texas
- **ISO-NE:** Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and most of Maine
- **MISO:** Most of Illinois and Indiana, Arkansas, Iowa, some of Kentucky, Louisiana, Michigan, Minnesota, parts of Missouri, Mississippi, Montana, North Dakota, South Dakota, some of Texas, and Wisconsin
- **ISO-NY:** New York
- **PJM:** Delaware, some of Illinois and Indiana, some of Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia
- **SPP:** Most of Arkansas, Kansas, Louisiana, some of Missouri, Nebraska, some of New Mexico, Oklahoma, and some of Texas.



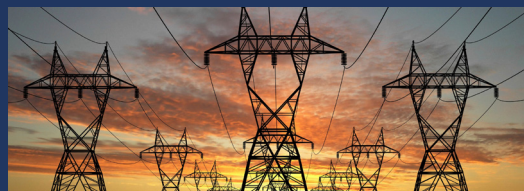
- In each of these ISOs, **Generators, Transmission and Distribution Utilities, and Retail Suppliers/Providers** work together to ensure safe and reliable service to customers.

GENERATOR



Any facility that produces electricity is considered a generator. For statutory & regulatory purposes, the term is generally limited to large scale generation facilities that provide electric power directly to the grid or are located on sites of large industrial customers. Most utility scale generators use steam created by fossil fired or nuclear boilers to generate electricity. Other methods of generation include geothermal, hydro, solar and wind.

TRANSMISSION & DISTRIBUTION



Transmission is the “interstate highway” of electricity delivery. It refers to the part of electricity delivery that moves bulk electricity from the generation sites over long distances to substations closer to areas of demand. Consumers may recognize transmission lines as the larger, taller poles/towers carrying many wires over long distances. If transmission is the interstate highway of the grid, distribution is the city street. It is the last leg of the delivery of electrical power from generation to the consumer. Power travels on the distribution system at a voltage level that can be delivered directly to a home or business. Distribution lines are the lines many of us see on the streets.

SUPPLIERS/PROVIDERS

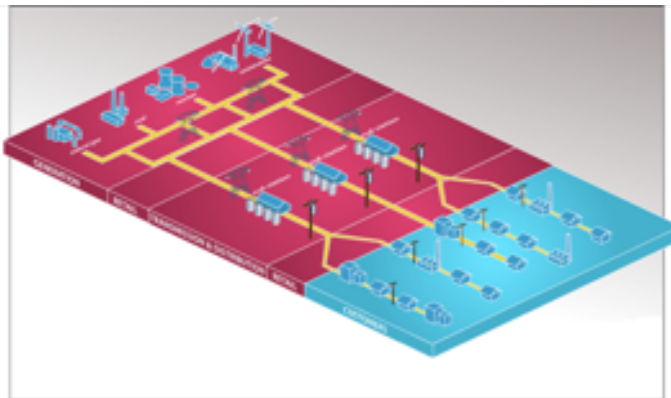


The company that sells electricity to the consumer is called the supplier or the provider, depending on the market. They also help the market schedule generation to match load and provide hedging services to customers to help manage electricity costs. Depending on the market model used for electricity in a jurisdiction, a supplier might be the incumbent utility or a separate competitive entity.

In the United States, there are two main constructs for how electric markets are structured: Monopoly and Competitive.

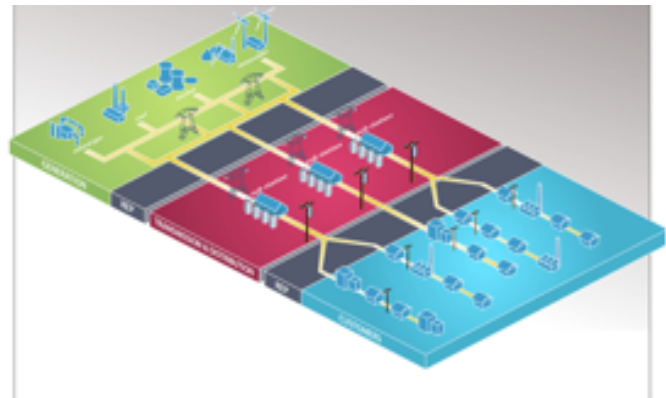
THE MONOPOLY (RATE REGULATED) MODEL

The “rate regulated” market model is often what people think of when they think of the “electric market”. The “electric utility” has a state granted monopoly to provide electric service through the full supply chain (the red parts of the graphic below), including generation, transmission, distribution, and retail. In return for this monopoly, the utility is rate regulated by the state and must get state approval for rates, which are generally based on capital investment in the grid. Municipal and cooperative utilities also operate along a similar model.



THE COMPETITIVE MODEL

In restructured electric markets, the generation (wholesale) and retail portions of the electric supply chain are competitive products provided by private companies like any other retail competitive retail market. The traditional “electric utility” is limited to the transmission and distribution aspects of electric delivery (red part below), which is still a monopoly and rate regulated in these markets. In the competitive market, investors bear the risk of investments in generation, not rate payers, and consumers are able to choose the electric plan that works best for them and are not forced to use a regulated “one-size-fits-all” plan.



STATES CAN HAVE ONE, BOTH OR A HYBRID OF THESE MARKET STRUCTURES WITHIN THEIR BORDERS

Regardless of market structure, customers in both markets are the same:

RESIDENTIAL & SMALL COMMERCIAL

Residential customers include single-family homes and multi-family housing. It accounts for over a third of the electricity used nationwide. Small commercial users are businesses with electricity consumption on par with a residence, e.g., strip-mall store fronts.

COMMERCIAL, GOVERNMENT & MUNICIPAL

Generally larger retail business customers who have corporate campuses or large store fronts (e.g., big box). Also can include state and federal government as well as municipal facilities. This sector accounts for more than a third of U.S. electricity consumption.

LARGE COMMERCIAL & INDUSTRIAL

Industrial customers’ facilities and equipment use electricity for processing, producing, or assembling goods, including such diverse industries as mining, agriculture, manufacturing, and construction. Overall, this sector uses less than a third of the nation’s electricity.