Energy Justice Intervenor Glossary

April 2024

This is a living document where terms and definitions will be added as they arise in cohort sessions. If you have requests for terms please feel free to suggest them in comments. Many of these definitions come from the Regulatory Assistance Project.

Ancillary Service
One of a set of services offered and demanded by system operators, utilities, and, in some cases, customers, which generally addresses system reliability and operational requirements. Ancillary services include voltage control and support, reactive power, harmonic control, frequency control, spinning reserves, and standby power. The Federal Energy Regulatory Commission defines ancillary services as those services "necessary to support the transmission of electric power from seller to purchaser given the obligations of control areas and transmitting utilities within those control areas to maintain reliable operations of the interconnected transmission system."

Average Cost
The revenue requirement of a utility divided by the quantity of utility service associated with that revenue requirement expressed as a cost per kilowatt-hour for an electric utility, or cost per therm for a natural gas utility.

Avoided Cost
The cost not incurred by not providing an incremental unit of service. Short-run avoided cost is the incremental variable cost to produce another unit from existing facilities. Long-run avoided cost includes the cost of the next power plant a utility would have to build to meet growing demand, plus the costs of augmenting reliability reserves, additional transmission and distribution facilities, environmental costs, and line losses associated with delivering that power.

Baseload Generation/Baseload Units/Baseload Capacity/Baseload Resources
Electricity-generating units that are most economically run for extended hours. Typical baseload units include coal-fired and nuclear-fueled steam generators.

Capacity
The ability to generate, transport, process, or utilize power. Capacity is measured in watts, usually expressed as kilowatts (1000 watts), megawatts (1000 kilowatts), or gigawatts (1000 megawatts). Generators have rated capacities that describe the output of the generator at its busbar when operated at its maximum output at a standard ambient air temperature and altitude.

Capital Expenses

Costs associated with long lasting physical assets such as transformers, powerlines, buildings, or batteries. Utilities can recover the cost of these expenses plus a profit from customers.

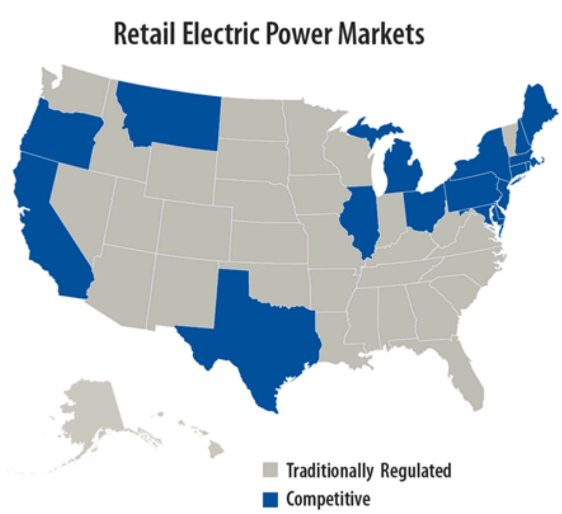
Cost Allocation
Division of a utility's cost of service among its customer classes. Cost allocation is an integral part of a utility's cost of service study.

Cost of Service
Regulators use a cost of service approach to determine a fair price for electric service, by which the aggregate costs for providing each class of service (residential, commercial, and industrial) are determined. Prices are set to recover those costs, plus a reasonable return on the invested capital portion of those costs, and allocated based on the sales made to each class.

Cost-of-Service Study or Analysis (COSS/COSA)
An analysis performed in the context of a rate case that allocates a utility's allowed costs to provide service among its various customer classes. The total cost allocated to a given class represents the revenue required to be collected from that class through the rates to be set in the rate case. Cost of service studies involve a great deal of judgment, and no single approach can be said to be "correct."

Customer Charge/Basic Charge/Service Charge
A fixed charge to consumers each billing period, typically to cover metering, meter reading, and billing costs that do not vary with size or usage.

Customer Choice
The ability of a customer to choose an energy supplier. Customer choice is available in a limited number of jurisdictions where retail competition is allowed. In most instances, the choice is limited to generation supply. The delivery of that supply to the customer is typically still provided by the local monopoly utility.



Customer Class
A collection of customers sharing common usage or interconnection characteristics. Common customer classes include residential (sometimes called household), small commercial, large commercial, small industrial, large industrial, agriculture (primarily irrigation pumping), mining, and municipal lighting (street lights and traffic signals). All customers within a class are typically charged the same rates, although some classes may be broken down into subclasses based on the nature of their loads (e.g., electric vehicle charging or solar photovoltaic generation customers may be placed in their own subclass), the capacity of their interconnection (e.g., the size of commercial or residential service panel), or the voltage at which they receive service.

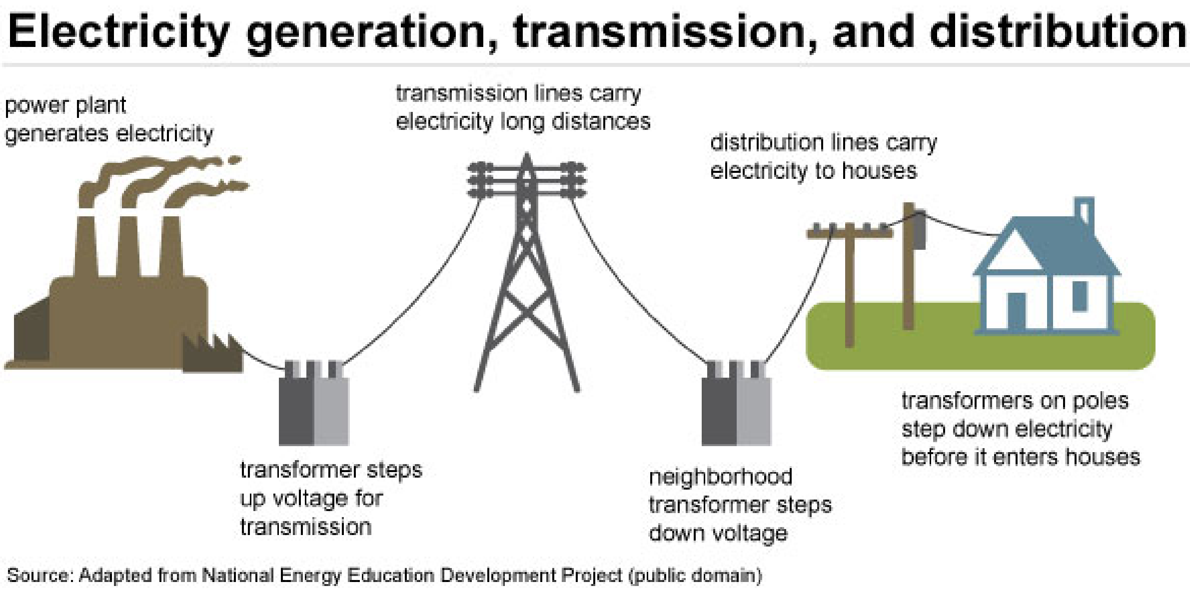
Demand
In theory, an instantaneous measurement of the rate at which power or natural gas is being consumed by a single customer, customer class, or the entirety of an electric or gas system. Demand is expressed in kilowatts or megawatts for electricity, and therms for natural gas. Demand is the load-side counterpart to an electric system's capacity. In practical terms, electricity demand is actually measured as the average rate of energy consumption over a short period of time, usually 15 minutes or an hour. For example, a 1,000-watt hair dryer run for the entirety of a 15-minute demand interval would cause a demand meter using a 15-minute demand interval to record one kilowatt of demand. If that same hair dryer were only run for 7.5 minutes, however, the metered demand would only be 0.5 kilowatt. Metering of demand requires the use of either an interval meter or an advanced smart meter.

Demand Response (DR)
Reduction in energy use in response to either system reliability concerns or increased prices (where wholesale markets are involved) or generation costs (in the case of vertically integrated utilities). Demand response must generally be measurable and controllable to participate in wholesale markets or be relied upon by system operators.

Distributed Energy Resources/Demand-Side Resources (DER)
Any resource or activity at or near customer loads that generates energy or reduces energy consumption. Distributed energy resources include customer-site generation, such as solar photovoltaic systems and emergency backup generators, as well as energy efficiency and controllable loads.

Distributed Generation (DG)
Any electricity generator located at or near customer loads. Distributed generation usually refers to customer-sited generation, such as solar photovoltaic systems, but may include utility-owned generation placed within the distribution system.

Distribution
The delivery of electricity to end-users via low-voltage electric power lines (usually 34 kV and lower).



Distribution-Only Utility
A utility that owns and operates only the distribution system. It may provide bundled service to customers by purchasing all needed energy from one or more other suppliers, or may require that customers make separate arrangements for energy supply. *See: Vertically Integrated Utility*

Distribution System
That portion of the electric system used to distribute energy to customers. The distribution system is usually distinguished from the transmission system on the basis of voltage and function. After energy is received from a generator's busbar, its voltage is stepped up to very high levels where it is transported by the transmission system. Transmission system components carry energy at voltages as high as 758 kW or higher and as low as 115 kV or lower.

Distribution System Operator (DSO)
The entity that operates the distribution portion of an electric system. In the case of a vertically integrated utility, this entity would also provide generation and transmission services. In many restructured markets, the distribution system operator only provides delivery services and may provide only limited energy services as a provider of last resort.

Electric Cooperative (also known as a Co-op)
Electric cooperatives are consumer-owned utilities that are owned by the electric consumer members. They are controlled by a member-elected board, which includes business customers. Some coops are regulated by state utility commissions, and some are not. Most co-ops were formed in the years following the Great Depression, to extend electric service to remote areas that investor-owned utilities were unwilling to serve; there are also some urban cooperatives.

Energy

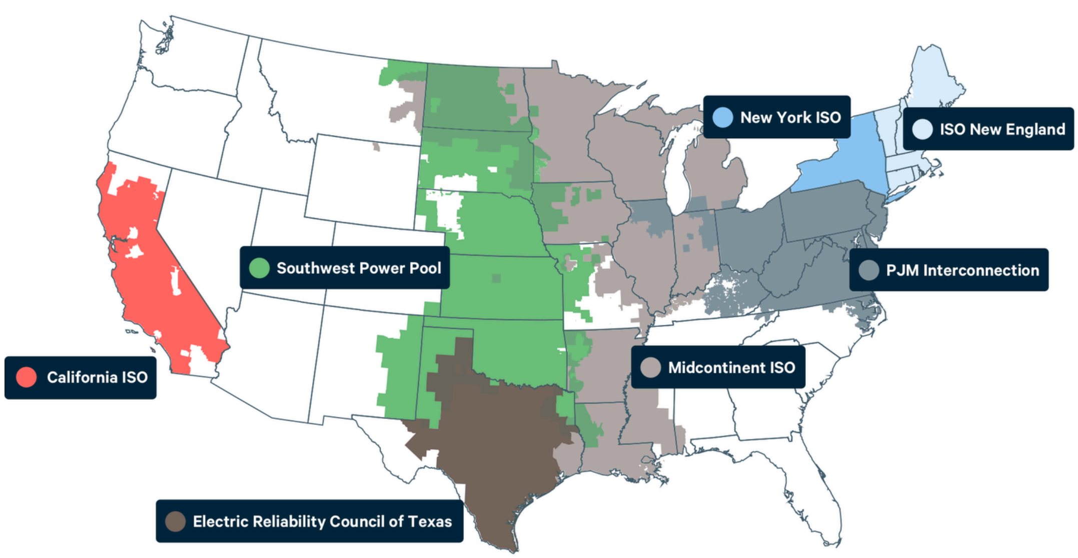
A unit of demand consumed over a period of time. Energy is expressed in watt-time units, in which the time units are usually one hour, such as one kilowatt-hour, one megawatt-hour, and so on. An appliance placing one kilowatt of demand (1 kW) on the system for one hour will consume one kilowatt-hour (1 kWh) of energy.

Federal Energy Regulatory Commission (FERC)
The U.S. federal agency that has jurisdiction over interstate transmission systems and wholesale sales of electricity.

Generation
Any equipment or device that supplies energy to the electric system. Generation is often classified by fuel source (i.e., nuclear, coal, gas, solar, and so on) or by operational or economic characteristics (e.g., “must-run,” baseload, intermediate, peaking, intermittent, load following).

Grid
The electric system as a whole or as a reference to the non-generation portion of the electric system.

Independent System Operator (ISO)
A non-utility that has multi-utility or regional responsibility for ensuring an orderly wholesale power market, the management of transmission lines, and the dispatch of power resources to meet utility and non-utility needs. An ISO controls and operates the transmission system independently of the local utilities that serve customers. This usually includes control of the dispatch of generating units and calls on demand-side resources over the course of a day or year.



Source: Homeland Infrastructure Foundation-Level Data (2019)

RFF

Integrated Resource Plan (IRP)
An integrated resource plan is a long-term plan prepared by a utility to guide future energy efficiency, generation, transmission, and distribution investments. Some commissions require IRPs and review the plans.

Investor-Owned Utility (IOU)
A privately owned electric utility owned by shareholders. Approximately 75 percent of U.S. consumers are served by IOUs.

Load
The combined demand for electricity placed on the system. The term is sometimes used in a generalized sense to simply denote the aggregate of customer energy usage on the system, or in a more specific sense to denote the customer demand at a specific point in time.

Load-Serving Entity (LSE)
The entity that arranges energy and transmission service to serve the electrical demand and energy requirements of its end-use customers. In restructured states, such entities are not necessarily the utilities that own transmission and distribution assets.

Marginal Cost
The cost of augmenting output. Short-run marginal costs are the incremental expenses associated with increasing output with existing facilities. Long-run marginal costs are the incremental capital and operating expenses associated with increasing output over time with an optimal mix of assets. Total System Long-Run Incremental Costs (TSLRIC) are the costs of building a new system in its entirety, a measure used to determine if an existing utility system is economical.

Merchant Power Plant
A power plant owned by an entity other than a regulated utility, that sells power in a competitive market to recover both investment costs and operating costs. Some merchant power plants enter into long-term contracts with utilities or industrial customers, and others operate strictly in the short-term market for power.

Microgrid
A localized grouping of electricity sources and loads that normally operates connected to and synchronous with the traditional centralized grid (macrogrid), but can disconnect and function autonomously as physical and/or economic conditions dictate.

Municipal Utility (Muni)
A utility owned by a unit of government and operated under the control of a publicly elected body. About 15 percent of Americans are served by Munis.

Natural Monopoly
Natural monopolies occur when, for practical reasons, a service or good is only provided by one

entity in a region. Energy utilities were and are widely regarded as natural monopolies because of the impracticalities associated with multiple entities setting up poles to serve one area for example.

Net Energy Metering/Net Metering (NEM)
A rate design that allows a customer who has distributed generation, typically solar photovoltaic systems, to receive a bill credit at the full retail rate for energy injected into the electric system.

North American Electric Reliability Corporation (NERC)
Oversees electric utility reliability standards. NERC is a self-regulatory organization, subject to oversight by the U.S. Federal Energy Regulatory Commission and governmental authorities in Canada. Regional and subregional reliability organizations are subject to NERC's purview.

Off-peak
The period of time that is not on-peak. During off-peak periods, system costs are generally lower and system reliability is not an issue. Time-of-use rates typically have off-peak prices that are lower than on-peak prices.

On-peak
The period of time when customer demand is higher than normal. During on-peak periods, system costs are higher than average and reliability issues may be present. Many rate designs and utility "programs" are oriented to reducing on-peak usage. Planning and investment decisions are often driven by expectations about the timing and magnitude peak demands during on-peak period. Time-of-use rates typically have on-peak prices that are higher than off-peak prices.

Operating Expenses
Business expenses such as employee salaries, office rent, software, legal fees etc., associated with a utility. A utility can collect the cost of these investments but not profits from customers.

Opt-In
A way of determining whether customers will be placed on an alternative or new rate schedule. In an opt-in approach, customers will only be placed on the rate schedule if they actively choose that option. The opt-in approach assures that customers are placed on a rate schedule without their express permission, but will typically result in fewer customers taking the new rate.

Opt-Out
A way of determining whether customers will be placed on an alternative or new rate schedule. In an opt-out approach, customers will automatically be placed on the rate schedule unless they actively to choose to stay on their existing rate schedule. The opt-out approach results in a participation rate on the new rate schedule, but risks placing customers on a rate without their knowledge and consent.

Peak Demand

The maximum demand by a single customer, a group of customers located on a particular portion of the electric system, or all of the customers in a class or all of a utility's customers during a specific period of time – hour, day, month, season, or year.

Peak Load
The maximum total demand on a utility system during a period of time.

Peaking Resource/Peaking Generation/Peaker Plant
Generation that is used to serve load during periods of high demand. Peaking generation typically has high fuel costs or limited availability (e.g., storage of hydrogeneration), and often has low capital costs. Peaking generation is used a limited number of hours, especially as compared to baseload generation. Peaking resources may connote non-generation resources, such as storage or demand-side resources.

Performance-Based Regulation (PBR)
Any form of alternative regulation that ties company earnings to performance on metrics set by the regulator, rather than to strict cost-recovery of invested capital and operating expenses.

Photovoltaic Systems (PV)
An electric generating system utilizing photovoltaic cells to generate electricity from sunlight. PV systems may be used in off-grid, stand-alone applications, or operated synchronously with the electric system by interconnecting through a power inverter that converts their output to system-quality AC power, which is synchronized with the AC cycles of the electric system. In the United States, synchronous operation requires the use of an inverter that meets the standards of IEEE 1547, in addition to possible additional requirements of the local utility.

Power Marketing Agencies (PMA)
Federal power marketing agencies were created by Congress to market power produced by federal dams. In some cases, they have also been given authority to build and own thermal power plants. These federal PMAs include the Bonneville Power Administration, the Southeastern Power Administration, the Southwestern Power Administration, and the Western Area Power Administration.

Public Utility Commission (PUC)
The state regulatory body that determines rates for regulated utilities. Although they go by various titles, PUC and Public Service Commission are most common.

Publicly Owned Utility (POU)
A utility owned by a governmental unit or agency, such as a municipality, a utility "district," or a government agency. Public utilities are controlled by a voter-elected body. Most publicly owned utilities are not regulated by state regulatory commissions.

Rate Base

The net investment of a utility in property that is used to serve the public. This includes the original cost net of depreciation, adjusted by working capital, deferred taxes, and various regulatory assets. The term is often misused to describe the utility revenue requirement.

Rate Case
A proceeding, usually before a regulatory commission, involving the rates, revenues, and policies of a public utility.

Rate Design
Specification of prices for each component of a rate schedule for each class of customers, which are calculated to produce the revenue requirement allocated to the class. In simple terms, prices are equal to revenues divided by billing units, based on historical or assumed usage levels. Total costs are allocated across the different price components such as customer charges, energy charges, and demand charges, and each price component is then set at the level required to generate sufficient revenues to cover those costs.

Regional Transmission Organization (RTO)
An independent regional transmission operator and service provider established by FERC or that meets FERC's RTO criteria, including those related to independence and market size. RTOs control and manage the high-voltage flow of electricity over an area generally larger than the typical power company's service territory. Most RTOs also operate day-ahead, real-time, ancillary services and capacity markets, and conduct system planning. RTOs include PJM, ISO-New England (ISO-NE), the Midwest Independent System Operator (MISO), the Southwest Power Pool (SPP), the New York ISO (NYISO), and the California ISO (CAISO).

Regulatory Compact
The term "regulatory compact" is used to describe the implicit "agreement" between a utility and the government, whereby the utility accepts an obligation to serve in return for the government's promise to approve and allow rates that will compensate the utility fully for the costs it incurs to meet that obligation. The compact actually describes the act of regulation, and there is in fact no binding agreement between a utility and the government that protects utility ownership from financial accountability.

Reliability
A measure of the ability of the electric system to provide continuous service to customers over time. Reliability is often measured in terms of "loss of load probability" (LOLP). The U.S.-Canadian-Mexican interconnections generally experience extremely high reliability. Reliability standards are set and maintained by the North American Electric Reliability Corporation and its regional counterparts, as well as by RTOs/ISOs and electric utilities. Compliance with reliability standards is compulsory.

Renewable Energy Certificate/ Renewable Energy Credit/ Green Certificate/ Green Tag/ Tradable Renewable Certificate (REC)
Documentation of energy produced by a renewable energy resource. RECs can be unbundled from the energy produced and separately traded. Utilities that must comply with a renewable

portfolio standard are usually required to document their compliance by possessing RECs through their own generation or by purchasing RECs from third parties, to document the production of energy from renewable resources.

Renewable Portfolio/Energy Standard (RPS or RES)
A regulatory requirement that utilities meet a specified percentage of their power supply using qualified renewable resources.

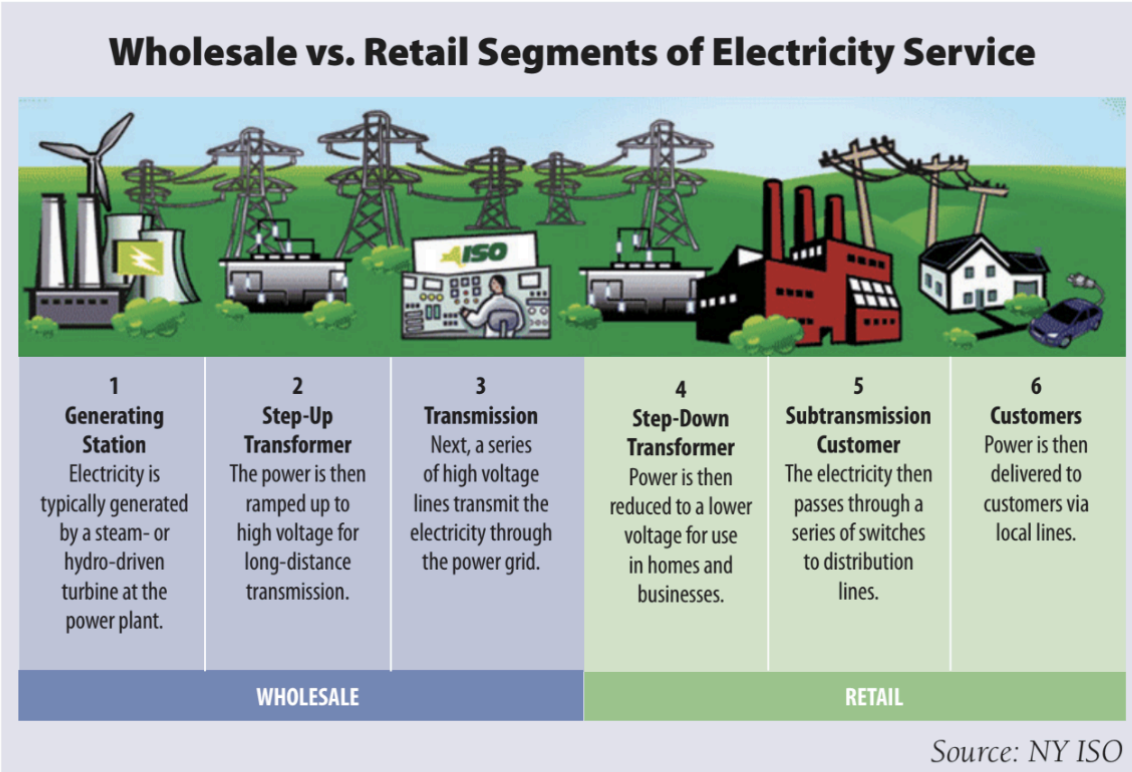
Renewable Resources
Power generating facilities that use wind, solar, hydro, biomass, or other rapidly renewed or non-depleting fuel sources. In some states, qualified renewable resources exclude large hydro stations and some other types of generation.

Reserve Capacity/Reserve Margin/Reserves
The amount of capacity that a system must be able to supply, beyond what is required to meet demand, in order to assure reliability when one or more generating units or transmission lines are out of service. Traditionally a 15- to 20-percent reserve capacity was thought to be needed for good reliability. In recent years, the accepted value in some areas has declined to ten percent or even lower.

Restructured State/Restructured Market (aka Deregulated)
Replacement of the traditional vertically integrated electric utility with some form of competitive market. In some cases, the generation and transmission components of service are purchased by the customer-serving distribution utility in a wholesale competitive market. In other cases, retail customers are allowed to choose their generation suppliers directly in a competitive market.

Retail Choice/Retail Competition
A restructured market in which customers are allowed to or must choose their own competitive supplier of generation and transmission services. In most states with retail choice, the incumbent utility or some other identified entity is designated as a default service provider for customers who, through inaction, do not choose another supplier. In Texas, there is no default service provider and all customers must make a choice.

Retail Electricity Market
Retail markets involve the sale of electricity to consumers.



Revenue Regulation (aka Decoupling)
Revenue regulation (also known as “decoupling”) fixes the amount of revenue to be collected and allows the price charged to float up or down between rate cases to compensate for variations in sales volume in order to maintain the set revenue level. The target revenue is sometimes allowed to increase between rate cases on the basis of an annual review of costs or a fixed inflator, or on the basis of the number of customers served. The latter approach is sometimes known as “revenue-per-customer decoupling.” The purpose is to allow utilities to recover allowed costs in volumetric prices, independent of sales volumes.

Revenue Requirement
The annual revenues that the utility is entitled to collect (as modified by adjustment clauses). It is the sum of operation and maintenance expenses, depreciation, taxes, and a return on rate base. In most contexts, revenue requirement and cost of service are synonymous.

Smart Grid
An integrated network of sophisticated meters, computer controls, information exchange, automation, information processing, data management, and pricing options that can create opportunities for improved reliability, increased consumer control over energy costs, and more efficient utilization of utility generation and transmission resources.

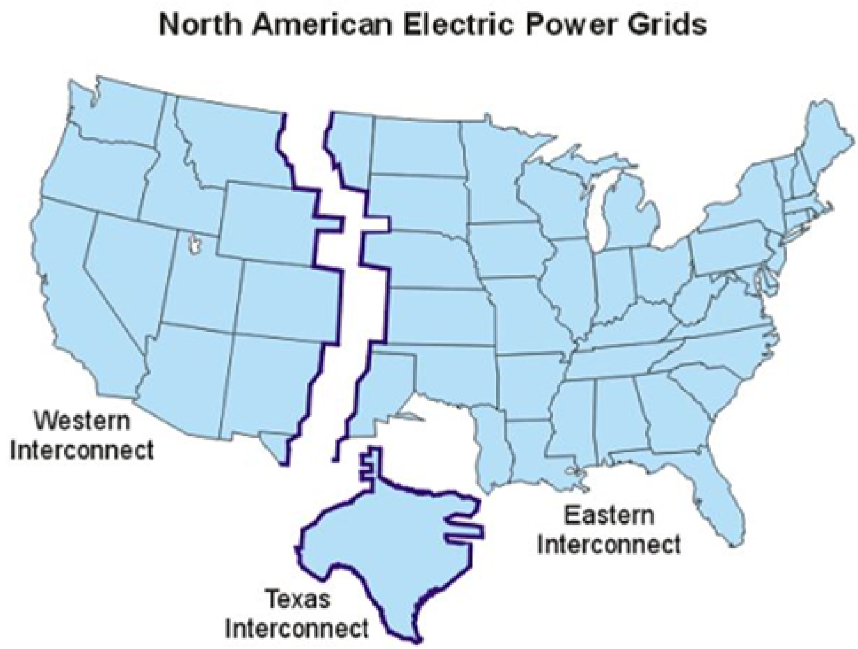
Smart Meter
An electric meter with electronics that enable recording of customer usage in short time intervals and two-way communication of data between the utility, optionally the customer, and the meter.

Standby Service
Support service that is available, as needed, to supplement supply for a consumer, a utility system, or another utility if normally scheduled power becomes unavailable. The unavailable source may be a third-party provider or a customer-owned generator.

Stranded Asset
Stranded assets are assets that, at some point prior to the end of their economic life (as assumed at the investment decision point), are no longer able to earn an economic return (i.e., meet the company's internal rate of return) as a result of changes associated with the transition to a low-carbon economy (lower than anticipated demand/prices). Or, in simple terms, assets that turn out to be worth less than expected as a result of changes associated with the energy transition.

Substation
A facility with a transformer that steps voltage down from a portion of the system that transports energy in greater bulk and to which one or more circuits or customers may be connected.

Synchronous Interconnections (Interconnects)
Local grids are interconnected to form larger networks for reliability and commercial purposes. At the highest level, the U.S. power system in the Lower 48 states is made up of three main interconnections, which operate largely independently from each other with limited transfers of electricity between them. The Eastern Interconnection, covering the region east of the Rockies, excluding most of Texas, but including adjacent Canadian provinces except Quebéc; the Western Interconnection, from the Rockies to the Pacific Coast, again including adjacent Canadian provinces; and the Electric Reliability Council of Texas (ERCOT), covering most of Texas. Because 47 states (excluding ERCOT, Hawaii, and Alaska) have interconnected transmission networks, FERC sets the rates and service standards for most bulk power transmission.



System Peak Demand
The maximum demand placed on the electric system at a single point in time. System peak demand may be a measure for an entire interconnection, for sub-regions within an interconnection, or for individual utilities or service areas.

Tariff
A listing of the rates, charges, and other terms of service for a utility customer class, as approved by the regulator.

Tariff Rider
A special tariff provision that collects a specified cost or refunds a specific consumer credit, usually over a limited period of time.

Transformer
A device that raises ("steps up") or lowers ("steps down") the voltage in an electric system. Electricity coming out of a generator is often stepped up to very high voltages (345 kW or higher) for injection into the transmission system and then repeatedly stepped down to lower voltages as the distribution system fans out to connect to end-use customers. Some energy loss occurs with every voltage change. Generally, higher voltages can transport energy for longer distances with fewer energy losses.

Transmission/Transmission System
That portion of the electric system designed to carry energy in bulk. The transmission system is operated at the highest voltage of any portion of the system. It is usually designed to either

connect remote generation to local distribution facilities or to interconnect two or more utility systems to facilitate exchanges of energy between systems.

Variable Cost
Costs that vary with direct usage or revenue, plus costs over which the utility has some control in the short-run, including fuel, labor, maintenance, insurance, return on equity, and taxes. Variable cost excludes interest and depreciation expense.

Vertically Integrated Utility (in Regulated Markets)
A utility that owns its own generating plants (or procures power to serve all customers), transmission system, and distribution lines, providing all aspects of electric service.

Watt
The electric unit used to measure power, capacity, or demand. One kilowatt = 1,000 watts, one megawatt = 1,000,000 watts or 1,000 kilowatts.

Watt-Hour
The amount of energy generated or consumed with one watt of power over the course of one hour. One kilowatt-hour (kWh) equals 1,000 watts consumed or delivered for one hour. One megawatt-hour (MWh) equals 1,000 kilowatt-hours. One terawatt-hour (TWh) equals 1,000 megawatt-hours. The W is capitalized in the acronym in recognition of electrical pioneer James Watt.

Wholesale Electricity Market
Wholesale markets involve the sales of electricity among electric utilities and electricity traders before it is eventually sold to consumers.