



## Distributed Generation: Glossary of Terms

Items with an asterisk (\*) are terms as defined by the U.S. Energy Information Administration (EIA). The EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. Additional definitions are available online in EIA's glossary of terms.

### **Avoided Cost**

The incremental cost for a utility to produce one more unit of power. For example, because a qualifying facility (QF) as defined under the Public Utilities Regulatory Policies Act or an Alternate Energy Production Facility and as defined in Iowa Code §476.42, reduces the utility's need to produce this additional power themselves, the price utilities pay for QF power has been set to the avoided or marginal cost.

### **Backfeed**

When electric power is being induced into the local power grid, power flows in the opposite direction from its usual flow.

### **Backup Generator**

A generator that is used only for test purposes, or in the event of an emergency, such as a shortage of power needed to meet customer load requirements.\*

### **Backup Power**

Electric energy supplied by a utility to replace power and energy lost during an unscheduled equipment outage.\*

### **Baseload Generation (Baseload Plant)**

Generation from a plant, usually housing high-efficiency steam-electric units, which is normally operated to take all or part of the minimum load of a system, and which consequently produces electricity at an essentially constant rate and runs continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system operating costs.\*

### **Biomass**

Organic nonfossil material of biological origin constituting a renewable energy source.\*

### **Central Station Generation**

Production of energy at a large power plant and transmitted through infrastructure to a widely distributed group of users.

### **Coal**

A readily combustible black or brownish-black rock whose composition, including inherent moisture, consists of more than 50 percent by weight and more than 70 percent by volume of carbonaceous material. It is formed from plant remains that have been compacted, hardened, chemically altered, and metamorphosed by heat and pressure over geologic time.\*

### **Cogeneration**

The production of electrical energy and another form of useful energy (such as heat or steam) through the sequential use of energy.\*

**Commissioning Test**

A highly specialized activity where a power installation is tested to ensure it meets exacting standards through the integrated application of a set of engineering techniques and procedures to check, inspect and test every operational component of the project, from individual functions, such as instruments and equipment, up to complex amalgamations such as modules, subsystems and systems.

**Consumption (also Energy Consumption)**

The use of energy as a source of heat or power or as a raw material input to a manufacturing process.\*

**Cost of Service**

A ratemaking concept used for the design and development of rate schedules to ensure that the filed rate schedules recover only the cost of providing the electric service at issue. This concept attempts to correlate the utility's costs and revenue with the service provided to each of the various customer classes.\*

**Distributed Generator**

A generator that is located close to the particular load that it is intended to serve. General, but non-exclusive, characteristics of these generators include: an operating strategy that supports the served load; and interconnection to a distribution or sub-transmission system (138 kV or less).\*

**Distribution**

The delivery of energy to retail customers.\*

**Electricity Generation**

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

**Electric Power Grid**

A system of synchronized power providers and consumers connected by transmission and distribution lines and operated by one or more control centers. In the continental U.S, the electric power grid consists of three systems the Eastern Interconnect, the Western Interconnect, and the Texas Interconnect. In Alaska and Hawaii, several systems encompass areas smaller than the State (e.g., the interconnect serving Anchorage, Fairbanks, and the Kenai Peninsula; individual islands).\*

**Energy**

The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Energy has several forms, some of which are easily convertible and can be changed to another form useful for work. Most of the world's convertible energy comes from fossil fuels that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. Electrical energy is usually measured in kilowatt hours, while heat energy is usually measured in British thermal units (Btu).\*

**Energy Demand**

The requirement for energy as an input to provide products and/or services.\*

**Energy Efficiency**

A ratio of service provided to energy input (e.g., lumens to watts in the case of light bulbs). Services provided can include buildings-sector end uses such as lighting, refrigeration, and heating; industrial processes; or vehicle transportation. Unlike conservation, which involves some reduction of service, energy efficiency provides energy reductions without sacrifice of service. May also refer to the use of technology to reduce the energy needed for a given purpose or service.\*

**Energy Efficiency, Electricity**

Refers to programs that are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall electricity consumption (reported in megawatt hours), often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technologically more advanced equipment to produce the same level of end-use services (e.g. lighting, heating, motor drive) with less electricity. Examples include high-efficiency

appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.\*

### **Engineering Study**

A study conducted by the electric cooperative that will indicate the equipment needed for the interconnection of a distributed generation system; typically this study will address technical and safety requirements.

### **Grid**

The layout of an electrical distribution system.\*

### **IEEE**

Institute of Electrical and Electronics Engineers

### **Interconnection**

Two or more electric systems having a common transmission line that permits a flow of energy between them. The physical connection of the electric power transmission facilities allows for the sale or exchange of energy.\*

### **Interconnection Agreement**

A legal contract for the connection of the distributed generation facility to the cooperative's lines, specifying the location, size, cost, manner of payment, terms of operation, and respective responsibilities of the cooperative and the distributed generation member-owner.

### **Interconnection Costs (DG)**

The reasonable costs of connection, switching, metering, transmission, distribution, safety provisions, and administrative costs incurred by the cooperative directly related to the installation and maintenance of a member-owner's distributed generation facility.

### **Intermittent Load**

The range from base load to a point between base load and peak. This point may be the midpoint, a percent of the peak load, or the load over a specified time period.\*

### **Intermittent Resource**

Intermittent electric generator or intermittent resource: An electric generating plant with output controlled by the natural variability of the energy resource rather than dispatched based on system requirements. Intermittent output usually results from the direct, non-stored conversion of naturally occurring energy fluxes such as solar energy, wind energy, or the energy of free-flowing rivers (that is, run-of-river hydroelectricity).\*

### **Isolation Device**

A readily accessible, lockable, visible-break switch located between the distributed generation facility and its interface to the cooperative's electric facilities.

### **IUB**

Iowa Utilities Board

### **Kilowatt Hour (kWh)**

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

### **Load**

An end-use device or customer that receives power from the electric system.\*

### **Methane**

A colorless, flammable, odorless hydrocarbon gas which is the major component of natural gas. It is also an important source of hydrogen in various industrial processes. Methane is a greenhouse gas.\*

### **Natural Gas**

A gaseous mixture of hydrocarbon compounds, the primary one being methane.\*

**Output**

The amount of power or energy produced by a generating unit, station, or system.\*

**Peak Demand, Peak Load**

The maximum load during a specified period of time.\*

**Photovoltaic (PV)**

Energy radiated by the sun as electromagnetic waves (electromagnetic radiation) that is converted at electric utilities into electricity by means of solar (photovoltaic) cells or concentrating (focusing) collectors.\*

**PURPA**

Public Utility Regulatory Policies Act (PURPA) of 1978. One part of the National Energy Act, PURPA contains measures designed to encourage the conservation of energy, more efficient use of resources, and equitable rates. Principal among these were suggested retail rate reforms and new incentives for production of electricity by cogenerators and users of renewable resources. The Commission has primary authority for implementing several key PURPA programs.\*

**Qualifying Facility (QF)**

A cogeneration or small power production facility that meets certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC) pursuant to the Public Utility Regulatory Policies Act (PURPA).\*

**Reliability**

A measure of the ability of the system to continue operation while some lines or generators are out of service. Reliability deals with the performance of the system under stress.

**Renewable Energy**

Energy resources that are naturally replenishing but flow-limited. 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, wind, ocean thermal, wave action and tidal action.\*

**Solar Energy**

The radiant energy of the sun, which can be converted into other forms of energy, such as heat or electricity.\*

**Storage Capacity**

The amount of energy an energy storage device or system can store.\*

**System Protection Equipment**

Equipment that protects electrical power systems from faults through the isolation of faulted parts from the rest of the electrical network. The goal is to stabilize the power system by isolating only the components that are under fault, while leaving as much of the network as possible still in operation.

**Transmission System**

An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.\*

**Usage**

The amount of energy or electricity used by a member-owner.

**Wind Energy**

Kinetic energy present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power generators.\*