

Glossary

This glossary of electric cooperative and utility terms was created by member publications of the National Electric Cooperative Statewide Editors Association in conjunction with *Rural Electric Magazine* and *Straight Talk Alert* and abridged as a convenience to readers of *Electric Co-op Today*.

A

access charge A fee assessed for the right to send electricity over another utility's wires.

ACES Power Marketing A nationally recognized wholesale energy trading and risk management firm formed in February 1999. Owned and governed by 17 electric cooperatives, APM, based in Carmel, Ind., with regional trading centers in Carmel and Cary, N.C., also serves other electric industry participants, such as municipal electric systems, financial institutions, and independent power producers. APM has become one of the nation's largest physical traders of electricity.

acid rain Precipitation with a high acidity level, produced when gases (notably sulfur dioxide and nitrogen oxides from coal-based power plants) are released into the atmosphere. These gases form acidic compounds that fall back to earth in rain, snow, or sleet or as dry particles or gases. Acid rain has been blamed for damaging the environment, particularly fish life in eastern lakes.

ACRE Co-op Owners for Political Action[®] A program created by NRECA in 2003 that allows residential electric cooperative consumers to participate in the Action Committee for Rural Electrification.

Action Committee for Rural Electrification (ACRE[®]) A bipartisan political action committee formed by NRECA in 1966 that gives financial support to congressional and state legislative candidates friendly to electric cooperatives. ACRE does not get involved in presidential, gubernatorial, statewide row office, judicial, or municipal races. Forty-nine percent of all ACRE funds are returned to state ACRE committees, based on each state's contributions. All ACRE contributions are voluntary, and membership includes electric cooperative employees, directors, attorneys, chief executives, spouses, and consumers.

advanced meter infrastructure (AMI) A comprehensive set of technologies and software applications that enable two-way communications with a smart meter and provide electric utilities—using frequent meter reads—with near real-time oversight of system operations.

aggregators Brokers, utilities, or other parties that put retail consumers into electric power buying groups to negotiate for the lowest possible electricity costs, or that sell demand response from multiple retail consumers into the wholesale market. Electric cooperatives have always acted as aggregators for their consumers.

all-requirements contract An agreement under which an electric distribution cooperative agrees to purchase all of its wholesale power needs from a single supplier, generally a generation and transmission cooperative.

alternating current (AC) A flow of electricity through a conductor that reverses direction at regularly recurring intervals, in contrast to direct current (DC). AC allows for the long-distance transport of high-voltage electricity. Nearly all of the electricity consumed in the United States arrives via alternating current.

American Public Power Association (APPA) A Washington, D.C.-based national service organization representing municipal electric utilities. Formed in 1940.

AMI advanced meter infrastructure.

AMR automated meter reading.

anaerobic digester Equipment where biodegradable organic matter, such as livestock waste, gets broken down by bacteria into biogas (primarily methane) that can be used to generate heat and electricity. Sometimes called a methane digester.

ancillary services Items necessary to support reliable operation of an interconnected transmission system. The Federal Energy Regulatory Commission has identified six ancillary services: reactive power and voltage control, loss compensation, scheduling and dispatch, load following, system protection, and energy imbalance.

area coverage The extension of electric service to everyone who wants it in a given area at no additional charge; a basic tenet of electric cooperatives.

automated meter reading (AMR) Specially equipped metering devices that allows utilities to remotely collect kilowatt-hour use (and in some cases demand) information and transfer it to a central database for billing and/or analyzing purposes. Data, which flows just one way, can be gathered and sent via drive-by or walk-by readings as well as radio frequency, powerline carrier, telephone lines, or wireless systems.

avoided cost A calculation that estimates the expense an electric utility incurs to supply or generate a certain amount of power. In practice, it refers to the price that qualifying facilities under the Public Utility Regulatory Policies Act of 1978 are entitled to receive for excess power sold to a utility. Avoided cost is established at the price a utility would have paid for power had it not purchased from a qualifying facility.

B

backup power Electricity supplied when generating units are not in service because of emergencies, outages, or scheduled maintenance.

base load The minimum amount of electric power delivered or required from a generating system over a specified period of time; usually measured in megawatts.

baseload A large, efficient generating station—typically with a capacity factor of at least 65 percent—that provides dependable electric power year-round at a low cost per kilowatt-hour. Coal-fired, nuclear, hydro, and large natural gas-fired power plants make up most baseload generation in the United States, although smaller-scale biomass facilities (such as anaerobic digesters and plants burning wood waste, poultry litter, or landfill gas), if properly operated, can also produce baseload output (though in much smaller quantities). Solar thermal energy (concentrating solar power) has begun making inroads as a baseload source in the Southwest U.S.

biomass Biological material that can be used as a fuel or exploited for industrial purposes (such as chemicals, fibers, plastics, etc.). In electricity generation, biomass consists of two types: closed-loop biomass (trees grown expressly for power production) and open-loop biomass (sawdust, tree trimmings, timber slash, wood chips, farm byproducts, animal waste, and landfill gas).

biomass conversion The process of producing fuels or energy from renewable organic matter such as plant or animal wastes.

blackout Total power failure over a large area, often caused by the malfunction of generating equipment or transmission facilities.

blog A frequently updated, interactive website that lists content, such as commentary, news, images, and video, in reverse chronological order. Individual articles are called posts. Readers can interact with authors, called *bloggers*, by leaving comments in response to posts. Short for weblog.

Bonneville Power Administration (BPA) One of four regional federal agencies that market electricity generated primarily at federal dams. Based in Portland, Ore., BPA sells power from 31 U.S. Army Corps of Engineers and U.S. Department of the Interior Bureau of Reclamation hydro projects in eight northwestern states: all of Idaho, Oregon, and Washington as well as contiguous swaths of California, Montana, Nevada, Utah, and Wyoming.

BPL broadband over powerline.

British thermal unit (Btu) Amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit.

broadband Often called high-speed Internet, it includes any data transmission connection to the consumer of 256 kilobits per second or greater. Standard broadband technologies available to rural residents include cable modem, digital subscriber line (DSL) over existing copper telephone lines, wireless, and satellite.

broadband over powerline (BPL) Technology that holds the promise of allowing a consumer to access high-speed Internet service simply by plugging a computer or other web-enabled device into a power outlet. With BPL, utilities connect substations to the Internet (via fiber-optic lines or satellite hookups) and then “inject” broadband signals on existing electric distribution wires.

brownout A small, temporary voltage reduction implemented by a utility to conserve electricity during periods of high power consumption.

Btu British thermal unit. Singular and plural are the same.

bulk power Large amounts of electricity shipped across a transmission system, generally on a wholesale level.

bundling The vertical organization of a utility into generation, transmission, and distribution segments. Bundling of an electric bill means the consumer gets charged just one amount for all components involved in providing electricity.

Bureau of Reclamation An agency within the U.S. Department of the Interior, established in 1902, that has constructed more than 600 dams and reservoirs in 17 western states, including such iconic projects as Hoover Dam on the Colorado River and Grand Coulee Dam on the Columbia River. The Bureau of Reclamation owns and operates 58 federal hydropower facilities.

bylaws Rules for governing an organization, such as an electric cooperative, approved by the membership.

C

CAIR Clean Air Interstate Rule.

cap and trade A system of reducing airborne pollutants from large stationary sources (such as power plants, factories, and refineries) using market forces. Under a cap-and-trade regime, each emitting facility has limit placed on the amount of a particular pollutant it can release—the cap. Sources that emit less than the cap can sell the extra allowances to those not able to achieve reductions as easily—the trade. A cap-and-trade system was first created in the Clean Air Act of 1990 for curbing emissions of acid rain-causing sulfur dioxide. Since 1999, 21 eastern states and the District of Columbia have been using a similar cap-and-trade strategy to cut smog-producing nitrogen oxides emissions. A U.S. Environmental Protection Agency cap-and-trade rule for toxic mercury emissions from power plants was rejected by the U.S. Court of Appeals for the District of Columbia in February 2008. Cap-and-trade proposals to curtail the release of carbon dioxide and five other greenhouse gases—methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—have been floated in Congress.

capacity The potential for generating power, measured in kilowatts or megawatts, of a power plant. Also the electric load, measured in watts or kilowatts, of a piece of electrical equipment.

capacity factor The ratio of actual net electrical energy generation to the maximum possible energy that could have been generated if a plant operated at its maximum capacity rating over the same time. Capacity factor is normally reported as a percentage.

capital credits Margins credited to cooperative members based on their purchases (in the case of electric cooperatives, electricity use) from the cooperative. Used by the cooperative as working capital for a period of time, then paid back to the membership. Also called patronage capital or equity capital. Capital credits should not be confused with profits, which are a return *on* capital. Retirement of capital credits provides a return *of* member-furnished capital.

captive shipper Utilities, chemical manufacturers, steel mills, mines, lumber and wood products companies, and grain processors that must rely on a single railroad line for transporting goods or receiving raw materials.

carbon capture and storage (CCS) The technical process of separating carbon dioxide gas from power plant emissions (primarily coal- or natural gas-fired generation); compressing it; pumping it down into spent oil and natural gas wells, saline reservoirs, or inaccessible coal seams; and entombing it there forever.

carbon dioxide A colorless, odorless gas produced by all animals, plants, fungi, and microorganisms during respiration and used by plants during photosynthesis. Carbon dioxide also gets emitted when fossil fuels like coal and natural gas or vegetable matter are burned, and from volcanoes and other geothermal processes such as hot springs and geysers. Although essential to life, the gas is increasingly viewed as a pollutant—higher carbon dioxide emissions as a result of industrialization, most scientists contend, have

created a heat-trapping greenhouse effect in the atmosphere that's now disrupting climate patterns and warming the planet.

carbon footprint The impact human activities have on the environment based on the amount of greenhouse gases produced as measured in units of carbon dioxide. Individuals, nations, and organizations (like electric cooperatives) can use the calculations to conceptualize their contribution to climate change.

carbon sequestration The permanent removal carbon dioxide from (or before it enters) the atmosphere by both natural (crops, forests, oceans, soil, and vegetation) and man-made means. Synonymous with the "storage" part of carbon capture and storage.

CBO Congressional Budget Office.

CCS carbon capture and storage.

CFC National Rural Utilities Cooperative Finance Corporation.

CFCs chlorofluorocarbons.

CFL compact fluorescent lightbulb.

cherry-picking The process of competing to serve another utility's most profitable consumers, normally big industries and housing projects. Also called cream-skimming.

chlorofluorocarbons (CFCs) Chemicals used as refrigerants and propellants in aerosol cans. Studies have shown that these compounds destroy the ozone layer in Earth's atmosphere. As a result, they are completely or partially banned in most countries.

Clean Air Act The 1970 federal law that serves as the backbone of efforts to control air pollution in the United States. It requires the U.S. Environmental Protection Agency to

develop and enforce regulations that protect the general public from exposure to airborne contaminants hazardous to human health. The statute was reauthorized and significantly amended in 1977 (with the inclusion of New Source Review provisions) and again in 1990 (creating a cap-and-trade program to curb emissions of acid rain-causing sulfur dioxide from power plants and other large stationary sources, like factories and refineries). In April 2009, EPA announced it was ready to use the Clean Air Act to curtail the release of carbon dioxide and five other greenhouse gases—methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—blamed for contributing to climate change.

Clean Air Interstate Rule (CAIR) A U.S. Environmental Protection Agency regulation issued on March 10, 2005, that permanently caps emissions of sulfur dioxide and nitrogen oxides across 28 eastern states and the District of Columbia. When fully implemented in 2015, CAIR will reduce sulfur dioxide emissions from power plants by more than 70 percent and nitrogen oxides emissions by more than 60 percent from 2003 levels as well as result in \$85 billion to \$100 billion in annual public health benefits and nearly \$2 billion in visibility benefits. Electric cooperatives supported the rule. The U.S. Court of Appeals for the District of Columbia vacated it on July 11, 2008, but on December 23, 2008, reversed itself, saying that despite “fatal flaws” (including how CAIR treats emissions on a state-by-state basis) the regulation should remain in place to preserve environmental benefits while EPA made required changes.

clean-coal technology Any industrial system or application that reduces emissions from coal-fired power plants.

Clean Renewable Energy Bonds (CREBs) Created in the federal Energy Policy Act of 2005, these bonds act as low-interest loans and provide not-for-profit electric cooperatives with a way to invest in renewable generation. CREBs level the “green power financing playing field” with investor-owned utilities, which can qualify for investment tax credits to support solar installation and production tax credits to “sprout” other renewable electricity sources involving wind, geothermal, closed-loop biomass

(trees grown expressly for electricity production), open-loop biomass (sawdust, tree trimmings, timber slash, wood waste, farm byproducts, animal waste, and landfill gas), small hydro (less than 25 MW), and hydrokinetic (ocean wave and tidal) power. At the end of 2008, \$452.6 million in CREBs had helped electric cooperatives develop more than 4,500 MW of renewable generation from 90 projects.

climate change Periods of freezing and warming experienced by planet Earth. Policymakers are now focused on finding ways to reduce man-made greenhouse gas emissions blamed for contributing to what most scientists contend is a current cycle of global warming. Electric cooperatives are encouraging elected officials to make sure that any climate change solutions adopted can be sustained economically and politically for decades to come.

coal A readily combustible rock composed primarily of carbon and hydrogen along with small quantities of other elements, notably sulfur. Coal remains the most commonly used fuel for generating electricity in the nation and around the world, and the largest source of carbon dioxide emissions said to contribute to climate change. In the United States, coal-based power plants account for approximately 39 percent of the nation's man-made carbon dioxide output—more than any other sector—and about 33 percent of all greenhouse gas emissions from human activity. Coal accounts for about 80 percent of the power produced by generation and transmission cooperatives and 62 percent of all electric cooperative power requirements nationwide.

coal combustion byproducts (CCBs) Residue, such as bottom ash, fly ash, scrubber sludge, and slag generated by coal-fired power plants. Each year, the U.S. electric utility industry generates about 100 million tons of CCBs. Currently, only about one-third of fly ash (typically used as a Portland cement replacement) and a little more than one-fourth of scrubber sludge (the portion converted into synthetic gypsum) gets recycled for commercially beneficial uses. The remainder, more than 70 million tons per year, ends up in impoundments and landfills.

coal gasification The conversion of coal to a gas.

coal liquefaction The conversion of coal to liquid fuel, generally diesel.

CoBank A Greenwood Village, Colo.-based lender (organized as a cooperative and a member of the \$200 billion-plus Farm Credit System) that provides financing to rural agribusinesses, farm cooperatives, as well as water, electric, and telecommunications cooperatives and companies. Funds to finance CoBank loans come primarily from the sale of Farm Credit System securities to investors in national and international money markets.

cogeneration Producing both electricity and heat from a single source, such as tapping waste heat from an industrial process to generate electricity or using waste heat or steam from electric generation to boost industrial output or for heating purposes. The U.S. Department of Energy Oak Ridge National Laboratory finds that increased deployment of cogeneration could meet close to 20 percent of the nation's power needs by 2030, up from 9 percent presently. Also known as combined heat and power.

combined cycle A method of generating power from waste heat created by one or more combustion turbines. High-pressure, high-temperature exhaust from the turbines can be captured to make steam and power a turbine-generator that produces additional electricity. The process greatly increases generating efficiency at low cost with zero emissions. A form of cogeneration, it's also known as waste-heat recovery.

combustion turbine An engine that typically burns natural gas, occasionally diesel fuel, or a combination of both to produce electricity. Combustion turbines, because of their generally rapid start-up and ramping times, are often used to meet short-term demand peaks.

compact fluorescent lightbulb (CFL) A type of fluorescent lamp designed to replace incandescent lightbulbs. Compared with incandescents delivering the same amount of

visible light, CFLs use 25 percent to 33 percent less energy and boast a longer life. After 2012, retail stores in the United States will stock only CFLs.

congestion costs Expenses that arise from the less-than-optimal dispatch of generation facilities due to transmission constraints.

Congressional Budget Office (CBO) A non-partisan arm of Congress that prepares fiscal estimates on the cost of legislation and federal policy.

conservation The careful and wise use of resources, as well as changes in consumer behavior to save energy. Conservation differs from *energy efficiency* in that behavioral changes center on cutbacks aimed at using less electricity.

construction work in progress (CWIP) A utility regulatory commission term. CWIP is not allowed in the rate base of regulated utilities. However, some agencies, including the Federal Energy Regulatory Commission, treat CWIP on a case-by-case basis.

consumer charge A levy sometimes used to recover fixed costs for serving individual accounts. These costs are recovered through a flat charge, regardless of the amount of energy used.

consumer choice The ability for consumers (investor-owned utilities use the less personal, profit-associated word customers) to select between competing companies for electric generation. Choice works both ways: you don't have to choose a new electric generation supplier and suppliers don't have to choose you.

consumer-member More inclusive wording for all persons (including children) served by an electric cooperative than the more restrictive member or owner (which refer just to the person[s] listed on the account).

cooling tower A structure used to vent steam produced by a nuclear power plant.

cooperative (co-op) A business owned and governed by members who use its services. Democratically controlled and operated on a not-for-profit basis, a cooperative returns any margins to members on the basis of patronage. The modern cooperative movement traces its roots to a store started by 28 weavers and other artisans in the town of Rochdale in northern England in 1844.

Cooperative Benefit Administrators, Inc. (CBA) A wholly owned for-profit subsidiary of NRECA based in Lincoln, Neb., that processes and administers medical, dental, vision, prescription drug, insurance, and disability claims for electric cooperative employees, retirees, dependents, and directors participating in the NRECA Group Benefits Trust. CBA commenced operations on May 29, 1984.

cooperative principles A set of guidelines that govern cooperative operations. These principles were introduced into the United States in 1874 by the National Grange, and formally written down by the International Cooperative Alliance in 1937 (last updated in 1995). The cooperative principles are:

1. Open and Voluntary Membership
2. Democratic Member Control
3. Members' Economic Participation
4. Autonomy and Independence
5. Education, Training, and Information
6. Cooperation Among Cooperatives
7. Concern for Community

Cooperative Research Network (CRN) A division of NRECA that monitors, evaluates, and applies technologies to help electric cooperatives control costs, increase productivity, and enhance service to their consumers. CRN provides studies specifically for electric cooperatives on innovation affecting the utility industry, member service and generation opportunities, creative technical and management approaches, and new products.

Cooperative Response Center (CRC) A nationwide, cooperatively owned and operated 24/7 contact center and software provider that provides various services (primarily to electric cooperatives) including after-hours dispatch, round-the-clock consumer care, and monitoring of security and medical alarm systems. Founded in 1992, CRC operates out of offices in Austin, Minn., and Dunlap, Tenn.

cost-based rate A pricing structure where consumers in each class (residential, commercial, and industrial) pay their fair share of a cooperative's costs so no group subsidizes another.

cost of service The "price tag" of providing a consumer with electricity, excluding generation.

CREBs Clean Renewable Energy Bonds.

credit union A financial cooperative formed by a group of people with a shared field of membership who join together to save money and make loans at the lowest possible cost.

critical-peak pricing A method of setting rates where power costs are much higher during a limited number of hours per year (typically fewer than 80 hours). Consumers are given notice ranging from one day to one hour before a utility implements critical-peak pricing. These rates are generally coupled with time-of-use rates under which the cost for electricity varies according to the time when it's consumed, whether during more expensive peak (usually afternoon) or cheaper off-peak (usually nighttime) demand periods. Higher prices are meant to discourage use at those times.

CRN Cooperative Research Network.

cross-subsidization The practice of charging rates higher than the actual cost of service to one class of consumers so that lower rates can be provided to another class. Also known as cost shifting.

CWIP construction work in progress.

cyberspace A general reference to doing things electronically by computer over the Internet.

cyber security The process of protecting data and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction. Critical infrastructure protection standards issued by the North American Electric Reliability Corporation are designed to defend bulk power systems from “cyber-tage.”

D

day-ahead market The competitive wholesale power market for the following day, or more specifically, the market for wholesale electricity 24 hours in advance of a given time in any day.

debt-to-equity ratio The amount an electric cooperative owes in relation to the amount it owns.

declining block rate A pricing structure where a consumer pays less for electricity as use increases beyond one or more fixed kilowatt-hour amounts during a specific billing period.

degree-day A measurement of how much the average daily temperature varies from a standard reference temperature; employed to estimate heating and cooling requirements for a home or building. Use with a hyphen.

demand The amount of electricity drawn from an electric system at a given time, measured in kilowatts.

demand response Programs or mechanisms that reduce electricity consumption in response to market signals or other incentives. Demand response includes direct load control, time-of-use rates, interruptible contracts, utility dispatch of consumer-owned generation, and other initiatives.

demand-side management A utility program aimed at reducing total consumer use of electricity through conservation or efficiency measures, or shaving peak demand through use of demand-response measures. Most often referred to by electric cooperatives as load management.

deregulation Major reduction of government oversight of private industry. To better describe legislative and regulatory initiatives aimed at allowing retail electric consumers to choose between competing electric generation suppliers, use restructuring, as many aspects of utility regulation still remain.

digger-derrick A type electric utility line truck that digs holes and sets poles.

direct access The ability of a retail consumer to purchase electricity directly from the competitive power market rather than through his or her local distribution utility.

disaggregation Separating a vertically integrated utility into smaller, individually operated distribution, transmission, and generation divisions.

distributed generation Decentralized generation technologies designed to supplement or replace power produced by large generating plants. In most cases, distributed generation is located at or near the point of use. Distributed generation provides electric cooperatives with an option when electricity use spikes—a consumer can switch to his or her backup

power supply and ease strain on the grid. In return, the consumer usually receives a special electric rate. Also called on-site generation, dispersed generation or distributed energy.

distributed resources Decentralized energy sources including distributed generation, local energy storage, and demand-response resources.

distribution cooperative An electric cooperative that operates a distribution system, purchases wholesale power, and delivers it to consumers.

distribution system Poles, wire, substations, and transformers used to deliver electric energy to consumers.

DOE U.S. Department of Energy.

E

ECBA Electric Cooperative Bar Association.

Edison Electric Institute (EEI) The Washington, D.C.-based trade association of investor-owned utilities and electric utility holding companies. Organized in 1933.

EERE U.S. Department of Energy Office of Energy Efficiency and Renewable Energy.

efficiency A ratio of the work or energy output over the amount of energy input.

EIA U.S. Energy Information Administration.

85/15 An Internal Revenue Service requirement under which an electric cooperative loses its tax-exempt status for the year when more than 15 percent of its revenue comes from non-member sources. The restriction can crimp the ability of electric cooperatives to compete in a restructured electricity marketplace.

EIS environmental impact statement.

ELCON Electricity Consumers Resource Council.

electric and magnetic fields (EMF) Radiation surrounding power lines; present wherever electric power is being used. Already plural, so do not use EMFs.

electric cooperative A not-for-profit utility owned by those (members) who use its services. Electric cooperatives generate and purchase wholesale power, own or arrange for the transmission of that power, distribute power, and aggregate power purchases for consumers.

Electric Cooperative Alumni Club An organization of former electric cooperative employees, chief executives, and directors that assists NRECA with co-op political activism and concern-for-community efforts

Electric Cooperative Bar Association (ECBA) An NRECA professional network formed in 2001 that allows more than 600 electric cooperative attorneys to share advice and expertise.

Electric Power Research Institute (EPRI) A non-profit research consortium made up of electric utilities, including electric cooperatives, headquartered in Palo Alto, Calif.

Electricity Consumers Resource Council (ELCON) A Washington, D.C.-based association of large industries formed in 1976 that advocates for policies promoting electric competition and consumer choice.

electricity theft The unlawful and dangerous practice of interfering with the operation of a meter or jumping power to another facility to lower or avoid paying electric bills. Also known as theft of service or meter tampering.

electronic meter reading A system that uses a handheld computer to record and store electric use information from consumers' meters and then transmits that information to a central computer for billing purposes.

EMF electric and magnetic fields.

eminent domain The power of a government body to condemn private property for public use after paying the property owner "just compensation." Sometimes used as a last resort by electric utilities in constructing power lines.

energy The capacity for doing work; may be natural or manufactured. In an electrical context, the use of power, measured in kilowatt-hours.

energy audit An analysis of residential, commercial, or industrial buildings that shows consumers how to save money on their electric bills by making energy efficiency-related improvements.

energy efficiency Using less energy to perform the same or additional functions. Energy efficiency measures—a real resource that can be measured and verified—help electric cooperatives temporarily head off the need to build new generation while curbing greenhouse gas emissions. In general, the biggest payoff for electric cooperatives comes from consumers implementing recommendations of energy audits and switching to more energy-efficient geothermal and air-source heat pumps, lighting, and appliances combined with improved power plant operating efficiencies and expansion of load management programs. Energy efficiency differs from conservation in that it involves doing more with less electricity.

energy efficiency rating (EER) A measure of how efficiently an appliance uses energy.

Energy Policy Act of 1992 A federal law that opened up the wholesale power market to competition. It gave the Federal Energy Regulatory Commission authority to order transmission-owning utilities to provide interstate transmission service to other utilities, federal power marketing agencies, and independent power marketers for wholesale transactions.

Energy Policy Act of 2005 A federal law that provided tax incentives and loan guarantees for all types of energy production and conservation. Among other things the measure exempted all electric cooperatives with annual electricity sales of less than 4 million MWh from Federal Energy Regulatory Commission jurisdiction; placed into law FERC's regulatory exemption for electric cooperatives that borrow from the Rural Utilities Service; authorized Clean Renewable Energy Bonds to assist electric cooperatives in financing "green power" projects; and removed from 85/15 calculations electric cooperative earnings from nuclear decommissioning trust funds, income received from providing open transmission access, and (for the first seven years of consumer choice) revenue collected from non-members being served to offset load lost under retail competition

Energy Resources Conservation loan Low-interest financing provided by some electric cooperatives to consumers for energy-saving home improvements and energy-efficient electric heating and cooling systems. Funding for ERC loans (which can't exceed seven years in length) comes from deferred principal payments on a portion of debt owed to the federal Rural Utilities Service. Under the 2008 Farm Bill, ERC loans can be used for home energy audits as well.

Energy Star An international standard for energy-efficient consumer products. First created by the U.S. Environmental Protection Agency in 1992, it has since been adopted by Australia, Canada, Japan, New Zealand, Taiwan, and the European Union. Devices

carrying the Energy Star logo, such as computers, kitchen and household appliances, and homes, use 20 percent to 30 percent less energy on average than comparable products.

environmental impact statement (EIS) A report required by many state and federal regulators that outlines the likely environmental consequences of building and operating large-scale facilities such as power plants.

EPA U.S. Environmental Protection Agency.

EPRI Electric Power Research Institute.

EPRI Prism A comprehensive set of recommendations in eight technology areas made by the Electric Power Research Institute that, if adopted nationally, would allow the electric utility industry to slow, halt, and eventually decrease carbon dioxide emissions to 2005 levels by 2030 while still meeting demand for affordable, reliable electricity. Failure to maximize any of the eight technologies in the “full portfolio” will dramatically jack up the cost of achieving climate change goals. The eight components are: boosting end-use energy efficiency, decreasing transmission and distribution system line losses, improving the operating efficiency of fossil fuel-fired power plants, investing in renewable energy, expanding nuclear power capacity, capturing and storing carbon produced by coal-fired power plants, deploying electrotechnologies, like arc furnaces, for industrial and commercial use, and putting plug-in hybrid electric vehicles on the road. The EPRI Prism analysis, first released in 2007, undergoes periodic revision reflecting energy technology advances and policy developments.

equity The monetary value of a property or business that exceeds the claims and/or liens against it by others. In an electric cooperative, equity represents the value of member ownership.

EV electric vehicle.

externality Hidden costs of an energy source or costs not covered in the price of fuel, such as expenses derived from cleaning up acid rain.

F

FASB Financial Accounting Standards Board.

Federal Energy Regulatory Commission (FERC) A federal agency formed in 1977 with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, and oil pipeline rates. FERC also reviews and authorizes liquefied natural gas terminals, interstate natural gas pipelines, and non-federal hydropower projects. Part of the U.S. Department of Energy, but functions independently. FERC replaced the Federal Power Commission.

Federal Financing Bank (FFB) An arm of the U.S. Treasury created on December 29, 1973, to coordinate the borrowing of federal agencies, such as the Rural Utilities Service, that provide loan guarantees. RUS's predecessor agency, the Rural Electrification Administration, signed a loan commitment agreement with FFB on August 14, 1974.

Federal Power Commission A body created in 1920 to better coordinate federal hydropower development among cabinet-level departments. It was transformed into an independent regulatory agency in 1935. Predecessor to the Federal Energy Regulatory Commission.

federated cooperative A cooperative composed of smaller cooperatives.

Federated Rural Electric Insurance Exchange The Lenexa, Kan.-based company that provides property and casualty insurance to electric cooperatives in 40 states. Formed as a stock-owned company in 1959, it became a reciprocal exchange in October 1999.

feed-in tariff A concept promoted by green power advocates that requires utilities to enter into long-term purchased power agreements with renewable energy producers at a price high enough to make the generation projects profitable—but not at a price reasonable for consumers. Feed-in tariffs, commonly used in Europe, can lead to the installation of inefficiently sized and poorly located systems, create operational challenges, and increase costs for consumers.

FERC Federal Energy Regulatory Commission.

FFB Federal Financing Bank.

Financial Accounting Standards Board (FASB) A Norwalk, Conn.-based independent organization recognized as the accounting profession's chief rulemaking body. Auditors, industry, government, and professional associations frequently submit topics to FASB to clarify various accounting issues. After a hearing and comment period, FASB may issue a new "Statement of Financial Accounting Standards." These statements affect accounting requirements for virtually all businesses that must issue financial reports.

financial transmission rights (FTRs) Hedging instruments that allow transmission customers to protect themselves against the risk of cost increases when receiving electricity across congested transmission lines. A necessary tool in centralized wholesale power markets, where transmission users pay market prices to move energy from one point on the system to another.

Finding of No Significant Impact statement (FONSI) A document from the federal Rural Utilities Service stating that a given project will have no significant impact on environmental, cultural, historical, or archeological resources of the area affected; necessary before a project funded by RUS can proceed.

firm energy Electricity guaranteed by a power supplier to be available at all times.

fixed costs Expenses that stay the same regardless of other factors or the level of sales. A distribution cooperative's fixed costs would include rent, utilities, taxes, and depreciation on buildings.

Florida Reliability Coordinating Council One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

fluidized-bed combustion A method of burning coal to achieve lower emissions that combines coal with limestone or similar material in a suspension that moves up through a boiler.

fly ash Tiny, talcum-like solids that escape in flue gas from a coal-fired boiler; removed by pollution-control equipment.

forced outage The period of time during which a power plant is scheduled to operate but cannot because of breakdowns or other unforeseen circumstances.

fossil fuel Hydrocarbons such as coal, oil, or natural gas found within the top layer of Earth's crust and used to produce heat or power; also called conventional fuels.

franchise A license granted by a government entity giving a utility the right to serve consumers in a particular area.

fuel adjustment clause A correction or modification on a consumer's monthly electric bill caused by an increase or decrease in the cost of an electric utility's fuel supply. This adjustment eliminates the need for a new rate approval each time fuel costs change. Also called a power cost adjustment.

fuel cells Devices similar to batteries that convert the chemical energy of fuels, such as hydrogen and natural gas, directly into electricity.

fusion power The result of a reaction where two light atoms, such as hydrogen, fuse together to form a heavier atom, such as helium. In the process, some of the hydrogen mass gets converted into energy. Nuclear fusion occurs naturally in stars. Artificial fusion in a sustainable uncontrolled chain has also been achieved (the hydrogen bomb). Research into controlled fusion for producing electricity has been accompanied by extreme scientific and technological difficulties, resulting in slow progress over the past 50-plus years.

G

GAO Government Accountability Office.

G&T generation and transmission cooperative.

generation The production of electricity using fuels such as coal, natural gas, oil, and uranium or from renewable sources such as biomass, geothermal, hydro, hydrokinetic (ocean wave and tidal), solar, or wind.

generation and transmission cooperative (G&T) A wholesale power supply cooperative owned by a group of electric distribution cooperatives and sometimes other entities (like municipal electric systems). G&Ts produce power and/or purchase it from a variety of sources. G&Ts generate 5 percent of the nation's electricity and own 160 generating units producing 38,604 MW. G&T-owned power plants produce 57 percent of the electricity supplied by member electric distribution cooperatives to consumers; overall, G&T facilities account for 45 percent of the total power sold by all electric cooperatives.

geothermal power Electricity produced using natural heat contained in rocks, hot water, and steam below Earth's surface.

gigawatt (GW) A measure of electric capacity equal to 1 billion W, 1 million kW, or 1,000 MW.

global positioning system (GPS) A satellite-based navigation network made up of 24 satellites placed into orbit by the U.S. Department of Defense. GPS was originally intended for military applications, but in the late 1980s the government began making it available for civilian use. GPS works in all weather conditions, anywhere in the world (except parking garages and tunnels), 24 hours a day.

global warming A gradual warming of Earth's atmosphere thought by some to be caused by increased concentrations of water vapor and gases like carbon dioxide. Human activities such as the burning of fossil fuels increase concentrations of these "greenhouse gases," which absorb outgoing radiation and trap heat closer to the ground.

Government Accountability Office (GAO) A non-partisan congressional watchdog agency that audits federal programs.

GPS global positioning system.

greenhouse effect A climate change phenomenon caused by the trapping of heat due to a buildup of water vapor, carbon dioxide, methane, and other gases in Earth's atmosphere.

greenhouse gases Carbon dioxide and five other gases—methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—that when emitted into the air contribute to the warming of Earth's atmosphere.

grid A network of interconnected high-voltage transmission lines and power generating facilities that allows utilities and other suppliers to share resources on a regional basis. The North American Electric Reliability Corporation oversees reliability of the electric grid covering the United States, most of Canada, and the Mexican state of Baja California

Norte. The nation's electric grid consists of three main sections: the Eastern Interconnection, which extends from the foot of the Rocky Mountains to the Atlantic seaboard, excluding most of Texas; the Western Interconnection, which runs from the Rocky Mountains to the Pacific coast; and the Texas Interconnection, which covers most of Texas. Also, any network of interconnected electric facilities, including a distribution system.

guaranteed loan A loan that a third party agrees to repay if the borrower defaults; the federal Rural Utilities Service has historically acted as the third party for electric cooperative borrowers.

Guaranteed Underwriter Program For electric cooperatives that no longer borrow from the federal Rural Utilities Service, loans carrying an RUS guarantee can be made through private “qualified lenders” (either the National Rural Utilities Cooperative Finance Corporation or CoBank), which obtain funds from the Federal Financing Bank—an arm of the U.S. Treasury that coordinates the borrowing of federal agencies providing loan guarantees. The government guarantee allows qualified lenders to raise money at a reduced rate compared to what can be obtained from capital markets. For the privilege of borrowing from FFB, qualified lenders pay a 30-basis-points (three-tenths of 1 percent) fee twice a year for as long as a loan remains outstanding. Those fees then flow into the federal Rural Economic Development Loan and Grant Program to provide additional funding for rural businesses expansion and job creation.

GW gigawatt.

H

hardship loans A federal Rural Utilities Service insured loan program available to electric distribution cooperatives that have electric rates at least 20 percent above the average for all utilities in their state and serve consumers with average household

incomes below the statewide average, or that have suffered a natural disaster. Hardship loans are made on a first-come, first-served basis at 5 percent interest and can be used for distribution, subtransmission, and headquarters (service and warehouse facility) purposes.

heat exchanger A device designed to transfer heat between two physically separated fluids or mediums of different temperatures.

heat pump An appliance that provides both heating and cooling by moving heat into or out of a structure. Geothermal heat pumps, also called ground-source heat pumps, come in two types: a groundwater (open-loop) heat pump uses well water; an earth-coupled (closed-loop) model moves a water and antifreeze solution through underground pipes to disperse heat. An air-source heat pump uses air to transfer heat.

heat sink A medium—such as water or earth—that receives heat released from a heat pump.

high voltage Voltage in a power line greater than the 120 V to 240 V used in most residences.

holding company A corporate entity that partly or completely controls another company. Throughout the 1920s, electric utility holding companies bought smaller utilities, and while the smaller utilities were subject to state regulation in many cases, holding companies were not. As a result, holding companies could issue new stock and bonds without state oversight, and their pyramid structure allowed them to inflate the value of utility securities. Consolidation of utilities continued until, by the early 1930s, 10 holding companies controlled 75 percent of all electric power production in the United States. Abuses led to passage in 1935 of the federal Public Utility Holding Company Act (PUHCA). The 1935 law was repealed in the federal Energy Policy Act of 2005, although some of its consumer protections were retained in a revised PUHCA of 2005 thanks to electric cooperative efforts.

horsepower (hp) A measure of power equal to 746 W.

hours-of-service rules Regulations issued by the Federal Motor Carrier Safety Administration designed to prevent accidents caused by fatigued long-haul truck and bus drivers. The restrictions, which took effect in January 2004, limit the time commercial interstate fleet operators can spend behind the wheel each day and each week and establish a minimum rest period between shifts. State regulations apply for intrastate driving. Electric cooperatives were initially lumped in the rules because line trucks sometimes exceed 10,000 lbs. gross weight, not because of any safety concerns. However, compliance threatened to increase costs for cooperatives in performing routine line maintenance, slow down line crews trying to restore power after localized heavy storms, and severely hamper out-of-state mutual assistance efforts. A permanent exemption for utility truck operators was included in the massive federal highway bill enacted in 2005.

HVAC Short for heating, ventilation, and air conditioning systems, as used in building design and construction.

hydroelectric plant A facility that produces electric energy from flowing water. Some hydroelectric plants generate power by releasing water from a reservoir to drive turbine-generators. Run-of-river facilities use the natural energy of moving water from undammed waterways.

hydroelectric power A renewable baseload source of electric generation created by flowing water. Since large hydroelectric power plants can ramp up from nothing to maximum output in just a few minutes without the need for an external power source, they have long been relied upon to restart electric grids after a blackout.

hydrokinetic power Generation produced by the action of waves or tides.

hydropower Short for hydroelectric power. Hydropower accounts for less than 1 percent of the electricity produced by generation and transmission cooperatives but about 10 percent of electric cooperative power requirements nationwide.

I

IEEE A Piscataway, N.J.-based non-profit professional organization dedicated to the advancement of electricity-related technology. A leader in standards-making, it publishes the *National Electrical Safety Code*. IEEE was formerly used as an acronym for the Institute of Electrical and Electronics Engineers before becoming the group's formal name.

incentive rate A discount used to attract economic development or encourage consumption of electricity during periods of low power use.

independent power producer (IPP) An entity other than a utility that generates wholesale power.

independent system operator (ISO) An independent organization responsible for providing non-discriminatory transmission services for one or more transmission owners while maintaining reliability. ISOs typically perform similar functions as regional transmission organizations (RTOs) but have somewhat less authority and typically cover smaller geographic areas. Both ISOs and RTOs are subject to Federal Energy Regulatory Commission jurisdiction

industrial rate A special pricing structure created for industrial consumers.

insured loans Financing offered by the federal Rural Utilities Service that chiefly benefits electric distribution cooperatives.

integrated gasification combined cycle (IGCC) A power generation system that converts coal into a clean-burning gas stripped of sulfur compounds and mercury, then burns it to generate electricity.

integrated resource planning (IRP) A process through which an electric utility, after evaluating ways to meet future power requirements, selects a mix of generation and demand-side management options that minimizes costs to consumers while meeting reliability and other objectives.

intermittency A major reliability challenge associated with wind power, solar power, and hydrokinetic (ocean wave and tidal) power. Even with good location and plenty of breezes, wind generation averages only about 20 percent to 40 percent capacity factor and seldom blows on the days when power is needed most; wind's coincident capacity averages only 2 percent to 15 percent depending on location. Solar power systems, for their part, operate only during daylight hours and are affected by cloud cover. Some concentrating solar power systems can reduce intermittency by storing heat in a molten salt compound.

Internet A global system of interconnected computer networks that interchange data. Developed originally for the U.S. military but later extended to government, academic, and research institutions in the 1970s and to commercial use in 1988. While often used interchangeably with the term World Wide Web, the two are not one and the same: the World Wide Web is one of the services communicated via the Internet.

Internet Protocol (IP) A set of rules for processing packets of information sent between computers connected to the Internet. Each computer has at least one IP address, which acts like a telephone number for talking to that computer.

interruptible rate A pricing structure where consumers, mostly large commercial and industrial accounts, pay a lower rate for electricity in exchange for giving a utility the right to cut off service temporarily during periods of high demand.

investment tax credit (ITC) A federal tax incentive available to homeowners, businesses, and investor-owned utilities to encourage solar power deployment. The federal Emergency Economic Stabilization Act of 2008 extended the 30 percent ITC for both residential and commercial solar installations for eight years. The ITC helps lower the cost of power from solar projects to a level competitive with convention fuels, like coal or natural gas. Electric cooperatives are not eligible for the ITC, but can use Clean Renewable Energy Bonds for the same purpose. Spell out on first reference.

investor-owned utility (IOU) A stockholder-owned power company that generates, transmits, and distributes electric energy for a profit.

IOU investor-owned utility.

IPP independent power producer.

IRP integrated resource planning.

ISO independent system operator.

ITC investment tax credit.

J

journeyman lineman An electric utility employee who has completed apprenticeship training and learned the trade for working on power lines.

K

key account Any load deemed vital to the financial well-being of an electric cooperative, usually a large business or industry.

kilovolt (kV) Equal to 1,000 V. Used to measure the amount of electric force carried through a high-voltage transmission line.

kilowatt (kW) The basic unit of electric demand, equal to 1,000 W. A measure of both a utility's capacity and a consumer's demand or load.

kilowatt-hour (kWh) A unit of energy or work equal to 1,000 Wh. The basic measure of electric energy generation or use. A 100-W lightbulb burning for 10 hours uses 1 kWh.

L

Leadership in Energy and Environmental Design (LEED) A program of the Washington, D.C.-based U.S. Green Building Council that recognizes the overall sustainability of properties by awarding points for just about any feature imaginable, from bike racks and rainwater collection systems to energy-efficient lighting and low-flow plumbing fixtures. LEED uses different tiers of certification such as Silver, Gold, or Platinum tailored for new buildings, existing buildings, and tenant buildouts.

least-cost planning Efforts undertaken by utilities and regulators to meet growing power needs without building new generating plants. Methods include buying power from other utilities, making maximum use of transmission grids, and developing energy efficiency and load management programs.

LED light-emitting diode.

LEED Leadership in Energy and Environmental Design.

license plate rate A regional transmission pricing structure under which costs are based on the transmission system where a transaction originates; similar to the way residents pay to license a car in their home state, but can drive anywhere.

lien accommodation A financing adjustment that occurs when an electric cooperative, which has borrowed from the federal Rural Utilities Service in the past, uses another lender. The new lender will require a lien on any assets it finances, but the existing RUS mortgage supersedes other liens. To enable the new lender to obtain a first lien on the specific assets it is bankrolling, RUS must grant a lien accommodation that places the agency in a subordinated position.

light-emitting diode (LED) An electronic component that emits light when an electrical current is applied in the forward direction of the units. Widely used for indicator lights and digital readouts on appliances and increasingly in higher power applications such as flashlights, traffic signals, and area lighting.

lignite A low-sulfur, low-energy coal found primarily in the upper Great Plains.

LIHEAP Low Income Home Energy Assistance Program.

line loss Electric energy lost in the process of distributing or transmitting it over power lines.

liquefied natural gas (LNG) Methane that has been cooled and liquefied for easier long-distance transport. Most LNG used in the United States comes from countries like Algeria, Egypt, Nigeria, and Qatar. Double-hulled tanker ships bring the resource to specially designed terminals dotting the U.S. coastline. Once unloaded, the liquid gets transferred by pressurized, heavily insulated trucks to storage facilities, or heaters at the docks warm LNG into its natural state for pumping into a pipeline.

LMP locational marginal pricing.

LNG liquefied natural gas.

load The amount of electric power drawn at a specific time from an electric system, or the total power drawn from the system.

load curve A graph plotting a utility system's use of electricity over a period of time.

load factor The ratio of average demand to peak demand; a measure of efficiency that indicates whether a utility system's electrical use over a period of time remains reasonably stable or if it exhibits extreme peaks and valleys. A high load factor usually results in a lower average price per kilowatt-hour than a low load factor.

load forecasting Predicting a utility system's load and kilowatt-hour sales growth.

load management An energy efficiency initiative whereby an electric utility reduces power consumption—and keeps the lid on wholesale generation costs—by controlling when electricity gets used. On the residential side, utilities interrupt electric service to water heaters, air conditioners, electric thermal storage units, and other specialized appliances in the homes of volunteer consumers. On the commercial and industrial (C&I) side, service gets cut off to irrigation pumps, manufacturing equipment, and even entire businesses, some of whom have installed backup generation. In most cases, control takes place for a brief period (typically just a few hours) during times of peak demand. Electric cooperatives with load management programs normally offer rate incentives, such as a rebate on electric bills (for residential consumers) to interruptible rates (for C&I consumers). Also called demand response, demand-side management, or peak load shifting/shaping. As of 2008, electric cooperatives could control 6 percent of their peak load through load management.

locational marginal pricing (LMP) A market-based approach used to manage the efficient use of generation when transmission congestion occurs. LMP revolves around

the idea that the price of any commodity should be based on the cost of bringing the last unit of that commodity—the one that balances supply and demand—to market. In centralized wholesale power markets, LMP prices are established by the last power station to come on-line to meet demand at any particular location on the grid. LMP prices rise when transmission congestion prevents lower-cost generation outside a local area from being imported to meet load requirements, forcing higher-cost resources (generally the most expensive and least efficient peaking plants) within the load pocket to be dispatched.

loop tariff A pricing structure under which an electric cooperative installs, and then owns and maintains, residential geothermal loops for ground-source heat pump systems.

loop transmission An electric distribution system that allows consumers to receive electricity from more than one direction, providing backup in case of an outage.

loss control Safety programs aimed at preventing or limiting financial and personnel loss from accidents.

Low Income Home Energy Assistance Program (LIHEAP) A federal welfare program created in 1981 that offers financial support to eligible low-income households for paying home heating or cooling bills. Each state, territory, and tribal government receives LIHEAP funds as a block grant from the U.S. Department of Health and Human Services Administration for Children & Families and then operates individual programs. Applicants for LIHEAP cash grants and crisis payments must have an annual household income of less than 150 percent of the federal poverty level or 75 percent of state median income, whichever is greater; some states provide supplemental appropriations to expand coverage. LIHEAP provides a critical safety net for struggling electric cooperative consumers since rural communities have limited access to alternative energy assistance sources, like private fuel funds used in many large cities.

M

man at the end of the line A phrase of unknown origin that has become a mantra or creed embodying the spirit of rural electrification: extending power to the last homestead in the farthest reaches of the last hollow in rural America. It's estimated that up to 10 percent of all electric cooperative consumers actually live at the end of a distribution line.

margin The difference between a cooperative's income and its expenses; returned to members in the form of capital credits as the cooperative's financial status permits.

marginal-cost pricing A method of establishing the selling price of a commodity based on production costs of the last, most expensive unit sold.

market-based rate Price for generation based solely on what can be obtained in an open marketplace. This differs from cost-of-service rates, which are tied to the cost of construction and operation of facilities necessary to produce electricity.

market power The ability of a company to raise and maintain prices (and generate profits) above competitive levels for a significant period of time.

means testing The practice of limiting loans to borrowers with special eligibility criteria. For electric cooperatives, means testing was attached to the awarding of federal Rural Utilities Service hardship insured loans under the Rural Electrification Loan Restructuring Act of 1993. The Bush Administration, as part of its 2004 and subsequent federal budget blueprints, proposed additional means testing on all RUS electric loans, such as limiting them to "genuine rural areas with persistent poverty rates."

megawatt (MW) Equal to 1,000 kW or 1 million W. A measure of both a utility's capacity and a consumer's demand or load.

megawatt-hour (MWh) Equal to 1,000 kWh or 1 million Wh.

member The actual person(s) listed on an account who receive service from an electric cooperative. In most cases, the number of members served by a cooperative differs from the total number of consumers served (not all consumers are members, as some are children, etc.) or the number of meters served (since some accounts have more than one meter).

merchant plant A generation facility built to produce electricity as a commodity and that has not committed its full output to a specific customer or customers under long-term contracts.

metal theft The unlawful and (in the case of copper wire used for electric service) dangerous practice of stealing items made of metal and selling them for scrap. The most common products affected are those made of copper, aluminum, brass, and bronze. Metal theft increased significantly from 2003 to mid-2008 due to record-high world metal prices.

meter A device used to measure and record the amount of electricity used by a consumer. Newer models also communicate readings and other data with a utility.

microhydro Small hydroelectric plants that typically produce no more than 100 kW of power.

Midwest Independent System Operator (MISO) A Carmel, Ind.-headquartered regional transmission organization that coordinates roughly 130,000 MW, or 13 percent, of the nation's generating capacity, across all or parts of 15 states and the Canadian province of Manitoba.

Midwest Reliability Organization One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

mill One-tenth of a cent. Used as a measure of electric energy bought and sold.

MISO Midwest Independent System Operator.

modified debt service coverage (MDSC) A ratio that measures a borrower's ability to repay a loan. It's calculated by totaling interest on long-term debt, depreciation and amortization expenses, operating margins, interest earned, and cash received as generation and transmission or other capital credits and dividing that figure by total long-term debt exposure. The National Rural Utilities Cooperative Finance Corporation requires electric cooperative borrowers to maintain a minimum MDSC of 1.35.

MultiSpeak® Initiative A collaboration between NRECA and vendors, consultants, and electric utilities aimed at developing standard interfaces between commonly used (primarily distribution system) software applications and automation tools. Launched in October 1999, MultiSpeak essentially allows meters, consumer databases, and utility equipment to “talk” to each other without expensive custom programming, helping boost system efficiency and service reliability. Today, MultiSpeak specifications are used by 50 vendors and more than 300 electric cooperatives, along with a growing number of municipal electric systems, five investor-owned utilities and four foreign power companies.

municipal electric system An electric distribution utility owned by a city, borough, or other incorporated community.

municipal rate loans A federal Rural Utilities Service insured loan program available to electric distribution cooperatives with interest set at the current market yield on municipal bonds. Funds can be used for distribution, subtransmission, and headquarters (service and warehouse facility) purposes.

MW megawatt.

MWh megawatt-hour.

N

NAAQS National Ambient Air Quality Standards.

NARUC National Association of Regulatory Utility Commissioners.

National Ambient Air Quality Standards (NAAQS) Levels of pollutants that can be present in the atmosphere without endangering public health and welfare; established by the U.S. Environmental Protection Agency.

National Association of Regulatory Utility Commissioners (NARUC) A professional trade association, headquartered in Washington, D.C., composed of members of state and federal regulatory bodies that have authority over public utilities.

National Cooperative Services Corporation (NCSC) A subsidiary of Herndon, Va.-based National Rural Utilities Cooperative Finance Corporation (CFC) created on January 26, 1981, to help co-ops reduce the cost of new generating facilities through tax-advantaged financing (such as leveraged leases) available at the time. Today, NCSC offers services that CFC can't, such as financing for-profit electric cooperative ventures, loans to cooperative consumers for home energy efficiency improvements, and acquisitions of investor-owned utility service territories.

National Information Solutions Cooperative (NISC) A Lake Saint Louis, Mo.-based information technology provider that develops and supports software and hardware applications primarily for electric cooperatives and rural telecommunications carriers.

National Renewables Cooperative Organization (NRCO) An organization founded in 2008 to assist electric cooperatives in gaining access to power generated from renewable

resources. Any NRECA member cooperative—such as generation and transmission cooperatives, unaffiliated electric distribution cooperatives, public utility districts, and partial-requirements cooperatives with the legal ability to purchase wholesale electricity—can join NRCO.

National Rural Electric Cooperative Association (NRECA) The Arlington, Va.-based national service organization representing more than 900 consumer-owned, not-for-profit electric cooperatives, public power districts, and public utility districts in the United States. NRECA oversees cooperative employee benefits plans; carries out federal government relations activities like lobbying; conducts management and director training; and spearheads communications, advocacy, and public relations initiatives. In addition, it coordinates national and regional conferences and seminars; offers member cooperatives advice on tax, legal, environmental, and engineering matters; and performs economic and technical research. Incorporated in the District of Columbia on March 19, 1942.

National Rural Telecommunications Cooperative (NRTC) The Herndon, Va.-based organization representing the advanced telecommunications and information technology interests of more than 1,400 electric cooperatives, telephone cooperatives, and affiliates in 47 states. NRTC offers products developed specifically to meet the needs of rural consumers, such as WildBlue satellite high-speed Internet service, DIRECTV digital satellite television programming, automated meter reading, long-distance and mobile phone programs, and Internet Protocol television. Incorporated on August 6, 1986.

National Rural Utilities Cooperative Finance Corporation (CFC) The Herndon, Va.-based premier private market lender to the nation's electric cooperatives. Incorporated on April 10, 1969, it lists more than \$20 billion in loans and loan guarantees.

National Telephone Cooperative Association (NTCA) The Arlington, Va.-based service organization representing about 450 telephone cooperatives and other independent telephone companies across the United States.

National Utility Training & Safety Education Association (NUTSEA) An organization whose primary activities involve job training, safety education, and Rural Electric Safety Accreditation Program administration for electric cooperatives and related organizations. Originally formed in the early 1940s as the Rural Electric Association Safety and Job Training Instructors, the name was changed in 1976.

natural gas A gaseous fossil fuel consisting primarily of methane but including significant quantities of ethane, propane, butane, and pentane used for electric generation, heating, cooking, and public transportation. Natural gas, most commonly used as a fuel for peaking plants rather than baseload generation, accounts for about 7 percent of the power produced by generation and transmission cooperatives and 11 percent of all electric cooperative power requirements nationwide. Natural gas compressor stations are largest collective load for electric cooperatives nationwide.

NCSC National Cooperative Services Corporation.

net generation The total amount of electricity produced at a power plant less the amount of electricity used by the plant itself.

net metering An incentive where owners of small renewable energy systems receive retail credit for at least a portion of the electricity they generate. In its pure form, a consumer's electric meter will spin backwards whenever he/she uses less power than the renewable energy system produces, effectively banking excess electricity production for future credit.

net utility plant Used to measure the value of security on a loan, it's determined by the total value of a borrower's physical plant plus construction work in progress, minus accumulated provision for depreciation and amortization.

New Source Review (NSR) A provision in the federal Clean Air Act of 1977 that requires installation of expensive, state-of-the-art pollution controls—like scrubbers—when equipment at a coal-fired power plant, refinery, or factory undergoes an upgrade or operational change deemed to be a “major modification.” In contrast, projects considered “routine maintenance, repair, or replacement” are exempt. Electric cooperatives, holding that NSR rules are confusing, arbitrary, and stymie plant improvements, have strongly urged Congress and the U.S. Environmental Protection Agency to clarify the matter. In reauthorizing the Clean Air Act in 1990, Congress recognized that power plants have a typical life expectancy of 65 years or more and electric utilities are expected to maintain existing capabilities and reliability of those plants during their useful life without NSR kicking in.

nitrogen oxides Compounds of nitrogen and oxygen formed when fossil fuels burn and a leading contributor to smog and acid rain.

NISC National Information Solutions Cooperative.

non-coincident demand The highest demand for power by a consumer or class of consumers that occurs at a different time than a power supplier’s system peak demand.

non-coincidental peak The sum of two or more utility system load peaks that do not occur at the same time. Meaningful when considering peak loads within a limited period, such as a day, week, month, and a heating or cooling season.

non-firm power Generation or power-producing capacity supplied or available under a commitment carrying limited availability.

non-utility generator A corporation, person, agency, authority, or other entity that owns electric generating capacity and is not defined as a utility under state or federal law. Includes small power producers (such as electric cooperative consumers with renewable energy systems) and independent power producers.

North American Electric Reliability Corporation (NERC) The Princeton, N.J.-based organization charged with overseeing reliability of the electric grid covering the United States, most of Canada, and the Mexican state of Baja California Norte. NERC develops and enforces reliability standards; assesses reliability annually via 10-year and seasonal forecasts; monitors the bulk power system; evaluates users, owners, and operators for preparedness; and educates, trains, and certifies industry personnel. While a self-regulating body, NERC remains subject to oversight by the Federal Energy Regulatory Commission and governmental authorities in Canada.

Northeast Power Coordinating Council One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

NRC Nuclear Regulatory Commission.

NRCO National Renewables Cooperative Organization.

NRECA National Rural Electric Cooperative Association.

NRECA International Foundation A registered charitable 501(c) (3) organization that partners with electric cooperatives in the United States and others to bring power and economic development to rural villages overseas. The Foundation, created in 1985 by NRECA, has provided millions of dollars in funding, supplied donated equipment, and recruited volunteer personnel to share expertise with electric cooperatives in developing countries.

NRECA International, Ltd. A wholly owned subsidiary of NRECA with offices in six countries that designs, constructs, and operates hundreds of rural electric utilities overseas, while training local personnel to own and manage them.

NRECA International Programs A division of NRECA created in November 1962 to combat communist expansion and boost goodwill overseas by helping developing countries (42 to date) provide rural residents with access to safe, reliable, and affordable electricity. These electrification programs have resulted in increased agricultural productivity, millions of new jobs, as well as higher incomes and quality of life for more than 100 million people. Composed of two distinct entities: NRECA International, Ltd. and NRECA International Foundation.

NRTC National Rural Telecommunications Cooperative.

NSR New Source Review.

NTCA National Telephone Cooperative Association.

nuclear fission The energy produced by splitting atoms (such as uranium) in a nuclear reactor.

nuclear fuel reprocessing The chemical separation of spent nuclear fuel into plutonium, reusable uranium, and a small amount of waste products. Fear of nuclear weapons proliferation led the United States to indefinitely suspend the commercial reprocessing and recycling of high-level nuclear waste in 1977 and focus on long-term storage.

nuclear power A method whereby steam, produced from water heated to a boil through nuclear fission, spins a turbine to generate electricity. In nuclear power plants, a reactor contains a core of nuclear fuel, primarily enriched uranium. When uranium atoms are hit by neutrons they fission (split), releasing heat and more neutrons. Under controlled conditions the neutrons keep striking more uranium atoms, creating a self-sustaining chain reaction used to boil water. Nuclear power accounts for about 13 percent of the electricity produced by generation and transmission cooperatives and 15 percent of all electric cooperative power requirements nationwide.

Nuclear Regulatory Commission (NRC) The federal agency responsible for the licensing and safety of nuclear power plants; successor to the Atomic Energy Commission.

Nuclear Waste Fund An account created in the federal Nuclear Waste Policy Act of 1982 to pay for construction of a permanent, central storage repository for high-level radioactive waste. (The law called on the U.S. Department of Energy to begin developing such a facility.) Since 1983, Americans who consume electricity produced by nuclear power plants have paid roughly \$30 billion, including interest, into the Nuclear Waste Fund through a one-tenth of 1 cent per kWh fee. More than \$700 million of the total has come from electric cooperative consumers. With DOE and the Obama administration having decided to shelve construction of a repository, some members of Congress are suggesting money collected through the fund be returned to utilities and ratepayers.

O

Occupational Safety and Health Administration (OSHA) Federal agency that sets standards for safe work places and enforces them through periodic inspections.

ocean wave power A form of hydrokinetic power that converts mechanical energy from the constant rising and falling of ocean waves into electricity. Most ocean wave power systems rely on buoy technology to run a piston that in turn drives a generator.

Office of Management and Budget (OMB) A White House branch that prepares fiscal estimates and budgets.

off-peak power Electricity supplied during periods of low consumption.

off-peak rate A pricing structure where consumers pay special low charges for electricity used during times of low consumption.

offset rate A pricing structure where a cooperative passes along certain charges to consumers.

ohm The amount of resistance overcome by 1 V in causing 1 A to flow. An ohm measures resistance to current flow in electrical circuits.

oil A liquid fossil fuel found in rock formations consisting of a complex mixture of hydrocarbons and other organic compounds. Refined and distilled, it can be turned into a variety of products such as asphalt, diesel fuel, gasoline, heating oil, jet fuel, kerosene, lubricants, paraffin wax, sulfuric acid, tar, and aromatic chemicals. More accurately referred to as petroleum. Oil, primarily diesel fuel, accounts for less than 1 percent of the power produced by generation and transmission cooperatives and around 1 percent of all electric cooperative power requirements nationwide.

OMB White House Office of Management and Budget.

once rural, always rural Lending policy used by the federal Rural Utilities Service under which any electric cooperative borrower is considered eligible for loans despite demographic changes in its service territory. The historic practice was officially written into law as part of the 2008 Farm Bill. Also referred to as once a borrower, always a borrower.

open access Permitting wholesale power suppliers and sellers to move power over the transmission lines of other utilities.

operating expenses Costs needed to generate electricity, such as those associated with running a power plant, maintenance, taxes, and depreciation.

operating income The amount of money remaining to a utility after operating expenses are deducted from operating revenues.

operating reserve Generating capacity available within a short period of time to meet demand in case a power plant goes down or another supply disruption occurs. Most power systems are designed so that, under normal conditions, the operating reserve always matches the capacity of the largest generator plus a fraction of peak load.

operating revenues Money a utility receives from selling goods and services.

Operation Round Up[®] A “members helping members” program where electric cooperative consumers agree to round up their monthly electric bills to the next whole dollar amount. The extra pennies, nickels, dimes, and quarters then flow into a fund managed by individual electric cooperatives and used to assist worthy community organizations as well as fellow members who fall on hard times. Some 250 local electric co-ops nationwide currently run Operation Round Up programs, which have raised more than \$100 million over the years. Developed and launched by Palmetto Electric Cooperative in Hardeeville, S.C., in 1989.

OSHA U.S. Occupational Safety and Health Administration.

Our Energy, Our Future[™] The largest and most aggressive grassroots awareness campaign in electric cooperative history. At its core, the effort seeks to engage more than 42 million electric cooperative consumers in 47 states to discuss with elected officials the complexities associated with providing safe, reliable, and affordable power in an environmentally responsible fashion over coming decades. Launched in late February 2008.

outage Interruption of service to an electric consumer because of malfunctioning power plants, transmission lines, substations, or distribution equipment.

ozone layer A section of the upper atmosphere containing a form of oxygen that screens out ultraviolet radiation. Studies showed this layer was being destroyed by chemicals from aerosol cans and refrigeration units, which were then banned.

P

Pace Act The 1944 federal law that extended the life of the federal Rural Electrification Administration indefinitely beyond its targeted 1946 expiration date on the condition that electric cooperatives adopt area coverage. The measure also set REA loan interest rates at 2 percent and lengthened loan terms to 35 years.

payback A method of calculating how long it will take to recover the additional cost of a more efficient appliance or building material.

PCBs polychlorinated biphenyls.

peak demand The electric utility industry's equivalent of rush-hour traffic when power costs are the highest. It's the greatest demand placed on an electric system, measured in kilowatts or megawatts; also, the time of day or season of the year when that demand occurs.

peak load The amount of electric power required by a consumer or a utility system during times when electric consumption reaches its highest point; measured in kilowatts or megawatts.

peaking plant An electric generating unit, usually burning natural gas or diesel fuel, that operates for a short time during periods of high electricity consumption.

PHEV plug-in hybrid electric vehicle.

photovoltaics (PV) Technology for generating electric power directly from sunlight.

PJM Interconnection (PJM) A Valley Forge, Pa.-headquartered regional transmission organization that coordinates roughly 165,000 MW, or 16 percent, of the nation's generating capacity, in all or parts of 13 Mid-Atlantic and Midwest states and the District of Columbia.

plug-in hybrid electric vehicle (PHEV) Cars or light trucks that rely on the combination of a gasoline or diesel engine and rechargeable lithium-ion batteries for propulsion. Unlike standard hybrid vehicles, where much smaller 1.3-kWh nickel-metal hydride batteries are recharged by the gasoline engine and a regenerative braking system, PHEV batteries (ranging from 9 kWh to 16 kWh and perhaps even larger) are fully recharged only through a regular 110-V outlet.

PMAs Power marketing administrations.

pole attachments Lines and conduits, typically deployed by telephone and cable TV companies, that “piggyback” on electric utility poles and rights-of-way for a fee. Electric cooperatives base pole attachment rates and terms on local costs and conditions, not profit. As a result, the federal Telecommunications Act of 1996 exempts electric cooperatives from Federal Communications Commission pole attachment rate-setting authority.

pole-mount transformer An electric transformer mounted on a utility pole.

pollution control Steps taken to ease any harmful environmental effects resulting from electricity production.

polychlorinated biphenyls (PCBs) Once used as insulation in electric transformers, PCBs were found in the mid-1970s to be toxic and banned.

postage stamp rate A regional transmission pricing structure that establishes a single rate for all users; similar to the way postage is charged in that it costs the same amount to send a letter across the country as it does down the street.

power In the context of electricity, a general term that can include energy (kWh), capacity (kW), or both.

power line A conductor (wire) that carries electricity from a generation source to a supplier or the ultimate consumer.

power marketer Persons or companies that sell wholesale power they generate themselves, purchase from others, or both. Power marketers are required to register with the Federal Energy Regulatory Commission.

power marketing administrations (PMAs) The umbrella term for the federal Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA). PMAs sell power produced at federal hydropower projects, giving first priority to consumer-owned electric cooperatives and publicly owned municipal electric systems, and making power available at the cost of production. More than 600 electric co-ops and 500 municipal electric systems in 33 states, serving 50 million consumers, receive power from a PMA. PMAs sell energy from 134 federal hydropower facilities owned and operated by the U.S. Army Corps of Engineers or the U.S. Department of the Interior Bureau of Reclamation

power pool Two or more utility systems connected to increase reliability and operating efficiencies.

PPD Public power district.

preference principle An antimonopoly measure authorized by Congress that gives publicly owned municipal electric systems (since 1906) and not-for-profit, consumer-owned electric cooperatives (since creation of the Tennessee Valley Authority in 1933) first right, or preference, to purchase hydropower produced at federal dams. Preference provides cooperatives with access to wholesale power at reasonable rates and creates a competitive yardstick for measuring electricity costs.

Price-Anderson Act Federal legislation first passed in 1957 that partially indemnifies nuclear power plant operators against liability claims arising from accidents while still ensuring compensation for the general public. The act was most recently renewed for another 20 years as part of the Energy Policy Act of 2005.

privatization Turning over government or public assets to private interests to be operated for profit.

production tax credit (PTC) A federal tax incentive designed to support the introduction of renewable energy. For-profit companies presently can qualify for a 2.1 cents per kWh production tax credit for installing wind, geothermal, closed-loop biomass (trees grown expressly for electricity production), open-loop biomass (sawdust, tree trimmings, timber slash, wood chips, farm byproducts, animal waste, and landfill gas), small hydro (less than 25 MW), and hydrokinetic (ocean wave and tidal) generation. Production tax credits lower the cost of power from renewable energy projects to a level competitive with convention fuels, like coal or natural gas. Electric cooperatives are not eligible for PTCs but can use Clean Renewable Energy Bonds for the same purpose.

public power district Locally controlled political subdivisions within the state of Nebraska, similar to a county, formed to distribute electricity on a not-for-profit basis across a specified service area. PPDs (some are called rural public power districts, differ from electric cooperatives in that they are not required to retain and return capital credits or hold annual meetings, and directors are elected on the state general election ballot. They have full status as members of NRECA.

public utilities Private, for-profit, and state-regulated businesses that provide an essential commodity or service, such as water, electricity, natural gas, or cable TV. Also, entities selling wholesale power or providing interstate transmission service subject to regulation by the Federal Energy Regulatory Commission.

public utility district A political entity, similar to a school district, formed in Washington, California, and Oregon (where they're called people's utility districts) to distribute electricity on a not-for-profit basis across a specified service area. PUDs differ from electric cooperatives in that they are not required to retain and return capital credits or hold annual meetings, and commissioners (i.e. directors) are elected on the state general election ballot. They have full status as members of NRECA.

Public Utility Holding Company Act (PUHCA) One of the most important consumer protection statutes ever enacted, the original 1935 federal law limited the size (geographic scope) of investor-owned utility holding companies, banned common ownership of electric and natural gas utilities, and curbed self-dealing among utility affiliates while opening up holding company books and records to inspection by the U.S. Securities and Exchange Commission and state regulators. The 1935 law was repealed in the Energy Policy Act of 2005, although some of its consumer protections were retained in a revised PUHCA of 2005 thanks to electric cooperative efforts.

Public Utility Regulatory Policies Act (PURPA) One of five parts of the National Energy Act of 1978 designed to promote greater use of self-generated, mostly "clean and green" energy. PURPA Section 210 created an electricity sales market for non-utility generators, independent power producers (such as industrial cogenerators), or consumers with small-scale renewable generation, by requiring electric utilities to buy power from them at the utility's avoided cost. The Energy Policy Act of 2005 repealed sections of PURPA requiring utilities to buy power from these qualifying facilities if the Federal Energy Regulatory Commission finds they have access to real-time competitive

wholesale power markets. It also revoked requirements that utilities sell power to qualifying facilities in territories with active retail competition.

PUHCA Public Utility Holding Company Act.

purchased power Wholesale power bought through a long-term contract or off the spot market. Purchased power from investor-owned utilities, non-utility generators, power marketers, federal power marketing administrations, state power agencies, and others makes up 55 percent of the electricity supplied by electric cooperatives nationwide; the rest is provided by power plants owned by generation and transmission cooperatives.

PURPA Public Utility Regulatory Policies Act.

PV photovoltaics.

Q

QF qualifying facility.

quad A quadrillion Btus, equal to the energy contained in 8 billion gallons of gasoline—a year’s supply for 10 million cars.

qualified lender For electric cooperatives that no longer borrow from the federal Rural Utilities Service, loans carrying an RUS guarantee can be made through private “qualified lenders” (either the National Rural Utilities Cooperative Finance Corporation or CoBank), which obtain funds from the Federal Financing Bank—an arm of the U.S. Treasury that coordinates the borrowing of federal agencies providing loan guarantees. The government guarantee allows qualified lenders to raise money at a reduced rate compared to what can be obtained from capital markets. For the privilege of borrowing from FFB, qualified lenders pay a 30-basis-points (three-tenths of 1 percent) fee twice a

year for as long as a loan remains outstanding. Those fees then flow into the federal Rural Economic Development Loan and Grant Program to provide additional funding for rural businesses expansion and job creation.

qualifying facility (QF) A distinct class of electricity producers consisting of either renewable generators up to 80 MW in capacity or cogenerators that meet criteria established by the Federal Energy Regulatory Commission. When a generation unit of this type meets Public Utility Regulatory Policies Act and FERC requirements for size and efficiency, local electric utilities are obligated to interconnect, sell backup power to, and purchase the output from the QF at their avoided cost. Under the Energy Policy Act of 2005, utilities no longer have to buy power from QFs if FERC finds they have access to real-time competitive wholesale power markets, or sell power to QFs in territories with active retail competition.

quorum Number of members who must be present for an electric cooperative to legally conduct business. Usually established in a cooperative's *bylaws*.

R

rate The cost per kilowatt-hour for electricity.

rate base The total value of a utility's plants, transmission lines, buildings, and other equipment.

rate of return The percentage of profit a utility earns on an investment in electric facilities; generally, it applies only to regulated investor-owned utilities.

reactor A complex machine that uses boiling water to produce steam, which in turns spins a turbine to generate electricity. Heat for boiling the water comes through the fission, or splitting, of uranium atoms.

real-time pricing A method of setting rates where the retail rate for electricity varies on an hourly or more frequent basis as the price of wholesale power changes.

Red Flags rule A Federal Trade Commission regulation aimed at stemming the tide of identity theft. It required electric cooperatives, like all utilities with “covered accounts,” to implement identity theft prevention programs by November 1, 2008. Enforcement was later delayed until May 1, 2009, and then until August 1, 2009.

REDL&G Rural Economic Development Loan and Grant Program.

regional transmission organization An entity established to ensure non-discriminatory access to transmission systems on a regional basis, perform regional transmission planning, implement and operate competitive wholesale power markets, and improve regional system reliability. The voluntary formation of RTOs was encouraged by the Federal Energy Regulatory Commission under Order 2000 issued on December 20, 1999. RTOs perform similar functions as independent system operators (ISOs) but have expanded authority and cover larger, multi-state geographic areas. Both ISOs and RTOs are subject to FERC jurisdiction.

regulation A governmental order carrying the force of law. Because public utilities, such as stockholder-controlled investor-owned power companies, gain a natural monopoly within a given area, governmental oversight of rates and service becomes necessary to protect consumers from rampant price gouging and shoddy performance. Not-for-profit local electric cooperatives, being consumer-owned and controlled, boast built-in consumer protection. As a result, most states exempt electric cooperatives from utility regulation.

ReliabilityFirst Corporation One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

renewable electricity standard An energy proposal being considered by Congress that would require all electric utilities to obtain 15 percent of their retail power supply from renewable sources, such as wind, solar, biomass, or geothermal, by 2020, and make efficiency gains accounting for another 5 percent. States with few renewable resources could opt for a lower 12 percent RES coupled with an 8 percent boost in energy efficiency. A national RES would likely augment, rather than pre-empt, existing state renewable portfolio standards.

renewable portfolio standards Laws passed by 29 states and the District of Columbia (as of June 2009) that require investor-owned utilities, competitive electric generation suppliers, as well as some municipal electric systems and electric cooperatives to add increasing amounts of “clean and green” electricity to their retail power supply mix (ranging from 10 percent to 30 percent) by a certain date (mostly between 2018 and 2025). Eighteen states call for electric cooperatives to meet RPS mandates.

renewables Sources of energy that are naturally replenishable, including wind, solar, biomass, geothermal, hydro, and hydrokinetic (ocean wave and tidal) power. Non-hydro renewables account for less than 1 percent of the power produced by generation and transmission cooperatives and 1 percent of electric cooperative power requirements nationwide.

reserves Extra generating capacity required to provide for variations in demand, load-forecasting errors, loss of equipment, and area protection.

restructuring Changes made in the electric utility industry to promote competition. Also refers to the reorganization of an electric utility.

right-of-way A strip of land owned by another party on which a utility places poles, wires, substations, and other facilities. Sometimes acquired through eminent domain.

Rochdale Principles A set of business guidelines drawn up by Charles Howarth, one of 28 weavers and other artisans who founded the Rochdale Society of Equitable Pioneers in Rochdale, England, on December 21, 1844. (The tradesmen had banded together to open a store selling food items they could not otherwise afford, starting out with a meager selection of butter, sugar, flour, oatmeal, and a few candles but soon expanding to include tea and tobacco. Eventually, the enterprise was so successful that the group was able to open a cooperative factory and textile mill.) The Rochdale (pronounced Rotch-dale) Principles serve as the basis of the seven cooperative principles used today.

rolling blackouts Controlled power outages designed to lessen the threat of an overload or cascading outage affecting major transmission systems brought on by short supply and high demand for power. Rolling blackouts are scheduled for predetermined sectors of the transmission grid at timed intervals. This spreads the burden of power shortages across an entire region for short, manageable periods (usually no more than a few hours) rather than allowing imbalances to destabilize the grid and cause extended, unplanned blackouts that can jeopardize public safety and damage sensitive equipment.

RPS Renewable portfolio standards.

RTFC Rural Telephone Finance Cooperative.

RTO Regional transmission organization.

Rural Business-Cooperative Service A division of the U.S. Department of Agriculture that oversees the Rural Economic Development Loan and Grant Program.

Rural Economic Development Loan and Grant Program (REDL&G) A federal Rural Business-Cooperative Service offering that uses electric cooperatives as “pass-throughs” to make loans and grants available for rural businesses expansion and job creation. Businesses that receive REDL&G assistance see no real difference between loans and grants—in both cases, local electric cooperatives furnish the funds as a zero-interest loan

with a payback of up to 10 years. Cooperatives, though, guarantee repayment of REDL&G loans to the federal government. With REDL&G grants, electric cooperatives agree to create a revolving loan fund and match 20 percent of the amount. The match and subsequent loan repayments capitalize the revolving fund so it can assist additional local projects. REDL&G has a record of leveraging \$5 in private sector investment for every \$1 provided.

Rural Electrification Act Legislation signed into law by President Franklin D. Roosevelt on May 21, 1936, that provided official status to the federal Rural Electrification Administration as a lending agency for electric cooperatives. An amendment, the Hill-Poage Rural Telephone Act of 1949, authorized REA to make loans to telephone cooperatives as well as existing telephone companies and mutual associations for extending dial-tone phone service to rural areas.

Rural Electrification Administration A U.S. Department of Agriculture agency established by Executive Order 7037 on May 11, 1935, to lend money and provide engineering services to electric and later telephone cooperatives. On October 20, 1994, as part of a department reorganization, REA became the Rural Utilities Service.

Rural Electrification Loan Restructuring Act A law signed on November 1, 1993, that replaced 5 percent federal Rural Electrification Administration insured loans with insured loans carrying interest rates set at the current market yield on municipal bonds. In addition, the measure abolished 2 percent REA hardship insured loans and created a new 5 percent fixed-rate hardship insured loan program. The legislation came after President Bill Clinton announced his intention to “reform” REA in his initial State of the Union address by reducing interest rate subsidies.

Rural Telephone Finance Cooperative (RTFC) A Herndon, Va.-based member-owned, not-for-profit cooperative created in 1987 to lend money to rural telephone and telecommunication systems. Funded by its affiliate, National Rural Utilities Cooperative Finance Corporation.

Rural Utilities Service (RUS) A U.S. Department of Agriculture agency that lends money and offers engineering and accounting assistance to the nation's consumer-owned electric and telephone cooperatives.

RUS guaranteed loans An electric cooperative loan program under which the federal Rural Utilities Service provides a 100 percent government guarantee for distribution, subtransmission, bulk transmission, generation, and headquarters facilities (office, service, and warehouse) loans. For electric cooperatives that borrow from RUS, guaranteed loans are made through the Federal Financing Bank—an arm of the U.S. Treasury—at market interest rates, plus one-eighth of 1 percent. As a result of provisions in the 2008 Farm Bill, RUS guaranteed loans may come directly from the U.S. Treasury. However, RUS guaranteed loans for generation are presently limited to natural gas-fired power plants and renewables since the Bush Administration in 2007 blocked RUS from guaranteeing loans for baseload coal-fired and nuclear power plants (due to taxpayer risk). Electric co-ops tried to overturn that action in the 2008 Farm Bill, but Congress balked at including provisions that would have allowed RUS to impose an up-front fee on coal and nuclear power plant loans as a way to mitigate taxpayer risk.

S

SCADA Supervisory Control and Data Acquisition.

scrubbers Expensive devices that remove up to 95 percent of the sulfur dioxide and some other pollutants from coal-fired power plant smokestack emissions. Most scrubbers work by spraying a slurry of pulverized limestone and water into flue gas. Calcium carbonate in the limestone then reacts with sulfur dioxide to form calcium-sulfur compounds. The newest scrubber technology (forced oxidation) introduces air into the process to convert the resulting scrubber sludge into calcium sulfate (synthetic gypsum).

SEPA Southeastern Power Administration.

SERC Reliability Corporation One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

service area/territory The geographic region that a utility is required to serve, or has the exclusive right to serve, in supplying electricity to the ultimate consumer.

Sister Cooperative Partnership Program An initiative launched in 1963 by NRECA International Programs—a division of NRECA—that allows electric cooperatives in the United States to individually establish relationships with and provide monetary support, equipment, volunteer labor, and management advice to a counterpart in a developing country.

small power producer An entity that generates electricity primarily from a renewable energy system with capacity under 80 MW. As defined by the federal Public Utility Regulatory Policies Act, small power producers can use some fossil fuels as part of their generation but renewables must provide at least 75 percent of the total energy input. Small power producers include homeowners and farmers who self-generate electricity for their own needs from a “backyard” renewable energy facility and sell the surplus back to their local utility.

small utility exemption Legislative requirement that allows electric utilities selling less than a set amount of retail electricity (most often 4 million MWh per year, the definition used by the federal Small Business Administration) to avoid certain regulatory mandates. The federal Energy Policy Act of 2005 exempted utilities, including both electric distribution and generation and transmission cooperatives, with annual electricity sales of less than 4 million MWh from Federal Energy Regulatory Commission jurisdiction. Proposed federal renewable portfolio/electricity standards may include a similar small utility exemption for distribution systems based on retail sales.

smart grid The use of technologies (such as advanced meter infrastructure and down-line automation) that help electric utilities better meet consumers' needs reliably and affordably by more effectively monitoring demand and system conditions on a near real-time basis. The smart grid combines digital devices and two-way communications to track the flow of electricity with great precision, pinpoint outages, identify voltages out of allowed ranges, and transmit messages to transformers, capacitors, circuit breakers, and other distribution equipment to initiate diagnostic or corrective (self-healing) actions. It can also let utilities record consumer electric use in various time intervals, communicate that consumption data among authorized staff, and provide consumers with hourly or more frequent pricing signals so they can respond to changing electricity requirements.

smart meter A type of advanced electric meter that identifies consumption in detail over various time intervals, then communicates the information via a network back to a local utility for power quality monitoring and billing purposes. Smart meters also let electric consumers react to electricity price signals and more actively participate in utility demand-response programs.

smart thermostat A type of programmable thermostat that lets electric consumers react to electricity price signals and more actively participate in utility demand-response programs. Electric utilities can also access smart thermostats during times of peak demand and adjust temperatures to lower electricity use.

social media Information created and distributed among peers and the public through online forums. Unlike print or broadcast media, social media content gets generated, shared, and discussed by individual users, generally at low or no cost. Social media includes online communities/Listservs; blogs; microblogs; social networks; social bookmarking services; digs; multimedia sharing sites; and RSS feeds.

social networking Establishing, maintaining, and interacting with personal and professional contacts through online communities, such as Facebook, LinkedIn, and MySpace.

solar power Energy absorbed from photons (elementary particles) in sunlight and converted into heat or electricity.

solar thermal energy Technology that harnesses sunlight for heat and characterized by three types. Low temperature solar thermal collectors typically are used to heat swimming pools. Medium-temperature collectors heat water for residential and commercial use. High temperature collectors, also known as concentrating solar power, can produce baseload generation using shiny long parabolic troughs that concentrate the sun's rays on receiver tubes; synthetic oil in the system gets pumped through heat exchangers to create steam that turns a turbine-generator. Solar thermal energy differs from photovoltaics, which convert sunlight directly into electricity.

Southeastern Data Cooperative (SEDC) A Tucker, Ga.-based provider of billing and accounting software for the electric utility industry.

Southeastern Power Administration (SEPA) One of four regional federal agencies that markets electricity generated primarily at federal dams. Based in Elberton, Ga., it sells power from 23 U.S. Army Corps of Engineers hydro projects in 11 states: Alabama, Florida, Georgia, Illinois, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Southwest Power Pool One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

Southwestern Power Administration (SWPA) One of four regional federal agencies that markets electricity generated primarily at federal dams. Based in Tulsa, Okla., it sells

power from 24 U.S. Army Corps of Engineers hydro projects in six states: Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas.

spinning reserve Extra generating capacity available from a power plant on short notice in case another generating station on the system goes down.

spot market A commodity exchange that allows producers of surplus power to instantly locate available buyers, negotiate prices within milliseconds, and deliver the actual energy just a few minutes later.

standard offer service (SOS) Electricity supplied by local utilities to consumers who do not choose a competitive electric generation supplier. Sometimes called provider of last resort.

statewide An organization formed by electric cooperatives operating in one or more states that offers government relations, communications, job training and safety, economic development, education, group purchasing, and other services.

stranded costs Assets owned by utilities that become uneconomical in a competitive marketplace. Primary examples of stranded costs include power plants or transmission lines.

strip mining Extracting coal from underground seams by digging pits with giant shovels called draglines.

subsidy costs What federal Rural Utilities Service loan programs actually cost taxpayers after the loans are repaid with interest. Calculated as the difference between the official federal borrowing rate and the sometimes lower rate charged on RUS loans. Subsidy costs are appropriated annually by Congress.

substation An electrical facility containing equipment for controlling the flow of electricity from supplier to user.

subtransmission system The network of poles, lines, and wires used to interconnect a high-voltage transmission network with a distribution system.

sulfur dioxide A poisonous gas created during the combustion of fossil fuels when sulfates combine with oxygen. A principal contributor to acid rain.

superconductors Materials that carry an electric current without friction and, as a result, don't waste energy by producing heat. An electric current could conceivably flow in a loop of superconducting wire forever. Superconductors are already in use in hospital MRI machines, cell-phone towers, and high-speed maglev trains but presently can only function at extremely low temperatures.

Supervisory Control and Data Acquisition (SCADA) A distribution monitoring system that provides data from substations, feeders, control breakers, and switches; manages demand-response/load management efforts; keeps an eye on down-line devices; and controls capacitors.

supplemental reserve Extra generating capacity not connected to an electric system that can be brought on-line after a short delay. Often involves importing power from an interconnected system or reducing power exports.

supply-side management Activities conducted on the utility's side of an electric meter.

surge suppressor A device that protects consumer electronic equipment and appliances from short-term, high-voltage flows of electricity such as lightning strikes; also called a spike suppressor.

SWPA Southwestern Power Administration.

synthetic fuel Combustible liquid obtained from coal, natural gas, biomass, or other solids such as oil shale, tar sand, and waste plastics.

system demand The total amount of energy required to supply all consumers served by a utility or within a region.

T

take-and-pay contract An agreement that says payment shall be made only for power actually delivered.

take-or-pay contract An agreement that stipulates payment must be made whether or not the power contracted for gets used.

tariff A statement of a utility's rates, terms, and conditions of service as filed with a utility regulatory body.

Tennessee Valley Authority (TVA) A quasi-governmental agency created by Congress in 1933 to develop hydroelectric resources throughout the Tennessee River Valley.

territorial dispute A disagreement between two utilities about which one has the right to deliver electricity to a particular service area or consumer.

territorial integrity Legally supported right of an electric utility not to have consumers in its franchised service territory connected to the lines of another electric utility.

Texas Regional Entity One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

therm A measure of heat equal to 100,000 Btu.

thermal energy storage A type of air conditioning system found mostly in large office buildings that produces cold water, ice, or an icy slurry at night, when electricity costs less to generate. The frosty material is then stored before being used to cool circulated air the next day. Sometimes called an ice harvester. Electric cooperatives in Arkansas and Oklahoma have tested residential-size thermal energy storage units with some success.

three-phase power An electric circuit that consists of three separate currents delivered at one-third cycle intervals by means of three wires; typically used to power large industrial motors that operate at 230 V or higher.

time-of-use metering Measures both electric consumption and time of use.

time-of-use rate A pricing structure where the cost for electricity varies according to the time when it's consumed. Time-of-use rates can include on/off-peak rates, critical-peak pricing, dynamic pricing, and real-time pricing.

Times Interest Earned Ratio (TIER) A ratio of margins to long-term interest expense, indicating the ability of an electric cooperative to meet financial obligations. TIER equals long-term interest plus margins divided by long-term interest. A cooperative with interest costs of \$100,000 and margins of \$150,000 has a TIER of 2.5. The federal Rural Utilities Service requires electric cooperative borrowers to maintain a minimum TIER of 1.25.

Touchstone Energy[®] Cooperatives The “brand ID” of the nation’s electric cooperatives launched on April 4, 1998. The brand offers more than 45 different services, including Co-op Connections[®] membership wallet cards and key fobs that provide co-op consumers with discounts at participating local and national retailers and pharmacies; curriculum kits designed to teach middle school students about electric cooperatives and electricity in general; a hot-air and cold-air balloon program; SitesAcrossAmerica.com, a website that

serves as a clearinghouse for available commercial and industrial properties in electric cooperative service territories; and ongoing national advertising campaigns.

transformer A device used to raise or lower voltage along electric distribution or transmission lines.

transmission The process of moving large amounts of electricity from where it's generated to where it's used, as well as the facilities needed to move that power.

transmission congestion A condition that occurs when a transmission system operates at full capacity and proper efficiency, yet still can't supply all consumers. If congestion occurs in a competitive wholesale power market, utilities that control transmission facilities could engage in price gouging. As a result, federal and state regulatory agencies and regional transmission organizations attempt to build in safeguards to prevent such abuses and ensure that congestion-related price increases reasonably reflect extra costs incurred in alleviating the situation. Also called transmission bottlenecks or transmission constraints.

transmission system The interconnected network of lines, poles, wires, and other equipment that move large amounts of electricity from generating plants to distribution systems, whether on a local or regional level.

Treasury rate loans A federal Rural Utilities Service loan program available to electric distribution cooperatives with interest rates set daily by the U.S. Treasury and determined at the time of each loan advance. Funds can be used for distribution, subtransmission, renewable generation, and headquarters (service and warehouse facility) purposes.

turbine A rotary engine that extracts energy from moving water, gas, steam, or air. The simplest turbines boast one moving part, a rotor assembly—essentially, a shaft with blades attached.

turbine-generator A steam, gas, air, or water-driven turbine coupled directly to a generator that produces electricity.

TVA Tennessee Valley Authority.

U

unbundling Splitting operations of an electric utility into separate generation, transmission, and distribution components. An unbundled electric bill may itemize charges associated with providing electric service.

uninterruptible power supply (UPS) A device typically used to protect computers, telecommunications equipment, or other electric-using appliances where an unexpected power disruption could cause injuries, fatalities, or data loss.

universal service Electricity sufficient to meet the basic needs of virtually everyone regardless of income or where they may live.

universal service charge A levy placed on retail electric providers by regulators and used to assist utilities in providing service to low-income or hard-to-reach (i.e. rural) consumers.

uranium A soft, radioactive metal and the heaviest natural element; used as a fuel for nuclear energy. One pound of enriched uranium contains nearly 3 million times the energy contained in a pound of coal.

U.S. Army Corps of Engineers A federal agency within the U.S. Department of Defense responsible for large-scale dam construction and operation; works with the U.S. Department of the Interior Bureau of Reclamation in the West. Other functions include flood control, irrigation, and river navigation projects.

USDA U.S. Department of Agriculture.

USDA Rural Development A mission area of the U.S. Department of Agriculture that combines rural electric, water, environmental, telecommunications, distance learning, and telemedicine programs. These programs are administered primarily through three agencies: Rural Utilities Service, Rural Business-Cooperative Service, and Rural Housing and Community Development Service.

U.S. Department of Agriculture (USDA) The federal cabinet-level department responsible for implementing national farm, rural development, and nutrition policy.

U.S. Department of Energy (DOE) The federal cabinet-level department responsible for implementing national energy policy.

U.S. Department of Energy Office of Energy Efficiency and Renewable Energy (EERE) A mission area within the U.S. Department of Energy that seeks to strengthen America's energy security, environmental quality, and economic vitality by bringing clean, reliable, and affordable energy technologies to the marketplace through public-private partnerships. EERE also oversees the federal Weatherization Assistance Program.

used and useful Requirement that before fixed assets of a generating plant may be included in a utility's rate base, the plant in question must be in operation (used) and be needed to provide service to the public (useful).

U.S. Energy Information Administration (EIA) The highly respected statistical arm of the U.S. Department of Energy.

U.S. Environmental Protection Agency (EPA) A federal bureau with cabinet-level status that oversees the nation's environmental science, research, education, and

assessment efforts. One of its primary duties involves developing and enforcing rules and regulations for environmental protection.

utility plant Fixed assets of a utility.

V

vertically integrated utility An electricity provider that owns generation, transmission, and distribution facilities.

volt (V) A unit of electric force that measures the pressure of electricity.

voltage An electromotive force that acts like water pressure and causes electrons to flow. Voltage measures the potential for current flow and may exist between objects without an actual flow of current.

volt-ampere (VA) The basic unit of electric power, figured as the product of a system's voltage multiplied by amperes.

W

WAPA Western Area Power Administration.

watt (W) The standard unit of electric power, equal to 1/746 horsepower.

watt-hour (Wh) Energy converted or consumed at a rate of 1 W for a period of one hour.

Weatherization Assistance Program A U.S. Department of Energy program created in 1976 that enables low-income families to permanently reduce energy bills by making their homes more energy efficient. DOE's Office of Energy Efficiency and Renewable

Energy oversees the program and provides funding and technical guidance to states, which then set eligibility guidelines and select weatherization service providers—usually local non-profit agencies.

Western Area Power Administration (WAPA) One of four regional federal agencies that markets electricity generated primarily at federal dams. Based in Lakewood, Colo., WAPA sells power from 57 U.S. Army Corps of Engineers, U.S. Department of the Interior Bureau of Reclamation, and U.S. State Department International Boundary and Water Commission hydro projects in 15 states.

Western Electricity Coordinating Council One of eight North American Electric Reliability Corporation regional organizations that coordinate planning and operations among utilities.

wheeling Delivering large amounts electricity from a generating plant to a distribution system across another utility's transmission lines.

wholesale competition A market-based system under which an electricity supplier has the option to buy power for resale from a variety of generation providers.

wholesale power market A system that allows trading between generators, retailers, and financial intermediaries both for short-term (spot price) and future (forward price) electricity delivery periods.

Wi-Fi A wireless technology brand owned by the Wi-Fi Alliance used to certify the interoperability of wireless computer networking devices, typically in reference to wireless Internet service.

WildBlue A satellite-delivered high-speed Internet service for homes and small offices available through participating members of the National Rural Telecommunications Cooperative and many local satellite TV dealers.

wind farm A group number of large wind turbines built close together.

wind power Converting the kinetic energy present in wind motion to produce electricity.

wind turbine A device that, by capturing the wind's energy with two or three propeller-like blades mounted on a rotor, generates electricity.

wires charge Fee imposed on retail consumers for wheeling power through a local distribution system. This charge would cover the cost of providing distribution service and may also include additional charges levied by regulators, such as supporting energy efficiency programs, renewable energy sources, and possibly stranded costs.