Glossary

active solar energy system

A solar heating and cooling system that relies on an external power source to circulate a working fluid which distributes heat and cool air within a building.

alternating current (AC)

An electric current in which the electrons flow in alternate directions. In North American energy grids, this reversal of flow is governed at 60 cycles per second (Hertz).

anadromous

A term describing fish that hatch in freshwater, migrate to the ocean where they mature, and then return to freshwater to spawn. Salmon and steelhead trout are anadromous fish.

average cost pricing

A method of pricing electricity which melds the expensive and relatively cheaper resources on a system into a flat rate per kWh. (See **inverted rate**).

average megawatt (MWa)

Equivalent to one megawatt of capacity produced continuously over a period of one year. (1 megawatt x 8,760 hours in one year = 8,760 megawatt-hours or 8,760,000 kilowatt-hours.) An average megawatt may also be referred to as a megawatt equivalent (MWe).

avoided cost

The cost of power from the next power plant a utility would have to build to meet growing demand. This cost would be "avoided" if a less expensive conservation or generating option were substituted for the incremental power plant.

base load resources

Base load electricity generating resources are operated around the clock except for maintenance and unscheduled outages.

biomass

A source of solar energy chemically stored in plants and other organic matter as a result of photosynthesis. Biomass energy sources include terrestrial and marine plants and agricultural, forestry and municipal wastes. Biomass can be burned directly or converted into fuels such as ethanol, methanol, or methane.

bridge fuel

An interim energy source for use during the transition to more sustainable resources. Natural gas is often referred to as a "bridge fuel" for the transition from fossil fuels to renewable resources.

British thermal unit (Btu)

The amount of heat necessary to raise the temperature of one pound of water one degree Fahrenheit (3,413 Btus equals one kilowatt-hour). One Btu is also the amount of heat given off by a single match. The U.S. annual consumption of energy from all sources is about 85 quadrillion (85 x 1015) Btus. (See **quad**).

capacity

The maximum power that a machine or system can produce or carry safely. The capacity of generating equipment is generally expressed in kilowatts or megawatts, and refers to the power it could produce in a single instant. In terms of transmission lines, capacity refers to the maximum load a line is capable of carrying safely. Related terms: Peak capability, peak generation, firm peak load, and carrying capability.

carbon tax

A tax applied to a fuels based on their carbon content. This kind of tax is designed to reflect the environmental impact of the greenhouse gases produced when such fuels are burned.

cogeneration

The simultaneous production of electricity and useful thermal energy. Cogeneration can be accomplished by using waste heat from industrial processes to power an electricity generator. Conversely, waste heat from an electric generating plant can be used for industrial processes, space or water heating applications. (See **thermally-matched cogeneration**).

conservation

Efficiency of energy use, production, transmission, or distribution that yields a decrease in energy consumption while providing the same, or higher, levels of service.

conservation transfers

The exchange of conserved energy from one utility service territory to another. Conservation transfers allow a utility that needs new energy supplies to invest in conservation in an area served by another utility, and use the power "freed up" to serve its own needs.

conventional resources

Non-renewable energy resources that utilities have traditionally relied upon, primarily fossil and nuclear plants.

cost-effective

A term used to describe a resource or combination of resources which cost no more than the power plant that a utility would otherwise have to build to serve growing loads. (See **avoided cost**).

cost of service

The cost of providing electrical service for a particular group of customers — residential, commercial, industrial, or irrigation.

critical water

The "worst case" water scenario based on historical drought conditions. Given such conditions, the hydropower system will generate about 12,500 MWa — this is also referred to as "firm" hydro output. In an average year, the Northwest hydropower system will produce about 16,600 MWa, and in a very wet year it will produce about 20,000 MWa.

customer charge

A flat fee utility customers pay no matter how much they consume.

customer class

Utility customers are identified with a group or class that has several characteristics in common. Examples of typical customers classes include: residential, irrigation, commercial, and industrial.

declining block rate

Electricity rates that decrease in price per unit as more energy is consumed. For example, an electricity consumer pays 3 cents per kilowatt hour for the first 500 kilowatt hours used, then 2.5 cents for the second 1500 kilowatt hours used. It is typically accompanied by a high customer charge.

decoupling

A regulatory design that breaks the link between utility revenues and energy sales. This design more closely aligns utilities' financial interests with broader societal goals of a clean environment and an efficient economy. Financial incentives can be incorporated into decoupling to encourage utility investment in conservation.

demand charge

The fee that utility customers pay based on the maximum amount of energy they use at any one moment in time.

demand-side management (DSM)

A utility strategy for changing the demand for electricity or natural gas, while still meeting customer needs, through programs that encourage customers to use energy more efficiently. In some cases, DSM programs encourage consumers to reduce their energy needs during peak hours — times when demand for electricity or gas is highest.

direct application renewable resource

Technologies that use renewable energy sources to perform a task without converting the energy into electricity. These resources and their functions may include wood for space heat, solar for space heat and drying, geothermal space and water heating, and wind machines used for mechanical drive (such as pumping).

direct current (DC)

An electrical current in which the electrons flow continuously in one direction. Direct current is used in specialized applications in commercial electrical generation, transmission and distribution systems.

distribution

The transfer of electricity from the transmission network to the consumer. Distribution systems generally include the equipment to transfer power from the substation to the consumer's meter.

downwinders

This term refers to people who have lived in the vicinity of federal nuclear installations, and have been affected by radioactive releases from bomb production and weapons testing. "Downwinders" is commonly used to refer to people who are adversely affected by pollution sources located near them.

efficiency

The ratio of the amount of useful energy output to the energy input for a given device.

electromagnetic fields (EMF)

Fields of force caused by electric voltage and current that surround all electrical equipment, including household appliances and power lines. Electric fields are present in electrical appliances whenever they are plugged in. Magnetic fields exists only when current is flowing — when appliances are plugged in and turned on. Both kinds of fields decrease with distance. Growing concerns about the potential health effects of EMF associated with alternating current have prompted scientific studies around the world.

energy

That which does, or is capable of doing work, such as lighting a room or running a motor. Energy is measured in terms of the work it is capable of doing. Electrical energy is commonly measured in kilowatt-hours, or average megawatts.

energy charge

A fee utility customers pay that is based on the amount of energy — therms or kilowatt hours — that they use over time.

energy-intensity

A measure of the amount of energy used to produce a given unit of output relative to other producers. For example, the U.S. economy uses about 60% more energy per unit of Gross National Product (GNP) as Japan. Thus, our economy is more energy intensive than Japan's.

environmental impact statement (EIS)

A study outlining the environmental costs and benefits of developments that are likely to have "significant" environmental effects. The study must identify and defend a " preferred alternative" and involve affected communities in the decision-making process. Environmental Impact Statements are required by federal and state laws prior to developing major energy or other types of projects.

externalities

Any costs or benefits not accounted for in the price of goods or services. Specifically, the term given to the effects of pollution and other environmental impacts from power plants or conservation measures. Equivalent terms: environmental externalities and environmental costs.

firm energy

That portion of a customer's energy load for which service is assured by the utility provider.

fishways

Passage structures, such as screens or ladders, that allow fish to pass through a hydroelectric facility bypassing turbines and other harmful components.

fixed cost

Costs of generation projects that must be paid regardless of the amount of energy produced. Such costs normally include capital costs, interest, insurance and taxes.

flat rate

Electricity rates which charge the same price per unit for all energy consumed.

fuel cell

An electricity generating device that relies on a chemical reaction to produce current, in a similar fashion as conventional batteries. For example, in a "phosphoric acid" fuel cell, natural gas can be electrolytically reacted with air to produce both electricity and heat. For transportation, a catalyst is used to separate hydrogen into hydrogen ions and electric current. The leftover ions react with oxygen to produce water as a by-product.

fuel switching

A change in the energy source for a given application. Fuel switching often describes the replacement of electric space and water heat with natural gas.

generation

The act or process of producing electricity from other forms of energy.

generating resources

Resources that provide electricity by converting one form of energy to another, as opposed to non-generating resources, such as conservation and passive renewable measures.

geothermal

Useful energy derived from the natural heat of the earth as manifested in hot rocks, hot water, hot brines or steam.

gigawatt-hour (GWh)

A unit of electrical energy equal to 1,000 megawatt-hours. 9 GWh equals approximately one average megawatt (MWa).

greenhouse gas

Any number of gases that trap heat in the atmosphere. Examples include carbon dioxide, methane, and chlorofluorocarbons.

head

The elevation difference between the body of water above the dam or diversion structure and the tailwater of a hydroelectric power plant.

hydroelectric power

The generation of electricity using falling water to turn turbines.

intervenor

An individual, group, or institution officially involved in a rate case. Intervenors have the right to be represented by attorneys, to cross-examine witnesses and to present witnesses and testimony on their own. Intervenors receive all official mailings connected with the case.

inverted rate

Electricity rates that increase in price per unit as more energy is consumed. For example, an electricity customer pays 2 cents per kilowatt-hour for the first 500 kilowatt-hours used, and 5 cents per kilowatt-hour for the next 1000 kilowatt-hours used.

kilowatt (kW)

The electrical unit of power that equal 1,000 watts. One kW will light ten 100-watt bulbs for an instant.

kilowatt-hour (kWh)

A basic unit of electrical energy that equals one kW of power applied for one hour.

least-cost planning (LCP)

Least-cost planning, or "integrated resource planning," is a name given to the power planning framework that recognizes load uncertainty, embodies an emphasis on risk management and reviews all available and reliable resources to meet future loads. The term "least cost" takes into consideration all costs of a resource, including capital, labor, fuel, maintenance, decommissioning, known environmental impacts, and difficult-to-quantify effects of selecting one resource over another. This process seeks to minimize total consumer costs.

levelized life-cycle costs

The present value of a resource's cost (including capital, financing and operating costs) converted to a stream of equal annual payments. This stream of payments can be converted to a unit cost of energy by dividing them by the number of kilowatt-hours produced or saved by the resource in associated years. By levelizing costs, resources with different lifetimes and generating capabilities can be compared to one another.

load

The amount of electric power required at a given point on a system, or the aggregate requirements of the system.

load management

A strategy that attempts to reduce the amount of power required during the periods of highest demand. Such strategies may be components of utility demand side management programs.

marginal cost

The cost of producing the last unit of energy required (the incremental cost of production).

megawatt (MW)

The electrical unit of power that equals one million watts or one thousand kW. A large coal plant is typically about 1,000 megawatts.

municipal solid waste (MSW)

Refuse offering the potential for energy recovery. Technically, residential, commercial, and institutional discards.

negawatts

A newly coined term that refers to saved energy that would otherwise have to be generated at a power plant.

nominal dollars

Dollars that include the effects of inflation. These are dollars that, at the time they are spent, have no adjustments made for the amount of inflation that has affected their value over time. (See **real dollars**).

nonfirm energy

Energy produced by the hydropower system that is available when water conditions are better than critical and after reservoir refill is assured. It is available in varying amounts depending upon season and weather conditions.

non-renewable resources

Sources of energy that are based on finite fuels, such as coal, gas, oil, and nuclear.

Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Regional Act)

Federal legislation joining the four Northwest states in regional energy planning and the protection and enhancement of fish and wildlife as they relate to the Bonneville Power Administration's system operations.

passive solar energy system

A solar heating and cooling system consisting of an energy-efficient building designed to utilize natural energy flows to transfer heat inside and outside the building, as needed, without relying on the forced circulation of a heating or cooling fluid.

peak capacity

The maximum capacity of a system to meet peak demand.

peak demand

The highest demand for power on a system. In the Northwest, this occurs on the coldest day of the year.

photovoltaic

A semiconductor that converts sunlight directly into electrical energy.

Public Utility Regulatory Policy Act of 1978 (PURPA)

Federal legislation that requires utilities to purchase electricity from qualified independent power producers at a price that reflects what the utilities would have to pay for the construction of new generating resources. PURPA was designed to encourage the development of small-scale cogeneration and renewable resources, and bring competition to the utility industry.

public involvement processes

Public forums required by law to involve the public in energy policies and issues. Held by energy decision makers such as NPPC, BPA, and most electric and gas utilities, these processes may involve one or more meeting(s), public hearings, and written comment periods to gather citizen input on a particular issue.

quad

Abbreviation for an amount equaling 1 x 10^{15} units. A quad is often used to measure British thermal units, for example, one quadrillion Btus equals 172 million barrels of oil energy equivalent.

real dollars

Dollars that are adjusted to net out the effects of inflation. They represent constant purchasing power. (See **nominal dollars**).

regional exchanges

The transfer of power among geographical areas. Utilities can sometimes avoid construction of new power facilities by exchanging power with other regions.

renewable resources

Inexhaustible energy sources that are supplied on a continuous or periodically sustained basis. These sources include solar energy in its direct and indirect forms including wind, hydroelectric power, biomass, ocean thermal gradients, waves, ocean currents, tidal power, and some geothermal energy.

revenue requirement

The amount of revenue a utility must take in to cover the sum of its estimated operation and maintenance expenses, debt-service, and taxes. During the rate-setting process, the calculation of revenue requirements is compared to revenue produced by current rates to determine whether a rate increase is needed, and if so, to determine the overall size of the increase.

siting and licensing

The process of preparing a power plant and associated services, such as transmission lines, for construction and operation. Steps include locating a site, developing the design, conducting a feasibility study, preparing an EIS, meeting applicable regulatory requirements and obtaining the necessary licenses and permits for construction of the facilities.

solar access ordinance

A municipal law that protects access to the sun's rays by, for instance, restricting the location of shade trees or requiring that subdivisions be laid out so as to maximize the usefulness of solar energy.

supply-side resources

Fuels and technologies used to generate electricity.

system cost

All direct costs of a measure or resource over its effective life.

tariff

A listing of the rates charged by a utility, or of specific conservation programs to be paid for through rates.

therm

Equivalent to 100,000 **Btus**. (See **British thermal unit**).

thermally-matched cogeneration

Cogeneration is the simultaneous production of electricity and heat or steam from industrial processes. Cogeneration is most efficient when it is thermally-matched — when the electricity production is sized in proportion to the heat production.

thermal resource

A facility that produces electricity by using a heat engine to power an electric generator. The heat may be supplied by burning coal, oil, natural gas, biomass, or other fuel, by nuclear fission, or by solar or geothermal resources.

transmission

The act or process of long-distance transport of electrical energy, generally accomplished by elevating the electric current to high voltages.

watt

The electrical unit used to measure power, the rate of doing work.

wind farm

A collection of wind turbines in a designated area, all interconnected to a single transmission source.

Acronyms

ACEEE American Council for an Energy Efficient Economy

AERO Alternative Energy Resources Organization

ASES American Solar Energy Society

AWEA American Wind Energy Association

BC British Columbia

BPA Bonneville Power Administration (U.S. DOE)

Btu British Thermal Unit

CAA Community Action Agency

CAP Community Action Program

CAREIRS Conservation and Renewable Energy Inquiry and Referral Service

CCC Citizen's Conservation Committee (Seattle City Light)

CEERT Coalition for Energy Efficiency and Renewable Technologies

COOP Cooperative (utility)

CO_2 Carbon Dioxide

CRITFC Columbia River Inter-Tribal Fish Commission

CUB Citizens Utility Board

DCD Department of Community Development

DNRC Department of Natural Resources and Conservation (MT)

DOE Department of Energy

DSI Direct Service Industry

DSM Demand-Side Management

ECC Energy Conservation Coalition

EES Energy Extension Service (Washington State Energy Office)

EIS Environmental Impact Statement

EMF Electro-Magnetic Fields

EOC Energy Outreach Center

EPRI Electric Power Research Institute

FELCC Firm Energy Load Carrying Capability

FERC Federal Energy Regulatory Commission (U.S. DOE)

FERN Fair Electric Rates Now

FOE Friends of the Earth

FUSE Fair Use of Snohomish Energy

GAO General Accounting Office (federal)

GWh Gigawatt hour

GNP Gross National Product

HTPP Hydro Thermal Power Program

HVAC Heating Ventilation Air Conditioning

ICN Idaho Citizen's Network

IDWR Idaho Department of Water Resources

IOU Investor-Owned Utility

IPP Independent Power Producer

IRP Integrated Resource Planning

IRU Idaho Rivers United

kW Kilowatt(s)

kWh Kilowatt-hour

LBL Lawrence Berkeley Laboratory

LCP Least-Cost Planning

LDC Local Distribution Company

LIRA Low Income Rate Assistance Program

LWFR Land and Water Fund of the Rockies

LWV League of Women Voters

MAP Model Action Plan

MEIC Montana Environmental Information Center

MMBtu Million British Thermal Units

MPC Montana Power Company

MSW Municipal Solid Waste

MW Megawatt(s)

MWa Average Megawatt(s)

NATAS National Appropriate Technology Assistance Service

NCAC Northwest Conservation Act Coalition

NEIC National Energy Information Center

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NPPC Northwest Power Planning Council

NREL National Renewable Energy Laboratories

NPRC Northern Plains Resource Council

NRDC Natural Resources Defense Council

Abbreviations

$B Billions of dollars

WWII World War Two

WWP Washington Water Power (utility)

Bonneville Bonneville Power Administration

Coalition Northwest Conservation Act Coaltion

Cogen. Cogeneration

Corps U.S. Army Corps of Engineers

Council Northwest Power Planning Council

MAP Campaign "MAP to the Region's Energy Future" Campaign (NCAC, 1991)

Model Plan Model Electric Power and Conservation Plan (NCAC, 1982)

Regional Act Northwest Electric Power Planning and Conservation Act (U.S. Congress, 1980)

Regional Plan Northwest Conservation and Electric Power Plans

NRIC Northwest Resource Information Center

NWIFC Northwest Indian Fisheries Commission

NWRC Northwest Rivers Council

ODFW Oregon Department of Fish and Wildlife

OEC Oregon Environmental Council

ONRC Oregon Natural Resources Council

OPUC Oregon Public Utility Commission

ORC Oregon Rivers Council (now Pacific Rivers Council)

ORNL Oak Ridge National Laboratories (U.S. DOE)

PECI Portland Energy Conservation, Inc.

PIP Programs In Perspective (Bonneville Power Administration)

PNUCC Pacific Northwest Utilities Conference Committee

PNW Pacific Northwest

PPC Public Power Council

PSA Public Service Announcement

PSC Public Service Commission

PUC Public Utility Commission

PUD Public Utility District (People's Utility District in Oregon)

PURPA Public Utilities Regulatory Policy Act

PV Photovoltaic (solar cell)

PVUSA Photovoltaics for Utility Scale Application

ODOE Oregon Department Of Energy

RAG Resource Advisory Group (Seattle City Light)

R&D Research and Development

RD&D Research, Development and Demonstration

RFP Request For Proposal

RMI Rocky Mountain Institute

SCLDF Sierra Club Legal Defense Fund

SEA of O Solar Energy Association of Oregon

SECC Safe Energy Communication Council

SEPA State Environmental Policy Act

SIC Solar Information Center

SNAP Spokane Neighborhood Action Program

SO_2 Sulfur Dioxide

SOS Save Our *Wild* Salmon

T&D Transmission and Distribution

UCS Union of Concerned Scientists

U.S. DOE United States Department of Energy

WEC Washington Environmental Council

WPPSS Washington Public Power Supply System

WRI World Resources Institute

WSEO Washington State Energy Office

WUTC Washington Utilities and Transportation Commission