Chapter 8
Glossary & Acronyms

APE – Area of Potential Effect.

Access road – Roads and road spurs that provide vehicular access to the corridor and structure sites. Access roads are built where no roads exist. Where county roads or other access is already established, access roads are built as short spurs to the structure site. Access roads are maintained even after construction, except where they pass through cultivated land. There, the road is restored for crop production after construction is completed.

Airshed – An air supply of a given geographic area, usually defined by topographic barriers or atmospheric conditions that confine air emissions.

Alluvium – Sediments deposited by flowing water.

Alternating current (AC) – An electric current or voltage that reverses direction of flow periodically and has alternately positive and negative values.

Alternatives – Refers to different choices available for a project. Alternative plans usually differ from each other in where they begin and end.

Ambient noise – Noise from sources such as a substation that occur over a longer period of time.

Aquatic bed – Includes wetlands and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Aquatic beds generally occur in water less than 2 meters (6.6 feet) deep and are placed in the Littoral Subsystem (if in Lacustrine System).

Aquifer – Water-bearing rock or sediments below the surface of the earth.

Average megawatts (aMW) – The unit of energy output over a year, equivalent to the energy produced by the continuous operation of one megawatt of capacity over a period of time.

Backdropped – Landscape elements behind facilities; a background setting.

Bay – An area set aside in a substation for special equipment.

Biodiversity – A measure of the number of different species in a given area; species richness.

8 Glossary & Acronyms

BOR – U.S. Department of Interior, Bureau of Reclamation

BPA – Bonneville Power Administration

Breakers – See Power circuit breakers.

Bridge – The uppermost portion of the tower that serves as the attachment point for the insulators, which in turn supports the conductors.

Bundle – (Used with conductor, as in "bundled conductor.") Two, three, or four conductors (wires) put together to act as a single conductor to carry electricity.

Bus pedestals – Supports that elevate bus tubing within a substation.

Bus tubing – A metal "bar" used to carry electricity from one piece of equipment to another within a substation.

Cairn – A mound of stones erected as a memorial or landmark.

Capacity – A measure of the ability of a transmission line, groups of lines (path) or transmission system to carry electricity. (See Transfer Capacity.)

Cataracts – Large waterfalls.

Circuit breakers – see power circuit breakers.

Colluvium – Soil material, rock fragments, or both accumulated at the base of steep slopes.

Conductor – The wire cable strung between transmission towers through which electric current flows.

Configuration – A physical and electric description of the transmission lines in a corridor.

Congestion pricing – Pricing that works to reduce congestion by allowing generation on the surplus side of the constraint to shut down and purchase replacement power on the deficit site.

Corona – Corona occurs in regions of high electric field strength on conductors, insulators, and hardware when sufficient energy is imparted to charged particles to cause ionization (molecular breakdown) of the air.

Crossarms – The horizontal supports on a wood pole or steel tower, that support the insulators.

Crossdrains – Channels or dips constructed across a road to intercept surface water runoff and

divert it before erosive runoff volumes and concentrations occur.

Counterpoise – Wires that route the lightening energy to the ground.

Culvert – A corrugated metal or concrete pipe used to carry or divert runoff water from a drainage; usually installed under roads to prevent washouts and erosion.

Current – The amount of electrical charge flowing through a conductor (as compared to voltage, which is the force that drives the electrical charge).

Curtail – To temporarily reduce or stop electric power delivery tinder emergency conditions.
Cut and fill – The process where a road is cut or filled on a side slope. The term refers to the amount of soil that is removed (cut) or added (fill).

Cutplane – The point where insufficient transmission capacity exists to transmit all available power any farther

CWA – Clean Water Act. A Federal law intended to restore and maintain the chemical, physical, and biological integrity of the nation's waters and secure water quality.

Danger trees – Trees (or high growing brush) in or alongside the right-of-way, which are hazardous to the transmission line. These trees are identified by special crews and must be removed to prevent tree-fall into the line or other interference with the wires. The owner of danger trees off the right-of-way is compensated for their value. BPA's Construction Clearing Policy requires that trees be removed that meet either one of two technical categories: Category A is any tree that within 15 years will grow within about 18 feet of conductors with the conductor at maximum sag (212 ° F) and swung by 6 lb per sq/ft. of wind (58 mph); Category B is any tree or high-growing brush that after a years of growth will fall within about 8 feet of the conductor at maximum sag (176 ° F) and in a static position.

dBA – The first two letters (dB) are an abbreviation for "decibel," the unit in which sound is most commonly measured. The last letter (A) is an abbreviation for the scale (A scale) on which the sound measurements were made. A decibel is a unit for expressing relative difference in power, usually between acoustic signals, equal to 10 times the common logarithm of the ratio of two levels.

Dead ends – Heavy towers designed for use where the transmission line loads the tower primarily in tension rather than compression, such as in turning large angles along a line or bringing a line into a substation.

Decibel – A decibel is a unit for expressing relative difference in power, usually between acoustic signals, equal to 10 times the common logarithm of the ratio of two levels.

Demand-side management – The strategies that focus on influencing when and how customers use electricity, with an emphasis on reducing or leveling load peaks, such as conservation measures and rate incentives for shifting peak loads, and energy storage schemes for reducing, redistributing, shifting, or shaping electrical loads.

Direct service industries (DSIs) – A group of high-electricity use manufacturers. The DSIs purchase their power directly from the Bonnevile Power Administration, rather than from utilities.

Discharge reactor – A device that is used during removal of capacitors from service (bypassing) to control currents to safe levels.

DNR – State of Washington, Department of Natural Resources

Double-circuit – The placing of two separate electrical circuits on the same tower.

Drain dips – Dips in secondary roads to reduce road surface and fill slope erosion by intercepting storm and seasonal runoff and diverting it to a safe disposal area.

Easement – A grant of certain rights to the use of a piece of land (which then becomes a "right-of-way"). BPA acquires easements for many of its transmission facilities. This includes the right to enter the right-of-way to build, maintain, and repair the facilities. Permission for these activities are included in the negotiation process for acquiring easements over private land.

EFSEC – Washington State Energy Facility Site Evaluation Council

Electromagnetic interference (EMI) – Interference caused by corona.

Electromagnetic noise – The noise generated in the frequency bands used for radio and television signals caused by corona on transmission line conductors.

Electric and magnetic fields (EMF) – The two kinds of fields produced around the electric wire or conductor when an electric transmission line or any electric wiring is in operation.

Emergent – Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.

Endangered species – Those species officially designated by the U.S. Fish and Wildlife Service that are in danger of extinction throughout all or a significant portion of their range.

Environmental Impact Statement (EIS) – A detailed statement of environmental impacts caused by an action, written as required by the National Environmental Policy Act.

EPA – Environmental Protection Agency.

Ephemeral – Streams filled with water for a brief time during the spring.

Equivalent sound level (L_{eq}) – Generally accepted as the average sound level.

Erosion susceptibility – A qualitative rating based on the of the erosion factor of the soils and slope. For example, a highly erosive soil on steep slopes would have high erosion susceptibility, whereas a low erosive soil on flat areas would have low erosion susceptibility.

ESA – Endangered Species Act

Exceedence levels (L levels) – Refers to the A-weighted sound level that is exceeded for a specified percentage of the time during a specified period.

Exposure assessments – Estimates of the magnetic field levels that people are and will be potentially exposed to.

FAA – Federal Aviation Administration

FCC – Federal Communications Commission

Fiber optics – Special wire installed on the transmission line that is used for communication between one location and another.

Floodplain – That portion of a river valley adjacent to the stream channel that is covered with water when the stream overflows its banks during flood stage.

Footings – The supporting base for the transmission towers. Usually steel assemblies buried in the ground for lattice–steel towers.

Foreground – The viewed landscape from 0 to 0.5 mi. from an observer.

Forested— Characterized by woody vegetation that is 20 feet tall or taller.

Generation – The power that is produced through some type of power plant.

GIS – Geographic Information System. A computer system that analyzes graphical map data.

Glacial outwash – Materials deposited by glacial meltwaters.

GMA – Washington State Growth Management Act of 1990. This Act requires most counties

and cities in Washington to adopt comprehensive plans.

Ground – A connection from electrical equipment to a ground mat or to the earth, used to insure that the equipment (housing or structure) will be at the same potential (voltage) as the earth.

Groundwire (overhead) – Wire that is strung from the top of one tower to the next; it shields the line against lightning strikes

H-Frame – Refers to a type of structure usually made of wood, with vertical poles and horizontal crossarms. When erected, it resembles a capital letter "H."

Herbaceous – A plant having the characteristics of an herb, not woody; or having a green color and a leafy texture.

Hertz (Hz) – The unit of frequency in cycles per second

Hydrology – The science dealing with the properties, distribution, and circulation of water.

Insulators – A ceramic or other nonconducting material used to keep electrical circuits from jumping over to ground.

Intermittent – Referring to periodic water flow in creeks or streams.

Isolated wetland – a wetland that is not connected to other surface water bodies; although adjacent wetlands may be interconnected during high precipitation years.

Kilovolt (kV) – One thousand volts. (See Volt.)

Lacustrine – Includes wetlands and deepwater habitats with all of the following characteristics: situated in a topographic depression or a dammed river channel; lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30 percent areal coverage, and total area exceeds 8 hectares (20 acres).

Lattice steel – Refers to a transmission tower constructed of multiple steel members that are connected together to make tip the frame.

Lithic – Relating to stone tools.

Load – The amount of electric power or energy delivered or required at any specified point or points on a system. Load originates primarily at the energy-consuming equipment of customers.

Load growth – Increase in demand for electricity. (See Load.)

Locational pricing – A method of establishing prices that is discriminatory with respect to location and the characteristics of a location (e.g., greater demand).

Loess – Sediment composed of mostly silt-sized particles, deposited by the wind.

Long-term firm transmission agreements – Agreements that obligate sellers/buyers of electrical power to sell/buy a stated amount on a long-term basis.

Mass movement – The dislodgment and downhill transport of soil and rock materials tinder the direct influence of gravity. Includes movements such as creep, debris torrents, rock slides, and avalanches.

Megawatts (MW) – A megawatt is one million watts, or one thousand kilowatts; an electrical unit of power.

Metal oxide varistor – A device designed to protect electric equipment from high-transient voltage by diverting a momentary over voltage (lightning or switching) to the ground.

Metric ton – Equivalent to 1000 kilograms or 2,205 pounds.

mG – Milligauss – A unit used to measure magnetic field strength. One-thousandth of a gauss

Middle ground – From the foreground to about five miles from the viewer.

Mills/kWh – The common expression of the cost of electricity; one mill per kilowatt-hour equals one dollar per megawatt-hour.

Mitigation – Steps taken to lessen the effects predicted for each resource, as potentially caused by the transmission project. They may include reducing the impact, avoiding it completely, or compensating for the impact. Some mitigation, such as adjusting the location, of a tower to avoid a special resource, is taken during the design and location process. Other mitigation, such as reseeding access roads to desirable grasses and avoiding weed proliferation, is taken after construction.

Multiplier effects – The total increase in income and employment that occurs in the local economy for each dollar of local project expenditure.

National Environmental Policy Act (NEPA) – This act requires an environmental impact statement on all major Federal actions significantly affecting the quality of the human environment. [42 U.S.C. 4332 2(2)(C).]

NESC – National Electrical Safety Code

Non–attainment – An area which does not meet air quality standards set by the Clean Air Act for specified localities and periods.

Nonfirm – Used to differentiate from "firm" power; may be interrupted.

Nonrenewable – Not capable of replenishing.

Non-spectural – Non-reflecting.

Noxious weeds – Plants that are injurious to public health, crops, livestock, land or other property.

NPDES – National Pollutant Discharge Elimination System.

NRHP – National Register of Historic Places

NWP – Nationwide Permit

Obligations – Capacity and energy BPA provides under contract to public agencies and private

Oil spill containment – Units installed in a substation to collect oil spilled from equipment.

100-year Floodplain – Areas that have a 1 percent chance of being flooded in a given year. (See Floodplain.)

Open water – Water covers the surface at a mean annual depth of grater than 6.6 ft or areas less than 6.6 ft in depth that do not support rooted-emergent or woody plant species.

Operations and Maintenance – see other documents.

Outage – Events caused by a disturbance on the electrical system, that requires BPA to remove a piece of equipment or a portion or all of a line from service. The disturbances can be either natural or human-caused.

Overloaded – Too much current trying to flow over transmission facilities. Equipment has safeguards: in the event of overloading of the system, switches will disconnect sensitive equipment from the flow of electricity.

Palustrine – Includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 parts per thousand.

Particulate matter (PM) – Airborne particles including dust, smoke, fumes, mist, spray, and

aerosols.

Perennial – Streams or creeks with year-round water flow.

Permeable – Capable of transporting liquids.

Permanently Flooded – Water covers the land surface throughout the year in all years.

Phase – A conductor or conductors or piece of electrical equipment that is associated with one of three separate phases of an alternating-current power system, designated A-phase, B-phase, and C-phase.

PM-10 – Particulate matter having a nominal aerodynamic diameter less than or equal to 10 microns.

Power circuit breakers – A switch, installed at a substation, which breaks or restores the flow of current through the line.

Prime and unique farmland – Prime farmland is land with the best combination of physical and chemical characteristics for producing food and other agricultural crops. Unique farmland is land other than prime farmland that is used to produce specific high-value food and fiber crops. It also has special characteristics to economically produce sustained high quality or high yields of specific crops.

Proposed RTO West – A proposed future Regional Transmission Organization.

Pulling site – The site where the machinery used to string the conductors is staged.

Record of Decision (ROD) – The document notifying the public of a decision taken on a Federal action, together with the reasons for the choices entering into that decision. The Record of Decision is published in the Federal Register

Relay – An electrical device that responds to a change of current or voltage in one circuit by making or breaking a connection in another..

Remedial action scheme – A set of fast, automatic control actions used to ensure acceptable power system performance following disturbances.

Resource protection area – A designation given to a stream reach by Washington State if the reach flows through a State Park, or is a component of the Washington State Scenic Rivers System, or if the reach has been designated as a component of the federal Wild and Scenic Rivers System or is being studied for potential designation.

Revegetate – Reestablishing vegetation on a disturbed site.

Right-of-way (ROW) – An easement for a certain purpose over the land of another, such as a strip of land used for a road, electric transmission line, pipeline, etc.

Riparian – Of, on, or relating to the bank of a natural course of water.

Riprap – Broken stones put in areas to prevent erosion, especially along river and stream banks.

Regional Transmission Organizations (RTOs) – An organization comprised of public and private entities that coordinates the sales and purchases of electricity.

Scabland – Areas scoured by Ice Age floods characterized by shallow soils and rock outcrops.

Scoping – A part of the NEPA process where significant issues to be analyzed in detail in the environmental document are identified.

Scrub/shrub – Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.

Seasonally flooded – Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

Semipermanently flooded – Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.

Sensitive/hydropower opportunity area – A designation given to a stream reach by Washington State if the reach is of statewide or regional significance for recreation, or is a candidate for the Washington State Scenic Rivers System, or if the reach flows through or abuts a Washington State Parks Conservation Area.

Series capacitors – Electrical devices that can increase loading on a transmission line. Used to increase the capability of interconnections and to achieve the most advantageous and economical division of loading between lines.

Shunt reactor – An electrical device connected to a bus or to a line and used to reduce voltage.

Single-circuit - A line with one electrical circuit on the same tower.

Slash windrows – Rows of slash or cut vegetation placed on the side of an access road to control

erosion.

Sole source aquifer – An aquifer designated by the Environmental Protection Agency which provides at least half of an area's drinking water.

Staging area – The area cleared and used by BPA/BPA's contractor to store and assemble materials or structures.

Structure – Refers to a type of support used to hold up transmission or substation equipment.

Subsoiling – Breaking up compacted soils, without inverting them, using a plow or blade

Substation – The fenced site that contains the terminal switching and transformation equipment needed at the end of a transmission line.

Substation dead ends – Dead end towers within the confines of the substation where incoming and outgoing transmission lines end. Dead ends are typically the tallest structures in a substation.

Substation fence – The chain-link fence with barbed wire on top provides security and safety. Space to maneuver construction and maintenance vehicles is provided between the fence and electrical equipment.

Substation rock surfacing – An 8-cm (3-in.) layer of rock selected for its insulating properties is placed on the ground within the substation to protect operation and maintenance personnel from electrical danger during substation electrical failures.

Switches – Devices used to mechanically disconnect or isolate equipment; found on both sides of circuit breakers.

Switchyard – An installation of equipment where several transmission lines are interconnected. Specifically, the 500-kV substation near Grand Coulee Dam owned by the Bureau of Reclamation, which is the eastern end of the Grand Coulee–Bell No.1, 115-kV line.

SWPP – Stormwater Pollution Prevention Plans

System reliability – The ability of a power system to provide uninterrupted service, even while that system is tinder stress.

Tackifiers – A water-based agent used to bind soil particles together to provide erosion protection. Talus – Rock debris that has accumulated at the base of a cliff or steep slope.

Talus – A sloping mass of rocky fragments at the base of a cliff.

Tapped – See Tap point.

Tap point – The point at which a transmission line is connected to a substation or other electrical device to provide service to a local load.

Temporarily flooded— Surface water is present for brief periods during growing season, but the water table usually lies well below the soil surface. Plants that grow both in uplands and wetlands may be characteristic of this water regime.

Terminus – Either end of the transmission line.

Thermal limit – The maximum current that can flow in a transmission line conductor, device or electrical machine without a failure or damage caused by excessive temperature.

Thermal overload – When the thermal limit is exceeded. (See Thermal limit.)

Threatened species – Those species officially designated by the U.S. Fish and Wildlife Service that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Tie line – A transmission line connecting two or more power systems.

Time of use rates – Rates that are discriminatory with respect to time of use (e.g., higher rates for peak use times).

Tower – See Structure.

Transfer capacity – The capability of a transmission line, group of transmission lines (path) or system to transfer a specified amount of power in a direction, assuming that no major facilities are out of service. (See Capacity.)

Transformers – Electrical equipment usually contained in a substation that is needed to change voltage on a transmission system.

Transient noise – Noise from sources such as passing aircraft or motor vehicles that is usually of short duration.

Transmission dead end towers – The last transmission line towers on both the incoming and outgoing sides of the substation. These towers are built extra strong to reduce conductor tension on substation dead ends and provide added reliability to the substation.

Transmission line – The structures, insulators, conductors, and other equipment used to transmit

electrical power from one point to another.

Transmission system – A system to transmit electrical energy from one point to another.

USFWS – U.S. Fish and Wildlife Service

Volt – The international system unit of electric potential and electromotive force. Vortex – Fluid flow involving rotation about a single point.

Vortex – A whirling mass of water.

Water bars – Smooth, shallow ditches excavated at an angle across a road to decrease water velocity and divert water off and away from the road surface.

WDFW – Washington State Department of Fish and Wildlife

Wetlands – An area where the soil experiences anaerobic conditions because of inundation of water during the growing season. Indicators of a wetland include types of plants, soil characteristics and hydrology of the area.

Woodlands – Lands having a cover of trees and shrubs.

WSCC – Western Systems Coordinating Council, A utility group that self-regulates the transmission system in the western United States.

WWP – Washington Water Power