



Energy Northwest operates Columbia Generating Station, the Northwest's only nuclear power plant. A boiling water reactor, the plant uses nuclear fission to heat water into high pressure steam. The steam spins turbines connected to a generator that makes emissions-free electricity.

Columbia Generating Station demonstrates Energy Northwest's commitment to developing environmentally friendly, powerful solutions. | *continued...*



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#### TYPE

Boiling Water Reactor (nuclear)

#### GENERATING CAPACITY

Approximately 1,150 megawatts net

#### LOCATION

10 miles north of Richland, WA

#### SITE SIZE

~1,089 acres

#### PROJECT PARTICIPANTS

Electricity produced at Columbia Generating Station is provided, at-cost, to the Bonneville Power Administration which delivers the power to utilities throughout Washington and other western states as necessary.

#### PHASES

Construction Permit Issued	March 1973
NRC Issued Plant Operating License	December 1983
First Electricity Produced	May 1984
Commercial Operation	December 1984
First Refueling Completed	April 1986



### RELIABLE, AFFORDABLE, ENVIRONMENTALLY RESPONSIBLE POWER

The 1,150-megawatt Columbia Generating Station produces enough electricity to power a city the size of Seattle. The production cost of nuclear power is comparatively inexpensive. The cost of power from the Columbia Generating Station for fiscal year 2007 was 3.69 cents per kilowatt-hour.

This power is also extremely reliable. Unlike hydro, wind, and solar generation facilities, Columbia Generating Station is not dependent on weather conditions—it can produce electricity twenty-four hours a day, seven days a week. In addition, operators adjust power levels—or load follow—to meet the Bonneville Power Administration’s needs.

Refueling and maintenance outages are performed every two years during the spring, when the river system has ample water supplies to generate electricity through the Columbia and Snake River dam system, ensuring uninterrupted power for the region.

### SAFE, CLEAN ENERGY

Nuclear power has proven itself safe for over 30 years of operation at more than 100 nuclear plants across the U.S. Working in a nuclear power plant is far safer than driving your car to work and unlike your car, produces no greenhouse gases.

Uranium, a naturally occurring element, is the primary fuel source. Fuel remains in the reactor for six years with one-third of the fuel rods replaced every two years. After six years of boiling water into steam the “used” fuel still contains more than 95 percent of its energy potential.

The “used” fuel is presently stored in heavy steel and concrete casks at an on-site dry cask storage facility until it can be permanently stored or recycled. Recycling will dramatically decrease the amount of “used” fuel requiring storage and disposal.

### HOW IT WORKS

Fission occurs when a subatomic particle called a neutron strikes and is absorbed into the nucleus of a uranium atom. This causes the nucleus of the atom to become unstable and to split, producing heat and additional neutrons and other fission products. These additional neutrons bombard other uranium atoms causing them to fission and creating a self-sustaining chain reaction.

Heat generated in the fuel core boils water into high-pressure steam. The steam is then piped to large turbines connected to a single large electric generator. The steam spins the turbines which spin the generator producing electricity. After flowing through the turbines, the steam moves through a condenser where it is cooled back into water. The water is then pumped back to the reactor to be reheated back into steam, continuing the cycle.

A separate, non-radioactive water system carries heat from the condenser to six cooling towers located outside the plant. The heat from the non-radioactive cooling water is released into the atmosphere by the cooling towers as steam.

As with all Energy Northwest projects, Columbia Generating Station is ISO-14001: 2004 certified.



### ENERGY NORTHWEST

*Energy Northwest is a not-for-profit public power, joint operating agency headquartered in Richland, Washington. The consortium’s nuclear, hydroelectric, wind, and solar projects deliver nearly 1,400 megawatts of reliable, affordable, environmentally responsible electricity to the northwest power grid. Energy Northwest continually explores and develops new generation opportunities while offering a wide range of energy and business services. Energy Northwest owns and operates Columbia Generating Station, Nine Canyon Wind Project, Packwood Lake Hydroelectric Project, and White Bluffs Solar Station.*