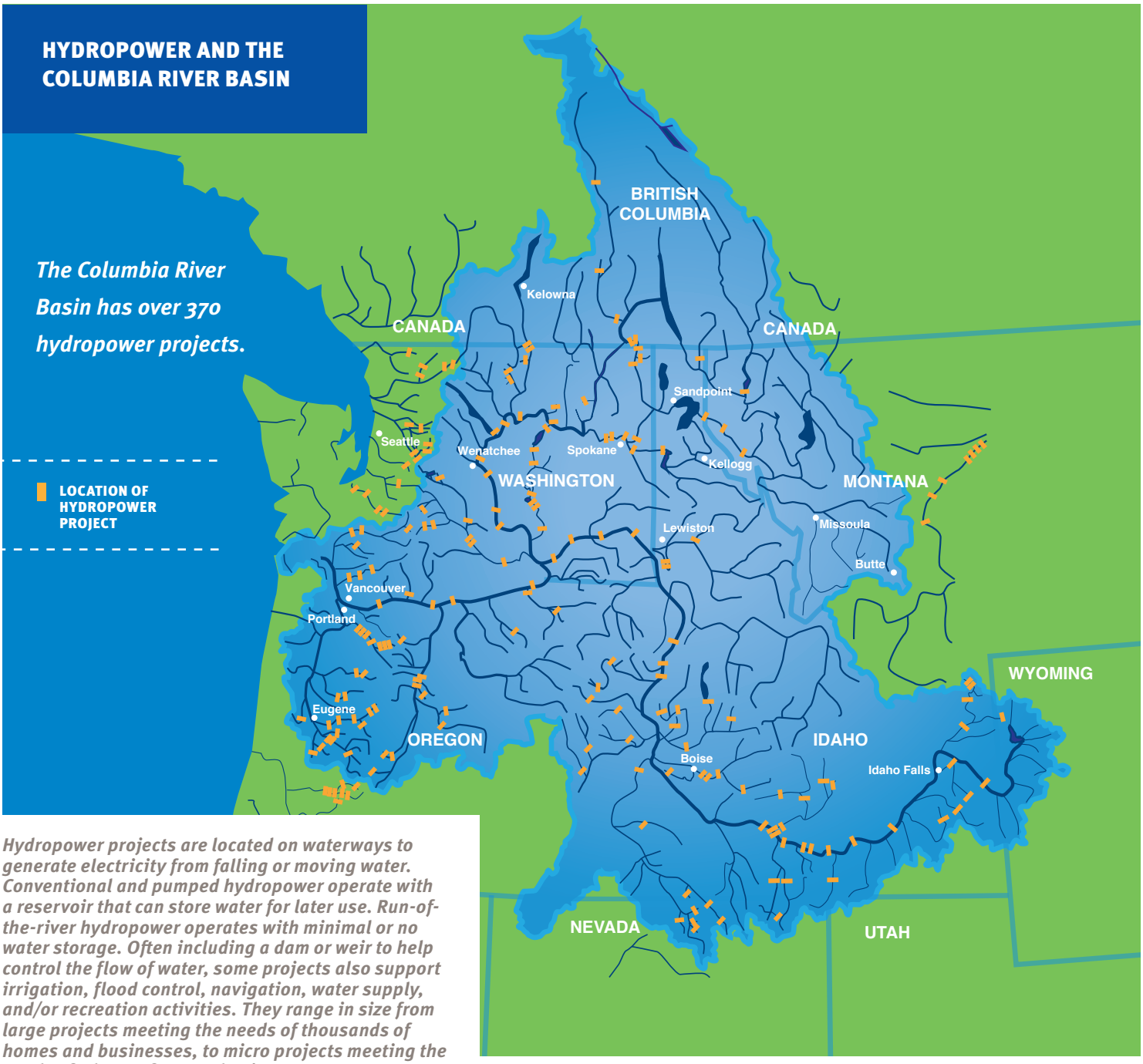
Hydropower in the Northwest

Hydropower is the key to the Northwest attaining a carbon-free generation future.

Hydropower projects provide the baseload of clean, renewable, low cost electricity that other renewable generation resources build from. More than 370 projects provide over 55 percent of the Northwest's electric generation capacity in a normal precipitation year. The 16 largest projects account for 62 percent of the Northwest's hydropower capacity, and all but one is located on the Columbia or Snake rivers.

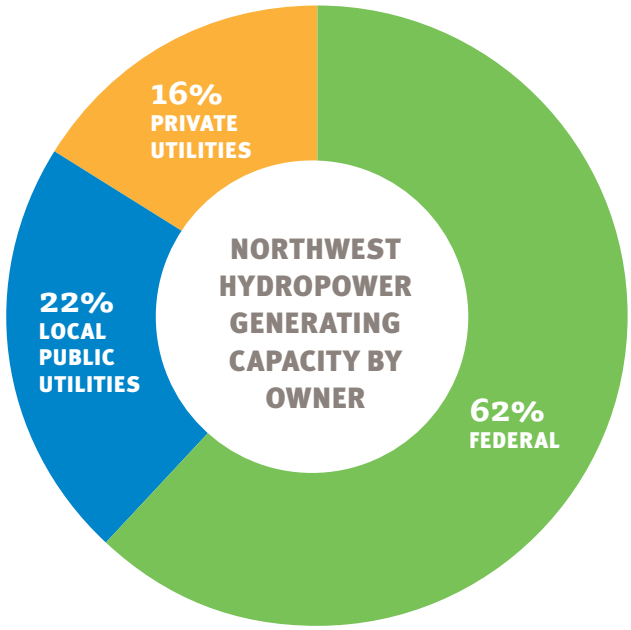


Hydropower projects are located on waterways to generate electricity from falling or moving water. Conventional and pumped hydropower operate with a reservoir that can store water for later use. Run-of-the-river hydropower operates with minimal or no water storage. Often including a dam or weir to help control the flow of water, some projects also support irrigation, flood control, navigation, water supply, and/or recreation activities. They range in size from large projects meeting the needs of thousands of homes and businesses, to micro projects meeting the needs of a home, farm, or business.

Source: Foundation for Water and Energy Education

The unique nature of the Columbia Basin, a 259,000 square mile area the size of France, enables the force of falling water to power these projects. Rivers and streams from parts of seven states and Canada drain into the Columbia River. 1,243 miles in length and 2,690 feet above sea level at its headwaters, the Columbia has the greatest flow of any North American river draining into the Pacific, dropping an average of two feet per mile.

To think about the "force," or potential energy of this water flowing downstream, imagine you are on the Columbia River. Average stream flow at The Dalles Dam is about 190,000 cubic feet per second (cfs). That's like taking a football field and filling it with over three feet of water (or 1,421,000 gallons) and passing it by an imaginary line across the river each second. When the river flow peaks in spring, over twice this amount of water flows by The Dalles Dam.



Source: Foundation for Water and Energy Education

THE COLUMBIA RIVER BASIN: SOURCE OF THE NORTHWEST'S RENEWABLE HYDROPOWER BOUNTY

The Columbia River is 1,243 miles long

25 PERCENT of the river flow comes from Canada

The Columbia River falls an average of more than TWO FEET PER MILE before reaching the ocean

Average annual runoff at the Columbia's mouth is 192 MILLION ACRE FEET, enough to cover the state of Texas more than one foot deep in water

In the spring, water flows are the highest when SNOW MELTS into the rivers

The LARGEST TRIBUTARY to the Columbia is the Snake River, which is 1,036 miles long

EIGHT NAVIGATION LOCKS at dams on the Columbia and Snake rivers support a 465-mile corridor that ships millions of tons of cargo annually

Reservoirs at dams divert 6 percent of yearly runoff to IRRIGATE 8 MILLION ACRES of crops

Reservoirs store 55 million acre feet of water to provide flood control that SAVES BILLIONS OF DOLLARS in property damage

CLEAN, GREEN, AFFORDABLE hydropower helps keep worldwide internet cloud computing services flowing for Microsoft, Apple, Facebook, Amazon and others

A diverse group of public and private entities own and operate hydroelectric projects. The 31 federal government projects located on the Columbia River and major tributaries account for the majority of the Northwest's hydropower generating capacity. They are owned and operated by the U.S. Army Corps of Engineers and Bureau of Reclamation. Many of these also serve flood control, navigation and/or irrigation needs. The Bonneville Power Administration markets this power, with proceeds going toward financing construction, operations and maintenance costs.

Public ownership also exists at the local level, primarily via public utility districts (PUDs), cooperatives and municipal governments. These projects are owned and operated by the local citizens they serve. There are 61 such projects that contribute 22 percent of the Northwest's hydropower generating capacity. Private utilities, often called independent or investor-owned utilities, also own and operate projects. There are 264 private projects that contribute 16 percent of the Northwest's hydropower generating capacity.