Meeting the Carbon-Free Electricity Generation Challenge:

Building Blocks for a 21st Century Energy Resource Stack

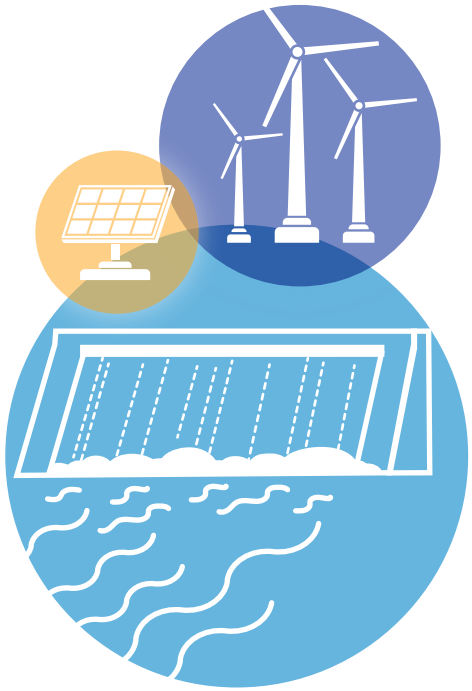
HYDROPOWER

WIND AND SOLAR

EFFICIENCY AND CONSERVATION

With more than 34,000 megawatts of electricity available, hydropower will continue to provide over half the power needed for a carbon-free, renewable energy future in the Pacific Northwest.

RIVERS provide flexible, reliable hydropower when wind and solar power are not available.



HYDROPOWER

Preserving and strengthening this resource base is critical. As important, hydropower provides:

Energy Storage: Hydropower projects with reservoirs, sometimes called lakes, behind them can "store" water to generate electricity when it's most needed. Think of them like giant, clean, carbon-free renewable batteries that provide "peaking" power when electricity demand is highest. For instance, in the morning when people are getting ready for the day with hot showers and other activities. Reservoir storage is also used to balance the availability of river flows from one season to the next. For example, high water flows in the spring can be stored until the summer when river flows slow in unison with less rainfall and melting snowpack.

Flexibility: Because the amount of water flowing through a dam's turbines is easy to adjust, hydropower can be quickly ramped up and down to ensure power is available when customers like you need it.

WIND AND SOLAR

In 2005, wind contributed 1 percent to the Northwest's generating capacity and solar contributed zero. Fast forward to 2019 and wind contributes over 14.5 percent of the Northwest's power generating capacity and solar 1 percent. Wind and solar resources will continue to be added to the system.

Hydropower is the perfect carbon-free renewable partner for wind and solar because it's reliable, available and can quickly be ramped up to meet demand when the wind isn't blowing or the sun isn't shining.

EFFICIENCY AND CONSERVATION

In many cases, the least expensive way to meet electricity demands is to use less or more efficiently use what already exists. For example:

Conservation: Home improvements such as adding insulation, installing energy efficient window replacements or upgrading to programmable thermostats. Also, changing habits like turning lights and appliances off when not using them.

Efficiency: Installing new appliances like refrigerators, stoves and hot water heaters that use less electricity to produce the same result. Likewise, people are replacing inefficient incandescent and halogen light bulbs with LED lights. Look for the ENERGY STAR® logo when shopping.

Thanks to actions taken between 1978 to 2019, power needs were reduced by more than 7,000 average megawatts. That's enough power savings to meet the annual needs of five cities the size of Seattle. If your household engaged in conservation and/or efficiency, your energy consumption was reduced, helping to reduce your power bills. And better still, each year our power system is avoiding emission of 22 million tons of carbon dioxide (the largest source of greenhouse gas).

Although the Northwest Power and Conservation Council predicts additional conservation and efficiency measures will meet new power demands over the next 20 years, they also project new renewable energy resources will need to be developed to replace retiring fossil fuel power plants.

2005-2019

WIND POWER INCREASED from 1% to 14.5% of NORTHWEST GENERATING CAPACITY

Source: Northwest Power and Conservation Council

USING LESS ADDS UP FOR THE NORTHWEST

energy efficiency + conservation ANNUALLY AVOIDS

22M TONS OF CARBON DIOXIDE (a greenhouse gas) EMISSIONS

Source: Northwest Power and Conservation Council