

Snake River Dams: Valuable Assets

Dams on the Columbia and Snake rivers are the foundation of the Northwest's electric power system. They are also crucial to flood control, river transportation, irrigation, and recreation. Since the 1930s, dams and the benefits they provide have been part of the landscape in the Northwest.

The federal government has built 31 major dams on the Columbia River and its tributaries. The newest federal dams include four built in the 1960s and early 1970s on the lower Snake River in eastern Washington. Despite a persistent call by dam opponents to breach these projects, they provide myriad benefits to the region.

Power of the Dams

Capacity refers to a power plant's value in meeting peak power loads.

- The four lower Snake River dams have a combined generating capacity of 3,033 megawatts.
- Each of the four lower Snake River dams has more capacity than a typical coal plant.
- The dams normally operate below capacity. They produce about 1,110 average megawatts of energy, enough to power a city the size of Seattle.
- If called upon in a cold snap or when another plant goes down, the dams are capable of operating above their rated capacity to produce up to 3,483 MW for several hours.



Key to System Reliability

Keeping the power system reliable is another key role for the lower Snake River dams.

- Because of their location, size, and ability to help meet peak power loads, the dams lend significant support to the power grid.
- The 10 largest dams in the federal power system keep the system operating reliably; of the 10, four are the lower Snake River projects.
- These hydroelectric dams provide voltage stability on a long transmission path between western Montana and eastern Washington, helping to keep the transmission grid reliable.
- Without these dams, less electricity could flow on certain major transmission lines.

Partner to Wind Power

Wind power is variable and must be combined with other generation that can quickly be increased when the wind dies down or decreased when the wind blows harder. Hydropower is the best resource with this type of flexibility.

- Dam operators can start, stop, increase, or decrease hydro generation by hundreds of megawatts in seconds to minutes.
- To maintain reliability with thousands of megawatts of wind power on the region's power grid, BPA – from its headquarters - can adjust hydro generation up or down as the wind changes.
- BPA generally makes these quick adjustments at mainstem Columbia River dams, with the lower Snake River dams pitching in to quickly help meet regional power needs.

Resource for a Low-Carbon Future

The carbon footprint in the Northwest is half that of the rest of the country, largely due to hydroelectricity, which provides the biggest share of our power. Hydroelectricity is the original renewable resource, with water from melting snow and rainfall providing the fuel.

Carbon emissions in the region would increase significantly without the lower Snake River dams. In its Sixth Power Plan, released in 2010, the Northwest Power and Conservation Council provided an analysis of what dam removal would mean for the region. In direct quotes from the plan, the Council lays out the value of the dams in reducing carbon emissions:

“Replacement of the lower Snake River dams energy and capacity results in increased carbon emissions of 3.0 million tons per year, a 7.6 percent increase. . . . In total . . . 1,103 average megawatts would be required to replace the dams with 437 average megawatts coming from carbon producing resources, not including increased imports that would also most likely come from carbon producing resources. . . . Dam removal increases the carbon emissions, cost, and risk of the power system.”

Improved Salmon Returns

Four of the 13 Columbia River salmon species listed under the Endangered Species Act must pass the lower Snake River dams. Scientists have studied this issue for decades and formulated ways to ease fish passage. There are multiple ways for juvenile fish to pass the dams on their migration to the ocean. Among the latest innovations are removable spillway weirs (fish slides) that have been tested and installed at each of the Snake River dams. They successfully pass fish at rates of survival over 95 percent. In years when water is low in the Snake, fish can be collected and barged to below Bonneville Dam. There is a 98 to 99 percent survival rate for barged fish.

Adult returns of some Columbia River anadromous species have set records in the past several years. Chinook have been returning to the Snake River in healthy numbers. And abundant adult sockeye and coho returns have astonished fish and wildlife officials in recent annual counts.

While fish passage and survival is a serious issue, technology and new ways of operating the power system are helping to address it.

Northwest RiverPartners is a partnership of farmers, electric utilities, ports, and large and small businesses in the Pacific Northwest. We are dedicated to ensuring the Columbia and Snake remain living, working rivers to benefit families and businesses in the region.