

Northwest RiverPartners  
"VOICES"  
Ad Facts  
July 1, 2022

**WHY IS IT IMPORTANT TO PROTECT NORTHWEST  
HYDROPOWER?**

**HYDROPOWER IS ESSENTIAL TO ADDRESS CLIMATE  
CHANGE AND PROTECT SALMON.**

***Hydro is essential to address  
climate change***

"Hydropower and pumped storage continue to play a crucial role in our fight against climate change by providing essential power, storage, and flexibility services."<sup>1</sup>

"With our wealth of carbon-free hydropower, Washington has some of the cleanest electricity in the nation."<sup>2</sup>

"Hydropower compliments other renewable energy sources. Technologies like pumped storage hydropower (PSH) store energy to use in tandem with renewables such as wind and solar power when demand is high."<sup>3</sup>

***Salmon are at high risk of extinction  
due to the impacts of climate change***

"With a warming climate, deterministic declines inevitably lead to extinction unless some ecological, evolutionary, or climatic rescue effect occurs."<sup>4</sup>

"Climate impacts were most dramatic in the marine stage, where survival was reduced by 83–90%."<sup>5</sup>

"Our analysis showed relative resilience in freshwater stages, with the dominant driver toward extinction being rising SST (sea surface temperature), which

tracked a ~90% decline in survival in the marine life stage.”<sup>6</sup>

“Hypoxia can lead to vast dead zones in the ocean, where marine life isn’t sustainable. As the climate changes, coastal ecosystems could become more vulnerable to hypoxia, according to research from NOAA’s National Centers for Coastal Ocean Science. ‘In Washington and Oregon, we’re experiencing really dramatic, intense hypoxic episodes each summer,’ Bauer said. ‘It essentially becomes this bathtub off the coast of Washington, where water is just sitting,’ he said.”<sup>7</sup>

“Salmon spend much of their lives in the ocean, and most of them don’t make it back inland to spawn. Take the endangered spring/summer chinook on the Snake River. Only about 1% of those salmon that make it to the ocean survive, said Brian Burke, a supervisory research fish biologist with NOAA’s Northwest Fisheries Science Center. ‘If we could change ocean survival from 1% to 2% on average, that would dramatically change the entire situation,’ Burke said.”<sup>8</sup>

***Saving salmon requires us to mitigate the impacts of changing ocean conditions due to climate change***

“The time salmon spend in the ocean represents one of the most variables, but least understood stages in their life cycles. Recent marine heatwaves in the northern Pacific Ocean and the Gulf of Alaska are believed to be factors in increased variability in survival rates of young salmon across the region. Under climate change, heatwaves like this are expected to increase in frequency, duration, and intensity in the future.”<sup>9</sup>

“Salmon in the Pacific is still a ‘survival story,’ [Ed] Farley [of the Alaska Fisheries Science Center] said. But these dramatic crashes in salmon populations are an ominous sign. Climate change, in his opinion, ‘drove a lot of the mortality that we’re seeing.’”<sup>10</sup>

“As the planet warms, driven by the burning of fossil fuels, scientists say changes in ocean conditions are helping drive these wild swings and collapses of key stocks. ‘Salmon will go out, in what we think is a really good ocean, and then it collapses,’” said Weitkamp, a fisheries biologist with the National Oceanographic and Atmospheric Administration based in Oregon. ‘They don’t come back.’”<sup>11</sup>

***Northwest hydropower has an important role to play in curbing the effects of climate change on salmon***

“electricity generation remains the largest source of carbon emissions worldwide and is the third-highest emitting sector in our state, after transportation and buildings.”<sup>12</sup>

“To achieve the 2030 [carbon neutral grid] standard, utilities must replace coal-based resources with non-emitting and renewable energy resources such as solar and wind power, use hydropower resources more efficiently and effectively, and increase overall energy efficiency.”<sup>13</sup>

**IN FACT, 90% OF THE RENEWABLE ENERGY WE GENERATE IN THE PACIFIC NORTHWEST IS FROM HYDROPOWER.**

NW Power and Conservation Council  
NW Power System Database  
Historical Energy Tables<sup>14</sup>

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	18,729	17,255	14,769	15,434	14,080	15,125	16,268	15,876	13,359	14,710
Wind	1,668	2,007	2,561	2,647	2,409	2,687	2,421	2,658	2,443	3,129
Solar	0	0.7	2.3	2.3	2.4	7.6	76	132	149	197
Geothermal	7.3	10.4	23.3	29.9	29	29.2	29.5	29.6	32.1	32.3
Total Renewable Gen	20,404	19,273	17,356	18,113	16,520	17,849	18,795	18,696	15,983	18,068
Hydropower as a % of total	92%	90%	85%	85%	85%	85%	87%	85%	84%	81%

“Hydropower delivers clean power to over 60% of the people in the Pacific Northwest. It accounts for 90% of renewable energy in the region and helps to reliably integrate new intermittent renewables, like solar and wind, into the grid.”<sup>15</sup>

**THE LOWER SNAKE RIVER DAMS KEPT POWER ON DURING LAST YEAR’S HEAT WAVE.**

“ Without these four dams, powering through the heatwave could have been much more expensive and operationally challenging.” This is another example of the value these facilities provide the region from a clean energy perspective,’ said [Bonneville Power] Administrator John Hairston.”<sup>16</sup>

**THE ONLY WAY TO REPLACE THEIR RELIABILITY WOULD BE BURNING MORE FOSSIL FUELS.**

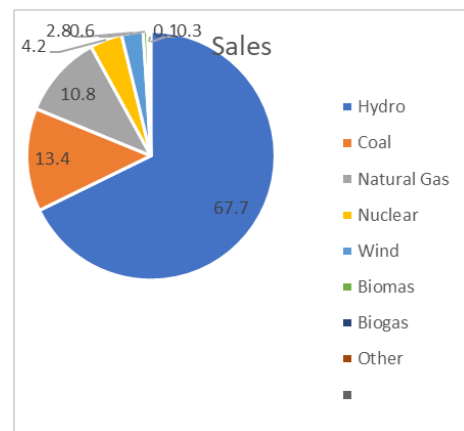
“GHG emissions would increase the most of the hydropower was replaced with natural gas. This would lead to an additional 3.3 million metric tons (MMT) of CO<sub>2</sub>, a 9% increase in power-related emissions across the Northwest. However, even assuming the new replacement resources to maintain regional reliability are variable renewables (the base case of solar with batteries), some increase in fossil fuel-based generation from existing power plants would occur to maintain system reliability, leading to an additional 1.3 MMT of CO<sub>2</sub> annually (a 3.5% increase in power-related emissions in the Northwest). This seems counter-intuitive but occurs because the magnitude and timing of the reduction in hydropower generation would occur in particular times seasonally or daily

(e.g., during peak demand) during which capacity resources would need to increase generation to maintain reliability (i.e., to meet the power demand and avoid blackouts).<sup>17</sup>

“Requiring an additional 14,900 MW of resources to be built to replace the carbon-free LSRD capacity puts further stress on the ability to achieve state policy mandates, likely adding 5 MMT – 8.5 MMT of CO<sub>2</sub> released into the atmosphere.”<sup>18</sup>

**Nearly 2/3 of Washington’s electricity comes from hydropower.**

“Figure 3.1: Washington State Electric Utilities Aggregate 2017 Fuel Mix: Using Net System Mix: Hydro, 67.7%; Coal, 13.4%; Natural Gas, 10.8%; Nuclear, 4.2%; Wind, 2.8%, Biomass, 0.6%; Biogas, 0.1%; other, 0.3%”<sup>19</sup>



**REMOVING THEM COULD RAISE RATES BY 25% OR MORE.**

“If Bonneville had to replace the four lower Snake River projects’ full capability with zero-carbon resources, the rate pressure could be up to 50% on wholesale power rates.”<sup>20</sup>

**NORTHWEST HYDROPOWER.**

**CLEAN, SAFE, AND AFFORDABLE.**

**Spokespeople Featured in NW RiverPartners “VOICES” [in order of appearance]**

**Libby Calnon**

Libby Calnon is the General Manager of Hood River Electric Co-op. Libby Calnon became HREC’s fifth manager in June 2018.

Headquartered in Hood River, Oregon, Hood River Electric Co-op (HREC) was established on June 15, 1945, after nine valley residents filed articles of confederation for a cooperatively-owned electric utility: Walter Wells, William Vollmer, John Sigler, Eino Annala, H. J. DeWitt, St. Clari Dianond, Earl Moore, Eino Jakku and W.C. May. The fee for membership is the same now as it was at inception: \$5

Today, Hood River Electric & Internet Co-op serves about 3,900 electric accounts and 2,800 internet accounts held by 3,700 members. Nearly 75 years after its formation, the Co-op continues to carry out its mission: “To provide affordable, reliable services to members using sound business practices and following the cooperative principles.”

**Dr. David Welch**

Dr. David Welch is the President and CEO, Kintama Research Services. David holds a B.Sc. in Biology and Economics (University of Toronto) and a Ph.D. in Oceanography (Dalhousie University). He joined Fisheries and Oceans Canada in 1985 and was appointed head of the High Seas Salmon Program in 1990. During the next decade, he was responsible for studying the ocean biology of Pacific salmon and provided some of the first compelling evidence for a potentially profound impact of global warming on Pacific salmon in the ocean. He served as Chief Scientist for the Census of Marine Life’s project, POST, from 2000-2005. David developed the original concept of building large-scale marine tracking arrays, particularly for application to Pacific salmon management.

David is the author of over 300 primary scientific papers and technical reports, including peer-reviewed analyses published in the *Proceedings of the National Academy of Sciences of the United States of America*. Among other awards, he received the 2007 Prix de Distinction and the 2008 Prix d’Excellence from DFO in recognition of his “...outstanding scientific contributions to both national and international climate change research, and the Government of Canada”. More recently he received the 2011, J.P. Tully Medal, in Oceanography from the Canadian Meteorological and Oceanographic Society and in 2012 the American Fisheries Society gave him the Award of Excellence—Fisheries Management; the latter awards are for his work on developing large-scale marine telemetry arrays and their application to fisheries issues.

**Christine Reid**

Christine Reid is the Political Director for IBEW 77.

Founded on August 28, 1897, IBEW Local 77 is one of the largest IBEW locals in the country. Local 77 represents over 8,000 workers in Washington, parts of Idaho, and Montana.

IBEW 77 represents several job classifications within the electrical industry, including linemen, power dispatchers, Protection Relay System operators, and hydro operators.

### **Kristin Masteller**

Kristin Masteller is the General Manager for Mason County PUD No. 1.

Headquartered in Shelton, Washington Mason County PUD No. 1 became the first operating Public Utility District in the State of Washington when voters approved a proposition on November 6, 1934. Mason County PUD No. 1 remains publicly owned and serves approximately 4,770 electric customers.

Mason County PUD No. 1 purchases power marketed by the Bonneville Power Administration and distributes it to their customers. It does not have large-scale power production facilities, though they have invested in some small-scale solar and partnered with the Skokomish Tribe to invest in electric vehicle charging stations at the Tribe's casino.

The electrical power for Mason County is supplied through the regional transmission grid and power from the federally managed dams in the Columbia River Basin and the Columbia Generating Station nuclear power plant in Kennewick, Washington.

Kristin joined PUD 1 in 2011 and now serves as the District's General Manager and Chief Administrative Officer.

<sup>1</sup> U.S. Department of Energy, Water Power Technologies Office, June 28, 2022: <https://www.energy.gov/eere/water/benefits-hydropower>

<sup>2</sup> Governor Jay Inslee, "Policy Brief: WASHINGTON ENACTS STRONGEST CLEAN ELECTRICITY STANDARD IN THE NATION" – May, 2019: <https://www.governor.wa.gov/sites/default/files/documents/clean-electricity-policy-brief-bill-signing.pdf>

<sup>3</sup> U.S. Department of Energy, Water Power Technologies Office, June 28, 2022: <https://www.energy.gov/eere/water/benefits-hydropower>

<sup>4</sup> "Climate change threatens Chinook salmon throughout their life cycle" by Lisa G. Crozier (NOAA Fisheries), Brian J. Burke (NOAA Fisheries), Brandon E. Chasco (NOAA Fisheries), Daniel L. Widener (Ocean Associates – under contract to NOAA Fisheries) & Richard W. Zabel (NOAA Fisheries). February 18, 2021. <https://www.nature.com/articles/s42003-021-01734-w>

<sup>5</sup> "Climate change threatens Chinook salmon throughout their life cycle" by Lisa G. Crozier (NOAA Fisheries), Brian J. Burke (NOAA Fisheries), Brandon E. Chasco (NOAA Fisheries), Daniel L. Widener (Ocean Associates – under contract to NOAA Fisheries) & Richard W. Zabel (NOAA Fisheries). February 18, 2021. <https://www.nature.com/articles/s42003-021-01734-w>

<sup>6</sup> "Climate change threatens Chinook salmon throughout their life cycle" by Lisa G. Crozier (NOAA Fisheries), Brian J. Burke (NOAA Fisheries), Brandon E. Chasco (NOAA Fisheries), Daniel L. Widener (Ocean Associates – under contract to NOAA Fisheries) & Richard W. Zabel (NOAA Fisheries). February 18, 2021. <https://www.nature.com/articles/s42003-021-01734-w>

<sup>7</sup> “To unravel some of the ocean's mysteries, scientists head to sea,” by Courtney Flatt. June 20, 2022. Northwest News Network: <https://kuow.org/stories/to-unravel-some-of-the-ocean-s-mysteries-scientists-head-to-sea>

<sup>8</sup> “To unravel some of the ocean's mysteries, scientists head to sea,” by Courtney Flatt. June 20, 2022. Northwest News Network: <https://kuow.org/stories/to-unravel-some-of-the-ocean-s-mysteries-scientists-head-to-sea>

<sup>9</sup> 2022 Pan-Pacific Winter High Seas Expedition

An international team of scientists continues their research on the winter ecology of Pacific salmon in a collaborative effort spanning the entire North Pacific Ocean.

<https://www.fisheries.noaa.gov/west-coast/science-data/2022-pan-pacific-winter-high-seas-expedition>

<sup>10</sup> “Salmon travel deep into the Pacific. As it warms, many ‘don’t come back.’” By Joshua Partlow, The Washington Post, March 29, 2022. <https://www.washingtonpost.com/climate-environment/2022/03/28/salmon-alaska-climate-change/>

<sup>11</sup> “Salmon travel deep into the Pacific. As it warms, many ‘don’t come back.’” By Joshua Partlow, The Washington Post, March 29, 2022. <https://www.washingtonpost.com/climate-environment/2022/03/28/salmon-alaska-climate-change/>

<sup>12</sup> Governor Jay Inslee, “Policy Brief: WASHINGTON ENACTS STRONGEST CLEAN ELECTRICITY STANDARD IN THE NATION” – May, 2019: <https://www.governor.wa.gov/sites/default/files/documents/clean-electricity-policy-brief-bill-signing.pdf>

<sup>13</sup> To achieve the 2030 standard, utilities must replace coal-based resources with nonemitting and renewable energy resources such as solar and wind power, use hydropower resources more efficiently and effectively, and increase overall energy efficiency.

<sup>14</sup> Last three available years on Historical Energy Table: [Power Supply \(nwcouncil.org\)](https://www.nwcouncil.org/power-supply)

<sup>15</sup> Bonneville Power Administration - Hydropower Impact: <https://www.bpa.gov/energy-and-services/power/hydropower-impact>

<sup>16</sup> “Lower Snake River dams help region power through recent heatwave: Ice Harbor key to relieving transmission congestion in Tri-Cities,” press release by, The Bonneville Power Administration, July 22, 2021: <https://www.bpa.gov/about/newsroom/news-releases>

<sup>17</sup> “Executive Summary: Columbia River System Operations Environmental Impact Statement,” <https://usace.contentdm.oclc.org/utills/getfile/collection/p16021coll7/id/14957>

<sup>18</sup> “Lower Snake River Dams Power Supply Replacement Analysis” Prepared for Northwest RiverPartners by Energy GPS Consulting (EGPSC), LLC, 6/28/2022

<sup>19</sup> “2019 Biennial Energy Report: Issues, Analysis and Updates,” Washington State Department of Commerce: <http://www.commerce.wa.gov/wp-content/uploads/2013/01/COMMERCE-Biennial-Energy.pdf>

<sup>20</sup> “Executive Summary: Columbia River System Operations Environmental Impact Statement,” <https://usace.contentdm.oclc.org/utills/getfile/collection/p16021coll7/id/14957>; and “Columbia River System Operations Environmental Impact Statement,” page 3-889 shows 54% of average utility rates are attributable to power supply; and “Columbia River System Operations Environmental Impact Statement,” page 3-969 shows a 14% increase in retail residential rates for some counties, which only includes ½ of the cost for replacement. Doubling would get it to 28%.