

**THE NORTHWEST AT RISK: THE ENVIRON-
MENTALIST'S EFFORT TO DESTROY
NAVIGATION, TRANSPORTATION, AND
ACCESS TO RELIABLE POWER**

OVERSIGHT FIELD HEARING

BEFORE THE

SUBCOMMITTEE ON WATER, WILDLIFE AND
FISHERIES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

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**OVERSIGHT FIELD HEARING ON THE NORTH-
WEST AT RISK: THE ENVIRONMENTALIST'S
EFFORT TO DESTROY NAVIGATION,
TRANSPORTATION, AND ACCESS TO
RELIABLE POWER**

**Monday, June 26, 2023
U.S. House of Representatives
Subcommittee on Water, Wildlife and Fisheries
Committee on Natural Resources
Richland, Washington**

The Subcommittee met, pursuant to notice, at 1 p.m., at Richland High School, 930 Long Avenue, Richland, Washington, Hon. Cliff Bentz [Chairman of the Subcommittee] presiding.

Present: Representatives Bentz and Collins.

Also present: Representatives Newhouse and McMorris Rodgers.

Mr. BENTZ. The Subcommittee on Water, Wildlife and Fisheries will come to order. Without objection, the Chair is authorized to declare a recess of the Subcommittee at any time.

Good afternoon, everyone. I want to welcome our witnesses, Members, and our guests in the audience to today's hearing.

The Subcommittee is meeting today to hear testimony on a hearing entitled "The Northwest at Risk: The Environmentalist's Effort to Destroy Navigation, Transportation, and Access to Reliable Power." By way of introduction, I am Cliff Bentz, the Chairman of the Subcommittee on Water, Wildlife and Fisheries. I also represent the 2nd District of Oregon.

I am grateful to be joined today by two Members who represent this region. Therefore, I ask unanimous consent that the gentleman and gentlelady from Washington, Mr. Newhouse and Mrs. McMorris Rodgers, as well as the gentleman from Georgia, Mr. Collins, be allowed to participate in today's hearing. Without objection, so ordered.

Since this is a congressional hearing, we are going to begin with the Pledge of Allegiance, and I will lead it, unless Mrs. McMorris Rodgers, would you like to lead it?

Mrs. McMORRIS RODGERS. Sure.

[Group recites Pledge of Allegiance.]

Mr. BENTZ. Thank you. I will now recognize myself for an opening statement.

**STATEMENT OF THE HON. CLIFF BENTZ, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF OREGON**

Mr. BENTZ. Good afternoon. Thank you all for joining us. Let me begin by welcoming the Chair of the Energy and Commerce Committee, Cathy McMorris Rogers, Congressman and Chair of the Western Caucus, Dan Newhouse, and member of the Natural

Resources Committee, Mike Collins, to this hearing. Let me also mention and welcome retired Chair Doc Hastings, who is in the audience today. I thank all of you for being here.

Also I want to thank the House Recording Studio team, Clinton Holt, Christopher Overby, Sean Root, and Ryan Dahl, who worked all night, basically, to get this hearing put together. There was a problem in the DCA airport which caused a delay. They made it here and got us set up, and for that we are all grateful, so thank you.

I also want to thank our witnesses for being here and for taking the not inconsiderable time to travel down to Richland to participate. I will be introducing each of you later, so I will simply say now thank you for your participation.

Our purpose today is to hear and learn what our river communities and our government agencies think and want when it comes to the future of the four Lower Snake River dams. Consistent with this purpose, last week in the congressional Committee on Natural Resources, I had the opportunity to ask the Chair of the Council on Environmental Quality, Brenda Mallory, if it was the position of the Biden administration that these four dams should be removed or breached without congressional authorization. She assured me that Congress would have to authorize such action.

I was using the term “remove or breach” as shorthand for upsetting or reversing or mooted hydro project purposes, which would include extreme drawdown. I hope Chair Mallory has shared my understanding of this term. It is an important definition. I look forward to hearing the opinion of those agency witnesses here today on this issue.

I also asked Chair Mallory if the CEQ was taking an active role in guiding the future of the dams. I was assured that all the CEQ was doing was coordinating the efforts of the agencies involved. I look forward to hearing about that coordination from the agency witnesses here today.

We understand the future of these four dams is in significant part the future of Northwest communities, rate payers, fish, businesses, taxpayers, tribes, and in important ways, the processes used in making difficult decisions involving conflicting and important interests.

Here are some of the questions I hope we will know more about by the end of this hearing:

(1) Why is the Biden administration failing to aggressively act to protect the billions upon billions of taxpayer, ratepayer, and business dollars in building, improving, and operating the four Lower Snake River dams? These structures are capable of creating thousands of megawatts of clean, renewable, and firm power. Yet, the Biden administration is actively participating in efforts to turn these dams into little more than ripples in the mighty Snake. Our witnesses will remind the Administration, in their testimony today, of the incredible and ever-increasing balancing value of the hydro-power created by the four Lower Snake River dams and the enormous investment the United States and ratepayers in the Northwest have made in these four clean energy projects.

(2) Is the Biden administration, through its Council on Environmental Quality, NOAA, Army Corps of Engineers, the Bureau of Reclamation, and BPA using “mediation,” in a lawsuit *National Wildlife Federation et al v. National Marine Fisheries Service* pending in the U.S. District Court of Oregon as a means of avoiding congressional oversight? Is this lawsuit a sue-and-settle device used to cloak the government’s involvement with NGOs in achieving a preordained outcome such as the functional equivalent of dam breaching extreme drawdowns, for example?

(3) Congressman Mike Simpson, who was invited to attend today’s hearing, has said that although he supports dam removal, such removal should not happen until replacement power in an amount equal to that being produced by these dams has been built and is on-line. Replacement power is an extraordinarily important part of any discussion involving the 1,000 megawatts of reliable and firm power generated by these dams. We will be asking the agencies here today their thoughts on Chair Simpson’s thinking.

(4) Why is the Biden administration purposely ignoring the fact that based on existing science, even if the Snake River dams were gone, the benefits of salmon runs in the Snake River would be barely measurable. There will be testimony regarding the paltry benefit to the salmon of dam removal and the sad fact that agencies are focusing on freshwater when they should be looking at and studying the ocean.

(5) *The Maine Lobstermen’s Association v. National Marine Fisheries Service* case, decided just a few days ago, specifically noted that the action agency in this case, National Marine Fisheries, must “use the best science and commercial data available and avoid needless economic dislocation produced by agency officials, zealously and intelligently pursuing their environmental objectives.” Given this clear statement of how National Marine Fisheries must collect and analyze scientific data, why is the government failing to adequately study the oceans, predators, tribal take, fishing impacts on smolts that do reach the sea? We will hear testimony addressing the shortcomings of data being used to make decisions that will affect thousands of ratepayers and businesses in our Great Northwest.

(6) This hearing will establish that this panel and Congressional Members have no enthusiasm for either dam breaching or extreme drawdowns. Why? Because as this hearing will establish, removing the dams by breaching or drawdown is not a solution that will save or restore the salmon. Ratepayers’ money and efforts should be spent on the real problem, the real reasons that fish are not returning, and we believe it will be shown by testimony today that the answer is going to be found in the ocean. Let’s quit blaming the dams and start looking in the right place for solutions.

I now recognize Chair McMorris Rodgers for her 5-minute opening statement.

**STATEMENT OF THE HON. CATHY McMORRIS RODGERS, A
REPRESENTATIVE IN CONGRESS FROM THE STATE
OF WASHINGTON**

Ms. RODGERS. Thank you, Mr. Chairman. It is good to be here on the ground, talking about the Lower Snake River dams and with the people whose livelihoods depend on them. Each and every person on this panel has a story to tell about the benefits of the Lower Snake River dams. They, and the groups that they represent, must be a part of any debate over the future of the river system. Unfortunately, these conversations are already happening at the highest levels of government, including President Biden, and I am concerned the voices of everyone here are not being heard.

Today, your voices will be heard loud and clear. Today is about facts. The Lower Snake River dams have the capacity to generate 3,000 megawatts of reliable, clean electricity to power our homes and businesses, enough electricity to power one-third of the homes in Washington State. Without them, we are in big trouble.

Last September, California experienced an energy crisis. Governor Newsom begged residents to stop using their air conditioning and don't charge your electric battery vehicles. With coming blackouts, our dams generated 16,000 megawatt hours of energy that we sold to California to prevent a catastrophe. They also came to the rescue when Chief Joseph Dam failed during the deep freeze of February 2021, when they generated more than 1,600 megawatts of electricity to keep the lights on. And during the summer heat dome event, dams held 15 percent of BPA's total required reserves.

In all these examples, the Lower Snake River dams saved lives, and that is just on the energy front. The role that these dams play in feeding Americans and the world cannot be overstated. Sixty percent of all the wheat exports from the Pacific Northwest moved through the dams, making the river system the third-largest export corridor in the world, sending wheat from the United States to more than 20 countries across the Pacific Rim. Washington's wheat farmers have a legacy of feeding the world, a legacy that we cannot put at risk.

Barging on the Snake River allows farmers to move grain and other products efficiently, saving millions of dollars per year and reducing carbon emissions. Without barging through the dams, we would need an additional 538 semi-trucks on the roads to move the wheat carried by one four-barge tow. So, just imagine what that would mean for all the wheat barged on the river.

The economic benefits are also huge. Without barging, farmers would see the value of their products—wheat, barley, potatoes, beans, onions—go down, and the loss of jobs and economic activity would be felt across the board.

Let me be clear. I share the goal of protecting and restoring salmon runs on the river system. I want my kids and grandkids to know what salmon represent in our region. The Lower Snake River dams are an easy target, but they are not the problem, and breaching them is not the solution.

Like we saw this morning at Ice Harbor, these dams have the best-in-class fish passage technology and fish-friendly turbines. They are almost invisible to migrating salmon. What is not

invisible is the overpopulation of sea lions that feast on adult salmon returning to the Snake to spawn, the birds that prey on juvenile salmon on their way to the ocean, the tons of toxic sewage being dumped into Puget Sound that is literally suffocating the most important salmon to our orcas. These and other factors, like ocean conditions, habitat loss, and dams with no fish passage at all, are the things that need to be focused on in order to get results.

And speaking of results, salmon returns on the Lower Snake River are making encouraging gains. Last year, spring Chinook returns were 31 percent above the 10-year average. This year, Chinook got off to a late start, so we are watching those returns closely. But wild steelhead returns are double what we saw last year. Our focus needs to be on results, which starts with investing our resources to get a better understanding of what is happening to salmon in the ocean, controlling predators, addressing unchecked pollution, and restoring habitats. We must focus on science and facts. Only then will we accomplish our shared goals.

I yield back.

[Applause.]

Mr. BENTZ. Thank you. I now recognize Congressman Dan Newhouse for his opening statement.

STATEMENT OF THE HON. DAN NEWHOUSE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. NEWHOUSE. Thank you, Chairman Bentz, members of the House Committee on Natural Resources, I want to thank you for joining us here in Central Washington to help shed some light on a very important issue that is critical to Central Washington, and I would say to the entire Pacific Northwest. And while I am not a member of the House Natural Resources Committee, many of the issues impacting our region fall under the jurisdiction of this Committee, and I really appreciate the chance to be able to speak on them here today.

I also want to thank the witnesses that are joining us today who are each experts in their own field and will be able to provide valuable insight to my congressional colleagues as well as to the people that are here in person and those that are listening.

We are here today to discuss the multi-purpose benefits of the Columbia and Snake Rivers as well the Federal Columbia River Power System, with particular attention given to the Lower Snake River dams. Today's oversight hearing on the dam system will touch upon critical issues to Washington's 4th Congressional District. These include power, navigation, transportation, irrigation, certainly food, trade, fish, recreation, and so much more.

The Federal Columbia River Power System truly is the lifeblood of the Pacific Northwest. It comprises approximately 31 hydroelectric projects within the Columbia River basin. From these projects, approximately a third of the Pacific Northwest electricity is generated, whereas the Lower Snake River dams have the capacity to generate about 3,000 megawatts of carbon-free energy. Anywhere between 50 to 60 million tons of cargo are barged through the river annually. Meanwhile, fish passing through the dams have a 96 to 98 percent survival rate.

So, for these and many other reasons I have not only long opposed the breaching of the Lower Snake River dams, but I strongly support the preservation that is integral to our flood control, to navigation, irrigation, agriculture, and recreation throughout the area. We simply cannot afford to lose them.

I believe the facts speak for themselves. Critical infrastructure of the Snake River dams provides clean, renewable, safe, affordable energy for our homes and for our businesses. That is why I introduced the Northwest Energy Security Act earlier this year, in March. If enacted, this legislation would direct the Federal Columbia River Power Systems to be operated in alignment with the 2020 Columbia River System Operations Environmental Impact Statement Record of Decision. Ultimately, this bill would support the system by improving and maintaining existing hydro-power assets, ensuring operations throughout the system are conducted in accordance with the latest Federal scientific review and continuing to allow native salmon to recover at record rates.

And while I believe my legislation will help to support the entire system, more must be done to address this issue, and that is why I am so happy to see so many stakeholders here today who will be able to speak to the many benefits of the entire Federal Columbia River Power System, and in particular, the Snake River dams and the impact they have on this region and on the nation.

We have a unique opportunity to hear from those who know these issues so well, from wheat growers, port officials, fish scientists, and others, and I look forward to hearing their testimony today and engaging with them on these vital issues.

With that, Mr. Chairman, thank you, and I yield back.

Mr. BENTZ. Thank you, Mr. Newhouse. We are going to take a very brief recess. We are having an issue with our livestream video. So, we will go into recess and come back, I hope, in about 5 minutes.

[Recess.]

Mr. BENTZ. With that, we will turn to the opening statement from Mike Collins, who we welcome from the great state of Georgia.

Congressman Collins.

**STATEMENT OF THE HON. MIKE COLLINS, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF GEORGIA**

Mr. COLLINS. Thank you, Mr. Chairman, and I am sure you folks noticed that I probably don't sound like I am from around here, and that is because y'all have an accent.

[Laughter.]

Mr. COLLINS. But I do want to thank you though, Mr. Chairman. I know you tried to make me feel at home by leaving me some sweet tea up here, and I appreciate that.

Folks, I am from Georgia. I represent the 10th District of Georgia, and probably like 99 percent of y'all out there, for the past 30-plus years I have not been up here. I have been out there. I have never been elected to anything in my life until this past November, when I was elected to Congress.

My background is in the trucking business. My wife and I, we were fortunate enough—I am second generation in this industry.

We started our own trucking company 30 years ago, and now our third generation runs that thing. I decided to run for Congress on several different issues: inflation, border security, and having oversight in every committee that we have in Congress, which leads me to why I am here today.

While I am not on this Subcommittee, it is an honor to be here representing part of the Full Committee. I have had the opportunity to be in hearings on the East Coast, the Midwest, and now out here in the West. And it is the same thing everywhere we go. It is freaking over-reach from a Federal Government, with an administration that is pushing a left-wing, socialistic agenda down our throats.

[Applause.]

Mr. COLLINS. I look forward to the witnesses. I look forward to listening to your testimony. I think that it is so important that we have local community leaders and people that are out there trying to make a living and provide for their families.

And I will tell you something else. It is great to see such a huge crowd out there. That shows your concern. It shows that you are not just concerned about the community, you are probably concerned about your family, about your jobs, and about that third generation that may want to take over.

So, Mr. Chairman, I am glad to be here, I appreciate the opportunity, and I yield back so we can get this thing cranked up and going.

[Applause.]

Mr. BENTZ. Thank you, Mr. Collins.

I will now introduce our witnesses, and we will start on this end. Ms. Beth Coffey, Director of Programs for the Northwestern Division of the U.S. Army Corps of Engineers; Ms. Jennifer Quan, the West Coast Regional Administrator of National Marine Fisheries Service; Mr. John Hairston, Administrator of the Bonneville Power Administration; Mr. Scott Corbitt, General Manager of the Port of Lewiston, in Lewiston, Idaho; Mr. Rick Dunn, General Manager of Benton PUD in Kennewick, Washington; Ms. Michelle Hennings, Executive Director of the Washington Wheat Growers Authority in Ritzville, Washington; Mr. Alex McGregor, President of the McGregor Company of Colfax, Washington; Mr. Todd Myers, Environmental Director for the Washington Policy Center in Cle Elum, Washington; and Dr. David Welch, President of the Kintama Research Services in British Columbia, Canada.

Let me remind the witnesses that under Committee Rules, you must limit your oral statements to 5 minutes, but your entire statement will appear in the hearing record. We use timing lights. When you begin, the light will turn green. When you have 1 minute remaining, the light will turn yellow. And at the end of 5 minutes, the light will turn red, and I will ask you to please complete your statement. And as you can see, there is a clock down in front.

I will also allow all witnesses to testify before Member questioning. If you begin to run over, I shall begin to tap like that, and that is your signal to stop talking.

We will begin by listening to Ms. Coffey for 5 minutes. You are recognized.

**STATEMENT OF BETH COFFEY, DIRECTOR OF PROGRAMS,
NORTHWESTERN DIVISION, U.S. ARMY CORPS OF
ENGINEERS, PORTLAND, OREGON**

Ms. COFFEY. Good Afternoon. Thank you for the invitation to testify today.

The Northwestern Division oversees five districts: Seattle, Portland, Walla Walla, Kansas City, and Omaha. This is a large geographic region that includes the Columbia and Missouri River basins and their tributaries, as well as the coasts of Oregon, Washington, and the Puget Sound. Its primary civil works missions are flood, storm damage reduction, commercial navigation, and aquatic ecosystem restoration.

The Northwestern Division maintains and operates multiple-purpose dams that also provide benefits such as hydropower, water supply storage, and recreation. The dams also have modifications and operational changes to protect and mitigate the impacts of the system's construction and continued operation on fish and wildlife.

The Congress authorized the Corps and the Bureau of Reclamation to construct, operate, and maintain 14 Columbia River System projects for multiple specified purposes. The Congress authorized the Bonneville Power Administration to market and transmit the power generated by the coordinated system operations of these projects.

Within the Columbia River System, the Corps constructed, and operates and maintains, four dams on the Lower Snake River. These are multiple-use facilities whose purposes include, but are not limited to, navigation and hydropower production. Fish ladders have been in place at these facilities since the dams were built in the 1960s and early 1970s. Fish passage improvements, both structural and operational changes, have been made at all four dams over the last 25 years as the Corps investigates and adopts new technologies to avoid jeopardy to the continued existence of juvenile and adult fish pursuant to our obligations under the Endangered Species Act.

Even with significant investment, operations, and engineering to support improved fish passage, the construction and continued operation of the Federal Columbia River Hydropower System, coupled with other factors, negatively affects native fish abundance, and the communities, including Tribal Nations that rely on those fisheries for economic, cultural, and ecosystem benefits.

With appropriate maintenance, repair, rehabilitation, and replacement of components as needed, the Corps could continue to operate these four dams on the Lower Snake River for many years. Deauthorization and removal of the dams would require specific authorization and appropriations from Congress.

Management of the system has been the subject of litigation for the past two decades, which resulted in the latest National Environmental Policy Act evaluation of the system and the latest biological opinions from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, completed in September 2020.

The United States negotiated a stay of the district court litigation so that the parties could work collaboratively on addressing basin-wide solutions that could resolve the litigation. The stay that these parties negotiated has allowed the parties in the litigation and the regional sovereigns, which includes the region's tribes and the four states, to continue to work on developing comprehensive, basin-wide solutions to recover native fish populations. Under the court-ordered stay, the U.S. Army Corps of Engineers, Bureau of Reclamation, Bonneville Power Administration, National Marine Fisheries Service, and U.S. Fish and Wildlife Service are participating in a confidential mediation conducted by the Federal Mediation and Conciliation Service to achieve this goal. The Corps is committed to the confidential mediation and a whole-of-government approach to addressing these important matters.

In summary, Congress has authorized the Corps to operate the Lower Snake River facilities, and many others in the Northwest, for multiple purposes. The Columbia Basin is a complex system, and the Corps, working in partnership with the other Federal agencies, the tribes, states, and stakeholders, will continue to focus on improving innovative solutions to the issues facing the Columbia River Basin, including actions to protect and enhance both communities and ecosystems, consistent with the congressionally authorized purposes.

Once again, thank you for the invitation to testify before you today.

[The prepared statement of Ms. Coffey follows:]

PREPARED STATEMENT OF MS. FRANCES (BETH) COFFEY, PROGRAMS DIRECTOR,
NORTHWESTERN DIVISION, U.S. ARMY CORPS OF ENGINEERS

Thank you for the invitation to testify today. I am the Programs Director for the Northwestern Division of the United States Army Corps of Engineers (Corps). The Northwestern Division oversees five districts: Seattle, Portland, Walla Walla, Kansas City, and Omaha. This large geographic expanse includes the Columbia and Missouri River basins and their tributaries as well as the Coast of Oregon and Washington and Puget Sound.

The Northwestern Division manages its districts' Civil Works activities based on river basins rather than state boundaries. Its primary Civil Works missions are flood and storm damage reduction, commercial navigation, and aquatic ecosystem restoration. The Northwestern Division maintains and operates multiple purpose dams that also provide benefits such as hydropower, water supply storage, and recreation. The dams also have modifications and operational changes to protect and mitigate the impacts of the system's construction and continued operation on fish and wildlife. Within its jurisdiction are 77 dams and reservoirs, 29 hydropower plants, and 1,600 miles of navigable channels.

The Congress authorized the Corps and the Bureau of Reclamation (Reclamation) to construct, operate, and maintain 14 Columbia River System projects for multiple specified purposes. The Congress authorized the Bonneville Power Administration to market and transmit the power generated by the coordinated system operations of these projects.

Within the Columbia River System, the Corps constructed, and operates and maintains, four dams on the lower Snake River. These are multiple-use facilities, whose purposes include but are not limited to navigation and hydropower production. Fish ladders have been in place at these facilities since the dams were built in the 1960s and early 1970s. Fish passage improvements—both structural and operational changes—have been made at all four dams over the last 25 years as the Corps investigates and adopts new technologies to avoid jeopardy to the continued existence of juvenile and adult fish pursuant to our obligations under the Endangered Species Act. Even with significant investment, operations, and engineering to support improved fish passage, the construction and continued operation of the Federal Columbia River Hydropower System, coupled with other factors,

negatively affects native fish abundance, and the communities, including Tribal Nations, that rely on those fisheries for economic, cultural, and ecosystem benefits.

With appropriate maintenance, repair, rehabilitation, and replacement of components as needed, the Corps could continue to operate these four dams on the lower Snake River for many years. Deauthorization and removal of the dams would require specific authorization and appropriations from Congress.

Management of the system has been the subject of litigation for the past two decades, which resulted in the latest National Environmental Policy Act evaluation of the system and the latest biological opinions from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, completed in September 2020.

In late 2020 and early 2021, plaintiffs filed complaints in the district court in Oregon and the Ninth Circuit challenging the decisions of the Corps, Reclamation, Bonneville Power Administration, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service. The United States negotiated a stay of the district court litigation so that the parties could work collaboratively on addressing basin-wide solutions that could resolve the litigation. The District Court granted the stay in October 2021, and then extended the stay through August of this year. The stay that these parties negotiated has allowed the parties in the litigation and the regional sovereigns, which includes the region's tribes and four states, to continue to work on developing comprehensive, basin-wide solutions to recover native fish populations. Under the court ordered stay, the USACE and other affected Departments and agencies are participating in confidential mediation conducted by the Federal Mediation and Conciliation Service to achieve this goal. The Corps is committed to the confidential mediation and a whole-of-government approach to addressing these important matters.

In summary, Congress has authorized the Corps to operate the lower Snake River facilities, and many others in the Northwest, for multiple purposes. The Columbia Basin is a complex system, and the Corps, working in partnership with the other federal agencies, the tribes, states, and stakeholders, will continue to focus on providing innovative solutions to the issues facing the Columbia River Basin, including actions to protect and enhance both communities and ecosystems, consistent with the congressionally authorized purposes.

Once again, thank you for the invitation to testify before you today.

Mr. BENTZ. Thank you, Director Coffey.

The Chair now recognizes Ms. Jennifer Quan, the West Coast Regional Administrator of the National Marine Fisheries Service. Ms. Quan, you are recognized for 5 minutes.

STATEMENT OF JENNIFER QUAN, WEST COAST REGIONAL ADMINISTRATOR, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, SEATTLE, WASHINGTON

Ms. QUAN. Thank you, Chairman Bentz, members of the Subcommittee. Thank you for the opportunity to testify today before you. My name is Jen Quan, and I am the Regional Administrator for NOAA Fisheries West Coast Regional Office. I want to also thank Congresswoman McMorris Rodgers and Congressman Newhouse for hosting us in their districts. I am also aware and would like to acknowledge Chair Brigham from the Umatilla Tribe, who I think is in the audience, and thank them and all of our tribal co-managers for their partnership.

We appreciate the Committee's interest in this important, complex, and long-standing matter. NOAA is committed to working with our state and tribal fishery co-managers, other Federal agencies, and a broad range of stakeholders to develop a durable solution that takes into account the important interests across the Columbia River basin.

Since the early 1990s, NOAA Fisheries has listed 13 stocks of salmon and steelhead in the Columbia River Basin under the

Endangered Species Act, or ESA. Despite considerable efforts to mitigate the risk of extinction, salmon and steelhead are currently at abundances far below those necessary for fully supporting tribal, commercial, and recreational harvest. Delisting endangered and threatened species is the ultimate goal of the ESA, but these targets are not necessarily the only endpoint. Broad-sense recovery goals seek salmon and steelhead numbers that contribute fully to the culture, environment, and economy of the region.

In July 2020, NOAA Fisheries issued its latest ESA biological opinion that assessed and concluded that the operations and maintenance of the Columbia River System’s 14 dams was not likely to jeopardize the continued existence of listed salmon and steelhead or result in the destruction or adverse modification of their critical habitat. However, the opinion, as well as our 2022 5-year status review, documents that we remain concerned about the potential future prospects of ESA-listed salmon and steelhead in the Basin due to both the ongoing impacts occurring in freshwater and ocean environments.

NOAA Fisheries has remained deeply committed to working collaboratively to improve the abundance and productivity in the Columbia and Snake River basins. To that effect, in March 2022, NOAA Fisheries, the Departments of the Interior, Army, and Energy, and the Council on Environmental Quality, held a Nation-to-Nation consultation with representatives from the Columbia Basin’s tribes. In consideration of the messages we heard from the tribes, and to inform discussions on salmon recovery, NOAA Fisheries developed the Rebuilding Interior Columbia Basin Salmon and Steelhead Report. We finalized the rebuilding report in September 2022, with input and support from the U.S. Fish and Wildlife Service, scientists, and fishery co-managers throughout the Basin.

The foundation of the rebuilding report was guided by goals established by the Columbia Basin Partnership Task Force, that was originally convened back in 2017. NOAA’s rebuilding report provides a comprehensive set of actions with the highest potential to achieve the partnership’s mid-range abundance goals. These goals exceed the abundances required to achieve delisting on ESA-listed salmon and steelhead, and represent progress toward healthy and harvestable fish stocks, toward mandates set forth in the Magnuson-Stevens Act, and tribal treaties.

The actions in the rebuilding report include, but are not limited to, reductions in mortality from mainstem dams. They do include breaching Lower Snake River dams. They include management of predators, habitat restoration and protection, fish passage and reintroduction into blocked areas, as well as other efforts and management efforts in the ocean.

The rebuilding report does not assess the social and economic impacts of implementing any rebuilding measures. It does not suggest funding sources, congressional authorizations needed, or regulatory compliance measures required for implementation. NOAA Fisheries recognizes that the important services the Lower Snake River dams provide would need to be replaced or otherwise offset before breaching could occur, and we defer to other experts and ongoing regional efforts to address these pivotal issues.

We value the opportunity to continue working with the Subcommittee on these important issues, and I appreciate the opportunity to discuss NOAA Fisheries' work with you today. Thank you.

[The prepared statement of Ms. Quan follows:]

PREPARED STATEMENT OF JENNIFER QUAN, REGIONAL ADMINISTRATOR FOR WEST
COAST REGION OFFICE, NATIONAL MARINE FISHERIES SERVICE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
U.S. DEPARTMENT OF COMMERCE

Chairman Bentz, Ranking Member Huffman, and members of the Subcommittee, thank you for the opportunity to testify. The National Oceanic and Atmospheric Administration (NOAA) is responsible for the stewardship of the nation's living marine resources and their habitat. NOAA Fisheries provides vital services for the nation: sustainable and productive fisheries, the recovery and conservation of protected species, and healthy ecosystems—backed by sound science and an ecosystem-based approach to management—all in support of a thriving, sustainable ocean economy. The resilience of our marine ecosystems and coastal communities, including inland communities connected by large river systems like the Columbia, depends on healthy marine species, including protected species such as whales, sea turtles, salmon, and corals. Commercial fisheries in the Pacific Northwest landed more than \$500 million worth of sustainable seafood, including salmon, in 2021.

We appreciate the Committee's interest in this important, complex, and long-standing matter. NOAA Fisheries recognizes the numerous and diverse interests at stake, and we are committed to working with our state and tribal fishery co-managers, other federal agencies, and a broad range of industry and environmental stakeholders to develop a long-term durable solution that takes into account the important interests across the Columbia River Basin.

NOAA's collaborative fishery conservation and management work in the Columbia Basin is guided by multiple Congressional authorizations, including the Mitchell Act. The Mitchell Act not only authorizes the establishment, operation, and maintenance of hatchery facilities and scientific investigations to facilitate the conservation of the fishery resource, it also authorizes "all other activities necessary for the conservation of fish in the Columbia River Basin in accordance with law." More broadly, but explicitly applicable to Pacific salmon and steelhead fisheries, the Magnuson-Stevens Fishery Conservation and Management Act (MSA), enacted in 1976 and amended in 1996 and 2007, authorizes NOAA Fisheries to further the conservation and enhancement of essential fish habitat in support of realizing the full potential of the Nation's fishery resources.

NOAA Fisheries, along with the U.S. Fish & Wildlife Service, also administers the Endangered Species Act (ESA). Since the early 1990s, NOAA Fisheries has listed 13 stocks of salmon and steelhead in the Columbia River Basin as either threatened or endangered under the ESA. Despite substantial investments over the last 30 years, none of these listed stocks have been recovered to the point that they can be delisted. However, these efforts have prevented these listed stocks from going extinct, and yielded improvements for some stocks. It is important to note that prior to ESA listing decisions, many stocks of salmon and steelhead had already been extirpated throughout the Columbia Basin,¹ and impassable dams have blocked anadromous fish access to more than 40 percent of the historically available habitat.² The current returns of naturally produced salmon and steelhead in the Columbia Basin are less than 10 percent of the historical run sizes.

In addition to NOAA's duties under federal statutes, the US Government has long-standing commitments to Tribal Nations. NOAA takes these treaty and trust responsibilities to Columbia River tribes seriously. The tribes not only have reserved rights to fish, but an expectation that there would always be fish to harvest and a right to a fair share of the harvest. In the face of a changing climate, the urgency to act is greater than ever. The science tells us that it is possible to recover these iconic animals that so many in the region rely upon, and the region tells us that action must address the relevant social, cultural, economic, and ecological considerations.

In July 2020, NOAA Fisheries issued its latest biological opinion under the ESA addressing the ongoing operation and maintenance of the Columbia River System.

¹ Allen, Cain. 2003. Columbia River Indian fishing rights and the geography of fisheries mitigation. *Oregon Historical Quarterly*. Vol. 104, Issue 2.

² Northwest Power and Conservation Council, Fish passage at dams

NOAA Fisheries concluded that the proposed action—the operation, maintenance, and associated non-operational conservation measures for the 14 federal Columbia River System dams for a timeframe of fifteen years—was not likely to jeopardize the continued existence of listed salmon and steelhead or result in the destruction or adverse modification of their designated critical habitat.

As most recently documented in our 2022 ESA 5-year status reviews,³ we remain concerned about the potential future prospects of ESA-listed salmon and steelhead in the Basin due to continued low abundances and impacts from habitat degradation, hydropower, predation, and other threats. While we may have been able to conclude that the continued operations of the Columbia River System dams are likely to avoid jeopardizing the species under the ESA when paired with non-operational conservation measures like habitat restoration and predator control over the next fifteen years, listed salmon and steelhead generally remain at a high risk of extinction, particularly considering the potential effects of a changing climate.

Despite considerable efforts region-wide to mitigate the risk of extinction, salmon and steelhead in the Columbia River Basin are currently at abundance levels far below those necessary for fully supporting tribal, commercial, and recreational harvest, and are at about 12 percent, in the aggregate, of the Columbia Basin Partnership goals for healthy and harvestable stocks (see below for more on the Partnership and development of these goals). Delisting endangered and threatened species is the ultimate goal under the ESA, but these delisting targets are not necessarily the only endpoint. Broad-sense recovery goals seek salmon and steelhead numbers that contribute fully to the culture, environment, and economy of the region.

NOAA Fisheries’ 2020 biological opinion was challenged in court. During preliminary injunction proceedings, the opportunity arose to engage in a dialogue with the parties that could potentially resolve all claims in the litigation. In coordination with the Council on Environmental Quality, all defendant federal agencies agreed to seek a stay of litigation to explore the possibility of developing a long-term durable solution rather than repeating the constant, costly litigation cycle. Pursuant to the court ordered stay in litigation, NOAA and other affected departments and agencies are participating in confidential mediation conducted by the Federal Mediation and Conciliation Service.

Despite the often-contentious issues surrounding Columbia and Snake River salmon and steelhead, NOAA Fisheries has remained deeply committed to working collaboratively with state and tribal fishery co-managers, other federal agencies, and a broad range of stakeholders in conservation and recovery efforts. These collaborations are needed not only to improve the abundance and productivity of salmon and steelhead, but also to deliver the cultural, economic, and ecological benefits that salmon and steelhead provide.

Our past engagements with regional sovereigns and stakeholders provide important context for understanding the genesis and content of NOAA Fisheries’ report, *Rebuilding Interior Columbia Basin Salmon and Steelhead* (Report). In 2017, NOAA Fisheries’ Marine Fisheries Advisory Committee convened the Columbia Basin Partnership Task Force (Partnership), bringing together diverse representatives from across the Columbia Basin to establish a common vision and goals for the Basin and its salmon and steelhead. The diverse group of parties in the Partnership included Columbia Basin tribes, fishing, agriculture, conservation, river transportation, port, and hydropower interests, as well as the states of Idaho, Montana, Washington, and Oregon. These parties share overlapping and sometimes conflicting values and views about the Columbia River and its salmon and steelhead. In the past, many of the parties have faced each other across a courtroom. The Partnership brought these representatives together at one table to find common ground and foster a collaborative approach to ensure the long-term persistence of our salmon and steelhead.

The Phase 2 October 2020 Report, released at the conclusion of the Partnership’s work, documents that all of these parties want to ensure that healthy runs of salmon and steelhead thrive into the future, and to do so, it sets forth goals beyond ESA delisting that aspire to rebuild healthy and harvestable stocks of salmon and steelhead throughout the Basin. Given that current salmon and steelhead abundance levels are so low (on aggregate about 12 percent of healthy and harvestable goals), the Partnership emphasized the urgency of taking action across the salmon life cycle to restore salmon populations to the point they again support the region’s economy, environment, and culture. Achieving the Partnership’s goals would go beyond delisting of salmon and steelhead in the Basin to rebuild abundances to a

³ NOAA Fisheries West Coast ESA 5-year Status Reviews

level that could accommodate increased tribal and non-tribal harvest opportunities throughout the Columbia and lower Snake Rivers and in the ocean.

In March 2022, NOAA Fisheries, along with the Department of the Interior, Department of the Army, Department of Energy, and the Council on Environmental Quality, held a Nation-to-Nation consultation with representatives from the Columbia Basin’s tribes. In consideration of the messages we heard from the tribes, and in order to inform the discussions regarding what it would take to move beyond simply avoiding species extinction and instead focusing on restoring salmon and steelhead abundances to healthy and harvestable levels in the Basin, NOAA Fisheries, with input and support of the U.S. Fish & Wildlife Service, and input from scientists and fish managers from the Nez Perce Tribe and the State of Oregon, developed the draft Report.

In the draft Report, NOAA Fisheries looked towards the sovereign- and stakeholder-endorsed goals adopted by the Partnership and provided an assessment of the actions with the highest potential to achieve the Partnership’s midrange abundance goals. These goals exceed the abundances required to achieve de-listing of ESA-listed salmon and steelhead and represent substantial progress toward healthy and harvestable fish stocks, toward mandates set forth in the MSA and Tribal treaties. NOAA Fisheries identified a comprehensive suite of management actions to achieve these goals. The actions we identified include significant reductions in direct and indirect mortality from mainstem dams, including breaching lower Snake River dams; management of native and non-native predators; systematic and strategic tributary and estuarine habitat restoration and protection; fish passage and reintroduction into priority blocked areas; and focused hatchery and harvest reform.

As the Report focuses on the restoration of salmon and steelhead, NOAA Fisheries sought comments from fishery co-managers throughout the Basin. NOAA Fisheries received comments from the Confederated Tribes and Bands of the Yakama Nation, Upper Snake River Tribes Foundation, Spokane Tribe of Indians, Coeur d’Alene Tribe, Nez Perce Tribe, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Colville Reservation, Burns Paiute Tribe, Columbia River Inter-Tribal Fish Commission, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, and Idaho Department of Fish and Game.

After considering the comments that we received from state and tribal fishery co-managers, and consistent with commitments the U.S. made to extend the litigation stay, we released the final Report in September 2022. The final Report identifies a comprehensive suite of actions that, based on existing science and our experience and expertise, would have the greatest likelihood of making considerable progress towards restoring stocks of salmon and steelhead to healthy and harvestable levels. The final Report acknowledges scientific uncertainties, and did not include new studies or modeling to precisely quantify the expected benefits of the actions. It did conclude that the existing body of science “robustly supports riverscape-scale process-based stream habitat restoration, dam removal (breaching), and ecosystem-based management, and overwhelmingly supports acting, and acting now” if we are to achieve the higher abundance goals.⁴

The Report does not assess the social and economic impacts of implementing any rebuilding measures nor suggest funding sources, needed authorizations, or regulatory compliance measures required for implementation. NOAA Fisheries recognizes that the critically important social and economic services the lower Snake River dams provide would need to be replaced or otherwise offset before breaching could occur, and we defer to other experts and ongoing regional efforts on how to address these pivotal issues. The US Army Corps of Engineers, which owns and operates the lower Snake River dams, has indicated that breaching the dams would require Congressional authorization.

The regional and national conversations on this subject continue. NOAA Fisheries and other participants are considering a durable long-term strategy to restore salmon and other native fish populations to healthy and abundant levels, while also honoring Federal commitments to Tribal Nations, delivering affordable and reliable clean power, and meeting the resilience needs of stakeholders across the region. The Council on Environmental Quality recently published a request for information that builds upon public listening sessions to ensure all who desire to be heard have a voice in the process. Similarly, elected officials have weighed in with their own concepts and initiatives related to a long-term solution.

We hope to work with the subcommittee, and all the stakeholders here, to shape a future that gets us closer to the vision of “[a] healthy Columbia Basin ecosystem

⁴NMFS (National Marine Fisheries Service), *Rebuilding Interior Columbia Basin Salmon and Steelhead* (Sep. 30, 2022)

with thriving salmon and steelhead that are indicators of clean and abundant water, reliable and clean energy, a robust regional economy, and vibrant cultural and spiritual traditions, all interdependent and existing in harmony.”⁵

Conclusion

NOAA Fisheries is proud to continue to lead the world in conducting ocean and fisheries science, serving the nation’s coastal communities and industries, and ensuring responsible stewardship of our ocean and coastal resources. We value the opportunity to continue working with this Subcommittee on these important issues. Thank you, Members of the Subcommittee and your staff, for your work to support NOAA Fisheries’ mission. I am happy to take your questions.

Mr. BENTZ. Thank you, Ms. Quan.

I will now recognize Mr. John Hairston, Administrator of the Bonneville Power Administration, for 5 minutes.

STATEMENT OF JOHN HAIRSTON, ADMINISTRATOR AND CEO, BONNEVILLE POWER ADMINISTRATION, PORTLAND, OREGON

Mr. HAIRSTON. Good afternoon, Mr. Chairman, and members of the Subcommittee. I am John Hairston. I am CEO and Administrator of the Bonneville Power Administration, and I am pleased to be here today with you to describe the contributions of the Federal Columbia River System to the economic strength of Pacific Northwest communities.

As a steward of the Columbia River Power System, a vital source of clean and reliable electricity, Bonneville also shares in the protection and enhancement of fish and wildlife populations affected by the Columbia River system. Though I know it is well understood by you, Mr. Chairman, and other members of the Northwest Congressional Delegation, I always begin with reminding the audience that Bonneville is a public, not-for-profit entity charged with marketing Federal electric power at cost, and with preference to publicly-owned utilities in the Northwest.

Bonneville was created in 1937 by President Franklin Roosevelt with this public mission service in mind. The reliable delivery of affordable power was a significant factor in the contribution of the Columbia River Power System during World War II. It helped develop local economies, particularly in rural communities, by providing power for irrigation and manufacturing. Today, it powers the information technologies that are so important to the Pacific Northwest and our nation.

Bonneville’s mission also includes addressing the environmental impacts of the Columbia and Snake River dams, especially to the Columbia River tribal communities. The Federal Columbia River Power System is unique in the extensive modification and operational changes made for the protection and enhancement of fish and wildlife. Bonneville works in partnership with Columbia River tribes, Northwest states, and local communities in these efforts.

Since passage of the 1980 Northwest Power Act, Bonneville has invested billions of dollars to improve fish passage and dam operations as well as off-site mitigation investments in habitat

⁵ Columbia Basin Partnership Task Force, *A Vision for Salmon and Steelhead, Goals to Restore Thriving Salmon and Steelhead to the Columbia River Basin, Phase 2 Report of the Columbia Basin Partnership Task Force of the Marine Fisheries Advisory Committee* (October 2020)

restoration, tributary dam passage, and fish production programs. In current Federal District Court litigation regarding Columbia and Snake River operations, the United States negotiated a stay of the district court litigation so that parties could work collaboratively on addressing basin-wide solutions that could resolve this litigation.

The stay that these parties negotiated has allowed the parties in the litigation, and regional sovereigns, which includes the region's tribes and four states, to continue to work on developing comprehensive, basin-wide solutions to recover native fish populations. Under the court-ordered stay, Bonneville and other affected departments and agencies are participating in confidential mediation conducted by the Federal Mediation and Conciliation Service to achieve this goal. Bonneville is committed to the confidential mediation and a whole-of-government approach to addressing these important matters.

Today, the Columbia River Power System is called upon to play a central role in the clean energy transformation of the larger regional electric system. It directly supports clean state energy goals, responds to Federal tax incentives for new clean energy resources, and enables electrification of buildings and transportation. Columbia and Snake River hydropower offers the adaptable operation capability needed to integrate variable resources like wind and solar reliably and at low cost. Hydro generation is uniquely capable of ramping up and down, on demand, and within very short periods of time to balance the variable output of other renewable resources.

Additionally, the capabilities of the hydropower system are critical to maintaining the reliability of the regional electric power system during periods of extreme weather and peak demands. Extreme weather events in our region, both winter cold snaps and summer heat waves, are usually the product of high pressure systems parked over the interior West. These weather systems produce little to no wind and are generally multiple days in duration. The hydro system, Snake River dams included, is able to carry operating reserves and provide sustained peaking generation to meet regional electricity demand when it is needed most.

Last year, Bonneville commissioned an independent economic study of the costs to the region for replacing the energy and reliability services of the four Lower Snake River dams. The study found that replacing these dams, while meeting clean energy goals and maintaining system reliability, is possible, but doing so comes at a substantial cost to the region, and notes that emerging replacement technologies must first become commercially viable. I have listed those estimated costs in my written testimony.

I appreciate the opportunity to provide this testimony to you today, Mr. Chairman, and will be happy to respond to any questions. Thank you.

[The prepared statement of Mr. Hairston follows:]

PREPARED STATEMENT OF JOHN HAIRSTON, ADMINISTRATOR AND CHIEF EXECUTIVE
OFFICER, BONNEVILLE POWER ADMINISTRATION

Good afternoon, Chairman Bentz and members of the Subcommittee. I am John Hairston, Administrator and Chief Executive Officer of the Bonneville Power Administration (Bonneville). Bonneville is a Federal Power Marketing Administration within the United States Department of Energy and is headquartered in Portland, Oregon. I am pleased to be with you today to describe the role that Bonneville plays in marketing affordable electricity to its customers in the Pacific Northwest and for operating a reliable transmission system.

Bonneville serves a 300,000 square mile area that includes Oregon, Washington, Idaho, western Montana, and parts of northern California, Nevada, Utah, and Wyoming. Bonneville markets the electric power produced from 31 Federal hydroelectric projects operated by the U.S. Army Corps of Engineers (Corps) and the Bureau of Reclamation (Reclamation). Bonneville also acquires non-Federal power to meet the needs of its customer utilities, including the power from one nuclear power plant, the Columbia Generating Station, located just north of Richland, Washington.

Bonneville maintains and operates over 15,000 circuit miles of transmission lines and associated facilities over which this electric power is delivered. Its system is a substantial majority of the Northwest's high-voltage electric grid.

It is important to emphasize that Bonneville is not for profit. Bonneville recovers its costs from sales to its power and transmission customers, and finances capital expenditures, that also are recovered through rates, through the U.S. Treasury. Bonneville finances its operations with a business-type budget based on the self-financing authority, including U.S. Treasury borrowing authority, provided by the Federal Columbia River Transmission System Act of 1974 (Transmission Act, Public Law 93-454) and other various organic legislation, for energy conservation, renewable energy resources, capital fish facilities, and other purposes. Bonneville does not receive annual appropriations.

OVERVIEW OF FEDERAL HYDRO OPERATIONS AND FISH AND WILDLIFE MITIGATION

Congress authorized the U.S. Army Corps of Engineers and Bureau of Reclamation to construct, operate, and maintain the 31 Federal dams of the Federal Columbia River Power System (FCRPS). These dams are operated to meet multiple specified purposes, including flood risk management, navigation, hydropower generation, irrigation, fish and wildlife, recreation, and municipal and industrial water supply. BPA is authorized to market and transmit the power generated by coordinated system operations and mitigation of the effect of their construction and operation on fish and wildlife.

Built and put into service between 1938 and 1976, the FCRPS provides valuable social and economic benefits to the region: flood risk management, navigation, and water supply. Each of these services support both the regional and national economy. And of importance to Bonneville, the system is the source of affordable, reliable and renewable carbon-free power generation and provides the region with some of the least carbon intensive electricity in the country. On average, the FCRPS produces 8,500 average megawatts of power (equivalent to the power needs of eight cities the size of Seattle).

At the same time that the system has brought benefits to the region, the FCRPS has also had adverse impacts on salmon, steelhead, and other native fish populations in the Basin. These fish have tremendous value to the region and to the Tribal Nations in the Basin. As a result, the FCRPS has made extensive modifications and operational changes to protect and mitigate the impacts of the system's construction and continued operation on fish and wildlife. Since the 1980 Northwest Electric Power Planning and Conservation Act, BPA has invested billions of dollars in improved configuration and operation of the dams, as well as in offsite restoration efforts for the benefit of fish and wildlife sponsored by tribes, states, and rural communities.

BPA recognizes that salmon, steelhead, and other native fish and wildlife species are particularly significant to Northwest tribal communities and are an integral part of Northwest ecosystems. BPA is committed to working with tribes in the region and alongside its federal interagency counterparts on a comprehensive and collaborative approach to protect, mitigate, and enhance fish and wildlife populations that are affected by the construction and operation of regional Federal hydropower system.

In late 2020 and early 2021, plaintiffs filed complaints in the district court in Oregon and the Ninth Circuit challenging the decisions of the Corps, Reclamation,

Bonneville Power Administration, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service. The United States negotiated a stay of the district court litigation so that the parties could work collaboratively on addressing basin-wide solutions that could resolve the litigation. The District Court granted the stay in October 2021, and then extended the stay through August of this year. The stay that these parties negotiated has allowed the parties in the litigation and the regional sovereigns, which includes the region's tribes and four states, to continue to work on developing comprehensive, basin-wide solutions to recover native fish populations. Under the court ordered stay, Bonneville and other affected Departments and agencies are participating in confidential mediation conducted by the Federal Mediation and Conciliation Service to achieve this goal. Bonneville is committed to the confidential mediation and a whole-of-government approach to addressing these important matters.

THE ROLE OF FEDERAL HYDROPOWER FOR REGIONAL ECONOMY AND CLEAN ENERGY GOALS

Low-cost hydroelectric power has been an asset for this region's economy since the Great Depression and the days of World War II. Today, Federal power continues to serve remote rural communities across the Northwest that have few other economic advantages to offer industry and businesses. The Northwest's manufacturing and technology economies are more technologically advanced than ever, and these manufacturers depend on reliable electricity with stable voltage and near-zero interruptions.

Responding to state mandates, Federal incentives and the declining cost of technology, the Nation and much of the West is attempting to meet clean electricity goals through other renewable resources, particularly wind and solar. Because these resources are dependent on the wind blowing and sun shining, hydropower is one way—but not the only way—to offer adaptable operational capability to integrate these variable resources, thereby enabling the Western Interconnection's growing reliance on them.

SIGNIFICANCE OF LOWER SNAKE DAMS FOR BONNEVILLE'S ELECTRIC SYSTEM RELIABILITY AND INTEGRATING NEW GENERATING RESOURCES

The four lower Snake River dams play a role in keeping the region's Loss of Load Probability low—currently around 6.6%, or one year in every 15 years. Our analysis finds that breaching the four lower Snake River dams would require Bonneville (or regional utilities) to contract for or build substantial amounts of new resources to meet projected increases in demand and to achieve decarbonization goals. Extreme weather events, including heat waves last August and September and cold snaps last December, provide examples of the capabilities of the lower Snake dams to respond to days of peak electricity demands. During last August and September's heat events, for example, the lower Snake dams produced sustained output adding between 500 and 700 megawatts continuously over multiple days. At each dam, additional water is held in reserve to be called upon if additional generating capacity is needed or if energy use demands it. Similar operations occur in the winter when extreme cold weather drives energy demand up for days at a time.

In 2022, Bonneville contracted for an independent economic study of the value of the Lower Snake River dams to the Northwest power system. According to this study, replacing the four lower Snake River dams while meeting clean energy goals and system reliability is possible but comes at a substantial cost even assuming emerging technologies are available. In this study, E3, the firm Bonneville contracted, concluded that replacing these resources would require:

- 2,300–4,300 MW of replacement resources
- An annual cost of \$415 million–\$860 million by 2045
- A total net present value cost of \$11.2–\$19.6 billion based on 3 percent discounting over a 50-year time horizon following the date of breaching
- An increase in costs for public power customers of \$100–\$230 per household per year (an 8%–18% increase) by 2045.

Other energy studies in the region have concluded that the energy replacement needs would be less.

In conclusion, Mr. Chairman, I would again like to express my appreciation for the opportunity to participate in this hearing. The Federal Columbia River hydro-power system continues to benefit the people of the Pacific Northwest, while also powering our modern economy and contributing to the quality of life that people so greatly value in our region today.

Mr. BENTZ. Thank you, Mr. Hairston.

The Chair now recognizes Mr. Scott Corbitt, General Manager of the Port of Lewiston, in Lewiston, Idaho, for 5 minutes.

STATEMENT OF SCOTT CORBITT, GENERAL MANAGER, PORT OF LEWISTON, LEWISTON, IDAHO

Mr. CORBITT. Good afternoon, Chairman Bentz and Representatives McMorris Rodgers, Newhouse, and Collins. My name is Scott Corbitt, and I am the General Manager of the Port of Lewiston in Lewiston, Idaho. I appreciate the opportunity to testify regarding the significance of the Lower Snake River dams to our community.

The Port of Lewiston is Idaho's only seaport and is the furthest inland port on the West Coast, at the inland end of Marine Highway M-84, the transportation corridor that runs from Lewiston down the Snake and Columbia Rivers all the way to the Pacific Ocean. The Lewis Clark Valley is at the confluence of the Clearwater and Snake Rivers, and the culture, economy, and lifestyle of our communities are supported by these rivers, the dams, and the pool that is created by Lower Granite Dam.

At the Port of Lewiston, we transport tens of millions of bushels of the finest wheat down the river to feed the world. Barges, which rely on the Lower Snake River dams for their ability to navigate, support the third-largest grain corridor in the world. Our manufacturing leaders rely on the rivers to bring raw materials from the forests of the West to Lewiston and are barged right alongside our wind blades and our turbines.

The valley is the furthest inland destination for a growing cruise industry that brings tens of thousands of tourists into the region annually, injecting millions into our local economy. Lewiston has also been labeled the No. 1 place to live in America for outdoorspeople. Our folks spend free time on the water, whether it is kayaking around Chief Timothy Island or bass fishing at Hells Gate State Park.

Absent the dams, we get the river we saw during the drawdown experiment of 1992. For those not familiar, in 1992, an experimental drawdown dried out the levees, which began to collapse as the water dropped. The drawdown exposed stinking mud bogs and sediment that had accumulated over decades. If we lose our dams, who will deal with this sediment? Who will pay for the cleanup? Who will support our lost economy and the 65,000 people left high and dry by dam removal?

To accurately gauge the impact of dam removal on a place like Lewiston, one needs to look at both business and local government infrastructure. If the dams are breached, critical local infrastructure like water treatment, stormwater, and sewer will require major modification or replacement. These plans were designed to work with the rivers of today. Again, who will pay the tens of millions for these modifications?

Businesses, like Clearwater Paper, Idaho's only paper mill and one of the largest employers in the region, rely on the current level of the river for water intake and discharge. Boat builders and sellers rely on the slack water to maximize business, not to mention the recreational boaters who rely on marinas and boat launches and the docks that support our valley's expanding cruise boat and tourism industries.

The Lewis-Clark Grain Terminal supports 3,000 farm families who have come to rely on barge transport for their livelihood in the region. Even our electricity provider, Clearwater Power, relies on the hydropower generated by the Lower Snake River dams to provide low-cost energy to 11 counties in Washington, Oregon, and Idaho, in an area with 15 percent poverty rate and per capita income of only \$33,000.

Interestingly enough, we heard at a river commerce seminar recently, coordinated by the Biden administration's Department of Transportation, that the Maritime Administration is in full support of growing commerce along the Columbia and Snake River system. The economic development possibilities along the Marine Highway M-84 represent growth potential that exists for hundreds of thousands of people, many from disadvantaged and underserved populations.

In fact, the Port of Lewiston recently received a \$10 million appropriation from Governor Little of Idaho to continue growing these opportunities on Marine Highway M-84. This funding will increase the access for high, wide, and heavy loads, to support the return of container traffic to Lewiston, and invest in Idaho's first and only cruise boat dock. Investments like these are made precisely because the Lower Snake River dams are in place, but without them our economy and our communities will dry up, along with the river.

The loss of these assets I presented to you today only scratch the surface when it comes to the impact of the Lower Snake River dams and our communities. To us, they are truly irreplaceable. Unfortunately, dam removal proponents and people who live hundreds of miles from Lewiston, make it sound as if their loss is really no big deal, and that is because to them we are expendable.

My request is simple, that Congress and the Federal Government do not consider us expendable. Unlike those who believe this issue is about picking winners and losers and who have louder voices, endless financial resources, and no attachment to the Lewis Clark Valley, we believe communities, salmon, and dams can co-exist because we are living proof that they do.

Thank you again for the opportunity today, and I am happy to take any of your questions.

[The prepared statement of Mr. Corbitt follows:]

PREPARED STATEMENT OF SCOTT CORBITT, GENERAL MANAGER, PORT OF LEWISTON

Good afternoon, Chairman Bentz and distinguished Members of the House of Representatives. My name is Scott Corbitt and I am the General Manager of the Port of Lewiston in Lewiston, Idaho. I appreciate the invitation to testify today before the Subcommittee on Water, Wildlife and Fisheries about the importance of the Snake River dams to our community. I welcome the opportunity to provide comments on this critical issue.

For those of you not familiar, Lewiston is at the inland end of Marine Highway M-84, the transportation corridor that runs from Lewiston down the Snake and Columbia Rivers to the Pacific Ocean. Our home is at the confluence of the Clearwater and Snake Rivers, and we are blessed by the benefits that both these rivers provide the Lewis Clark Valley.

For situational awareness, the Port of Lewiston is in Nez Perce County, Idaho and is the furthest inland port on the West Coast. We are also Idaho's only seaport which helps support the largest community closest to the Lower Granite Dam and pool, the City of Lewiston.

The culture, business and lifestyle of Lewiston revolve around the Clearwater and Snake rivers and the slack water, or pool created by the Lower Snake River Dams (LSRD). That pool has developed opportunities for the Lewis Clark Valley that now serve as the lifeblood and supports an economy for around 65,000 people.

At the Port of Lewiston, we transport tens of millions of bushels of the finest wheat down the river to help feed the world. As you know, the LSRD include significant lock systems that allow for the navigation of barge transport. According to the U.S. Department of Agriculture, the volumes of grain transported along the Snake and Columbia River system make it the third largest grain export corridor in the world.¹

One of the Port of Lewiston's most river-dependent tenants, the Lewis Clark Terminal (LCT), loads approximately two hundred barges per year or around 24,000,000 bushels of wheat annually in our valley. As a cooperative, LCT represents 3,000 farms and farm families in the region. Not only do these families depend on barge transport for their livelihoods, if river transport did not exist, it would take at least 25,000 trucks a year to move just LCT's grain to the Tri-Cities, all on largely two-lane, curved, and unsafe highways.² Truck transport would drive up costs for farmers and likely result in significant health and environmental impacts to small communities along key roadways. No attention has been given to this potential environmental justice issue.

The LSRD have also provided other economic development opportunities for the Port of Lewiston including bringing raw materials from the forests in the West for river transport to Lewiston. Our manufacturing leaders have come to rely on the rivers and dams for passage of these and other goods, such as high, wide, and heavy loads like wind turbines and their blades. The return of container on barge shipping appears promising for the near future. The growth of river-based commerce at the Port of Lewiston is imminent and is reliant on the preservation of the LSRD.

The U.S. Department of Transportation and the Maritime Administration (MARAD) recognizes the value of Marine Highway M-84 and its future potential and recently helped coordinate a conference in our region regarding the expansion of services along the river. We heard at the river conference that MARAD is in full support for growing commerce on the Columbia and Snake River system and that the economic development possibilities existing along Marine Highway M-84 represent growth potential for hundreds of thousands of people, many from disadvantaged and underserved populations.

In addition to the expanded manufacturing and barging potential for our region, the LSRD support the expansion of the growing cruise industry that brings tens of thousands of tourists into the region annually, inserting millions of new dollars into our local economy. This is an expanding and exciting industry for our valley that represents enormous potential.

In fact, the Port of Lewiston and the State of Idaho have welcomed the cruise boat industry with the investment of a new dock where sailings are set to begin in the 2025 cruise season. Similarly, the Lewiston-Nez Perce County Airport is preparing for an influx of new visitors to enjoy these cruising opportunities, the Snake River canyon, and our region.

Lewiston has also been affectionately labeled as the #1 place to live in America for outdoors people. Our folks spend free time on the water, whether it's kayaking around Chief Timothy Island, bass fishing at Hells Gate State Park, or paddle boarding in the Lower Granite pool. The dams give us a multitude of recreational opportunities on the rivers.

Our communities have invested in recreational infrastructure such as docks, boat launches, and parks, not only for our own use but to welcome visitors to our region.

Our community—which has a 15% poverty rate and per capita income of just over \$33,000—is also serviced by member-owned Clearwater Power. Clearwater Power provides electricity for 11 counties in Washington, Idaho and Oregon and is a

¹United States Department of Agriculture, Agriculture Marketing Service, "Barge Dashboard"

²Letter to Senator Patty Murray & Governor Jay Inslee from Lewis Clark Terminal, June 23, 2022

Bonneville Power Administration full requirements customer. This means our community is powered by the hydro generated at the Snake River dams, providing our residents with clean, reliable, and inexpensive energy.

Not often discussed during the debate over the future of the LSRD is the importance of the water table to communities that line the Snake River. In Lewiston, the water table created by the LSRD pool is critical as it allows for the continued safe operation of one of our largest employers, Clearwater Paper.

The water table also supports municipal water use, provides for wastewater treatment, and is a draw for new economic investment. In many cases, our communities have been able to deliver water without wells and treat wastewater without septic because of the established water table. These are all projects that incur significant local investment and approval from local, state, and federal jurisdictions.

For the Port of Lewiston, the business generated by barge transport and our other river-user tenants has afforded us other community opportunities. Because of these lines of business, the Port of Lewiston has been able to make additional investments in our community. One of our biggest successes is providing the expansion of broadband so that some of the poorest members of our region can attend school and work.

The Port has also been able to expand our industrial land for tenants that rely on the rivers system, helping create new jobs and economic opportunities in our region. These have all been brought to us by the LSRD.

I participated and spoke during one of the Council on Environmental Quality's listening sessions regarding the litigation over the Federal Columbia River System Operations. Most of the presenters at these sessions lived hundreds of miles away from my community and largely disregarded the extreme and severe ramifications dam removal would have on a place like Lewiston and surrounding communities. They assure that the positive effects of the dams will be easily replaced and make no comments about potential negatives.

The comments made reminded me of what was promised to impacted timber communities when harvest was massively reduced and mills were shuttered in the 1990s. Again, folks from hundreds of miles away promised new tourism and recreation, educational opportunities, and economic development, many of which never, ever materialized.

In our case, we know what will happen if dams are breached. In 1992, a draw-down experiment was conducted in the Lower Granite pool. The result included stinking mud bogs, dead fish, and unusable marinas. What it also highlighted was the loss of barge traffic and the economic impact on our community. It laid bare that pool reduction leaves docks, boat launches, and parks deserted and abandoned. We learned quite quickly that the drawdown of the river would not support the communities and economy we had worked so hard to build.

What nobody disagrees with is that salmon are iconic and deserve our support. Where we disagree is what some call the "silver bullet," the destruction of four dams and the communities and economies they have supported based on merely hope that salmon would return in record numbers. This hope, which the federal government admits is all it has, is not close to being enough.

Our community cannot survive on this kind of hope. We must survive on reality. We know all the things that would be lost with dam removal, but we do not truly know what we would gain. It's a gamble on our future when there are so many other things we can do to support salmon—funding hatcheries, addressing predation, finding blocked areas that do not support fish and removing the obstruction, advancing ocean research and addressing climate change, habitat restoration, upgrading fish passage facilities, and finding levels of funding adequate to sustain our precious salmon.

You will recall that when built, these dams represented tremendous progress for our region—we gained clean power, expanded farming and agriculture opportunities, advanced one of the largest, big volume barging operations in the United States, and created recreation and economic development opportunities along a stretch of river that did not have much. While we continue working hard to mitigate for salmon, we cannot lose sight of all the progress we have made on the Snake River. It would be a shame to turn back the clock on all that progress.

My request is simple—that Congress and the federal government not ignore the people of the Lewis Clark Valley and all along Marine Highway M-84. Avoid ignoring the ramifications of breaching the LSRD on the people and communities that louder voices with financial resources and no connection seem happy to shutter.

To those of you who advocate for our communities, I cannot thank you enough. I appreciate the opportunity to participate today and am happy to answer any of your questions.

[Applause.]

Mr. BENTZ. Thank you, Mr. Corbitt.

The Chair now recognizes Mr. Rick Dunn, General Manager of Benton PUD in Kennewick, Washington, for 5 minutes.

**STATEMENT OF RICK DUNN, GENERAL MANAGER, BENTON
PUBLIC UTILITY DISTRICT, KENNEWICK, WASHINGTON**

Mr. DUNN. Good afternoon. My name is Rick Dunn. I am the General Manager of Benton PUD, located right here in the Tri-Cities, in Kennewick. Welcome to my home and what I call the center of the universe when it comes to the Northwest power grid.

I want to start by pushing back hard against any claims that the Lower Snake River dams are outdated, surplus, or high cost. These dams are world-class operations and are part of the foundation of the firm-energy wholesale portfolios of 134 utilities located in every Northwest state, many of which already have significant demand for electricity above their firm contract amount available from the Bonneville Power Administration. Benton PUD is one of the 134 current customers of the BPA, with Federal statutory rights to the electricity generated by 31 hydroelectric dams included in BPA's portfolio. And like many utilities across the Northwest, Benton PUD will soon rely on BPA to provide 100 percent of our wholesale electricity.

The annual generation from the Lower Snake River dams represents about 11 percent of BPA-marketed hydro in a typical year, and the cost of generated electricity is 1.4 cents per kilowatt hour, which is far below the cost of developing new renewable resources or what is available through calendar year forward market purchases, which have dramatically increased in price over the past few years to levels currently between 8 and 10 cents a kilowatt hour. Additionally, the LSRD are 4 of 10 Federal dams equipped with automatic generation control, which makes them an important part of the minute-by-minute demand and supply balancing required for stable and reliable Northwest power grid operations throughout the year.

And as more intermittent and variable wind and solar are added to the grid, flexible and controllable technologies like hydro dams will be even more critical for maintaining grid reliability across a wide range of weather and temperature conditions. Keep in mind the next best technology available today for balancing the grid is natural gas, which is being phased out by aggressive clean energy policies in Washington and Oregon. And when you add the recent and planned future closures of thousands of megawatts of coal-fired power plants to the mix, the dependence on hydropower for maintaining Northwest grid reliability and low electricity rates will only grow with each passing year.

This is why it is so concerning and frustrating to Northwest utilities that hydropower continues to be undermined by special interest groups and some political leaders, both in terms of public support and actual amounts of generated electricity. The good news is the majority of BPA's clean and reliable electricity continues to be offered at low cost, with prices holding steady and bucking the current inflationary trend. The bad news is BPA's portfolio of hydroelectric dams and the Columbia Generating Station Nuclear

Plant is tapped out, and they currently have no more firm energy available to meet growing electricity demands being experienced by many of their customers.

While it is not widely understood by the general public and some policymakers, the 2025 forecast of total BPA customer demand is already 466 average megawatts above the firm energy contract rights utilities have to the BPA power.

In addition, the combined New Large Single Load customers, which includes electricity-intensive facilities like data centers and other businesses with individual demands of more than 10 average megawatts annually, will reach 1,110 average megawatts in 2025.

It is important for citizens of the Northwest to understand large data centers and electricity-intensive industry and manufacturing are not eligible to be served at BPA's lowest rate. This means utilities must contract with a non-BPA generating source or they can ask BPA to serve them at what is referred to as the "New Resource Firm Power" rate, which is priced based on forward market price curves, and over the next 2 years has been set at an average of 9 cents per kilowatt hour for peak load periods and 8 cents per kilowatt hour for off-peak loads. This is as much as 250 percent above BPA's coveted and low-cost Tier-1 rate, which is currently 3.6 cents a kilowatt hour.

And I can tell you from experience, large commercial and industrial customers currently expect retail prices equivalent to being 5 and 6 cents, which makes BPA's wholesale NR rate a non-starter for new electricity-intensive industry and the jobs and tax revenues that they bring with them.

While the near-term prospects for adding large amounts of incremental electricity demand at reasonable rates are bleak for many utilities in the Northwest, thanks to affordable BPA hydro, which represents 50 percent of Benton PUD's average retail rate of 7.2 cents, our current customers are paying 33 percent less than the national average of 10.7, and compared to states like California with average retail rates reaching 20 cents per kilowatt hour, we are getting a heck of a bargain.

One frustrating irony is that some of the same entities who helped convince policymakers to back utilities into a corner and force a deeper dependence on wind and solar are continuing to call for the erosion and outright removal of carbon-free hydro capacity.

I have lived in the Northwest almost my entire life and love all that our rivers provide. Salmon and steelhead recovery is an unbelievably complex issue, but from my chair the science is far from settled, and we need every drop of affordable and carbon-free hydropower we can get.

Thank you for the opportunity to speak to you today.

[The prepared statement of Mr. Dunn follows:]

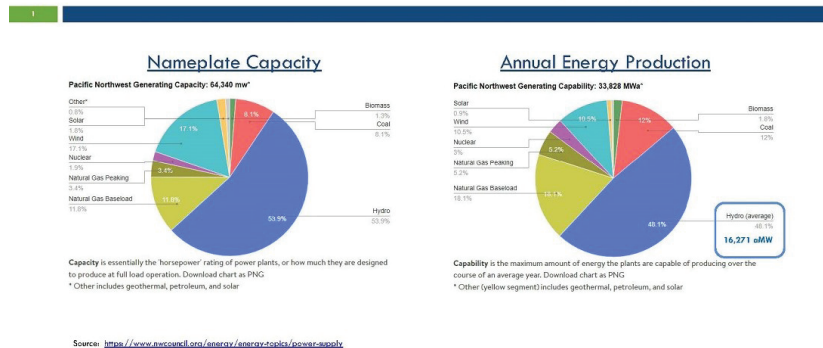
PREPARED STATEMENT OF RICK DUNN, GENERAL MANAGER, PUBLIC UTILITY DISTRICT
No. 1 OF BENTON COUNTY (BENTON PUD)

Hydroelectric Dams are the Foundation of Northwest Public Power

Benton PUD (BPUD) is an electric distribution utility located in Kennewick, Washington with over 56,000 service connections and is one of 134 current customers of the Bonneville Power Administration (BPA) with statutory preference and priority rights to the electricity generated by the Federal Columbia River Power System (FCRPS). The 31 hydroelectric dams included in the FCRPS typically generate about 8,500 average megawatts (aMW) of annual energy which is more than 50% of the Northwest hydropower total and a big reason why our region's electric grid is powered by more than 60% renewable generating sources; see Attachment Slide 1.

SLIDE 1

Pacific Northwest Electricity Supply



Like many utilities across the Northwest, BPUD will soon rely on BPA to provide 100% of our wholesale electricity. And as a Washington based utility, our 94% carbon-free hydro and nuclear portfolio puts us in a great position to meet our state's 100% clean electricity mandate.

The other good news is the majority of BPA's low cost, clean and reliable electricity continues to provide the foundation of consumer-owned public power in our region with prices holding steady and bucking the current inflationary trend. The bad news is *BPA's portfolio is tapped out and they currently have no more 'firm energy' available to meet growing electricity demand* being experienced by many of their customers.

In utility vernacular, firm energy is the electricity that can be essentially guaranteed to be delivered. And at this point BPA's FCRPS resources can produce about 7,000 aMW of firm energy on an annual basis with limits set by generating capability expected during low water (drought) years. And while it is not widely understood by the general public and some policy makers, *the 2025 forecast of total utility customer annual demand eligible to be served by BPA is already 466 aMW above the firm energy contract rights utilities have to the FCRPS*; referred to as a Contract High Water Mark (CHWM). In addition, the combined New Large Single Load (NLSL) electricity intensive businesses served by BPA customers will reach 1,110 aMW in 2025 with data centers representing most of this demand.

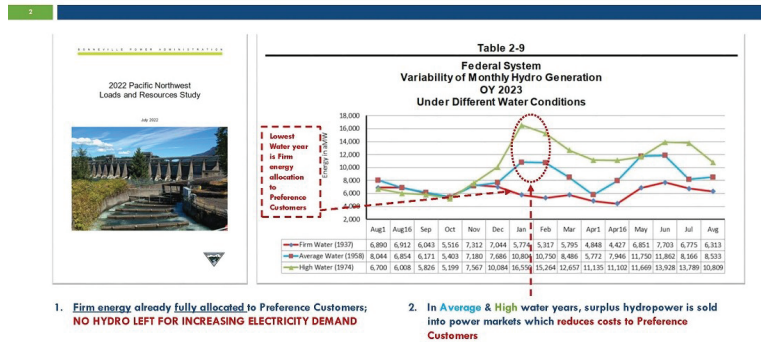
It is important to understand NLSL is a designation given to BPA utility customer loads *not eligible to be served at BPA's lowest rates*. Utilities can either serve an NLSL with non-federal generating resources or can ask BPA to serve the NLSL at what is referred to as the "New Resource Firm Power (NR)" rate. The NR rate is based on the forecast and actual price to acquire the additional power requested and for FY 2024/2025 is set at an average across the year of \$90 per megawatt-hour (MWh) for *Heavy Load Hours* (HLH) and \$80 for *Light Load Hours* (LLH). This is much higher than BPA's coveted 'Tier-1' rate which is currently averaging about \$36 per MWh.

Disallowing BPA to serve NLSL customers with 10 aMW or more of electricity demand annually at the cost of firm FCRPS capability (Tier-1) is a policy based in a statutory restriction put in place decades ago to keep low-cost hydropower from attracting too much of the nation's heavy industry to Northwest states. To put this in context, Benton PUD acquires about 210 aMW of wholesale electricity annually. So, while 10 aMW is a large number for any one customer, it is not uncommon for heavy industry, manufacturing facilities, and data centers to require many multiples of that.

While hydropower is a very flexible, low cost and clean generating technology, it is also variable from year-to-year and month-to-month. So, BPA can only contractually commit to providing firm energy to their preference customers based on the worst water years and then sells surplus hydropower generated during better than bad water years in wholesale electricity markets. To put things in perspective, compared to firm water years, *average and high-water years can deliver between 2,200 and 4,500 aMW of additional annual energy* which is as much as 4.5 times the Columbia Generating Station nuclear plant's 1,000 aMW annual production; see Attachment Slide 2.

SLIDE 2

BPA Hydro: Firm Energy is Spoken For



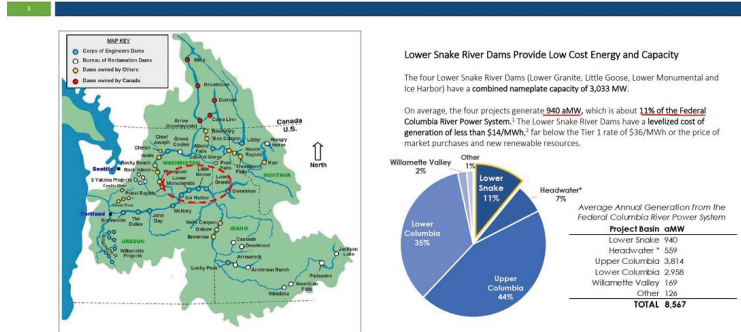
Revenues derived from BPA's surplus sales are used to buy down the rates they charge for their Tier-1 product which equivalent to 3.6 cents per kilowatt-hour (kWh) and translates to BPUD effective retail rates for large commercial and industrial customers of between 5 and 6 cents and 8.5 cents for residential customers.

Thanks to affordable BPA hydropower which represents 50% of BPUD's costs to our customers, our 7.2 cents per kWh average for all rate classes is 33% lower than the national average of 10.7 cents. Compared to states like California with average retail rates reaching 20 cents per kWh and residential rates expected to increase to as high as 40 cents per kWh in some cases, Washington state's 8.5 cents average represents a significant economic benefit to residential customers and an economic development advantage when trying to attract business and industry.

As for the Lower Snake River Dams (LSRD), their combined annual generation in an average water year is 940 aMW which represents about 11% of the FCRPS; see Attachment Slide 3. BPA data indicates the LSRD generate electricity at a cost of \$14 per MWh (1.4 cents per kWh) which is far below the cost of developing new renewable resources or what is available through market purchases which have dramatically increased in price over the past few years and are reflected in the BPA NR rate previously described.

SLIDE 3

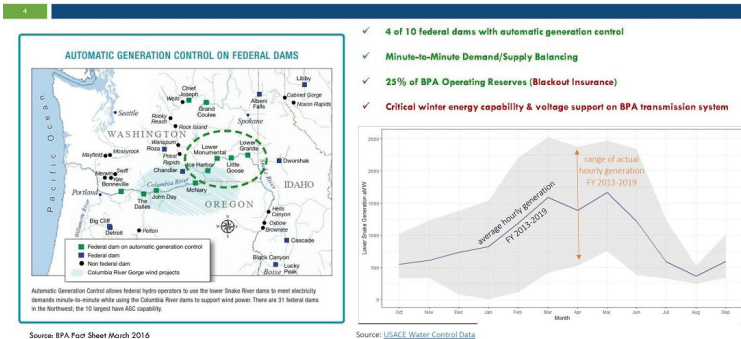
Lower Snake River Dams: Energy & Capacity



Additionally, the LSRD are four of ten federal dams equipped with automatic generation control which makes them an important part of the minute-by-minute demand and supply balancing required for stable and reliable Northwest power grid operations throughout the year; see Attachment Slide 4. The LSRD flexible capabilities also allows them to be used to meet a significant portion of BPA's operating reserve requirements as a Balancing Area Authority (BAA) which can be thought of as backup capabilities needed for power grid emergencies.

SLIDE 4

LSRD: 11% of Energy w/ Blackout Insurance



And as more intermittent and variable wind and solar are added to the grid, flexible and controllable technologies like hydroelectric dams will be even more critical for maintaining grid reliability across a wide range of weather and temperature conditions. Keep in mind, the next best technology available today for balancing the grid is natural gas which is being phased out by aggressive clean energy policies in Washington and Oregon aimed at financially crippling existing natural gas plants and eliminating the possibility of constructing new ones.

And when you add the recent closure of coal-fired power plants (and plans for more retirements) to the mix, the dependence on hydropower for maintaining Northwest grid reliability has already begun and will deepen significantly in the future. This is why it is so concerning to utilities that hydropower continues to be undermined by anti-dam special interest groups and some political leaders both in terms of public support and actual amounts of generated electricity.

Under relentless threats of legal action, BPA and its federal dam operating partners have agreed to divert more and more water through spillways at the LSRD and four lower Columbia River dams rather than through turbine generators. It is fair to say 'spill' has been increased to levels beyond sound scientific reason in what is being characterized as a 'last ditch' attempt to improve young salmon (smolt) survival on their migration to the Pacific Ocean.

We must not forget; it was not long ago when fish biologists expressed deep concerns over raising spill-caused total-dissolved-gas (TDG) levels to more than 115% as it would be detrimental to salmon and other aquatic species. And while it is not widely reported, early indications are *increased spill to 125% TDG is not delivering the increased survival* theorized by some. In fact, these unprecedented levels of spill are making it more difficult to accurately determine smolt survival and there are questions as to whether existing in-river instrumentation and field assessments of smolt are adequate to the task of determining whether high levels of spill are helping or hurting salmon.

In a November 2022 report from NOAA Fisheries, their data indicates *despite spilling 65% of the daily flow at the LSRD, there has not been an appreciable increase in survival* for spring Chinook and Steelhead. While more time and resources are needed to make an adequate assessment of the impacts of spill, there is no doubt increased spill and reduction of hydro generation is working against utilities trying to balance affordability and reliability with demands for eliminating greenhouse gas emissions.

Additionally, the 2020 Columbia River System Operations Environmental Impact Statement (EIS) studied the impacts of LSRD breaching concluding "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.*" And has been demonstrated, a 50% increase in BPUD's wholesale power costs would translate to a 25% increase in our retail rates.

So, *any claims the LSRD are "outdated, surplus or high cost" are not based on facts. The LSRD are part of the foundation of the firm-energy wholesale portfolios of 134 utilities located in every Northwest state*, many of which have significant demand for electricity above what they can get from BPA. And as has been mentioned, surplus sales derived from the LSRD are not a reflection of generating capability that is not needed, they are a result of the timing of river flows and having more water available to generate electricity than is represented by a firm water year. And for Washington and Oregon utilities, *no amount of affordable, firm, and carbon-free hydropower is "surplus" when you are required to meet 100% carbon-free electricity mandates.*

Increasing Electricity Demands and Costs

So, what are BPA customer utilities including BPUD doing when their need for electricity exceeds their CHWM which is adjusted each two-year rate period and referred to as a Rate Period High Water Mark (RHW)? Many are still counting on BPA's statutory obligation to meet their eligible electricity demand (not including NLSL) by serving loads above their RHW at BPA's Tier-2 rate. While BPA's Tier-2 rates started higher than Tier-1, they dropped to \$33 per MWh in FY 2023 (\$3 less than the average Tier-1 rate of \$36 per MWh). But the *decreasing Tier-2 cost trend* driven by what were low regional power market prices *is over*, with BPA Tier-2 rates set to rise to an average of \$62 per MWh in FY 2024/2025.

The 93% year-over-year BPA Tier-2 rate increase between fiscal year 2023 and 2024 is part of a disturbing trend reflecting the destabilization of the Northwest power grid precipitated primarily by rapid retirement of coal plants without specific plans for replacing their dependable capacity.

With some of the most aggressive clean energy laws and regulations in the nation, Washington, and Oregon's restrictions on the use of fossil-fueled technologies in electric utility portfolios are already beginning to put a significant premium on the cost of incremental electricity needed to meet 'organic' utility customer growth in residential and commercial sectors and on the critical electricity supply needed to maintain power grid reliability, particularly on the days and during the hours when customer demand is the highest.

To put it simply, in the next two-year period (and beyond), BPA utility customers with demand for wholesale electricity above their RHW, who do not have other generating resources, *will pay 72% more to add new customers* (\$62 per MWh for Tier-2 versus \$36 per MWh for Tier-1). Including new customers that may come from economic development opportunities. And with the NLSL restrictions previously discussed, any economic development opportunities involving electricity intensive loads above 10 aMW, the only near-term option is the NR wholesale rate which was previously identified as *\$90 per MWh for HLH which would likely be*

Over the years BPUD has been actively engaged in trying to help shape clean energy policies. We have invested significant time and money to help policy makers better understand electric utility perspectives when it comes to balancing environmental costs and benefits associated with different types of generating technologies with financial costs and power grid reliability.

When it comes to Northwest power grid reliability in the near to mid-term, it's all about the impacts of coal plant retirements which will top 4,000 megawatts by 2025. While this is consequential by itself, Washington and Oregon clean energy policies have taken 60% cleaner burning natural gas off the table as a logical replacement of coal, which means keeping the grid reliable becomes far more difficult and that *hydropower will be relied upon more than ever to 'keep the lights on'*.

SLIDE 5

Study was provided to WA State Legislature & Governor's Office prior to passage of Clean Energy Transformation Act

PacNW Existing Resources 2018

Load + Resource Balance (Winter 2017 = WA, OR, ID, parts of UT, NV)

	Load	Generation	Effective %	Effective
Peak Load	40.3			
Peak Exports	3.3			
Peak Imports	3.2			
Total Requirement	46.6			
Coal	0.8	100%	100%	0.8
Gas	12.2	100%	100%	12.2
Nuclear & Geothermal	4.4	100%	100%	4.4
Hydro	1.2	100%	100%	1.2
Geothermal Resource	0.6	100%	100%	0.6
Wind	7.1	75%	55%	3.9
Solar	1.6	100%	100%	1.6
Total Internal Resources	48.5			46.7
Overcapacity	1.9			2.3
Total Supply	79.8		75%	49.7
Available Excess				3.9

Source: E3 Response Adequacy in the Pacific Northwest, 2018
Notes: E3 uses a 100% capacity credit based on the 2020-2021 timeframe.

Effective GW

Effective GW

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The E3 Resource Adequacy study refers to a metric called Effective Load Carrying Capability (ELCC) which is used in the electricity industry to quantify the additional load (electricity demand) that can be met by an incremental generator while maintaining the same level of system reliability. Equivalently, ELCC is a measure

of ‘perfect capacity’ that could be replaced or avoided with dispatch-limited resources such as wind, solar, energy storage, or demand response.

For the Northwest power grid in place in 2018, the E3 Resource Adequacy study determined the effective capacity of thermal plants like natural gas, coal and nuclear to be 100%; see Attachment Slide 5. As a variable generating technology, hydropower with over 35,000 megawatts (MW) of nameplate capacity delivers an effective capacity of 53% due to limits on water storage and flows as well as generating unit availability. And the *ELCC of the 7,100 and 1,600 MW of wind and solar power was calculated to be 7% and 12% respectively.*

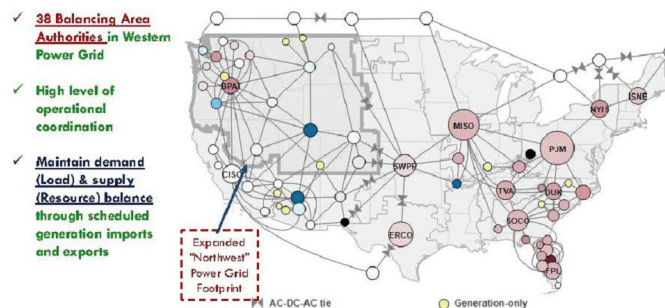
This means despite investments in thousands of megawatts of wind and solar ‘nameplate’ capacity, they are only expected to contribute 500 MW and 200 MW of effective capacity respectively which is what counts most when planning for power grid reliability. The extremely low ELCC of wind is a function of the simple observed reality that high electricity demand events in the Northwest tend to occur during the wintertime when historically there is little wind blowing. Further, the E3 study states “existing NW wind is almost entirely located within the Columbia River Gorge which tends to have very low wind output during the high-pressure weather systems associated with the Greater Northwest cold snaps that drive peak load events”. Wind ELCC in the Northwest can be improved by building more wind farms across a larger geographical area, particularly in Montana and Wyoming. But even the Southwest Power Pool regional transmission operator (RTO) covering states from Canada to northern Texas with the *best wind resources in the United States only has average Summer and Winter Wind ELCC of 15% and 16% respectively.*

In addition to effective capacity, it is critical to understand the scale of energy supply and demand, and how much we rely on each type of generating technology for both capacity and energy. *Electricity is a just-in-time service where the unforgiving laws of power grid physics requires the supply of electricity to precisely match demand on a minute-by-minute basis.* And controllable technologies like hydropower and natural gas are best suited for the balancing act.

To help better understand the distinction between energy and capacity, consider the expanded Northwest power grid which extends into Eastern Montana, Utah, Wyoming, and Colorado; see Attachment Slide 6. Each circle on the map represents a Balancing Area Authority (BAA) which are entities responsible for maintaining the precise balance of supply (generation) and demand (electrical load) for a collection of generating plants and a load service region. And each line on the map represents transmission lines connecting the various BAA’s together which allows scheduled generation imports and exports and a high level of operational coordination. Coordinated operations over a large geographical area allows BAA’s to share generating plant surpluses, cover unplanned outages of power plants and transmission lines, and take advantage of time and weather based load diversity.

SLIDE 6

Balancing Authorities Share Capacity & Energy

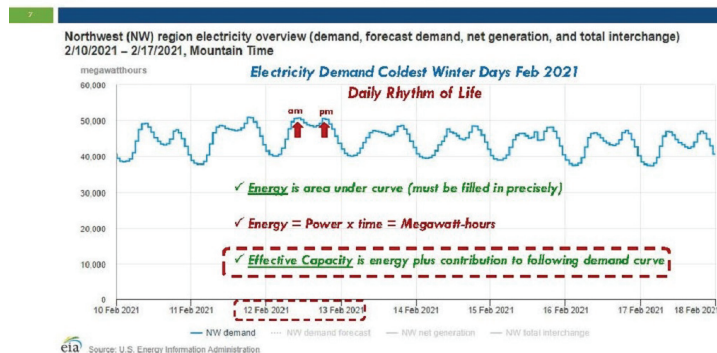


To really appreciate the importance of hydropower and thermal generation resources to power grid reliability in the Northwest it's helpful to review data and graphs from actual grid operations like what is shown on Attachment Slides 7 and

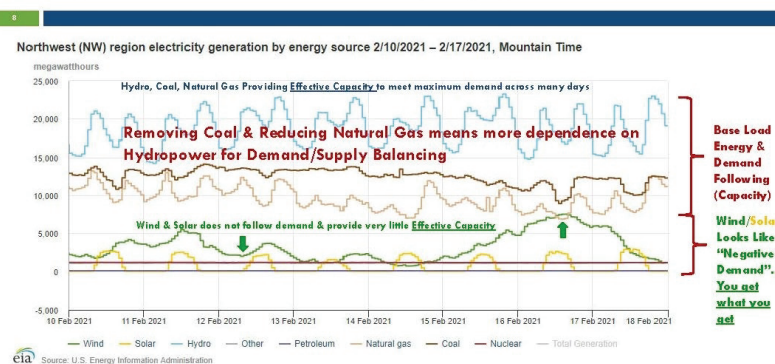
8. Slide 7 illustrates the magnitude and shape of electricity demand in the expanded Northwest power grid during a cold and snowy week in February 2021. In synch with the 'rhythm of life', electricity demand rises and falls as people wake up and go to sleep and try to stay warm as they go about their daily lives. It can be seen the total electricity demand reaches a level of just over 50,000 MW with two daily peaks coinciding with early morning and late evening heating demand.

SLIDES 7 and 8

Hydro Dominates Demand/Supply Balance in NW



Hydropower: Dominates Demand/Supply Balance in NW



Slide 8 shows the controlled output of *hydropower doing the bulk of 'load following'* and supplying as much as 23,000 MW to meet demand. Natural gas is also doing a bit of load following as indicated by the shape of its production curve. Coal power which is running mostly steady combines with natural gas to supply as much as 25,000 MW to meet 50% of demand on the coldest days. And of course, the Columbia Generating Station nuclear plant is providing an around the clock and constant 1,150 MW.

Slide 8 also illustrates how wind and solar power's inability to produce electricity in a controllable pattern matching customer demand makes these generating resources look like 'negative demand' in a get-what-you-get pattern not correlated to the demand curve shape. Referring to Slide 7 it's important to recognize the shape of the 'power curve' must be matched precisely and that the area under the curve is power over time which represents energy. So, wind and solar can be overbuilt to provide large amounts of energy and increase the probability they will fill in more area under the curve. But the question is how extensive will and should the overbuild be to achieve an adequate level of effective capacity? Particularly

when you consider land-use impacts, and that overbuilding can lead to the need to curtail wind and solar during times of low electricity demand. And *replacing a large share of controllable technologies like natural gas or hydropower with wind and solar requires many multiplies of up-front capital costs* which translates to *increases in prices utilities will have to charge their customers for reliability*.

Now with a better understanding of power grid operations and the dynamics of supply and demand balancing, the graph in the lower right corner of Attachment Slide 4 highlighting the benefits of the LSRD can be appreciated even more. This graph *illustrates the flexibility of LSRD operations and how their wide range of possible hourly generation can be used to help precisely follow demand*. The graph also shows the LSRD can produce as much as 2,500 MW of capacity and why BPA assigns as much as 25% of their operating reserve requirements to these dams. This is also why *'blackout insurance' is an apt description of the operating capability provided by the LSRD*.

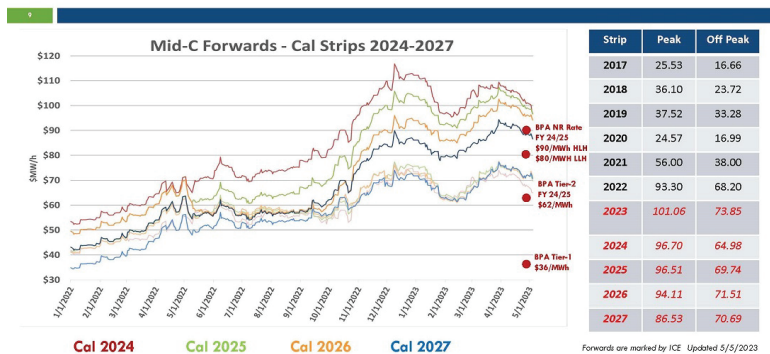
The Waning Northwest Economic Development Advantage

In recent years and months, the Tri-Cities area of Washington like many cities in the Northwest is increasingly on the radar of companies looking for communities to bring new industries and jobs. The kind of jobs that include good wages and benefits and that offer stable, multi-generational employment opportunities. There are a lot of reasons to love the diverse communities in the Northwest but when it comes to electricity intensive industry and manufacturing, they are being attracted here in large part based on the reputation the Northwest has for abundant and inexpensive hydropower. And while *low-cost electricity has been the economic engine of the northwest for decades, times are changing, and not for the better* when it comes to the possibility of electricity-intensive development in many communities.

As previously mentioned, power markets have recently taken a turn in the direction of significantly higher prices which is illustrated on Attachment Slide 9. Dramatic forward price increases in the Mid-C power market which is the central trading hub on the Northwest grid are indications of the impact rapid coal plant retirements with no plans for replacement with dependable technologies are beginning to have. Slide 9 illustrates what a utility should expect to pay to secure a year's worth of firm electricity on a calendar-year basis (calendar strip) compared to BPA rates. "Peak" includes the hours between 6 am to 10 pm (Heavy Load Hours) on weekdays and Saturdays and "Off Peak" are all other hours including Sundays and holidays (Light Load Hours).

SLIDE 9

Northwest Power Market Forward Calendar Strip Price Curves



While Northwest electric utility retail rates are currently some of the lowest in the nation, the *near-term prospects for adding large amounts of incremental electricity demand at 'reasonable rates' using market purchases are bleak*.

And for utilities with existing or emerging electricity deficits on a seasonal basis, Attachment Slide 10 provides an additional indication of the 'cost of reliability' with 2024 forward Q3 (summer) and Q1/Q4 (fall/winter) reaching Peak prices of more than \$150 per MWh and \$90 per MWh respectively. As important as the magnitude of these prices, is the slope of the curves and high rate of change of prices that

began in the spring of 2021. Using January 2021 when a Q3 forward was priced at \$45 per MWh as a basis, *there has been a more than 330% increase in 2024 Peak Quarterly prices over a two-and-a-half-year period.*

SLIDE 10

Northwest Power Prices Quarterly – 2024



As alarming as current forward price curves are, market-based electricity does not represent the only way for Northwest utilities to meet growing demand. Of course, utilities can elect to build their own generation (which is no small thing) or purchase power from new wind and solar farms proposed for development in the Northwest. *The challenge is how do you firm' the intermittent and variable output of wind and solar into the future when natural gas is facing punitive financial penalties and firm hydropower is at or close to its limits* and faces the possibility of being further diminished?

Firming with energy (battery) storage is a popular idea with some politicians and wind and solar developers. But batteries cost billions of dollars at the scales that would be needed, and current lithium-ion technology has significant operational limitations with only a four-to-six-hour discharge capability. And there is always the question of what you will charge the batteries with? Particularly as the Northwest grid deepens its dependence on wind and solar power and we experience multi-day cold spells that are also windless and cloudy.

As was addressed earlier, surplus hydro can provide large amounts of energy depending on the year but firming variable wind and solar with variable hydro that may not show up is becoming increasingly risky, both financially and physically.

While it remains to be seen where Mid-C prices will end up, the simple fact is certainty in electricity generation equates to predictable and more stable electricity rates. And *high levels of certainty are not what we are likely to get* with the construction of more wind and solar farms in the Northwest and further erosion of hydropower.

Conclusions

Reliable electricity is critical to every aspect of modern human living, including food, clothing, shelter, medical care, and education. When you think about it, electric utilities are really in the health, safety, and wellbeing business.

And while customers and policy makers rightly engage in holding utilities accountable for providing affordable and environmentally responsible electricity, *when it comes to delivering on reliability, there is nobody with more skin in the game than utilities*. Failure to 'keep the lights on' can be a matter of life and death and will always be the metric by which utilities will receive their harshest critiques and ultimate judgments.

Washington and Oregon clean energy policies have boxed many Northwest utilities into a corner by taking reliable technologies off the table before we have dependable replacements. To compound the problem, the *political leadership in both states are actively advocating for the diminishment of hydropower through excessive spill* and in the case of the Lower Snake River Dams, *outright removal*.

Aggressive clean energy policies with prohibitions and restrictions on fossil-fuel technologies are rapidly removing reliable generating technologies from the Northwest grid. And *in the Northwest, the perfect balancing of supply and demand*

required by the unforgiving laws of grid physics will fall more and more on hydropower. At this point, many utilities have nowhere else to turn for proven, dependable, and sustainable generating capacity. The kind of capacity that can be counted on to show up on the hottest and coldest days of the year.

When it comes to grid reliability, hydropower is to the Northwest as natural gas is to California and most of the rest of the United States. Based on sound scientific analysis and common sense, many utilities are unconvinced that widespread development of energy-dilute and variable wind and solar backed up by expensive and potentially unsustainable battery storage is a reasonable or even achievable vision for the power grid of the future.

Northwest utilities are already facing tremendous uncertainty with many deeply concerned *we could be heading for a reliability cliff.* Thankfully *Hydropower is standing in the growing effective capacity gap for now,* but the Northwest grid cannot afford to see a further erosion of its capabilities. Particularly if the levels of electrification of transportation and natural gas end uses envisioned by some state and federal policy makers happens, either in part or to a large degree.

One frustrating irony is that *some of the same entities who helped convince policy makers to back utilities into a corner and force a deeper dependence on wind and solar power are continuing to cavalierly call for the erosion and outright removal of carbon free hydroelectric generating capacity.* The very hydropower on which Washington and Oregon's 100% clean aspirational visions and bragging rights were established. And rather than celebrating our existing nation leading clean energy capabilities, anti-hydropower interests are attempting to capitalize on a shift in political power together with emotionally charged arguments and opinions to weaken support for hydropower while falsely promoting wind and solar technologies as environmentally benign replacements.

The industrialization of natural landscapes, ecological disruption and volumetric waste challenges that would be the result of replacing diminished hydro generation with wind and solar power never seem to be a part of the anti-dam conversation and they should be. Clearly dams have significant environmental and ecological impacts and it is right to continuously scrutinize and scientifically evaluate their operations. What is not right is to proclaim an unwavering commitment to science when it suits narrow ideological interests while being willfully blind to the fact all energy conversion technologies have limitations and life cycle impacts that should be considered in a balanced costs versus benefits analysis.

Policy makers and utilities also need to face the emerging reality that clean energy policies with strong preferences for wind and solar power are likely to face land use conflicts and supply chain constraints as significant limiting factors. And that *this project development 'friction' and uncertainty could contribute to a growing fragility of the Northwest power grid* as the scheduled rapid retirement of coal-fired power plants proceeds as planned and the strategy to overbuild wind and solar projects faces the prospect of project development gridlock in some areas.

This same uncertainty will likely be amplified further when you consider the potential pushback by citizens and agencies representing Idaho, Montana, and Wyoming; states that continue to be identified by Washington and Oregon policy makers as essential to the wind, solar and transmission line development necessary for achieving their aggressive clean energy goals. To reinforce this point, in a January 2023 work session with the Senate Environment, Energy & Technology Committee, Washington state energy officials confirmed they expect 43% of electricity will be imported into the state by 2050 and that 36% will come from Wyoming and Montana wind farms.

To gain additional perspective, the Washington state energy strategy (SES) indicates a near *doubling of electricity consumption will be required by 2050* to significantly decarbonize the transportation sector and natural gas end uses. Given Washington's annual electrical energy consumption was recently 10,700 aMW, the SES vision would require more than 35,000 megawatts of wind power or more than 42,000 megawatts of Washington based solar power to generate an equivalent amount of annual energy.

Of course, no single technology is being proposed as a solution but when you consider wind farms on average require about 140 square miles of land for every 1,000 megawatts of installed capacity, a land area equivalent to sixty Seattle's would have to be covered with industrial wind turbines to achieve just the incremental energy envisioned by Washington's SES. And when you consider the over-build required to make up for the deficient ELCC of wind, the build out is clearly infeasible.

As philosopher and energy expert Alex Epstein has stated "energy is the industry that powers every other industry. The lower cost energy is, the lower cost everything is." Energy costs in Washington state are trending upward with some of the

highest priced gasoline in the nation and carbon policies which will increase the cost of natural gas as well. As Washington state attempts to transition away from fossil fuels, the cost of transportation, groceries and other essentials are likely to increase making less money available for other expenses. Washington's goals to electrify transportation and natural gas end uses will increase demand for electricity, requiring unprecedented capital investments resulting in significant upward pressure on electricity rates. *Keeping electricity affordable in Washington will be more critical than ever and more difficult than ever.*

The availability of affordable and reliable electricity provided by BPA hydropower has been treated as a certainty for decades. BPUD customers (particularly those in lower income categories) have adapted their lives and budgets consistent with these expectations to be sure their lights stay on, and they are protected from extreme heat and cold. While we don't think about it much in the U.S., it is clear from a global perspective that energy poverty is human poverty. And I fear low income and vulnerable populations in the Northwest may be in for a very difficult time in the years to come if we continue down the path we are on. Every dollar counts for many of BPUD's customers. And as a consumer-owned utility our customers expect us to hold the line on electricity rates and they always hold us responsible when the lights go out.

[Applause.]

Mr. BENTZ. Thank you, Mr. Dunn.

The Chair now recognizes Ms. Michelle Hennings, the Executive Director of the Washington Wheat Growers Authority in Ritzville, Washington, for 5 minutes.

**STATEMENT OF MICHELLE HENNINGS, EXECUTIVE DIRECTOR,
WASHINGTON ASSOCIATION OF WHEAT GROWERS,
RITZVILLE, WASHINGTON**

Ms. HENNINGS. Chairman Bentz, thank you for the opportunity to testify today. My name is Michelle Hennings, and I am the Executive Director of the Washington Association of Wheat Growers. I am speaking today on behalf of Washington wheat growers and personally as a wheat farmer from eastern Washington.

The Washington Association of Wheat Growers represents over 4,000 producers across the state of Washington who rely on the Columbia Snake River System, and the Lower Snake River dams in particular, for their livelihoods.

Washington is the fourth-largest agricultural exporter of wheat in the nation, and in the top 20 for overall exports of agricultural goods. Washington's agriculture industry, and its ability to produce and export products globally, are critical to the state's economy. A significant volume of food and agriculture products from other states, including soybeans, wheat, and corn, are exported through Washington state ports each year. Once these pass-through exports are combined with Washington-grown or processed exports, the total value reaches over \$23 billion.

Farmers, including myself and my family, rely on barge transportation to ship goods to market. Not only is the Snake River System critical for Washington State, but farmers across the country rely on its transportation benefits as well. In fact, more than 60 percent of all U.S. wheat exports move through the Columbia Snake River system. Specifically, 10 percent of wheat that is exported from the United States passes through the four locks and dams along the Lower Snake River.

Any disruption to the Lower Snake River System could hurt existing relationships with trade partners. Over the last several decades, our industry has built relationships with customers around the world, using our world-class inland waterways infrastructure to safely and efficiently move Ag products. Breaching the dams could significantly hurt our ability to consistently provide a cost-competitive, high-value food product compared to our competitors in Canada, Australia, Russia, and elsewhere.

Droughts affect the state's agricultural production and have become more frequent in recent years. As a result, irrigation is necessary for the production of most crops, especially east of the Cascades. In fact, the local Natural Resource Conservation Service office estimates over 50,000 acres of land are irrigated from the reservoirs created by the four Lower Snake River dams. In addition, even in places with high rainfall, such as western Washington, irrigation still serves a critical purpose as the majority of the precipitation occurs in the winter months, and summers tend to be drier.

While there have been claims that benefits from the dams can be replaced, the bottom line is there is insufficient alternative transportation infrastructure to replace the barge shipment of wheat in the Pacific Northwest region to export markets. In addition to insufficient railroad infrastructure, ongoing operational and service issues continue to restrict existing shipping capacity by rail.

It is also important to note, barges are 30 percent more fuel efficient than rail and 78 percent more efficient than trucks. Additionally, barges are the only mode of transportation out of those three to improve fuel efficiency consistently, based on a National Waterways Foundation study.

While Washington wheat growers strongly oppose breaching the four Lower Snake River dams, it is important to understand that we strongly support efforts to ensure the long-term health of salmon populations. As there is no definitive science behind dam breaching being a "silver bullet" solution for salmon recovery, we believe that state and Federal efforts would be better focused on building upon efforts proven to positively impact salmon populations. More specifically, we support investments made at the Federal and state level including fish habitat restoration, toxin reduction, predator abatement, and expanding the state-of-the-art fish passages that these dams already have, instead of eliminating them. This is the kind of real work and investment of tax dollars that is needed to help our salmon and our region survive and thrive.

For the younger generation hoping to start or takeover a family-owned farm, the benefits provided by the dams, especially the irrigation and transportation benefits, are critical to the economic viability of the business. If the dams were to be breached, the higher transportation costs could drive many family farms out of business.

The importance of the Columbia Snake River System for the agriculture industry as a whole, and in particular for wheat growers across Washington, cannot be overstated. I look forward to discussing the importance of the four Lower Snake River dams with you today. Thank you.

[The prepared statement of Ms. Hennings follows:]

PREPARED STATEMENT OF MICHELLE HENNINGS, EXECUTIVE DIRECTOR, WASHINGTON
ASSOCIATION OF WHEAT GROWERS

Chairman Bentz, thank you for the opportunity to testify today. My name is Michelle Hennings, and I am the Executive Director of the Washington Association of Wheat Growers. I am speaking today on behalf of Washington wheat growers and personally as a wheat farmer from eastern Washington.

The Washington Association of Wheat Growers represents over 4,000 producers across the state of Washington who rely on the Columbia Snake River System, and the Lower Snake River Dams in particular, for their livelihoods.

Washington is the fourth-largest agricultural exporter of wheat in the nation, and in the top 20 for overall exports of agricultural goods.¹ Washington's agriculture industry, and its ability to produce and export products globally, are critical to the state's economy. A significant volume of food and agriculture products from other states including soybeans, wheat, and corn are exported through Washington state ports each year. Once these pass-through exports are combined with Washington-grown or processed exports, the total value reaches over \$23 billion.²

Farmers, including myself and my family, rely on barge transportation to ship goods to market. Not only is the Snake River System critical for Washington state, but farmers across the country rely on its transportation benefits as well. In fact, more than 55 percent of all U.S. wheat exports move through the Columbia Snake River system. Specifically, 10 percent of wheat that is exported from the United States passes through the four locks and dams along the Lower Snake River.³

Any disruption to the Lower Snake River System could hurt existing relationships with trade partners. Over the last several decades, our industry has worked to build relationships with customers around the world, using our world class inland waterways infrastructure to safely and efficiently move agricultural products. Breaching the dams could significantly hurt our ability to consistently provide a cost-competitive, high value food product compared to our competitors in Canada, Australia, Russia, and elsewhere.

Droughts affect the state's agricultural production and have become more frequent in recent years. As a result, irrigation is necessary for the production of most crops, especially east of the Cascades. In fact, the local Natural Resource Conservation Service (NRCS) office estimates over 50,000 acres of land are irrigated from the reservoirs created by the four Lower Snake River Dams.⁴ In addition, even in places with high rainfall, such as western Washington, irrigation still serves a critical purpose as the majority of the precipitation occurs in the winter months and summers tend to be dryer.⁵

While there have been claims that benefits from the dams can be replaced, the bottom line is there is insufficient alternative transportation infrastructure to replace the barge shipment of wheat in the Pacific Northwest (PNW) region to export markets. In addition to insufficient railroad infrastructure, ongoing operational and service issues continue to restrict existing shipping capacity by rail.

It's also important to note, barges are 30 percent more fuel efficient than rail and 78 percent more efficient than trucks.⁶ Additionally, barges are the only mode of

¹ *Annual State Agricultural Exports Interactive Chart*. USDA ERS—Annual State Agricultural Exports. (n.d.). <https://www.ers.usda.gov/data-products/state-agricultural-trade-data/annual-state-agricultural-exports/>

² *Exports statistics*. Statistics/Washington State Department of Agriculture. (2022). <https://agr.wa.gov/departments/business-and-marketing-support/international/statistics>

³ *Facts about U.S. wheat exports and the Columbia Snake River system*. U.S. Wheat Associates. (2022, March 15). <https://www.uswheat.org/wheatletter/facts-about-u-s-wheat-exports-and-the-columbia-snake-river-system/>

⁴ US Army Corps of Engineers. (n.d.). Water Supply. https://www.nww.usace.army.mil/Portals/28/docs/library/2002%20LSR%20study/DREW%20Products/water_supply.pdf?ver=2019-06-19-164751-430

⁵ *Water management: Food systems: Washington State University*. Food Systems. (n.d.). <https://foodsystems.wsu.edu/ecological-soil-management/water-management-2/>

⁶ National Waterways Foundation. (n.d.). *Waterways: Better for the Environment, Better for Communities*. National Waterways Foundation. <https://nationalwaterwaysfoundation.org/about/ourmission#:~:text=Barges%3A%20Most%20Fuel%20Efficient,a%20single%20gallon%20of%20fuel.>

transportation out of those three to improve fuel efficiency consistently, based on a National Waterways Foundation study.⁷

While Washington wheat growers strongly oppose breaching the four Lower Snake River Dams, it is important to understand that we strongly support efforts to ensure the long-term health of salmon populations. As there is no definitive science behind dam breaching being a “silver bullet” solution for salmon recovery, we believe that state and federal efforts would be better focused on building upon efforts proven to positively impact salmon populations. More specifically, we support investments made at the federal and state level including fish habitat restoration, toxin reduction, predator abatement, and expanding the state-of-the-art fish passages that these dams already have, instead of eliminating them. This is the kind of real work and investment of tax dollars that is needed to help our salmon and our region survive and thrive.

For the younger generation hoping to start or takeover a family-owned farm, the benefits provided by the dams, especially the irrigation and transportation benefits, are critical to the economic viability of the business. If the dams were to be breached, the higher transportation costs could drive many family farms out of business.

The importance of the Columbia Snake River System for the agriculture industry as a whole, and in particular for wheat growers across Washington, cannot be overstated. I look forward to discussing the importance of the four Lower Snake River Dams with you today. Thank you.

[Applause.]

Mr. BENTZ. Thank you, Ms. Hennings.

The Chair now recognizes Mr. Alex McGregor, President of the McGregor Company in Colfax, Washington, for 5 minutes.

STATEMENT OF ALEX MCGREGOR, CHAIRMAN OF THE BOARD OF DIRECTORS, THE MCGREGOR COMPANY, COLFAX, WASHINGTON

Mr. MCGREGOR. Thank you. Chairman Bentz, members of the House Natural Resources Committee, members of the Western Caucus, and honorable Members of Congress, good afternoon, friends.

The Inland Pacific Northwest is an agricultural cornucopia. Ninety percent of Washington wheat heads for export annually. The river terminals that line this gateway handle more of it than any other gateway in the United States. Representative Newhouse reminds audiences that if you have had French fries anywhere on the globe they were likely put in the ground here and processed here.

More than \$8 billion of grown or processed food is exported from Washington alone. That was in 2022.

A marine superhighway, this Columbia Snake River System, authorized by the U.S. Congress, is a keystone to the efficient transport network upon which so very much depends. Exchange an efficient low-carbon, timely transport system with some kind of makeshift alternative added to an already overburdened road and rail system, and you have cooked up a recipe for trouble.

Shipments must be timely. Delays are harmful to millers across the Pacific, with orders to fill and hungry people who depend upon us. Sixty percent of U.S. wheat bound for export goes through our

⁷ Center for Ports and Waterways, & Texas A&M Transportation Institute. (2022, January). National Waterways Foundation. A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001–2019. <https://nationalwaterwaysfoundation.org/file/28/tti%202022%20final%20report%202001-2019%201.pdf>

river system, 50 percent of wheat for international food programs, 100 percent of U.S. wheat to war-ravaged Yemen.

Joe Anderson, a Palouse country grower and Port of Lewiston Commissioner, states that, "Thanks to the river system, farmers can now load a barge and have it transferred for export in Portland in as little as 2 days." Compare that, friends, to rail, which struggled mightily last year, with more than 142,000 shipments delayed 11 days or more across the nation during the first quarter alone. Nor can growers wait for fertilizer deliveries when crops must be nourished and seeded, and delays cost yield potential for the next harvest.

Last year, we were stunned when fertilizer manufacturers, upon whom we depend, were told by the Union Pacific to cut shipments 20 percent, warning that "non-compliance" would result "in the embargo of its facilities." Then-Deputy Agriculture Secretary Jewel Brounough told the Surface Transportation Board of poor service and unreasonable rates from the big outfits. As she put it, "Farmers struggle to make ends meet, consumers pay higher prices at the grocery store, and the United States becomes less competitive on the global market." Last month, Ag Secretary Tom Vilsack stated rail service "remains inadequate and unreliable for many agricultural shippers."

What about trucks? If we tried to jam millions of tons more cargo into trucks when the National Highway Transportation Administration warns that fatal crashes have already reached a crisis level, we would clog the I-84 freeway to Portland and fill the skies of the Columbia River Gorge Scenic Byway with diesel smoke en route. We could not find drivers anyway. They are chronically short, regionally and nationally.

Meanwhile, NOAA Fisheries warns of a horrendous situation, the potential for 90 percent losses of salmon and steelhead at sea. It is "the reality of where we are right now, with the amount of CO₂ we are pumping into the atmosphere," Fisheries ecologist Lisa Crozier states.

Dismantling marine transport would make it worse. Tugs and barges produce 86 percent less hydrocarbons than trucks, 80 percent less than rail, 95 percent less nitrous oxide than trucks, 71 percent less than rail.

Instead of breaching dams, Crozier suggests the goal should be for people to come together and look for holistic solutions. By working together we can make real and lasting progress, improving prospects for salmon without endangering livelihoods, our economy, and the world-class crops that we must transport to feed a hungry nation and the world.

We believe that pulling together we can have healthy rivers and a healthy economy, and friends, we should accept nothing less. Thank you.

[The prepared statement of Mr. McGregor follows:]

PREPARED STATEMENT OF ALEX MCGREGOR, CHAIRMAN, THE MCGREGOR COMPANY

Pulling Together, We Can Have Healthy Rivers and A Healthy Economy

Good afternoon. I'm Alex McGregor, chairman of The McGregor Company, an agricultural retailer, and managing partner of McGregor Land and Livestock, a wheat and livestock ranch now celebrating its 140th year.

The Inland Pacific Northwest is an agricultural cornucopia. From rolling hills of wheat to arid lowlands transformed with the waters of the Columbia and Snake into bountiful and diverse crops, we play a vital role in feeding the nation and the world. People around the globe have depended on the crops we grow for a very long time—since 1868 when the first British ship left Portland headed for Liverpool with a full load of flour and grain. Within three decades 136 vessels left our gateway in a single year, with more than 32 million bushels of wheat onboard, headed for the United Kingdom, San Francisco and Los Angeles but with markets across the Pacific, particularly Japan and China, starting to dominate.

No wonder that the Northwest economy is more trade-dependent per capita than any other region. Ninety percent of Washington wheat heads for export annually—the river terminals that line this gateway handle more of it than any other port in the nation. Representative Newhouse reminds audiences that if you've had French fries anywhere on the globe, they likely got their start in our irrigated fields here. More than \$8 billion in grown or processed food exports in Washington alone in 2022.¹

A maritime superhighway, the Columbia-Snake River System, authorized by the U.S. Congress, is a keystone to the efficient transport network upon which so much depends. The exports from this state are but part of the picture—an additional \$14 billion of wheat, soybeans (#2 gateway in the nation for them), corn and much more arrives here from states across the northern tier and the Midwest. Closer to home, tugboat companies ship over eight million tons of cargo—not only grain but many other products like ethanol in double-hulled barges to Portland, refined liquid products up and down the river, wood chips, paper, wind turbine blades, even municipal solid waste from our urban neighbors is river-bound. Exchange an efficient, low carbon, timely transport system with some sort of makeshift alternative added to an already over-burdened road and rail network—and you've cooked a recipe for trouble. And more than 30,000 visitors annually are transported by cruise lines—an economic shot in the arm for many communities that would likely cease without the dams.

Like thousands of other wheat growers, my family trucks our grain to lower Snake River terminals. Shipments must be timely, delays harmful to millers across the Pacific, with orders to fill, and hungry people who depend upon us—60% of U.S. wheat bound for export leaves our river docks, 50% of wheat for international food programs, 100% of U.S. wheat for war-ravaged Yemen. Joe Anderson, a Palouse country grower and Port of Lewiston Commissioner, states that “Thanks to the river system, farmers can now load a barge and have it transferred for export in Portland in as little as two days.” Compare that to rail, which struggled mightily last year, with more than 142,000 shipments delayed eleven days or more across the nation during the first quarter alone. The National Grain and Feed Association said its members who depend upon rail “have had to shut down mills or cut off sales because they have run out of grain while awaiting deliveries.”

Nor can growers wait for fertilizer deliveries when crops must be nourished and seeded and delays cost yield potential for the next harvest. My family business, in the peak of busy season last fall with supplies tight, called for 4.5 million more gallons of liquid fertilizer, on short notice, for farm families who needed it right away—barges and tugs were the only hope, and they came through for us.

While we ship by rail, too, we were stunned when fertilizer manufacturers upon whom we depend were told by the Union Pacific to cut their shipments by 20%—warning that “non-compliance” would result “in the embargo of its facilities.”² The railroad also notified shippers it was parking some of its own rail cars on sidings, taking them out of service until demand slackened. Former Deputy Secretary of Agriculture Jewel Brunaugh told the Surface Transportation Board³ of poor service and unreasonable rates from the big outfits: “Farmers struggle to make ends meet, consumers pay higher prices at the grocery store and the United States becomes less competitive on the global market.” Last month Ag Secretary Tom Vilsack thanked

¹ <https://agr.wa.gov/departments/business-and-marketing-support/international/statistics>

² <https://www.cfindustries.com/newsroom/2022/union-pacific-shipping-restrictions>

³ Surface Transportation Board Docket No. EP 770, April 26, 2022

the STB for cracking down on embargoes but stated rail service “remains inadequate and unreliable for many agricultural shippers.”⁴

What about trucks? From the lower Snake River grain terminals to Pasco would require 150,000 semi-tractors annually, 411 trucks per day, to haul the grain now shipped by barge. The notion that drivers would be told to stop in the Tri-Cities, then unload onto a barge, as dam opponents have suggested, defies logic. Studies of Northwest rail, the Washington Grain Train strategic plan and railroaders themselves agree that they’re not much interested—unit trains and long hauls, the longer the better, pay the bills. Load that grain onto a truck in Lewiston and on that truck it will stay all the way to our ocean ports. And if we tried to jam millions of tons more cargo onto trucks when the National Highway Traffic Safety Administration warns of crashes at a “crisis level,”⁵ we’d clog the I-84 freeway to Portland and fill the skies of the Columbia River Gorge Scenic Byway with diesel smoke enroute. We couldn’t find drivers anyway—they’re chronically in short supply regionally and nationally.

Meanwhile NOAA Fisheries warns of a “horrendous situation”—the potential for 90% losses of salmon and steelhead at sea: “The reality of where we are right now with the amount of CO₂ we are pumping into the atmosphere,” fisheries ecologist Lisa Crozier states. A situation we’d only make worse if we allowed our dams to be breached and our barges and tugs left parked on a mud bank—EPA’s Emissions Control Laboratory studies show river shipping produces 86% less hydrocarbons than trucks, 80% less than rail, 95% less nitrous oxide than trucks, 71% less than rail.

Time to get out of the courthouse, after two decades, and get with the real world of helping our iconic Northwest fish. As Crozier puts it, “The goal is for people to come together and look for holistic solutions.” By working together, we can make real and lasting progress improving prospects for salmon without endangering livelihoods, our economy, and the world class crops we must transport to a hungry nation and the world. We believe that, pulling together, we can have healthy rivers and a healthy economy. We should accept nothing less.

[Applause.]

Mr. BENTZ. Thank you, Mr. McGregor.

The Chair now recognizes Mr. Todd Myers, Environmental Director for Washington Policy Center in Cle Elum, Washington, for 5 minutes.

**STATEMENT OF TODD MYERS, ENVIRONMENTAL DIRECTOR,
WASHINGTON POLICY CENTER, CLE ELUM, WASHINGTON**

Mr. MYERS. Good afternoon. My name is Todd Myers, and I am the Environmental Director at the Washington Policy Center. I worked previously at the Washington State Department of Natural Resources when the state implemented the landmark Forests and Fish rules that created new protections for salmon streams to keep them cool. And I am currently a member of the Puget Sound Salmon Recovery Council, which makes me a salmon recovery counselor.

To understand the controversy about the Snake River, it is important to understand the current state of salmon runs. *Seattle Times* recently noted that the state and tribes have invested millions to raise hatchery fish, restore critical habitat, keep rivers cool, and clean up industrial agricultural pollution. Yet, the efforts have not been enough to keep the river open to fishing this summer. The story, however, was not about the Snake River but the Snohomish River in western Washington, where there are no dams.

⁴ USDA AMS Secretary Vilsack Letter on Rail Service Issues, May 12, 2023

⁵ <https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities>

The unfortunate reality is that salmon across the Pacific Northwest are struggling. A recent assessment by NOAA Fisheries found that the Chinook populations in the Puget Sound actually declined between 2004 and 2019. The Washington State of Salmon in Watersheds report notes that salmon populations across the state are not improving, including Puget Sound, the Snake River, the Lower Columbia, and elsewhere.

Although they are struggling, claims that the Snake River salmon are on the edge of extinction have repeatedly been incorrect. Just 2 years ago, dam opponents wrote in the *Spokane Spokesman-Review*, “Imagine Snake River without any salmon.” Dam opponents claim that starting in 2019, wild Chinook populations would steadily decline and be “functionally extinct” by 2025. The dam opponents have been wrong. For all Chinook, 2022 was the third year in a row of increases and the fifth-highest returns since 2000. Despite the predictions that they would decline, wild Chinook returns more than doubled last year.

In spite of this real-world data, hyperbole and the slow pace of recovery has created frustration for salmon advocates, including me. The frustration is becoming counterproductive, however, leading some to grasp at silver-bullet solutions rather than focus on a region-wide, science-based approach that is the most likely path to increasing salmon populations. Spending \$35 billion, or more, to destroy the four Lower Snake River dams would be counterproductive, not just for the climate, energy reliability, and the economy, but for salmon, by misallocating resources that could do so much good across the region and distracting from many more immediate and critical challenges faced by salmon. Lack of quality habitat, high water temperatures, predation by seals and sea lions, ocean conditions, and pollution all make increasing salmon populations difficult.

Dams play a role in that list of impacts on salmon, but the Snake’s impact is limited. Between 96 and 98 percent of young salmon traveling downstream when they are most vulnerable successfully pass each dam. Spending tens of billions for such a small theoretical increase in survival is a dubious investment.

This is one reason the largest-ever scientific study of the impact of the dams, completed by Federal scientific agencies, determined that the dams should not be removed. Some who want to destroy the Snake River dams point to the removal of two dams on the Elwha River in Washington State. The dams have been gone for a decade, but the Chinook run in 2022 was actually below the 10-year average, and about 95 percent of Elwha Chinook are still hatchery fish. Dam removal simply is not a silver bullet.

Some have expressed concern about the impact the dams have on river temperatures. Salmon are cold water fish, and warm temperatures is an area of concern. But the salmon stock most in jeopardy, the spring and summer Chinook, typically travel downstream and then return when river temperatures are below the 68-degree threshold considered to be the danger zone for salmon. By way of contrast, the fall Chinook, which are approaching recovery goals, are exposed to the higher temperatures.

Despite that, some dam opponents cite an EPA model from 2003, to claim river temperatures are being significantly increased by the

dams. To test the validity of that model, I looked at real-world data between 2007 and 2019. The data show that the maximum temperature increase between the dams is well below the model's projections. During both the spring and fall Chinook runs, the temperature increase was relatively small. Finally, the temperature difference between the dams has actually declined over the past 15 years as the Corps of Engineers has successfully found ways to keep the river cool.

Rather than offering money on politically targeted projects, the State and Federal Governments should increase funding for science-based salmon recovery. With a long-term commitment, we can bring salmon back on the Snake and across the Pacific Northwest. Thank you.

[The prepared statement of Mr. Myers follows:]

PREPARED STATEMENT OF TODD MYERS, ENVIRONMENTAL DIRECTOR,
WASHINGTON POLICY CENTER

My name is Todd Myers, and I am the Environmental Director at the Washington Policy Center. I have worked in environmental policy for more than two decades, including work at the Washington State Department of Natural Resources when the state implemented the landmark Forests and Fish rules that removed culverts and opened thousands of miles of fish habitat and created new protections for salmon streams to keep them cool. I am currently a member of the Puget Sound Salmon Recovery Council.

Across the Pacific Northwest, including the Snake River, salmon recovery is going much more slowly than I would like. After decades of effort, we are missing our salmon recovery goals in every part of the state and in several places across the Pacific Northwest. Understandably, this is creating frustration among those of us for who work on improving salmon populations. I worry, however, that this frustration is becoming counterproductive—leading some to grasp at silver bullet solutions rather than focus on a region-wide, science-based approach that, while slow, is the most likely path to increasing salmon populations.

Spending \$35 billion—or more—to destroy the four Lower Snake River dams would be counterproductive, not just for the climate, energy reliability, and the economy, but for salmon by misallocating resources that could do so much good across the region.

The federal scientific agencies agree. The most comprehensive study of the impact of the dams ever completed, the Columbia River System Operations EIS, determined the dams should not be removed. That study concluded keeping the dams would “meet the Improve Juvenile Salmon, Improve Adult Salmon, and Improve Lamprey objectives. According to the CSS model, Snake River Chinook and steelhead are expected to see relative improvements in SARs [smolt-to-adult return ratios] of 35% and 28% respectively.”¹

By way of contrast, the report from the Biden Administration calling for the destruction of the dams stated very clearly that it is not a scientific document. A note early in the report says, “This report does not constitute a regulatory or policy requirement and does not supersede or modify existing analysis in ESA recovery plans, viability assessments, 5-year reviews, or ESA consultation documents. The report also does not assess the impacts of implementing any rebuilding measures nor suggest funding sources, needed authorizations, or regulatory compliance measures required for implementation.”²

That report sets the bar for Snake River recovery at what they call “mid-range” population, which they acknowledge “exceed ESA recovery abundance thresholds.” It notes, “Columbia River salmon and steelhead abundance remains far below historical levels.” This is an aspirational goal, but no river in the Northwest (or perhaps the nation) meets this recovery bar. If the goal is set above ESA targets or at the level of historical abundance, there is little justification for singling out

¹ Columbia River System Operators, “Columbia River System Operations Final Environmental Impact Statement,” July 2020, <https://www.nwd.usace.army.mil/CRSO/Final-EIS/>

² NOAA Fisheries, “Rebuilding Interior Columbia Basin Salmon and Steelhead,” September 30, 2022, Rebuilding Interior Columbia Basin Salmon and Steelhead/NOAA Fisheries

the Snake River compared to the many other rivers with poor returns compared to historical levels.

The status of salmon populations and recovery

To understand why the EIS supported keeping the dams and why focusing on the Snake River dams is counterproductive, it is important to understand the current state of salmon runs. *The Seattle Times* recently noted, “The state and tribes have invested millions to raise hatchery fish, restore critical habitat, keep rivers cool and clean up industrial and agricultural pollution. Yet the efforts haven’t been enough to keep the river open to fishing this summer . . .”³

The story wasn’t about the Snake River, but the Snohomish River in Western Washington where there are no dams. While some are fixated on the status of salmon on the Snake River, the unfortunate reality is that salmon across the Pacific Northwest are struggling.

For example, a recent assessment by NOAA Fisheries found that Chinook populations in Puget Sound declined between 2004 and 2019. As the Washington State report on the State of Salmon in Watersheds notes, salmon populations across the state are not improving, from Puget Sound Chinook, to the Snake River Spring/Summer Chinook (but not the Fall Chinook), Lower Columbia Chinook, as well as runs elsewhere.⁴

The challenge Washington and neighboring states face is that recovery is complex and we have to address numerous factors. Lack of quality habitat—good estuaries and floodplains or fish barriers like culverts—is one problem. High water temperatures in streams is another threat. A report this year from the Washington State Academy of Scientists noted that the number of Chinook being eaten by seals and sea lions is “substantial and has increased steadily,” concluding that “predation is considered a primary driver of increasing mortality rates.”⁵ Ocean conditions also play a major role in the cycle of salmon returns. Pollution, like 6PPD-quinone, a compound in tire rubber which kills coho salmon at low doses, also puts pressure on salmon populations.

With so many factors, salmon recovery is complex, and results take a long time. A recent scientific assessment of the effectiveness of salmon recovery efforts noted that in some cases it could take two decades to simply discern the benefits of habitat restoration projects.

Dams play a role in that complex list of impacts on salmon. I personally have voted for Washington state to remove a dam on the Nooksack River. The key, however, is not to focus on particular types of risks to salmon, but to target our efforts where they can make the most impact to increase salmon populations. Fixating on dams can lead us to search for silver bullet answers that aren’t there.

The experience of dam removal on the Elwha River

For example, some who want to destroy the Snake River dams point to the removal of two dams on the Elwha River on the Olympic Peninsula in Washington state. The dams have been gone for a decade, but Chinook populations have not improved. The Chinook run in 2022 was below the 10-year average and Chinook fishing is still banned on the Elwha due to low populations. Additionally, about 95 percent of Elwha Chinook are hatchery fish. Those who hope that removal of the Snake River dams will help increase the population of wild salmon cannot currently point to the Elwha.

Even on the Elwha River, where the dams had no fish passage—in contrast to the Snake River dams—the recovery strategy includes many elements. A recent scientific assessment of salmon recovery across the Pacific Northwest from federal agencies noted that the population increases that have occurred are due to many factors. The authors wrote, “Harvest limitations, natural fish recolonization, and hatchery fish supplementation were combined with the expanded availability of

³Breda, Isabella, “Summer Chinook fishing on premier WA rivers called off as salmon struggle,” *The Seattle Times*, June 21, 2023, <https://www.seattletimes.com/seattle-news/environment/summer-chinook-fishing-on-premier-wa-rivers-called-off-as-salmon-struggle/>

⁴Washington State Recreation and Conservation Office, Governor’s Salmon Recovery Office, “Salmon Abundance,” <https://stateofsalmon.wa.gov/statewide-data/salmon/>

⁵Washington State Academy of Sciences, “Pinniped Predation on Salmonids in the Washington Portions of the Salish Sea and Outer Coast,” November 2022, https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=Pinniped%20Predation%20on%20Salmonids%20in%20the%20Washington%20Portions%20of%20the%20Salish%20Sea%20and%20Outer%20Coast_5d43c6d6-3aad-442a-9271-0315d351eaf2.pdf

freshwater habitat to accelerate fish response.”⁶ Even in the case of the Elwha, recovery involved many complementary actions.

A focus on dam destruction as the key to increasing populations contradicts the science and experience of salmon recovery in the Pacific Northwest.

The status of Snake River salmon

It is also important to note that the claims we hear today that Snake River salmon are on the edge of extinction have repeatedly been inaccurate. In 1999, environmental groups purchased an ad in *The New York Times* claiming that unless the Snake River dams were removed, “wild Snake River spring Chinook salmon, once the largest run of its kind in the world, will be extinct by 2017.”⁷ Instead, about six times as many Chinook, wild and hatchery, returned in 2017 as in 1999.

Similar claims are being made today.

Just two years ago, dam opponents wrote in the *Spokane Spokesman-Review*, “Imagine Snake River without any salmon. That’s not hyperbole.”⁸ It is hyperbole. Using a projection from the Nez Perce, dam opponents claimed that wild Chinook populations would steadily decline and would be “functionally extinct” by 2025. In fact, wild Chinook returns more than doubled last year. For all Chinook, 2022 was the third year in a row of increases and the fifth-highest returns since 2000.⁹

This was not unexpected. Ocean conditions play a significant role in the cycle of salmon returns on the Snake and across the Pacific Northwest. In 2019, dam opponents claimed low populations were evidence that salmon would soon disappear on the Snake. That year, however, was the bottom of the population cycle and, predictably, populations have increased over the past three years as ocean conditions improved.

That is why in 2019 I predicted the increase we have seen over the last three years. That year, I co-authored an op-ed with Governor Inslee’s former salmon advisor, in which we noted, “Some people point to low runs in 2019 on the Snake as evidence that we need to remove the dams. Salmon populations run in a cycle, however, and we are seeing the same low runs across the region.”¹⁰ Despite that predictable cycle, there will be a downturn again in the near future and we will hear that salmon are doomed. This is not a rational or science-based way to make public policy or to help salmon.

Smolt-to-Adult return ratios (SARs)

While Chinook and other Snake River salmon are unlikely to become extinct, they are not recovering as quickly as we would like. One metric used to assess the success of recovery efforts is the smolt-to-adult return ratio, known as SARs. This is simply the metric of what percentage of baby salmon (smolt) that head downstream return four years later. The higher the ratio, the more likely a salmon stock is to become self-sufficient and increase population.

The ratio can also test another hypothesis from dam opponents—that the stress of passing the dams creates delayed mortality among Snake River salmon. Even if 96 to 98 percent of smolt successfully pass each dam, the claim is that salmon die at higher rates later.

The data show this is unlikely and that SARs on the Snake River are similar to other rivers, with and without dams. A peer-reviewed study of SARs across the Northwest from Welch et al. published in October 2020 concluded, “Within the Columbia River, the SARs of Snake River populations, often singled out as

⁶Pacific Northwest Aquatic Monitoring Partnership, “Management Implications from Pacific Northwest Intensively Monitored Watersheds,” May 31, 2022, <https://www.pnamp.org/document/15207>

⁷Kareiva, P. and Carranza, V., Fealty to symbolism is no way to save salmon. In: *Effective Conservation Science: Data Not Dogma*. Edited by Peter Kareiva, Michelle Marvier, and Brian Silliman: Oxford University Press (2018). Oxford University Press. DOI: 10.1093/oso/9780198808978.003.0015, <https://academic.oup.com/book/26688/chapter-abstract/195481536>

⁸O’Mara Collin and Macy, Ayssa, “Sen. Murray and Gov. Inslee must keep their promise to save wild salmon,” *Spokane Spokesman-Review*, June 6, 2021, <https://www.spokesman.com/stories/2021/jun/06/collin-omara-and-alyssa-macy-sen-murray-and-gov-in/>

⁹Columbia Basin Research, “DART Columbia Basin “Quick Look” Adult Passage/Columbia Basin Research,” [https://www.cbr.washington.edu/dart/quick look/adult](https://www.cbr.washington.edu/dart/quick%20look/adult)

¹⁰Myers, Todd and Martin, Steve, “Removing Snake River dams is misguided approach to saving orcas,” *The News Tribune*, January 25, 2020, <https://www.thenewstribune.com/opinion/op-ed/article239608063.html>

exemplars of poor survival, are unexceptional and in fact higher than estimates reported from many other regions of the west coast lacking dams.”¹¹

After some dam opponents criticized the study, an Independent Scientific Advisory Board (ISAB) was convened and agreed with the study’s assessment of Snake River SARs. The authors of that assessment wrote, “The ISAB concurs with the general conclusion . . . that current SARs for Chinook populations from the Columbia Basin and in other systems are generally low, with recent values below 2% (after accounting for fishery interceptions) being common.”¹²

Despite that, some have claimed that high SARs on the Yakima River (not far from the mouth of the Snake River) cited in that study, are evidence that the dams are the cause of the low returns. That is contradicted by the data and local experts.

The same data from the Welch et al. study show that two rivers even farther downstream—the Warm Springs River and the Carson River—have lower SARs than the Snake River populations. If dams are the cause of low SARs, why do returning salmon that pass fewer (or no) dams have even worse return rates?

Additionally, salmon recovery experts I spoke to in the Yakima River watershed indicate that while the SARs were good for a short period of time, the current SARs may actually be lower than the Snake.

The simple truth is that when we look at the science of salmon returns on the Snake, we return to the conclusion that salmon recovery is slow everywhere and that the Snake River runs reflect broader trends and are not unique.

The impact of the dams on river temperatures

As the concern about climate change and the impact on habitat increases, some have expressed concern about the impact the dams have on river temperatures. Salmon are cold water fish and warm water temperatures is an area of concern for all salmon. As I noted, I was at the Washington State Department of Natural Resources when we changed forest practice laws to address this very issue—providing more shade to keep streams cool.

On the Snake River, however, it is unlikely that the dams are significantly impacting temperatures and that temperature is the cause of poor returns.

The salmon stock in most jeopardy, the Spring/Summer Chinook run, travel downstream before river temperatures are typically warm enough to have a negative impact.¹³ They also return in the Spring when temperatures are well below the 68-degree threshold that is considered to be the danger zone for salmon. By way of contrast, the Fall Chinook, which return later and are sometimes exposed to higher temperatures, are one of the few salmon populations in Washington state this is recovering, and the state of Washington lists them as approaching recovery goals.

Spring Chinook simply aren’t exposed to high temperatures. Even this year, when the Spring Chinook run was delayed a few weeks, temperatures on the Snake were still about 59 degrees during the peak of the Spring run—well below the temperature that risks significant impacts.

Despite that, some dam opponents claim the dams are increasing river temperatures and harming salmon. In a letter, dam opponents cited at 2003 model from the EPA, and claimed, “When considered collectively, the four lower Snake Dams could affect temperatures up to a potential maximum of 6.8° C/12.2° F.”¹⁴ It has now been two decades since that model was released and we can use real-world data to determine the accuracy.

First, the model does not pass a simple smell test. The hottest summer in the last two decades was in 2015, where poor snowpack combined with a hot summer to increase river temperatures. Even then, temperatures at the Ice Harbor Dam—the farthest downstream—never reached 73 degrees. If the 12.2 degrees F impact was accurate, it would imply the temperature without the dams would have been 61

¹¹ Welch, David Warren, and Porter, Aswea Dawn, and Rechisky, Erin Leanne, “A synthesis of the coast-wide decline in survival of West Coast Chinook Salmon (*Oncorhynchus tshawytscha*, Salmonidae),” *Fish and Fisheries*, Volume 22, Issue 1, January 2021, <https://onlinelibrary.wiley.com/doi/epdf/10.1111/faf.12514>

¹² Independent Science Advisory Board, Northwest Power and Conservation Council, “ISAB Review of the Coast-Wide Analysis of Chinook Salmon Smolt to Adult Returns (SARs) by Welch et al.,” June 29, 2021, <https://www.nwcouncil.org/reports/isab-review-coast-wide-analysis-chinook-salmon-smolt-adult-returns-sars-welch-et-al/>

¹³ National Marine Fisheries Service West Coast Region, “Status of the Species: Snake River Spring/Summer Chinook Salmon,” February 2023, <https://www.fisheries.noaa.gov/s3/2023-02/feb-2023-status-snake-r-spring-summer-chinook.pdf>

¹⁴ Cannamela, David, “2019 Scientists’ Letter re: Warming waters in the lower Snake River, threat to salmon survival,” email to Scott Pogrud and the Idaho Office of Species Conservation, October 21, 2019, <https://species.idaho.gov/wp-content/uploads/2020/11/4.-Salmon-Workgroup-Public-Comment-10.22.19.pdf>

degrees. That is simply not possible since the temperature at the Lower Granite Dam, the farthest upstream, was about 67 degrees at that time and it is not likely that temperatures downstream would be lower than upstream.

Similarly, when Washington state set temperature records in June 2021, the water at Ice Harbor dam reached only 72 degrees. Suggesting that temperatures should have been 12 degrees lower is not plausible.

I did an additional test of the model by examining river temperatures between 2007 and 2019.¹⁵ According to the EPA model, the maximum temperature impact between Lower Granite and Ice Harbor is estimated at 4.69 degrees C. Using data collected by the Army Corps of Engineers, over thirteen years there is not a single instance of temperatures reaching that level of difference.¹⁶ We measured the temperature difference in two ways. First, we looked at same-day comparisons between the two dams. The highest real-world difference we found was 3.9 degrees C on August 10, 2007.

I also looked at temperature differences over the course of a week because it takes time for water to travel downstream. The highest variance we saw over the course of a week was 3.7 degrees, which occurred during the last week of July 2007. The amount of time it takes water to travel downstream varies, and other calculations are possible. But, it is unlikely that any timeframe would yield the 4.69 degrees temperature rise projected in the model.

Even if the model exaggerates the temperature impact, the dams may still increase temperatures, albeit by a lower amount, and that could harm salmon.

It is important to note that unlike dams that have large reservoirs behind them, like the Grand Coulee Dam on the upper Columbia, the Snake River dams are “run of river,” which means they do not store water to the degree that other dams do. Slow-moving pools behind dams tend to increase water temperatures. The Snake River dams can still have an impact on temperatures, but the potential impact is less than we see elsewhere.

Some portion of the increase in river temperature is due to natural causes and the river warms naturally as water flows downstream. Disaggregating what portion of the impact is natural and what is due to the dams is difficult, which is why EPA used a model rather than real-world data. Actual temperature data can, however, provide a reasonable range of temperature impact. Examining data between 2007 and 2019 reveals that the impact of the dams on temperatures is likely small and decreasing.

Comparing temperatures between Lower Granite dam (the farthest upstream) and Ice Harbor (the farthest downstream) on the same day shows the maximum temperature difference—and the maximum potential impact of the dams on temperature and fish—fell from 3.9 degrees C in 2007 to 2.1 degrees C in 2019—a reduction of 46 percent. Comparing temperatures at Lower Granite to those a week later at Ice Harbor shows a similar decline, with the maximum increase in temperature falling from 3.7 degrees C to 2.4 degrees C—a decline of 35 percent.

Focusing on the maximum difference doesn't tell the whole story. Those temperature increases occur when there are few fish in the river, between the Spring and Fall runs. When fish are in the river, the average temperature difference in the Spring is about one degree C (less than two degrees F). The same is true in the Fall, with average temperature differences reaching about one degree C.¹⁷

The decline in temperature differential within the same year, and over the past two decades is evidence that the U.S. Army Corps of Engineers are improving their ability to manage river temperatures and reduce the impact of the dams. One technique is to release cold water from the Dworshak Dam on the Clearwater River in Idaho when salmon are spawning.

Again, it is likely that the four Lower Snake River dams have some impact on river temperatures, but the real-world data are at odds with the model's projections. Those data show that the potential temperature impact is small when salmon are spawning, that temperatures are typically below levels considered serious for salmon, and that the temperature impact has significantly declined over the past 15 years.

¹⁵ Myers, Todd, “Real-world data contradicts letter on Snake River dams and temperatures,” Washington Policy Center, January 13, 2020, <https://www.washingtonpolicy.org/publications/detail/real-world-data-conradicts-letter-on-snake-river-dams-and-temperatures>

¹⁶ Columbia Basin Research, “Columbia Basin Conditions Year Comparisons for Single Project,” at http://www.cbr.washington.edu/dart/query/basin_conditions_projcomp.

¹⁷ Before we published this research, I sent it to the dam opponents who signed the letter expressing concern about the dams' impact on temperatures. They responded that they would not be providing feedback.

The Snake River dams and Southern Resident Killer Whales

Finally, one additional argument for destroying the dams is that improved salmon runs would also help the Southern Resident Killer Whales in Puget Sound, which are a listed species. The Southern Residents rely almost entirely on Chinook for their diet and low populations across the region are the major cause of their decline. Some have argued that destroying the dams would increase the number of Chinook available to the Southern Residents.

Scientists from NOAA Fisheries have stated clearly that destroying the dams would not have a meaningful impact on salmon available to the Southern Residents.

In a 2016 NOAA fact sheet titled, "Southern Resident Killer Whales and Snake River Dams," agency staff wrote, "the relative size of the Snake River salmon stocks compared to others on the West Coast means that increases in their numbers, whether from breaching dams or otherwise, would result in only a marginal change in the total salmon available to the killer whale."¹⁸

Additionally, NOAA Fisheries and the Washington State Department of Fish and Wildlife prioritized the most important watersheds for Puget Sound orca, ranking the Snake River ninth overall.

NOAA's fact sheet went on to say, "The best option for long-term recovery of both salmon and whales is restoring habitat across a diversity of west coast rivers." Again, focusing so much attention and resources on the Snake River distracts from salmon recovery efforts across the region that are more critical, both to the orca and salmon.

What can be done for salmon?

What, then, should be done to help recover salmon on the Snake, the Columbia, and other parts of the region?

First, we cannot allow frustration at the slow pace of recovery across the region to cause us to look for silver bullets that don't exist. Scientific prioritization must continue to be our guide on where and how to allocate state and federal dollars. It took decades for salmon to get to this point and it will take time for them to recover.

Second, the federal government should continue to support the work of the Pacific Northwest National Laboratory to find ways to reduce the impact of the dams in particular and improve our understanding of salmon runs more generally. Technology they have developed has already been very effective at tracking salmon and reducing mortality at the dams. One reason up to 98 percent of smolt successfully pass individual dams is the work of PNNL to understand how salmon interact with the dams.

Third, the federal government should follow the recommendations of NOAA Fisheries in the most recent status review of Snake River Spring/Summer Chinook. That review, released in February of this year, notes, "The greatest opportunities for advancing recovery include: (1) prioritizing actions that improve habitat resilience to climate change; (2) reconnecting stream channels with floodplains; (3) developing local- to basin-scale frameworks that prioritize restoration actions and integrate a landscape perspective; (4) implementing restoration actions at watershed scales; and (5) reducing pinniped predation on adults returning to the lower Columbia River."

Finally, both the state and federal governments should increase funding for science-based salmon recovery grants. There is much more work to be done to recover salmon and it will require funding. Rather than offering money to politically targeted projects, it should be put into grant programs using science-based metrics.

Thank you for the opportunity to provide information on this important issue.

[Applause.]

Mr. BENTZ. Thank you, Mr. Myers.

I will now recognize Dr. David Welch, President of Kintama Research Services in British Columbia, Canada, for 5 minutes.

¹⁸ NOAA Fisheries Service West Coast Region, "Southern Resident Killer Whales and Snake River Dams," 2016, https://www.salmonrecovery.gov/doc/default-source/default-document-library/3-16-2016_srkw_factsheet_pdf_t_d.pdf

**STATEMENT OF DAVID WELCH, Ph.D., PRESIDENT & FOUNDER,
KINTAMA RESEARCH SERVICES LTD., NANIAMO, BC, CANADA**

Dr. WELCH. Thank you, Chairman Bentz and members of the Committee. I appreciate the invitation to testify.

Time is short so I am simply going to start by noting that I have been working on salmon-related issues for 38 years over my career, and during my professional life I have received many awards. I mention that now because I am going to say some fairly strong contrarian statements to the argument that the science around the Snake River dam influences on salmon is settled. I think it is far from that. And I want to illustrate that with two points. My written testimony is much more extensive.

The first is that I want to quote from a colleague of mine, who I disagree with professionally, but does wonderful research for the other side of the argument, Dr. Steve Haeseker of the U.S. Fish and Wildlife Service. Dr. Haeseker has shown that survival through the eight dams, from Lower Granite Dam down to Bonneville Dam, is about 53 percent. By the time the adults come back, it is 1 percent. So, advocates for taking out the dams say, well, half the problem is in the power system because half the fish have died.

I have a very different view, which can be simply stated. One out of two fish dies from all causes in the power system. One out of 50 of those fish, or 2 percent, survives to come back from the ocean. So, in fact, the impacts beyond the dams is far greater than in the dams, which is why I think it has been so difficult for people manipulating things in freshwater to try to improve salmon returns. I would like to see salmon returns improved as well, but it is a very difficult thing when you are working on one piece of the puzzle that is a small component of the overall effect.

So, just to make that point again, the ocean is about 25 times more powerful in determining the salmon returns than is the whole power system, the eight dams, the fish predators, the bird predators, and the diseases.

My second point is that although those in favor of dam breach do not explicitly state that dam breach actually has a very small effect on overall salmon survival. They argue that delayed mortality in the ocean due to the passage through the dams is a big effect.

That was recently published in a paper with 12 authors called the Storch et al. paper, and they cited their own work, which includes many illustrious salmon scientists that argued for delayed mortality. Unfortunately, the problem with that paper is that they did not cite any of the work that we had done, where we explicitly tested whether there was a difference in survival between Yakima and Snake River salmon going down the river, down through the lower river and up to the coast to the northern tip of Vancouver Island. We found the survival was the same.

Now there is a whole backstory to that which I cannot get into now, but none of that was discussed. It was simply presented to the scientific audience in a scientific review, that fait accompli that it was simply due to dam passage, even though the publications are out there that do not agree with that. That is not science.

It is unfortunate that it has happened. Why that happened I don't understand. But the message here for the Committee, and more broadly, is that we need to look at these things from a much broader, more pragmatic viewpoint. Some of the ideas around what the dams are doing are simply wrong or are not being supported, but they are being ignored because they do not fit with a particular message or goal that people want to do.

The gold standard in science is these sorts of experimental tests of theories. That is when science moves forward. It is when we move away from our own pet theories and we say we were wrong. We had a good idea, but the idea didn't pan out. That is not happening here, unfortunately, because the view has become very polarized, people do not want to move off their views from 50 years ago.

Put simply, I think that the Snake River dams never caused the major problems that people thought they did over half a century ago. They didn't understand the effect of the ocean back then, and the overestimated what the construction of the Snake River dams was going to do. I think we need to try to redress that. We need to also bring people together, both scientists and the public, to try to address these things, to test things in the most careful way that we can, and to try to move things forward.

In summary, I think the courts actually had it right in rejecting the biological opinions over the last three decades. The problem is out in the ocean, and the solutions that are being put forward, have been things in freshwater that are not reasonably likely to turn those around. And for those reasons I think that the courts have actually been ahead of the scientists in saying that many of the things that are being proposed are not going to work, and we need to look at that much more closely as a possibility.

So, in summary, I would like to say to you, as policymakers, members of the audience, that if I am correct in my beliefs and my statements, the science around Snake River dam breaching is far from settled. Thank you.

[The prepared statement of Dr. Welch follows:]

PREPARED STATEMENT OF DAVID W. WELCH, PRESIDENT, KINTAMA RESEARCH SERVICES LTD

Thank you for the opportunity to testify before you today regarding salmon and the four lower Snake River dams. I am Dr. David Welch, President of Kintama Research Services, Ltd. Time is short, so I will start by simply stating that I am an expert on Pacific Salmon, and particularly on the ocean phase of their lives, which remains so mysterious to all of us.

I have appended my resume to my written remarks, but I will note here that over my 38 years of professional life working on salmon issues I have received many awards. Amongst those most relevant to your subcommittee's mandate are the 2007 Prix de Distinction from Fisheries & Oceans Canada "*For outstanding scientific contributions related to national and international climate change research*" then in 2008 the Prix d'Excellence from Fisheries & Oceans Canada "*In Recognition of Exceptional Scientific Contributions to the Government of Canada*". I believe that the Prix d'Excellence is Fisheries and Oceans Canada's highest award.

In 2012 I received both the Award of Excellence in Fisheries Management from the American Fisheries Society "*. . . for inspirational leadership in the fishery profession and substantial achievements for the American Fisheries Society and the fisheries resource*" and the J.P. Tully Medal in Oceanography from the Canadian Society for Meteorology & Oceanography "*. . . for three decades of research dedicated to understanding the sea life of salmon using innovative data-gathering techniques with special reference to acoustic arrays . . . This program has provided a core*

research platform for a wide range of scientists to address questions concerning fish movement and survival". More recently, in 2022 I was also honored by election as a Foreign Fellow of the Explorers Club in NYC and as an Elected Fellow of the Royal Canadian Geographical Society.

I list these awards because I am going to make some strongly contrarian scientific statements about the science behind Snake River dam removal and it is important for your subcommittee to be able to evaluate my credibility in making these remarks.

The ocean phase of the life history of salmon is fundamental to the issues your subcommittee is now struggling with concerning the role of the Snake River dams in causing the low levels of returning adult salmon. Unfortunately, the ocean has received short shrift by too many of my colleagues, who are looking for things they can do in freshwater to fix, or compensate, for the poor ocean survival of Chinook salmon and steelhead. To understand why I think this approach is unlikely to work and why so many freshwater focused studies get off on the wrong foot, your subcommittee needs to only consider the basic facts of the matter. I will frame these issues very simply for your subcommittee by citing the work of one of the critics of the Snake River dams whose work I much admire, Dr Steve Haeseker of the US Fish and Wildlife Service. Despite our radically different perspectives on the impact of the dams on salmon, I would like to highlight the quality of Dr Haeseker's careful studies. However, I will also use Dr Haeseker's fine work to illustrate why all of the dams now play such a small role in the poor returns of Snake River salmon from the ocean.

Dr Haeseker's studies show that on average about 53% of young salmon, or smolts, survive the journey down the Snake and Columbia Rivers from Lower Granite Dam to Bonneville Dam. I agree with him. The critics of the dams say that therefore because "*almost half*" of all the salmon die by the time they reach Bonneville Dam, so this is half the salmon problem. They are profoundly wrong. To understand why, let's round average survival in the FCRPS down to 50% to make the numbers simpler to follow. By the time the adults come back from the ocean, survival to adult return, or the "SAR", is 1.1%. Let's make that number 1%. So, now we have 1/2, or 50%, of the salmon dying from all causes in the FCRPS (dams, predatory birds and fish, and diseases) and just 1/50th of those lucky survivors, or 2%, coming back from the ocean!¹ That makes the ocean about 25X more powerful in determining the poor adult return to the Snake River.

Please let that sink in, because the enormity of that difference is critical to your understanding of the potential role of the dams in the conservation problem for Snake River salmon. Survival in the lower river and the ocean is only 1/25th the all-cause survival in the FCRPS—dams, predatory birds and fish, and all diseases. Despite this, salmon biologists have persisted for half a century in identifying the Snake River dams as the root cause of the problems and that removing these four dams will magically fix the problems. Yet my high school level use of fractions shows that the critics' own numbers reveal a very different perspective on the cause of the problem, one that is never explicitly laid out as I have just done for you.

Rather than recognize that the direct impact of the dams on salmon survival is now tiny, nearly 25 years ago the theory was put forward that survival in the ocean was bad because of damage inflicted by the dams. . . . so-called "*delayed mortality*". It was a creative idea in its time, because it basically acted like a force multiplier in military parlance; something that made the impact much larger than one would initially expect and essentially arguing that poor marine survival actually had a large component attributable to the dams. In support of this view, the proponents of delayed mortality point to the three times better survival of Yakima and John Day River salmon populations that don't go through the Snake River dams.

Unfortunately, it has been very difficult to get engagement on this basic issue. Back in 2021 a group of 68 biologists wrote to the Pacific northwest Governors, Members of Congress, and Senators essentially saying that "*the time is now to remove the Snake River dams*". Frustrated by the woolly thinking in that letter, I wrote my own rebuttal and sent it to the same group of policy makers the Group of 68 had sent their letter to. Also, as a courtesy, I sent it to those of the 68 biologists whose email addresses I had at hand. Later, I also submitted a version of that rebuttal to the Council on Environmental Quality, or CEQ. (I will submit a copy of this, my supplementary written testimony to the CEQ again). To date, I

¹Just for completeness, let's do the arithmetic with the actual averages: smolt survival through the entire eight dam FCRPS averages at 53% and adult returns average 1.1%. Then survival in the FCRPS is 53% and survival in the lower river below Bonneville Dam until adult return is $1.1/53=2.08\%$. Using more exact numbers makes no practical difference to the argument. See my response to the "Group of 68" letter for a fuller analysis.

have not had a single response telling me why I was wrong in my analysis that ***even breaching all eight dams*** would not even come close to achieving the stated policy goal of achieving a 4% SAR.

For simplicity, attached to my testimony is my earlier technical response I wrote that examined the claim of the Group of 68 biologists advocating for Snake River dam removal because it was the only feasible way to recover salmon populations to “*abundant and harvestable*” levels.

Several peer-reviewed scientific papers have been published in the past year, essentially supporting the letter written by the Group 68 biologists who in 2021 advocated for Snake River dam removal. All state that removing the lower Snake River dams is the best chance of recovering Snake River salmon populations to “*abundant and harvestable*” levels. I am here to advise you today that that these scientists are wrong, and that the recommendation of my colleagues to remove the Snake River dams to help the Snake River salmon will have only the tiniest of impacts on adult return rates, or “SARs”. Actions to breach the dams may in fact very well reduce SARs because past advocacy in favor of dam breaching has consistently failed to consider what happens to the smolts, or young salmon, if they are flushed into the ocean more quickly. Not only do we not know if salmon survival is better in the ocean than what is experienced during downstream migration through the hydropower dams, the studies conducted by both NOAA and the Fish Passage Center’s Comparative Survival Study contain logical errors that perpetuate mistakes first made during the studies conducted nearly half a century ago blaming the impact of Snake River dam construction on the demise of Snake River salmon populations.

I understand many within the Columbia River Basin are claiming that the science around dam breaching is “settled” and there is no need for further debate. In contrast to this widely promoted view, I wish to offer today a strongly contrarian testimony. It is my professional opinion that the science of salmon recovery is far from settled, and indeed is riddled with a number of basic errors of logic that the believers in dam breaching have continued to make for over half a century. Unfortunately, these errors—only two of which I will touch upon today—are compounded by an apparently deliberate twisting of the scientific facts that minimize serious known problems with the narrative that is now being promoted. I wish it wasn’t so, but I have to state that I believe this conduct is scientifically dishonest. How much is deliberate and how much is simply from a zealous belief that refuses to address the basic problems with various claims about the role of the Snake River dams I cannot say.

Although those in favor of dam breaching do not explicitly state that Snake River dam breach will actually have only tiny impacts on salmon survival, they do argue that in fact that “delayed” mortality caused by the dams reducing survival in the ocean is a major factor. In fact, in a recent scientific review paper by Storch et al. (2022), the group of 12 authors go so far as to state that “*. . . effects of the hydrosystem can manifest in reduced ocean survival . . . because of out-migration experiences*”. This paper has had substantial impact on the debate in the Columbia on the role of the dams, no doubt due at least in part to the illustrious reputation of many of the authors, which includes a number of the scientists who originally developed the delayed mortality theory.

Remarkably, despite billing itself as a scientific review paper, the Storch et al paper makes no effort to even acknowledge that the delayed mortality theory was directly tested in a series of peer-reviewed papers by myself and colleagues. The most prominent of these papers was published in the Proceedings of the National Academy of Sciences (Rechisky, Welch et al., 2013). The Proceedings of the US National Academy of Sciences is considered to be one of the top five scientific journals in the world across all disciplines. In our 2013 paper my colleagues and I reported the results from an experiment to directly measure the survival of Yakima and Snake River smolts in the lower Columbia River and north along the west coast of North America all the way to the northern tip of Vancouver Island, some 1,500 kilometers and almost two months after passing out of the hydropower system. The purpose of this breakthrough scientific paper was to show that survival could be directly measured in the ocean and to explicitly test the theory that “*delayed*” mortality due to Snake River dam passage reduced the survival of Snake River smolts relative to the Yakima population, which had three times higher adult return rates. These much higher return rates are the evidence that proponents of the delayed mortality theory point to when they argue that breaching the Snake River dams will “fix” the Snake River conservation problem.

Despite explicitly testing whether the Yakima R smolts that did not go through the Snake River dams had better survival than the Snake River smolts—the key claim needed to make Snake River dam breaching work—the authors of the Storch

et al paper chose to exclude any mention of these studies even though many of the Storch et al authors are well aware of these publications.

The gold standard in scientific research is exactly these sort of treatment-control experiments we conducted over multiple years for Snake River salmon (Rechisky, Welch et al 2013). Yet the Storch et al authors chose to only cite their own highly selective correlation studies that show a higher return rate for Yakima R smolts, which they interpreted as being due to the smolts not migrating through the Snake River dams. So, the Storch et al authors cited their own correlation studies, but refused to even mention to the readers that explicit testing of their theory found no evidence to support their theory. Some “review”!

There is an interesting history here that would have actually made for an informative debate. After our paper was published Dr Steve Haeseker of the FWS, one of the scientists on the other side of the debate who I greatly respect, wrote a critique submitted to the journal arguing that our results might be due to the use of “non-representative” smolts. In essence, Dr Haeseker suggested that perhaps we had obtained the same survival because we had selected smolts from the two populations for the experimental test that were the same size and forced them to migrate to sea at the same time whereas in the normal course of events the smolt size and migration timing might be different. We replied that if Dr Haeseker was correct, then either increasing the size of the smolts or changing the run timing was causing a six-fold increase in Snake River smolt survival for those smolts we hadn’t tested, which was more than enough of an improvement to achieve the “abundant and harvestable” standard now being promoted. We also pointed out that even if Dr Haeseker was correct (which was a big “if!”), we had still moved the goal posts because the original version of the delayed mortality theory just claimed that the Snake River dams were bad for all salmon. Now the proponents of dam breaching were arguing that there must be some sort of specialized conditions (small smolts or some subtle difference in migration timing) that were needed to make the theory work.

In any event, a year later we published (in 2014) a further study that removed both of Dr Haeseker’s objections and found that the survival of smolts that did or did not migrate through the Snake River dams was essentially the same. As a result, our experimental results say that Snake River dam breach cannot yield the claimed improvements to adult returns.

Storch et al elected *not to mention any of these issues* in their review and remained completely silent on the critical point that a direct experimental test of their key claim had been explicitly refuted. This is not science. It is wrong and unless put to rights will deliberately mislead the policy makers who have the difficult job of balancing the competing pressures of our societies. It will also mislead the Tribes, with their deep connection to the land and the salmon, who are essentially being told that supporting dam breach will ensure that their peoples will have abundant and harvestable Chinook salmon.

Yet that belief almost certainly is wrong. In October 2020 we published a paper reviewing all of the government data on smolt to adult return rates, or SAR, of Chinook salmon for the entire coast of North America—from California to SE Alaska (Welch et al 2020). We deliberately chose to be provocative by comparing the survival of all other regions to that for the Snake River. What we found was that for all other regions—including northern British Columbia and SE Alaska, regions with essentially pristine freshwater habitat values and no dams—SARs have now fallen for all regions to be essentially the same as those for the Snake River region. If Alaskan Chinook salmon really do have adult return rates now as low as the Snake River, how are the Tribes going to be assured the “*abundant and harvestable*” Chinook returns that they argue the treaties must provide them with? Clearly, decommissioning the Snake River dams won’t provide this because Alaskan natives are also suffering from the same lack of Chinook salmon, despite the absence of any dams.

Storch et al did cite this one paper of ours, but again mischaracterized it. Storch et al cited our paper in one line saying that we “. . . suggested that most variation in life-cycle survival can be explained by marine effects common among populations of Chinook Salmon throughout the west coast of North America”. In fact, our message was much more straightforward . . . we never talked about the variability in salmon returns caused by the ocean, we simply reported that the **average survival** was essentially the same everywhere—Snake River dams or no dams! It is the latter issue that is the important policy issue and the Storch et al authors deliberately sidestepped addressing it. Equally serious, in the Welch et al (2020) paper, we showed that much of the data used in the annual CSS study (that many of the Storch et al authors also contribute to) do not support the authors own thesis that Snake River dams are bad for Chinook salmon. For example, we showed that

the CSS' own data on Snake River Fall Chinook show that these populations have higher SARs than the SARs of mid-Columbia Fall Chinook that don't migrate through the dams. If dams are the only real cause of these differences in salmon survival, what are policy makers to make of these higher Snake River Fall Chinook survival? Will dam breach actually reduce Snake River Fall Chinook abundances? This seems unlikely, but I raise it to illustrate how selectively blaming the dams for the things that people don't like (bad return numbers) is unlikely to lead to good policy.

Selective citation of just the data fitting one's personal beliefs is unfortunate, but especially so by scientists claiming that dam breaching will fix the salmon conservation problems. Roughly \$18 Billion has been spent so far on salmon conservation efforts in the Columbia River Basin with only very modest improvements in the state of the salmon resource. A further \$35 Billion to allay the economic harms of dam breach is now being proposed by Rep. Mike Simpson, apparently because of assurances by some in the biological community that dam breach is the only way to improve the salmon resource and honor treaty obligations to the Tribes. Yet when the Storch et al authors play fast and loose with the facts it is time to call out these bad behaviours.

In fact, I would argue that the Courts have recognized these problems better than regional salmon biologists. Three different federal judges working over nearly 40 years have essentially rejected all of the Biological Opinions on the basis that they were not reasonably likely to address the problem—poor returns from the oceans. In my view the Courts are saying that tinkering with freshwater issues that don't address the bad survival happening somewhere in the ocean after the smolts leave isn't likely to address the real conservation issue—there aren't enough adults coming back from the ocean. I agree with the Courts.

Following my reading of professional declarations to the Court of Judge Simon Mitchell prepared by Ed Bowles, Howard Schaller, and Dave Johnson back in 2021, I was puzzled by why these authors all made the same repeated errors of logic in their claims. When thinking about those Court rulings and then pondering why so many talented salmon biologists consistently ignored the ocean issues in favour of finding something—anything—to work on in freshwater, I decided to go back and read the original studies by the Bureau of Fisheries (NOAA's predecessor) implicating the Snake River dams in the demise of the salmon runs half a century ago (Raymond 1968, 1979, 1988). It turns out that there are severe problems with both Raymond's original studies blaming the demise of Snake River salmon populations on the construction of the dams back in the 1960s & 1970s AND with how subsequent research has built upon those studies. In a word, the research that has been conducted for nearly half a century on the decline of Snake River salmon populations has major, possibly catastrophic, flaws.

Put simply, the Snake River dams probably never caused the major decline in salmon runs that has been claimed for over half a century (certainly not of the magnitude claimed).

I do not make these statements lightly. In the course of my research, I also made what I consider to be several major additional scientific breakthroughs as to why salmon recovery efforts in the Columbia River Basin have been so ineffective. I outlined two (of six) issues in two presentations I gave this past March at a seminar organized on "The Mighty Columbia" on March 3rd and at the Washington-BC meeting of the American Fisheries Society on March 21st. Again, to date I have received no communications refuting my analysis.

In brief, the original studies conducted in the late 1960s and 1970s by Howard Raymond for the Bureau of Fisheries (NOAA) implicating the Snake River dams as the cause of the major decline in survival contain several major errors of logic. These errors do not even require data to demonstrate their fundamental flaws. The key error is surprisingly simple: Raymond (1968) argued that the construction of the Snake River dams would turn the free-flowing river into a series of impoundments, dramatically increasing the migration time of the smolts as they travelled downstream to reach Bonneville Dam, the final dam in the Columbia hydropower system. Raymond argued that this would decrease survival and apparently all authors since him have agreed with this simple premise; many statements in various annual memos by NOAA and reports by the FPC's CSS make the statement that higher flows reduce travel time and survival of smolts. Yet this conclusion, as simple (and technically correct) as it is, is also highly misleading: measuring survival over a shorter time period means that survival *has* to increase!

Consider the case of the roughly 50% smolt survival to Bonneville Dam that Dr Haeseker (and many others) have reported on. If increased flows cut travel time in half and survival increases to 71% most Columbia River biologists would conclude

that policy actions leading to increased flows (such as spill) were increasing survival by 21% . . . a major increase. Yet $71\% \times 71\%$ is just 50% . . . no real change. What has actually happened here is that the observation time has been reduced, so fewer smolts die. Only if survival is higher than 71% (which is generally not checked in Columbia River studies) can there be a real improvement in in-river survival to Bonneville Dam. Even more important, survival during the extra time salmon spend in the ocean is completely unaccounted for. Unless survival rates in the ocean are better than in the hydropower system there can be no benefit from increased flow. Despite the elementary nature of these issues, they are almost never factored into statements about how increased flow improve smolt survival. That such a fundamental issue should be overlooked in the Columbia is a very troubling issue and suggests that biologists are not thinking about the issues carefully enough.

A second troubling example of insufficiently critical thinking in Columbia River salmon conservation work concerns the Fish Passage Center's Comparative Salmon Survival Study. This is an important report with multi-agency input that annually reports on smolt to adult (SAR) survival trends using PIT tags and evaluates how the dams influence survival. In October 2020 we published our findings that SARs were very similar coastwide and not materially different from Snake River values (Welch et al 2020). However, in that paper we also reported on our comparison of survival estimates using PIT tags with CWT (coded wire tags), which are occasionally used in the Columbia to measure survival and nearly always used elsewhere for this purpose. PIT tags are considered "*the gold standard*" in the Columbia Basin because an essentially perfect count of the returning adults is possible at the dams. Amazingly, despite their use for over two decades in the annual CSS Reports, we discovered in our work that the commercial and sport catch of salmon is not surveyed for PIT tags and that the unaccounted for harvest rates in salmon fisheries are large and varying over the years, not small (around 1%) as had been assumed by the CSS authors. Making things even more serious, tribal fish catch above Bonneville Dam needs to be added to the catches we reported on. The Boldt decision allocating half of harvest to Tribal Fisheries suggests that for many populations the impact of the missing harvest may be twice as large as we documented for (at least) Spring Chinook.

We were kind to the Fish Passage Center and the CSS report, and reported these flaws in our paper but did not pillory anyone for this error—I strongly believe that science progresses when errors are identified. Yet in the two years and eight months since the publication of our report, there seems to be zero effort made to address these problems with using PIT tags—the CSS annual reports make no mention of the issue, despite the ISRB politely reminding them of the issue in their review of the 2021 report. In point of fact, the failure to incorporate salmon catches into the survival estimates could be catastrophic for efforts to interpret how the dams are actually affecting salmon returns using PIT tags, because salmon managers actively manipulate harvest rates based on what they think ocean survival will be like. Despite gently pointing this out in our 2020 paper, apparently no attempt has been made to evaluate whether the missing catch invalidates the recommendations in these annual CSS reports. (We published a simple explainer of these issues for policy makers to accompany the publication of our 2020 paper, which can be reviewed here: Summary for Policy Makers-Animation: <https://youtu.be/FN7yp3FefB8> ; Text:https://www.scientia.global/wp-content/uploads/David_Welch/David_Welch.pdf).

Mistakes happen. However, in science we correct our mistakes. So far as I am aware, there has been no effort made to correct PIT tag-based SAR estimates for the missing catch, despite the CSS annual reports forming much of the policy basis used to argue for breaching the Snake River dams. In a similar vein, these same reports fail to address the very elementary point that without correcting for the time taken to reach Bonneville Dam, the generally higher survival reported in years of high flow or high spill may simply reflect the fact that survival is measured over a shorter period of time in those years. In summary, I find it frankly shocking that major issues like these remain unidentified and frankly un-addressed even when pointed out. This behaviour biases the policy debate around the role of the Snake River dams. So my final comment to you as policy makers is that if I am correct, the science around Snake River dam breaching is far from "settled".

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ATTACHMENT



Kintama Research Services Ltd
 755 Terminal Avenue
 Nanaimo, B.C.
 Canada V9S 4K1
 M: (250) 739-9044

17 March 2021

Subject: 68 Scientists' letter on the need for lower Snake River dam removal is wrong

TO: Northwest Governors, Members of the US Senate & Congress, Policymakers

I am writing to refute the recent letter signed by 68 scientists stating that Snake River dam removal is required *"to protect and restore abundant salmon and steelhead runs to the Snake/Columbia River Basin"* (22 February, 2021).

Only one of their four claims is correct, namely that *"The actions set forth in the 2020 Federal Environmental Impact Statement (EIS) and Biological Opinion (BiOp) are insufficient and will not reverse salmon declines"*. However, my colleagues' call to remove the Snake River dams will not work. It is mathematically impossible for removing the four Snake River dams to materially change salmon survival levels and it is long past time to make this clear to decision makers. Their letter also misrepresents the state of salmon runs in most other regions of the West Coast, which have similar conservation issues. In short, their three conclusions concerning removal of the Snake River dams as a fix for the salmon problems are just plain wrong.

Let me explain.

SNAKE RIVER Spring Chinook and steelhead currently have a greater than 96% survival rate per dam¹. These survival levels are the result of major efforts taken by the action agencies and are substantially greater than in the early 1970s when the dams were constructed. They are also roughly on par with survival rates reported from other regions without dams². As my 68 colleagues correctly informed you, current adult survival levels (SARs) are inadequate to restore Snake River salmon populations to abundance. However, removing the dams will not change this, because the failure of salmon to recover is because of poor ocean survival. Removing the Snake River dams won't fix this.

What the Group of 68 have not said is that it is impossible to achieve the target of 2-6% SARs by making further changes in freshwater. This should have been stated years ago.

¹Skalski et al (2016). Status after 5 Years of Survival Compliance Testing in the Federal Columbia River Power System (FCRPS). N. Amer. J. Fisheries Management, 36(4), 720-730. doi:10.1080/02755947.2016.1165775

²Welch, D. W., Porter, A. D., & Rechisky, E. L. (2021). A Synthesis of the Coast-wide Decline in Survival of West Coast Chinook Salmon. Fish & Fisheries, 22(1):194-211. doi:10.1111/FAF12514

Kintama Research Services Ltd., 755 Terminal Avenue, Nanaimo, B.C. Canada,
 Tel: (250) 739-9044 • e-mail: david.welch@kintama.com



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17 March 2021

Consider a simple thought experiment. If you remove all four Lower Snake River dams as requested, it is simple to calculate that SARs will increase from 1.1% to only 1.3%—a barely measurable increaseⁱⁱⁱ compared with the needed 4%.

My colleagues, undaunted, will then simply declare that they are still right, but it will require even more heroic efforts to achieve the goals... obviously, the four Columbia mainstem dams must now go as well; surely, taking out the four lower Columbia dams will fix the problem as claimed?

Eight dams are now gone. SARs increased from 1.1% to 1.3% to (now) 1.5%... not even close to the long-promised 4% needed for recovery^{iv}. This is the stark mathematical reality that they ignore.

Much of the mortality in the FCRPS is actually due to predators feeding on salmon smolts in the regions between dams, not the dams. Suppose you as the regional decision makers also institute an unprecedented extermination program, wiping out all bird and fish predators and all disease-causing agents contributing to smolt mortality. In effect, you sterilize the river. Average historical smolt survival for the entire 8 dam FCRPS is 53%, so eliminating all causes of smolt deaths (8 dams + all predators) moves the SAR from 1.1% to 2.1%—the very lower limit of current recovery targets— but will require major extermination programs that are legally and ethically fraught.

In reality, SARs will hardly budge if you follow my colleagues' plan. Despite their earnest letter, taking out the four Snake River dams won't even come close to achieving what is needed.

Why so little change? My esteemed colleagues will probably assure you that the mysterious "delayed mortality" due to accumulated stresses from the dams will also vanish because the dams are gone, so my simple calculations are too pessimistic. (And they certainly won't mention those extermination programs). However, also unmentioned in their letter, the claims for delayed mortality vanish when broader data sets are considered, which until our recent paper was published^v had never been discussed. Evidence for delayed mortality also disappears when adjusting for juvenile salmon size, according to a 2019 NOAA Fisheries study^{vi}.

The Group of 68's letter simply does not mention the extensive contradictory data because it does not fit with their beliefs. However, a simple calculation shows what level of delayed mortality must be occurring to achieve the 4% recovery target. To get from 2.1% SARs (remember, all dams must be removed and all predators exterminated to achieve this) to 4%, fully 47.5%—*half* of all Snake River smolts passing Bonneville Dam—must be dying from "delayed mortality"

ⁱⁱⁱ Moving from 96% per-project survival to 100% would increase the SAR by a factor of (1/0.96) per dam. This would increase the SAR from 1.1% to 1.1% x (0.96)⁻⁴=1.3% if all 4 Snake River dams were removed.

^{iv} The math is equivalent for removing 8 dams and yields 1.1% x (0.96)⁻⁸=1.5%. Haeseker (2012) reports slightly lower average historical smolt survival for the entire 8 dam FCRPS of 53%, so eliminating all smolt deaths would move the SAR from 1.1% to 1.1÷0.53=2.1%. This is an overestimate of the gain because it ignores the benefits from more recent improvements in smolt passage. It also requires extermination programs for the entire FCRPS.

^v Average SAR values from Haeseker et al. (2012). Assessing Freshwater and Marine Environmental Influences on Life-Stage-Specific Survival Rates of Snake River Spring–Summer Chinook Salmon and Steelhead. Transactions of the American Fisheries Society, 141(1):121-138. doi:10.1080/00028487.2011.652009

^{vi} Faulkner et al. (2019). Associations among Fish Length, Dam Passage History, and Survival to Adulthood in Two At-Risk Species of Pacific Salmon. Transactions of the American Fisheries Society, 148(6):1069-1087. doi:10.1002/tafs.10200

caused by those dams. If we “just” take out the 4 Snake River dams, the current demand, two-thirds of all Snake River smolts passing Bonneville must be dying because of the stress of passing those dams^{vii}. This is totally unrealistic.

The ISAB is preparing an evaluation of our published study⁸, so their assessment should be available soon. Unless the ISAB contradict the findings in our paper and conclude that there is real evidence for delayed mortality, the best the region can expect is to get to the lower end of the range (2%)—but only with the help of those major extermination programs that the Group of 68 do not mention. The salmon recovery promised in their letter is impossible, ignores the basic mathematics of the situation, and relies on their personal beliefs instead of the facts.

It gets worse. The Group of 68 go on to note in their letter, “...the four dams must be removed to not only avoid extinction, but also to restore abundant salmon runs and to achieve the region-wide goals”. Missing from their confident assertions is any caution about the parlous state of salmon in other river systems. In British Columbia’s Fraser River, the largest undammed river on the West Coast, Chinook, sockeye, and steelhead are all in catastrophic decline. For Chinook, only 2 of 15 Fraser populations received “green” status; 11 were assigned a Red status (“...a conservation unit being considered at risk of extinction”), one was assigned a Red/Amber status, and one was assigned Amber^{viii}. For sockeye, the situation is similar, with the lowest adult returns in over a century occurring in 2019^{ix}. None of my colleagues in either the US or Canada can tell you why only two Fraser Chinook and one Fraser sockeye population are doing well when all the other populations are doing extremely poorly, but it clearly can’t be because of differences in the number of dams they migrate past, because there are none. Dams certainly aren’t the reason the vast majority of Chinook and sockeye populations are in deep trouble. So why should you conclude that the dams are the culprit for the Snake River? Chinook populations in a much broader range of West Coast river systems are in serious trouble^x, and the Group of 68’s arguments clearly won’t fix the problems in these other river systems.

For Fraser River steelhead, the situation is even worse: both the Chilcotin and Thompson River populations have tumbled to catastrophically low population numbers over the past few decades, despite having an abundance of pristine habitat and no dams to migrate past^x. Steelhead in both

^{vii} To see this, consider what fraction of Snake River smolts passing Bonneville Dam must be dying because of the delayed effect of dam passage. Call this proportion x . To get from a 2.1% SAR to the target 4% SAR by “fixing” the claimed delayed mortality, the equation is $4\% = \frac{2.1\%}{(1-x)}$. Solving for x gives $x=47.5\%$ (half of all smolts

must die due to delayed mortality from the dams). If you remove only the 4 Snake River dams so the SAR rises to 1.3%, the calculation yields 67.5% two-thirds of all smolts passing Bonneville must die due to these claimed delayed effects. In short, both values are ludicrous, because they require the “delayed” effects in the ocean of the Snake River dams to be as great or greater than direct deaths from all causes occurring in the entire 8-dam FCRPS.

^{viii} CSAS (2016). Integrated Biological Status of Southern British Columbia Chinook Salmon Under The Wild Salmon Policy, Canadian Science Advisory Secretariat, Pacific Region Science Advisory Report. 2016/042: 15. <https://waves.vaguet.dfo-mpo.gc.ca/Library/40595419.pdf>

^{ix} MacDonald *et al.* (2020). State of the Salmon: Informing the survival of Fraser Sockeye returning in 2020 through life cycle observations, Dept. of Fisheries & Oceans, Government of Canada. Canadian Technical Report of Fisheries and Aquatic Sciences 3398: 76 pp. <https://waves.vaguet.dfo-mpo.gc.ca/Library/4088546x.pdf>

^x The Chilcotin River is pristine and has freshwater habitat conditions most regions can only dream of. The 2020 population estimate is 38 adult steelhead. For the Thompson River, the estimate is 257 adults. R. Bison, Province of B.C., personal communication. robert.bison@gov.bc.ca

Fraser River tributaries are requested for emergency listing²¹. Why, if the Group of 68 are correct and it is the Snake River dams blocking “the gateway to high quality, resilient spawning habitat” do we see such catastrophic conditions in these major tributaries of the undammed Fraser River? Why should the reduced marine survival thought to be impeding recovery of Fraser stocks not also apply to the Snake River? Similarly, why should the similar reported SARs of Puget Sound Chinook²² and steelhead^{23,24,25} not also tell us that removing the Snake River dams (and all those predatory populations of birds and fish) cannot possibly be a major factor in the current situation?

The reality is that Chinook populations are in trouble all the way up to the Yukon River in Alaska—despite the pristine freshwater habitat in northern areas that my colleagues are convinced will turn around the fate of Snake River populations if the dams are just removed. They have no explanation for why such problems occur elsewhere, so they simply ignore them.

Early on in our training, the principle of Occam’s Razor teaches junior scientists to look for the simplest explanation. Yet too often in salmon conservation this principle is abandoned in favor of complex river-specific narratives that deliberately ignore the parallel declines in salmon abundance in other river systems. In our recent publication we found that rivers without dams or even those with truly pristine freshwater habitat values are suffering the same decline in survival as the Snake River²⁶. Perhaps the most remarkable point is that the generations of salmon biologists running these monitoring programs have not pointed this out. Predictably, the Fish Passage Center labeled our work as incompetent, without ever providing an explanation for why the different agencies performing salmon monitoring work along the West Coast should converge on similar survival values. The Group of 68 in their letter to you also chose to omit any mention of the remarkable similarity in SAR levels that all these agencies are now measuring. The reason is obvious—it doesn’t fit with their preconceived ideas.

A Way Forward

The Northwest salmon debate is hardly unique in its shift from science to advocacy. Scientists are people, subject to emotion and opinions. However, to provide true value to society salmon science needs to go back to the basics. Partly this means using the simple calculations I outline to show that the basic claims made are mathematically impossible. However, it also means using the scientific method to rigorously test claims that are still within the realm of possibility. If one has a theory—for example, delayed mortality—then rigorous scientific testing is needed to prove it exists. Mere observation of patterns or correlations, such as better survival of some populations, is not proof of a cause-and-effect relationship and *always* need to be rigorously tested—the stakes are simply too high for the region to rely on belief. In fact, willingness to rely on “expert opinion” rather than rigorous hypothesis testing led to the current impasse, where biologists

²¹ Neilson, J., & Taylor, E. (2018). *Emergency assessments of the Steelhead Trout (Oncorhynchus mykiss): Thompson River and Chilcotin River populations (2018)*. Government of Canada, Ministry of Environment and Climate Change Retrieved from <https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife/special-reports.html>

²² Sobocinski et al. (2021). A hypothesis-driven statistical approach for identifying ecosystem indicators of coho and Chinook salmon marine survival. *Ecological Indicators*, 124. doi:10.1016/j.ecolind.2021.107403

²³ Welch et al. (2018). The coast-wide collapse in marine survival of west coast Chinook and steelhead: slow-moving catastrophe or deeper failure? *BioRxiv*, 476408. <https://www.biorxiv.org/content/10.1101/476408v1.abstract>

²⁴ Sobocinski et al. (2020). Ecosystem indicators of marine survival in Puget Sound steelhead trout. *Progress in Oceanography*, 188, 102419. doi:10.1016/j.pocean.2020.102419

blindly call for evermore efforts in freshwater in the hope that they can somehow compensate for poor marine survival. The belated recognition that many of these past analyses even failed to account for changes in salmon harvest² should be seen as a warning flag that all is not well in salmon science.

A conspicuous element of the Snake River debate surrounds how studies contradicting cherished beliefs are dismissed by opponents as “unrepresentative” without ever showing the claim is actually true. Unfortunately, such claims are commonplace in the Columbia Basin and make your job as policy makers more difficult. Many of the recent claims that analyses contradicting long-held dogma are “unrepresentative” are in fact directly testable using explicit scientific experiments—but currently aren’t. These claims need to be tested or the region risks being held hostage by theoretical possibilities rather than proven problems.

Global Warming, Climate Change, and the Future of PNW Salmon

As the four PNW States debate what to do about salmon and the recent call by the Group of 68 to remove the dams, please bear in mind that salmon are not the only resource at risk; so too are hydropower dams as incredibly valuable sources of clean, CO₂-free power.

Dams kill small numbers of salmon in their operations, although much of what is attributed the dams is actually due to salmon predators, and smolt survival in other rivers without dams seems broadly similar^{xxv}. A recent paper by NOAA scientists explicitly identifies the ocean as the main cause of future decreased survival due to global warming^{xxvi}. A UN analysis of plans from 74 countries, accounting for a third of global CO₂ emissions, found those nations’ emissions would be reduced by only 0.5% by 2030, compared with 2010 levels^{xxvii}. However, the Intergovernmental Panel on Climate Change reports that global emissions must fall by about 45% by 2030 to stand a chance of staying below 1.5°C^{xxviii}. The gap is huge.

You and your advisors must balance the direct impacts of hydropower on salmon mortality with the broader goals of identifying a path to a low carbon future. Measured direct impacts of the dams on salmon are now trivial. It is time to say this and recognize that past efforts to correct passage problems have achieved this.

Renewing Salmon Science

The disputes surrounding Snake River salmon now center on differences of opinion as to the underlying causes. Opinion should really count for little. You, as decision makers, should demand

^{xxv} Welch et al. (2008). Survival of Migrating Salmon Smolts in Large Rivers With and Without Dams. *PLoS Biology*, 6(10), 2101-2108. doi:10.1371/journal.pbio.0060265

^{xxvi} See Fig. 2. of Welch et al. (2018). The coast-wide collapse in marine survival of west coast Chinook and steelhead: slow-moving catastrophe or deeper failure? *BioRxiv*, 476408. <https://www.biorxiv.org/content/10.1101/476408v1.abstract>

^{xxvii} Crozier, L. G., Burke, B. J., Chasco, B. E., Widener, D. L., & Zabel, R. W. (2021). Climate change threatens Chinook salmon throughout their life cycle. *Communications Biology*, 4(1), 222. doi:10.1038/s42003-021-01734-w

^{xxviii} <https://www.newscientist.com/article/2269432-we-are-nowhere-near-keeping-warming-below-1-5c-despite-climate-plans/#iszz6nsknYkf>

^{xxix} <https://www.ipcc.ch/sr15/chapter/spm/>

a higher standard than simply expressions of professional opinion—there is far too much we do not know about the ocean life of salmon to rely on opinion, no matter how educated or sincere the individuals. Biomedical science recently emerged from a similar malaise with the recognition that much of their scientific literature was deeply flawed because of psychological issues surrounding interpretation of data^{xx}. The solution in medicine was to *insist on rigorous double blinded experimental testing of key issues*—not selective interpretation of data supporting a particular viewpoint—coupled with pre-publication of the study plan to avoid cherry picking of the data supporting a particular view. The importance and value of regional hydropower means that you should insist on the same standards for scientific advice you receive.

Difficult Days Ahead

The Pacific Northwest needs to prepare for a much warmer world where salmon populations will likely be reduced to vestigial remnants and, quite probably, regional extinctions. There is much to do. Ignoring this possibility will make the political and legal problems much worse as the climate warms further.

NOAA's recently released study showing massive negative impacts on Snake River salmon from future ocean warming should be a warning bell^{xxi}; if future ocean survival should drop as predicted, is it really even advisable to be moving salmon to the ocean more quickly? The Group of 68 are silent on why accelerating salmon to the ocean by dam breaching is even wise, let alone whether it can actually compensate for further reductions in marine survival... and if it cannot, why do it? This question is pertinent because the benefits from decreasing spill at hydropower dams means more carbon-free energy and more flexibility in using the dams to aid in the transition to greater use of wind and solar.

Summary

Your advisors will have told you that relying solely on intermittent power resources (wind, solar) without secure sources of reliable power will likely require three times the capital expenditure otherwise required^{xxii}. The required sums are enormous. The Pacific Northwest is fortunate that hydropower dams provide that backstop capacity. The recent calamity in Texas demonstrates the consequences of disrupting reliable sources of power as the climate changes.

I am not an expert on the US power grid. However, I am an expert on the biology of Pacific salmon. I have watched with dismay over three decades as fisheries agencies in both the U.S. and Canada preferentially expanded freshwater monitoring programs that are in reality simply documenting massive decreases in ocean survival without giving much insight into what is going wrong in the ocean. The reasons for this preference for freshwater over marine work are complex and deserving of careful sociological study. However, the end result has left the Pacific northwest exposed to likely catastrophic further declines in Pacific salmon returns caused by poor survival at sea as the oceans warm, with little capability to distinguish between real and imagined impacts of the dams.

^{xx} Horton, R. (2015). Offline: What is medicine's 5 sigma? *Lancet*, 385(9976), 1380. doi:10.1016/S0140-6736(15)60696-1

^{xxi} Sepulveda, et. al. (2018). The role of firm low-carbon electricity resources in deep decarbonization of power generation. *Joule*, 2(11), 2403-2420. doi:10.1016/j.joule.2018.08.006



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You, as decision makers, have a difficult task—that of balancing competing risks. Snake River salmon are in trouble and there are legal obligations to protect them. The Columbia River Basin dams also need protecting, as sources of reliable CO₂-free power crucial in the pivot away from fossil fuels, which helps slow down climate change—which helps salmon. Operating the dams kills some salmon and brings some gains. My professional advice to you is to balance the risks and rewards but recognize that the claims of my 68 colleagues are impossible.

Regional salmon coordination bodies with complex working groups cannot replace an actual understanding of what is occurring in the ocean. Consider that scientists cannot even tell you with confidence that flushing salmon smolts into the ocean faster will result in smolts having better survival than in the river. That this is not known despite many of my colleagues calling for dam removal to speed smolts into the ocean faster should give you pause—they assume that this is a good thing without knowing it is true. As so often the case with science, it is the hidden assumptions that can be the fatal flaw in the argument.

I urge you to not get stampeded by panicked calls to do ever-more of what hasn't worked well in the past. The basic mathematics make no sense, even if the objectives are laudable. There may be a need for triage with Snake River salmon—past multi-billion dollar investments have not appreciably changed their SARs compared to other regions along the west coast, so further efforts are unlikely to be more successful.

In closing, there is ample reason to question the diagnosis presented by my 68 colleagues. As the regional decision makers, I urge you to ask your own experts two hard questions: (1) Are the (very) simple mathematical calculations I laid out correct? and (2) Why were the basic issues I raise not acknowledged decades ago rather than simply continuing to focus on the dams as the problem? It is clearly time to develop a more flexible and thoughtful approach to the coming climate changes.

Sincerely,
David Warren Welch, Ph.D. (just one).
President, Kintama Research Services, Ltd.
755 Terminal Ave N, Nanaimo BC, Canada V9S 4K1
Mobile: (250) 739-9044
david.welch@kintama.com

Welch's awards and past involvement in identifying the role of ocean climate change on Pacific salmon can be viewed here: <http://kintama.com/about-kintama/leadership-team/>

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NW Congressional Delegation

Northwest Power & Conservation Council Members & Staff

Kintama Research Services Ltd., Nanaimo, B.C. Canada
Tel: +1 (250) 739-9044 • david.welch@kintama.com

[Applause.]

Mr. BENTZ. Thank you, Dr. Welch, and I want to thank all the witnesses for their testimony.

Before I recognize Members for questions, I want to let everyone know that we intend to do more than one round of questions. I now recognize Mr. Newhouse for 5 minutes.

Mr. NEWHOUSE. Thank you, Mr. Chairman, and I want to thank all the witnesses for their testimony today. It never fails that we learn something from these exercises, and I appreciate very much you taking the time to be with us.

Mr. McGregor, I could not help but notice in your closing comments something that I have been trying to verbalize for a long time, but putting it succinctly you say it is “time to get out of the courthouse.” I could not agree more that we need to come together, and Ms. Quan and I were discussing this very same concept. If we look just a little bit north, the Yakima River Basin Enhancement Project I think truly exemplifies bringing diverse interests and opinions together around one table and working together to come up with solutions. And it seems to me that this is way beyond time that we do that here in the Columbia and Snake River basins, so thank you for those words.

I am of the school of opinion that the benefits far outweigh the negative aspects of these dams and that we need to do all we can to make them work for people and for fish.

A couple of specific questions. I want to start with Mr. Myers, if I could. Todd, you talked about the ability of salmon to return and comparing to other rivers. Statistics tell us a lot about the dammed rivers and the undammed rivers. Could you expound a little bit more about that and make sure that we understand the comparisons there? Are there significant differences between those that are impeded by dams and those rivers that are not, and if not, why do you think that is the case?

Mr. MYERS. Thank you for the question. I think Dr. Welch actually has done some excellent work on that very question so maybe he can address that specifically. But what we see very clearly is that the returns across the Pacific Northwest, on the Snake, on the Columbia, in Puget Sound are all below where we want them to be. And the reason that you see these sorts of consistencies is because of ocean conditions.

This is pretty well known that there is a cycle of population, and you see it on the Snake River. In 2019, many of the advocates of destroying the dams argued that the very low population and the very low returns we saw in 2019 were indicative of a long-term trend. That year, I actually joined with Governor Inslee’s former salmon advisor and wrote a piece saying, no, this is a cycle and this a downturn, and what we are about to see is an upturn, and that is exactly what has happened over the next 3 years.

The challenge in identifying the impact of the dams is to determine the signal from the noise. There are so many things that are impacting salmon recovery. Any time there is a downturn, you can blame the dams, and any time there is an upturn, they say, “Oh, it is something else that is causing it.” So, I think that is the real challenge, in trying to identify the particular impact of the dams, especially when you see salmon returns across the Northwest struggling. It makes it clear that the other problems are much larger.

Mr. NEWHOUSE. Thank you. Mr. Dunn, in your testimony, you talk about the issue of total dissolved gases, and the fact that just a few short years ago, fish biologists were concerned that a level of 115 percent would be detrimental to salmon. While it is not widely reported, it says that increasing spill to 125 percent, where I think that is where we are now much of the time.

Can you tell me if we are seeing a benefit to the salmon by those increased flows, or are we seeing a detriment like we used to think we would at 115 percent?

Mr. DUNN. Thank you for the question. I think it helps to go back and also recognize that the increase in spill from the 115 percent level to 125 percent was a negotiated deal, and utility offtakers like Benton PUD negotiated a reduction in our contractual rights to electricity. So, spill, meaning diverting water over the spillway versus putting it through the turbine generators, has an impact. And after this negotiated settlement, we lost 4 percent of our firm contracted rights. So, don't forget that.

Obviously, as a utility manager, when I come into the game I am asking questions and saying, OK, again, kind of restating what you are asking, spilling to a total dissolved gas level of 115 percent was for years the limit, and that was based on biologists and others recognizing that when you gasify the water it is harmful to salmon and other aquatic species. So, it is being portrayed as kind of a last-ditch effort to get more smolt out to the ocean. We have agreed to this increase from 115 to 120 and now to 125.

Now, to more directly answer your question, I think the science is not settled on it yet. I question whether we have adequate instream instrumentation to even monitor it adequately. You have to assess the physical state of the smolt as they are going down the river for gas bubble trauma, so that requires the ability to get in the river.

And the other thing is counting smolt. If they are going over the spillway, it is difficult to impossible to know how many are actually being diverted, so it is making it difficult to know. I think the short answer is no, we don't know if it is beneficial. In fact, it could be hurting them, and salmon need 2 to 3 years to get back.

Mr. BENTZ. Excuse me for interrupting, if you could wind up.

Mr. NEWHOUSE. Thank you, Mr. Chairman. I apologize, we went over time. I yield back the balance of my time.

Mr. BENTZ. Thank you. I now recognize Mrs. McMorris Rodgers for 5 minutes.

Mrs. RODGERS. Thank you, Mr. Chairman. Thank you again for bringing the field hearing to eastern Washington, and to all who have testified. I really appreciate you all being here.

I wanted to start with Regional Administrator Quan, and again, thank you for being here and congratulations on assuming this role. I wanted to focus on an issue that really is having an outsized impact on Pacific science, but something that we don't fully understand, and that is impact of the ocean conditions on salmon returns.

At the end of last year, Northwest Fisheries Science Center published on NOAA's website an article titled "Oceans' Influence on Salmon Plays Out in Varied Returns to Different Rivers and Regions," and in the article NOAA said, "steelhead returns to the Snake River in 2021 were among the lowest on record, and steelhead to some tributaries of the Fraser River in Canada fell close to extinction levels." However, Bristol Bay in Alaska, the greatest return of sockeye salmon on record. This year we have already seen wild steelhead make huge gains from last year on the Snake River.

Are there specific ocean indicators that NOAA is tracking that consistently correlate with high or low returns for Columbia Basin salmon?

Ms. QUAN. Thank you for the question, Congresswoman. We are tracking a number of indicators in the ocean and have for many decades, relative to conditions. I would say that the ocean conditions are a great concern to us, and a particular concern to the commercial, recreational, and tribal economies that rely on those fisheries.

We also know that when we listed salmon, we looked at indicators in the ocean, in freshwater, and we looked at the things that we could control and manage to improve them, and that is harvest, hatchery, habitat, and hydropower, and those four H's still play into our management. Those are still really the dials we have to turn to improve salmon and get them back to healthy and harvestable levels.

So, we are monitoring ocean conditions, and both ocean and freshwater conditions are having impacts on their survival.

Mrs. RODGERS. OK. In British Columbia, the Fraser River has no dams. Correct?

Ms. QUAN. Yes.

Mrs. RODGERS. Has NOAA found what accounted for the extinction level returns on steelhead on the Fraser in 2021?

Ms. QUAN. I don't think we know exactly what accounted for that.

Mrs. RODGERS. OK. Dr. Welch, keeping on the topic of salmon returns on rivers that do not have dams, one of the points that we hear over and over from the dam removal advocates is that it is the smolt-to-adult return ratios on the Lower Snake River that is specific to setting salmon on a path to extinction. Would you speak to your research up and down the West Coast on the rivers that are dammed and do not have dams, and just what your research has shown.

Dr. WELCH. Certainly. I am concerned that salmon are on an extinction level trajectory. The problem is it is not just in the Columbia River. Up and down the West Coast, survival rates to adult return are virtually the same as the Snake River virtually everywhere, so we published that in 2020, including southeast Alaska with its natural, pristine, freshwater habitats, hatchery, and wild salmon have survival rates that are the same as that are being reported for the Snake River.

So, we deliberately made the comparison up and down the coast relative to the Snake River, as always thought to have very poor survival, but the point was it is the same.

Mrs. RODGERS. OK. Thank you. I just want to try to get one more.

Ms. Coffey, the Washington State Academy of Scientists recently did an analysis of salmon predation by seals and sea lions, and the report said the number of Chinook salmon that fall prey to seals and sea lions is substantial and has increased steadily. The report included some recommendations that the state of Washington experiment with reducing seal and sea lion populations.

Does the Army Corps face any barriers to removing seals and sea lions, and how can Congress help?

Ms. COFFEY. Thank you, ma'am, for that question. We do have data on Bonneville Dam. That is where we usually see those seals and sea lion issues occur. We have been working closely with the services over the last several years in order to look at how to work with them and look at how to manage those predators better.

I would have to get back to you on any specifics that Congress can help us with as far as future actions, but we have had some success over the last couple of years working with the services in trying to kind of mitigate for those predators in that part of the Basin.

Mrs. RODGERS. OK. I look forward to that. I yield back.

Mr. BENTZ. Thank you. I now recognize Mr. Collins for 5 minutes.

Mr. COLLINS. Thank you, Mr. Chairman. As I said, I am in the trucking business. I am just a small businessman. And when things hit me negatively in my business, I think of two things: what is the problem and what is the solution. As we go through the next few minutes, I hope you will go along with me to see if we can figure out exactly what the problems are and what the solution is.

Now I thought I was in the most regulated industry that there is in this country. That is until I started getting out and meeting folks like you. And now I think we are all in the most regulated industry that there is in the country.

[Applause.]

Mr. COLLINS. Being out here and going to these hearings is one of the most educational things that I have been able to do in my first 200 days, and I just want to give you an FYI. We got notice on this hearing on May 23. You had up until a week before this hearing started to say that you were going to attend. Now, there is not a single Democrat up here, not a single person from the other side of the aisle that is interested in looking you in the face and seeing what you have to say, and I hope you take that to heart and notice that.

This is what I have seen so far, and I am going to try to hurry through this. But I saw an EPA that was out of control in the Midwest, in Minnesota, destroying a small town up there, 20 years working on a mining permit. The biggest, largest deposit in the world for critical minerals. Keep that in mind as we go—critical minerals, for your EVs. Twenty years working on a permit, destroying the entire town.

The East Coast, we have NOAA over there trying to destroy an entire industry, the recreational fishing industry, over a right whale issue that they cannot even scientifically base what the problem is. Man, now we are out here on the West Coast.

Ms. Quan, I would like to start off—if I pronounced it wrong, I am sorry—when did Congress authorize NOAA?

Ms. QUAN. Pardon me?

Mr. COLLINS. When did Congress authorize NOAA as an agency? The answer is never. You don't have the authorization. You are another glaring example of an unauthorized, unaccountable agency that is out there, that is politically motivated, that is making rules on people across this country with no accountability. It reminds me of the hearing that we held last week with the Council on

Emissions Quality, a Biden administration office that is out there regulating the stew out of people, using foreign entities in that case, with no accountability to you, the taxpayer.

Mr. McGregor, I want to switch gears. You are a man in my industry. Are you multi-generational?

Mr. MCGREGOR. Yes, I am.

Mr. COLLINS. What generation?

Mr. MCGREGOR. We are third generation, 140 years in business.

Mr. COLLINS. Can you tell us, has inflation had an impact on you so far, in the past couple of years?

Mr. MCGREGOR. We certainly feel inflation. In agriculture, in particular, we are vulnerable to inflation because it increased the cost of production so rapidly and dramatically, and we can't control the price at which we sell our products. They go overseas at the prevailing price. So, it is very difficult for agriculture in inflationary—

Mr. COLLINS. Your production has gone up in pricing. You are in trucking, I can see, because you truck to the barge.

We have an 80,000-driver truck shortage out there. They want to blow up these dams, and then you are going to have to truck or rail. Is that going to be economically feasible?

Mr. MCGREGOR. We are very familiar with the shortage of truck drivers. It is a constant struggle to find them. We have about 60 semis on the road, and it is hard to fill those positions with people.

Mr. COLLINS. I think we all understand it. It is not.

You know, folks, I hope you all understand. These are the two problems that I see out there. This is the over-arching problem I see. You have an administration with an ideology that is way left wing and out of control. They don't care if you have enough electricity or not. That is not the point. You already live too good. You need to be brought down. You don't need all that electricity.

The problem we have here, immediately, is we have over-reaching, unaccountable agencies out there that can issue rules, listen to comments and don't really care. They are still going to issue rules and destroy industries, destroy your livelihood.

The solution to this is Congress needs to take control. These unauthorized agencies, we need to either authorize them, or defund them and get rid of them.

[Applause.]

Mr. COLLINS. The other part of this immediate solution, we need to rein these other agencies in through this REINS Act. We have good legislation out there to do that, Mr. Chairman.

And with that, I know I am over, and I yield back.

Mr. BENTZ. Thank you, Mr. Collins.

[Applause.]

Mr. BENTZ. The Chair recognizes himself for 5 minutes.

Ms. Quan, I am looking at your testimony and I am struck by some of the language I see on page 3 that talks about the difference between what the ESA would require, on the one hand, and what perhaps NMFS is shooting for on the other. The phrase in the second paragraph reads, "Broad-sense recovery goals seek salmon and steelhead numbers that contribute fully to the culture, environment, and economy of the region." That would suggest a

number far greater than what the ESA would require. Is that correct?

Ms. QUAN. That is correct.

Mr. BENTZ. And who establishes, to Mr. Collins' point, who is it that establishes or established the broad-sense recovery goals? Where did that standard come from?

Ms. QUAN. The rebuilding report that we issued back in 2022, were goals built out of the Columbia Basin River Partnership. That was a partnership pulled together through a number of stakeholders in the Basin, and they helped us establish those goals.

Mr. BENTZ. I think you actually address that in the last paragraph on page 3 of your testimony. It seems odd that the future of this Northwest would be determined by a group of people that get together, unelected, to discuss how this standard is going to be established, because then we move into the litigation that is now pending in front of Judge Simon. And he has allowed entry of a TRO, and now there is a mediation ongoing.

You are party to that. You are participating in that mediation. Can you share with us where you are, where that mediation is?

Ms. QUAN. The mitigation is confidential at this time.

Mr. BENTZ. Yes, it is confidential. I know that. I wanted you to say it out loud so everybody here knew that their future is being mediated by a group of parties to a lawsuit, and that they have no part in it.

Now there was an attempt, and you know this, because you and I were trying to have a conversation and I was about to go back into the hearing room last week, to question Brenda Mallory, who is the head of CEQ, about this exact issue. Because, in fact, in the Federal Register Ms. Mallory, head of the Council on Environmental Quality out of the White House, stated that she was actually asking that members of the groups go out into the community and find out what they were thinking, which I found odd. It is something that perhaps Congress should be doing, and that is exactly what we are doing today. We are out here trying to find out what is going on, and more to the point, shine light on what is going on.

But you are telling me that this mediation in a lawsuit that is going to determine, through Judge Simon's powers, the future of this area, is that what I am hearing? And if so, when might we expect to know what our future might be, as determined by the folks party to this mediation?

Ms. QUAN. Unfortunately, I cannot speak to ongoing litigation or matters that are confidential.

Mr. BENTZ. And who established that confidentiality? Was that Judge Simon by order, or by agreement among the group?

Ms. QUAN. What I can tell you is the mediation is being led and conducted by the Federal Mediation and Conciliation Service, and the agreements of the parties there are that—

Mr. BENTZ. Pardon me for interrupting. I didn't have a chance to go through all of the filings in the litigation, although I have most of them in this notebook right here. It is just that they are lengthy, and I had too many other things going on. But I will go through them, and I will check to see if Judge Simon actually ordered that confidentiality or not. Because I think it is

particularly important to all of us that we know what is going to design the future of this part of the great United States.

I am particularly challenged by seeing how agencies are acting in a way that would moot the oversight of Congress, and to that end I just want to mention how, when I asked Brenda Mallory whether Congress would have anything to say about the removal of the dams, she assured me that if they were removed and breached, of course Congress would have to become involved. But that is not what is really going on in your mediation, is it? You don't have to answer.

But what is really going on is an attempt to de-water the pools behind the dam and leave just the river, so that the two upper dams are merely, I call them ripples in the mighty Snake. And that is what I think you are discussing right now because I have seen a legal memo that has been given to all of you saying exactly that. Are you free to agree with me on this?

Ms. QUAN. I am not aware of the legal memo you are speaking of, so I cannot agree or disagree.

Mr. BENTZ. Thank you.

I now recognize Mr. Newhouse for 5 minutes.

Mr. NEWHOUSE. Thank you, Mr. Chairman. I appreciate the opportunity for a second round of questioning.

If we look back at last fall's report that was requested by Governor Inslee and Senator Murray, and even if we look further back a couple of years to Representative Simpson's project proposing the removal of the Snake River dams, they make a statement in there similar to what I heard, Ms. Quan, you made reference to. And, unfortunately, I don't have your testimony in front of me, so I apologize I don't have all the specifics, but you talked about the fact that important services would need to be replaced in the event of the breaching of the dams.

Both of those other reports I referred to also said the power generated from the Snake River dams would have to be replaced and operational before the breaching could occur.

And this question is for, gosh, everyone and anyone in particular—Mr. Hairston maybe has a thought, Mr. Dunn, maybe all of you do. Since we do not have the ability to replace the power that is generated by the Snake River dams currently—in fact, I said earlier it would take 6,000 acres of solar panels to achieve the output that the four Lower Snake River dams provide, and that only happens during the daylight hours, so we still do not even have it with that—isn't this discussion, this argument, really just an exercise in futility at this point since we do not have the ability to replace that power.

Any response? Mr. Hairston, perhaps we could start with you?

Mr. HAIRSTON. Yes. Thanks for the question, Congressman Newhouse. I would say that we have put together a study. We initiated a study to look at replacement of the Lower Snake dams. And, yes, we are at a point in time where we are having those discussions about what it would take, and the Murray-Inslee report did identify, like you said, the need to have replacement resources in place.

As I said in my testimony, the study indicated that it would cost anywhere between \$11.2 and \$19.2 billion, in present value, to replace what is given, what we have today.

It also looked at replacing anywhere between 2,300 to 4,300 megawatts in resources, so what you were saying in terms of the solar panels is on the right track. It would take an enormous amount of resources, according to the study.

And then also the annual cost could run anywhere between \$415 million to \$860 million per annual by 2045, according to the study that we commissioned.

And then the last thing I would share with you is that it also indicated an increased cost to public power customers, anywhere between \$100 to \$230 per household per year by 2045.

So, yes, we have looked at, or we commissioned the study, Bonneville did, to look at replacement. There are varying opinions on it, but the bottom line is that we did see significant costs in doing that.

Mr. NEWHOUSE. Thank you. Mr. Dunn, do you have any reaction?

Mr. DUNN. I will make it quick. I don't want to get you in trouble. Just remember, if you are going to replace controllable technology that can balance supply and demand, like hydro, there really is no equivalent technology on the table in Washington and Oregon. Oregon has taken new natural gas off the table. It is illegal to build a new natural gas plant. Washington, while it is not illegal, has made it so it is cost prohibitive. Nobody in their right mind is going to build a new natural gas plant in Washington.

So, to answer your question, what you do to replace hydro with wind and solar and batteries is you play a probability game, and we are increasingly playing a probability game that there will be adequate wind or there will be adequate sun plus storage. And it was already mentioned earlier, multi-day cold snaps are windless and often cloudy.

I hope that helps, but we have cornered ourselves and we really have no replacement technology that can do it affordably.

Mr. NEWHOUSE. Thank you very much. That absolutely helps, and I appreciate your explaining that in terms that make this conversation almost academic in the fact that we should be spending our time on how can we continue to allow dams and salmon to co-exist instead of eliminating one of the most important sources of energy that we have ever seen.

Thank you, Mr. Chairman. I yield back.

Mr. BENTZ. The Chair recognizes Mrs. McMorris Rodgers for 5 minutes.

Mrs. RODGERS. Thank you. And just as a follow-up, Mr. Hairston, I appreciate the study that BPA did, would you explain how four dams in Washington State are able to help keep the lights on in California?

Mr. HAIRSTON. Absolutely. The value of the Lower Snake dams also, I mean, first of all it starts within region, but also it is extra-regionally. As I said in my testimony, when we do experience heatwaves or cold snaps and there is high power demand, those Lower Snake dams, along with the rest of the hydro fleet are able to respond instantaneously. So, when there is a need on the system, we are able to ramp those up. Anywhere, on average, we

can get 1,000 megawatts from them, but that could actually be pushed as high as 2,000 megawatt capacity, if necessary. We are also capable of carrying reserves with those projects.

If you look at a system as a giant machine, which——

Mrs. RODGERS. Battery, maybe. Look at the whole system as a giant battery.

Mr. HAIRSTON. Yes. We have it interconnected with transmission, and we are able to send those megawatts under demand down south, when necessary, to avoid blackouts. And really, at the end of the day, it is about reliability and resiliency for us.

Mrs. RODGERS. Sometimes I like to refer to the dams as the largest natural battery out there.

Is BPA participating in the confidential mediation that is underway?

Mr. HAIRSTON. Yes, we are.

Mrs. RODGERS. Who is leading it?

Mr. HAIRSTON. Well, CEQ, along with FMCS, are heading up the mediation.

Mrs. RODGERS. Do you have any idea when Congress, the elected representatives of the people, may get an update about this confidential mediation, that includes potential breaching of the dams?

Mr. HAIRSTON. I would have to refer you to CEQ for that question.

Mrs. RODGERS. OK. Thank you. Mr. Dunn, I appreciated your testimony today and really highlighting Washington State, now we are on this 100 percent clean energy goal, right? Washington State has already been, are we not the greenest, cleanest electricity in the country?

Mr. DUNN. Near the top.

Mrs. RODGERS. Hydro, 15 percent renewable portfolio standard. That is getting up pretty high. And you mentioned that our electricity rates are 33 percent less than the national average. I am noting right now that our gas prices are the highest in the country.

Where do you see this headed as far as affordability, reliability, in our region? I don't want us to be in the same position as families and businesses in California who were told to stop using energy last summer. Any insights that you have into the impact of potential further decrease of the capacity of the four Lower Snake River dams?

Mr. DUNN. Yes. People need to understand, the hydropower system is really unmatched. There is really nowhere else in the United States that even comes close. So, our costs are so low it is hard to really even compare it to the rest of the country. But I mentioned Snake River dams are 1.4 cents per kilowatt hour. Remember, our retail rates, on average, are 7.2, so Bonneville's delivered costs are 3.6. That kind of puts it in the ballpark.

So, as we talk about replacing hydro with wind and solar and batteries, people need to remember that because wind and solar are not effective capacity resources, meaning you cannot control them to align their production with demand for electricity, you have to overbuild them, and again, you are playing a probability game and so you have to cover lots of acreage with these kinds of resources. So, when you overbuild, the capital costs of those resources that are portrayed as kind of low cost, well, in a vacuum

they might be low cost, but in a system where you have to deliver both energy and capacity, you overbuild, so there are billions of overinvestment that is necessary.

So, to answer your question, rates are going to go up. What is really standing in the gap right now in terms of reliability and rates is the hydropower system. That is why I said, we cannot afford to lose even a drop of hydro because it is just in a class by itself. Natural gas could help, but it is off the table.

Mrs. RODGERS. Thank you. I want to get to Mr. McGregor, just for a little bit of my remaining time. You speak so eloquently about the farmer, the American farmer, eastern Washington. What do you see the impact of these decisions on energy security and food security?

Mr. MCGREGOR. I see the impact of this issue having a bigger importance than the Pacific Northwest. In particular, I look at all the commodities that are moved from the northern tier states, the Corn Belt, to take advantage of that wonderful marine super-highway that we have. Best recent estimate is \$14 billion of goods shipped down that system from outside what we produce here in the Pacific Northwest. So, that is really vital.

I also think of how vital that system is for us on timeliness, which I had mentioned. Everything in agriculture is so keyed on that. You cannot have delays that go on and on and on. It is just crucial for agriculture to move fast. And with rail, you can have cars scattered all over the United States, and now even Canada and Mexico. A friend of mine, a longtime railroader, says, "There is railroad time and then there is real time." And railroad is important, but it is really vital to have the shipment by barge when you are up against it.

Here is an example. We bring up-river to nourish and supplement liquid nutrients for about 1.5 million acres, and where we can we use rail in the off-season, where there is time. But when you are up against it, you don't have that time. Last fall, we needed 4.5 million gallons of liquid fertilizer on short notice. Rail could not come through. Our own truck fleet could not possibly keep up with it, nor could anyone else's. Tugs and barges were where we turned, and they came through for us. It really is a crucial cornerstone so we move ahead.

And I think so much can be gained by pulling together. That is what we strive for in agriculture is to find ways that we can care for our salmon and find ways we can work together to keep our economy robust too, which is absolutely fundamentally critical.

Mrs. RODGERS. Thank you. Thank you, Mr. Chairman. I yield back.

Mr. BENTZ. Thank you. The Chair recognizes Mr. Collins for 5 minutes.

Mr. COLLINS. Thank you, Mr. Chairman. I would like to pick up kind of where I left off there with what I have been seeing and kind of what I saw today when we visited the Ice Harbor Dam. You know what I saw? I saw an incredible group of people that were knowledgeable and excited. They were eager to face challenges, and they were meeting them.

You take a look at two things. They were producing electricity out there, and at a lower cost, being more efficient, changing out

turbines as technology changes, environmentally sound. I mean, a 98 percent success rate with the salmon crossing through there. And economically, just moving products up and down the waterways. They were doing it while we were standing there.

So, with that in mind, Mr. Hairston, with a huge push toward electric vehicles and electric stoves, we don't want to leave that out, even without removing the dams, are the Northwest current and future energy resources adequate?

Mr. HAIRSTON. We are going to need to build more resources. We also need to build more transmission. We are going through our renewal of our 20-year power contracts, and as Mr. Dunn was saying, our customers would like to see more. They would like to get more energy from us, at a lower cost. So, we are looking at what resources will be necessary for the future to meet electrification as well as investments in transmission. And I also want to mention energy efficiency. That is a key component. We saved over 7,000 megawatts since the induction of the POWER Act, and we are going to continue to forge ahead there.

But by and large, given whether it is our own forecasts or what we are seeing come out in the industry, there is going to be a requirement to build more resources as well as more transmission.

Mr. COLLINS. So, what about our current needs, like now for the next 5 years? Do we have energy resources to meet that?

Mr. HAIRSTON. I would say for the next 5 years things are getting tight. However, we have seen a kind of movement in the Northwest where utilities have gotten together under the Western Resource Adequacy Program, where utilities have come together for the first time in a transparent fashion to look at reliability and to make sure that we are working together to meet any of the reliability needs as we move forward. So that, as well as building new resources, based on the incentives that are out there. And then we are also looking at how we can integrate resources a lot quicker through queue reform and other things on the transmission side of the business.

So, in the next 3 to 5 years I believe we are going to be able to manage it pretty solidly, based on what we have been doing together.

Mr. COLLINS. Factoring in any blackouts in that time frame?

Mr. HAIRSTON. I beg your pardon.

Mr. COLLINS. Brownouts. Any brownouts factored in?

Mr. HAIRSTON. Well, we are keeping the probability of that down by virtue of having the Lower Snake River dams and other hydro facilities and plants in place. That probability is around 6.6 percent, in I want to say a 15-year timespan. So long as we have our resources working, and like I said, working together with other entities in the region, we should be in very good shape in terms of resiliency and reliability.

Mr. COLLINS. All right. Thank you.

Ms. Hennings, can you estimate the value of the Northwest wheat, grain, and irrigated agriculture to our nation's food security?

Ms. HENNINGS. Well, nearly 500,000 acres are irrigated in Benton, Franklin, and Walla Walla Counties from the Snake, Columbia, and aquifer. So, a dam breach would not just remove

direct irrigation from the Snake, but it would result in a ground-water drop of 100 feet, requiring new, deeper wells for those using the aquifer.

I get the question of can we do without the irrigation on the Snake, and absolutely not. We are here to feed the world, and we cannot reduce the amount of production that we are producing.

Mr. COLLINS. All right. Thank you. Mr. Chairman, I yield back.

Mr. BENTZ. Thank you, Mr. Collins.

Ms. Quan, actually, let me go to Ms. Coffey first. I am looking at your testimony, and I note on page 1, next to the last paragraph, "With appropriate maintenance, repair, rehabilitation, and replacement of components as needed, the Corps could continue to operate these four dams on the Lower Snake River for many years. Deauthorization and removal of the dams would require specific authorization and appropriations from Congress."

Is your agency party to this secret mediation that is going on?

Ms. COFFEY. Sir, the Corps of Engineers is part of the mediation process.

Mr. BENTZ. Is the answer yes?

Ms. COFFEY. Yes.

Mr. BENTZ. And are you also sworn to secrecy, so you can't share with us what our future is?

Ms. COFFEY. We are still under the confidential agreement.

Mr. BENTZ. And who was it that swore you guys to secrecy again? Was it the judge who said you could not talk about what you are doing in the mediation?

Ms. COFFEY. It is just part of the agreement we have as part of the litigation stay that is approved by the judge.

Mr. BENTZ. Your statement here says deauthorization and removal would require congressional oversight. It has been said that if the district court upholds agency discretion to engage in the functional equivalent of dam breaching, extreme drawdowns that substantially reduce, if not eliminate, electricity production from the Snake River dams, and destroy navigation by existing barges during large, if not all, portions of the area. Congressional oversight and approval would not be necessary. Do you agree?

Ms. COFFEY. Sir, I think the question you are asking is whether or not any type of operational changes would need congressional approval. Those, specifically, would be at the discretion of the agency to look at. We do look at all the factors related to being able to do our mission.

Mr. BENTZ. I think your answer is no. Your answer is no. If it is operational, you are saying no, congressional authorization is not necessary. So, why did you put this paragraph in about deauthorization and removal? And I hate to be mean about this but it is pretty important to everybody in the room. Because the same language was included in the CEQ's two-page filing in the Federal Register on May 3, where they are very careful to point out, "but not limited to mitigation corridor restoration through breaching for Snake River dams, which would require congressional authorization." But that is not the way you guys are going. What you are doing is working together in this mediation to determine an operational means of mooting, neutering, taking away these dams. That is what is really going on.

Dr. Welch, you had a very, very important thing that you said early on. I just want to go back to it, and I am looking at page 2 of your report. I believe you were going through and explaining why sending more fish from Bonneville down to the ocean is apparently so dangerous for those fish because so few come back. And I think you need to say it again. I really want you to get this paragraph across to everyone in the couple of minutes we have left.

I mean, it is shocking, really. A lot of the smolts don't make their way down to the ocean. Let's say half do because that is what your paragraph says. But the half that get into the ocean, only a fraction come back. So, is it correct that perhaps our agencies that are sitting here should be, instead of beating up on the economy of the Northwest, shouldn't they be focusing on the ocean? Please give us your thoughts.

Dr. WELCH. Well, I am a long-term advocate for ocean salmon research in both Canada and the United States, more than we are doing, but it is directly relevant to these policy questions that you folks are struggling with. To reiterate the point that I made, 1 out of 50 of the smolts that pass Bonneville, or 2 percent, come back. So, one-half of the fish die in the power system, 50 percent make it. One out of 50 comes back. That is the 1 percent return that is current up and down the coast.

The key point is that it is up and down the coast. It is not just in the Columbia River, not just in the Snake River. But we need to understand why survival is so poor in the ocean, because the point I have made for years is we don't even know if survival is worse in the ocean than it is going through the power system. So, if it is worse, pushing the fish out to sea faster with spill is going to be counterproductive. It is actually going to reduce the adult returns.

Mr. BENTZ. Is it your opinion that we need more studies of what is going on in the ocean?

Dr. WELCH. Well, you cannot ask a scientist if we need more science. I would get my membership card taken away if I didn't say that.

[Laughter.]

Dr. WELCH. But I think we need more focused studies that are not just promising to study things but really focused on things that will address the policy questions that you folks are struggling with from your end.

Mr. BENTZ. Well, we are out of time, and this is amazing how fast these 2 hours have gone by. But I want to thank all of you for your valuable testimony and the Members for their questions.

The members of the Committee may have some additional questions for the witnesses, and we will ask you to respond to these in writing. Under Committee Rule 3, members of the Committee must submit questions to the Subcommittee Clerk by 5 p.m. Eastern time on Thursday, June 29. The hearing record will be held open for 10 business days for these responses.

If there is no further business, without objection the Subcommittee stands adjourned.

[Whereupon, at 3:03 p.m., the Subcommittee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

PREPARED STATEMENT OF THE HON. RUSS FULCHER, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF IDAHO

Thank you to Chairman Bentz and Members of the Waters, Wildlife, & Fisheries Subcommittee for the opportunity to submit, for the record, a brief statement on the hearing titled: "The Northwest at risk: the environmentalist's effort to destroy navigation, transportation, and access to reliable power." For the Northwest United States, the lower Snake River dams bring reliable energy, boost American exports, and offer wealth for millions of Americans.

These essential components of this maritime highway represent energy reliability from continuous production of hydropower to meet growing populations. Idaho's grain and other producers rely on the dams to help navigate these critical foods to "feed the world." And the wealth generated from these dams means we can keep families intact, communities whole, and economic opportunities in place. We should not supplant these ingeniously engineered systems with an ill-timed road network or other uncertain network. With ingenuity and technology, we can ensure wise stewardship of our environment, future energy needs, and prosperous communities.

Generations of Americans have relied upon these energy and transport systems to make a future for their families and their communities. With U.S. adversaries competing on the world stage, now is not the time for us to go back into a dark and bleak anti-growth future.

As we make strides towards a cleaner energy future, let's make the systems we have today work for future generations. I cannot in good faith tell the residents of Idaho to trade energy reliability for energy stagnation and economic uncertainty all to meet the whims and desires of the Biden Administration's push for environmental justice. Rather, I am encouraged by the admission of Council for Environmental Quality Chair, Brenda Mallory, that indeed, only Congress can authorize certain purposes to these dams, or for the removal of them physically.

Without the lower Snake River dams, families will go without power in the heat of summer and the cold of winter. The economic ruin that is certain to follow will not provide justice to communities across Montana, Idaho, Washington, and Oregon already surrounded by federal lands rife with bureaucratic red tape.

I am constantly inspired by the resilience of the farmers, ranchers, barge and port operators, recreational tourism, power, and all the immense benefits provided by the lower Snake River dams. For the time I am in office, I call on all interested parties to weigh in on where we are at in this country with our foreign adversaries, and consider—if the United States needed to be truly energy independent sooner rather than later, would we even be having conversations about removing strategically important energy and trade systems? I think not.

I thank the Committee on Natural Resources for holding this important hearing and providing an opportunity for the communities in the Northwest to be heard on a national stage.

Submission for the Record by Rep. Bentz

Statement for the Record

**Michael C. Seyfert
President and Chief Executive Officer
National Grain and Feed Association**

The National Grain and Feed Association (NGFA) thanks the Committee on Natural Resources, Subcommittee on Water, Wildlife and Fisheries and the Western Caucus for holding a hearing focusing on the benefits of the Columbia and Snake Rivers, and recent actions by environmental activists to breach the dams. The NGFA is opposed to any actions by federal or state governments that could result in breaching the Lower Snake River Dams.

The NGFA consists of nearly 1,000 grain, feed, processing, exporting and other grain-related companies and cooperatives operating more than 8,000 facilities. Our membership includes grain elevators; feed and feed ingredient manufacturers; biofuels companies; grain and oilseed processors and millers; exporters; livestock and poultry integrators; transportation companies and associated firms that provide goods and services to the nation's grain, oilseed, feed, and processing industry. Our industry feeds the world.

Barge transportation moves about half of all grain exports to export elevators and is critical to NGFA members in the Pacific Northwest. The Columbia-Snake River System is the third-largest grain export corridor in the world, transporting nearly 30 percent of U.S. grain and oilseed exports.

Breaching the Lower Snake River Dams in the Pacific Northwest would create severe economic harm to the entire U.S. agricultural value chain. Removing the Lower Snake River Dams will hurt producers and negatively impact the operations and livelihoods of NGFA members who have made investment decisions based on the ability to utilize barge transportation. In addition to the impact on agriculture in the Pacific Northwest and throughout much of the western and northern United States, reduced exports will have a tremendous negative impact on global food security, which has already been affected by the Russian invasion of Ukraine.

During a recent listening session held by the Federal Mediation Service, advocates of breaching the dams suggested barge traffic could be replaced by rail or truck transportation. The NGFA would like to clarify that the required infrastructure capacity simply does not exist, and it is highly unlikely that it could be created in an economically viable amount of time.

Importantly for this discussion, barges are the most environmentally friendly mode of transportation for grains and oilseeds with one four-barge tow moving as much grain as 140 rail cars or 538 semi-trucks. This fact cannot be ignored in the debate about the environmental impacts of breaching the dams.

We thank the subcommittee for the opportunity to offer comments on this issue.

