

**U.S. House Committee on Energy and Commerce**  
**Subcommittee on Energy, Climate, and Grid Security**  
**“Exposing President Biden’s Plan to Dismantle the Snake River Dams and the**  
**Negative Impacts to the United States.”**  
**[January 30, 2024]**

1. Letter from Michael Alvarez Shepard, Commissioner of the Port of Bellingham, January 22, 2024, submitted by the Majority.
2. Letter from Schneider Farms-Pasco LLC, January 22, 2024, submitted by the Majority.
3. Letter from Brian Shinn, Asotin County Commissioner – District 1, January 23, 2024, submitted by the Majority.
4. Letter from Monika Lawrence, Mayor of the city of Clarkston, January 23, 2024, submitted by the Majority.
5. Letter from Big Bend Electric Cooperative, January 25, 2024, submitted by the Majority.
6. Letter from Greater Spokane Incorporated, January 25, 2024, submitted by the Majority.
7. Letter from Tidewater, January 25, 2024, submitted by the Majority.
8. Letter from Public Power Council, January 26, 2024, submitted by the Majority.
9. Letter from Washington State Senate Republican Caucus, January 26, 2024, submitted by the Majority.
10. Letter from United Steelworkers Local Union 338, January 26, 2024, submitted by the Majority.
11. Letter from Southeast Washington Economic Development Association, January 26, 2024, submitted by the Majority.
12. Letter from Chris Rasmussen, Executive Director of the Port of Clarkston, January 26, 2024, submitted by the Majority.
13. Letter from Modern Electric Water Company, January 26, 2024 submitted by the Majority.
14. Letter from the Idaho Grain Producers Association, January 29, 2024 submitted by the Majority.
15. Letter from The McGregor Company, January 29, 2024, submitted by the Majority.
16. Letter from the Agricultural Retailers Association, January 29, 2024, submitted by the Majority.
17. Letter from the Waterways Council, Inc., January 29, 2024, submitted by the Majority.
18. Letter from the Washington Association of Wheat Growers, January 29, 2024, submitted by the Majority.
19. Letter from the Helena Agri-Enterprise, January 29, 2024, submitted by the Majority.
20. Letter from the Far West Agribusiness Association, January 29, 2024, submitted by the Majority.
21. Letter from the Benton PUD, January 29, 2024, submitted by the Majority.
22. Letter from the Montana Electric Cooperatives Association, January 29, 2024, submitted by the Majority.

23. Letter from Association of Washington Business, January 29, 2024, submitted by the Majority.
24. Letter from the Citizens for the Preservation of Fish and Dams, Inc., January 29, 2024, submitted by the Majority.
25. Letter from the American Public Power Association, January 29, 2024, submitted by the Majority.
26. Letter from Northwest River Partners, January 29, 2024, submitted by the Majority.
27. Letter from Susan Conniry, Care for the Future, January 29, 2024, submitted by the Majority.
28. Letter from the Northwest Corn Growers, January 29, 2024, submitted by the Majority.
29. Letter from the National Association of Wheat Growers, January 29, 2024, submitted by the Majority.
30. Letter from the National Corn Growers Association, January 29, 2024, submitted by the Majority.
31. Letter from the American Farm Bureau Federation Idaho Farm Bureau Federation, Montana Farm Bureau Federation, Oregon Farm Bureau, and Washington Farm Bureau, January 29, 2024, submitted by the Majority.
32. Letter from the Port of Lewiston, January 29, 2024, submitted by the Majority.
33. Letter from the U.S. Wheat Associates, January 29, 2024, submitted by the Majority.
34. Letter from the Oregon Municipal Electric Utilities Association, January 29, 2024, submitted by the Majority.
35. Letter from Family Farm Alliance, January 29, 2024, submitted by the Majority.
36. Letter from Shaver Transportation, January 29, 2024, submitted by the Majority.
37. Letter from Grant PUD, January 29, 2024, submitted by the Majority.
38. Letter from Oregon Wheat Growers League, January 29, 2024, submitted by the Majority.
39. Letter from the Port of Whitman County, January 29, 2024, submitted by the Majority.
40. Letter from Oregon Rural Electric Cooperative Association, Idaho Consumer-Owned Utilities Association, Washington Rural Electric Cooperative Association, Wyoming Rural Electric Association, Montana Electric Cooperatives' Association, Nevada Rural Electric Association, Golden State Power Cooperative, Utah Rural Electric Cooperative Association, January 30, 2024, submitted by the Majority.
41. Letter from National and Grain and Feed Association, January 30, 2024, submitted by the Majority.
42. Letter from Northwest River Partners to the Federal Mediation and Conciliation Service, January 5, 2023, submitted by the Majority.
43. Letter from Northwest River Partners and Public Power Council to CEQ Chair Brenda Mallory, August 30, 2023, submitted by the Majority.
44. Letter from Federal Mediation and Conciliation Service to Northwest River Partners and Pacific Northwest Waterways Association, February 7, 2023, submitted by the Majority.
45. Memorandum of Understanding, December 14, 2023, submitted by Rep. DeGette.
46. Report from NOAA entitled, "Rebuilding Interior Columbia Basin Salmon and Steelhead" September 30, 2022, submitted by the Minority.

47. Letter to Chair Duncan and Ranking Member DeGette from NGOs, January 29, 2024, submitted by the Minority.
48. Letter to Secretary Granholm from National Rural Electric Cooperative Association and American Public Power Association, December 1, 2023, submitted by the Majority.
49. Report entitled, "Economic Contribution of Irrigated Agriculture Supported by the Columbia Basin Project" May 2022, submitted by the Majority.

January 22<sup>nd</sup> 2024

The Honorable Cathy McMorris Rodgers  
Chair, U.S House Committee on Energy and Commerce  
United States House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chair, U.S House Committee on Energy and Commerce  
United States House of Representatives  
Washington, D.C. 20515

To: The Honorable Chairs Rodgers and Duncan and Ranking Members Pallone and DeGette  
Re: Support Treaty Rights and Prioritize Snake River Dam Removals  
From: Michael Alvarez Shepard, Port of Bellingham Commissioner

I received a request from the office of Rep. Cathy McMorris Rodgers encouraging elected officials to provide comments to the upcoming "Hearing on Protecting the Lower Snake River Dams." I am writing to you on Treaty Day, a day celebrated by many communities in the Salish Sea region in recognition of the day the Point Elliott Treaty was signed in 1855. 2024 is also the 50<sup>th</sup> anniversary of the decision by Federal Judge George Hugo Boldt in the 1974 *US v. Washington* case. Commonly known as the Boldt Decision, this ruling has affirmed that tribes of Washington State have an inherent right to harvest natural resources in their "usual and accustomed locations." The Boldt Decision has been repeatedly affirmed by appeals courts and the US Supreme Court. It represents a clear conclusion that tribal treaty rights are binding promises made between sovereign nations and must be upheld. We all expect our federal government to honor its promises and that includes those enshrined as treaties.

The dams of the Lower Snake River were constructed without capacity for salmon migration, which is essential for their lifecycle. Tribes have a treaty affirmed right to harvest salmon in support of their economic and cultural prosperity. The dams of the Lower Snake River have contributed to the crisis of insufficient salmon available to support tribes, non-tribal fishing families, and orcas. Legal precedent obligates the federal government to work to eliminate barriers that prevent tribes from exercising their treaty rights. I believe it is inevitable that these dams will be removed, given that they greatly diminish salmon abundance. I advocate that we start planning now and invest in the region as advocated by Rep. Simpson and others. There are many complex needs to address related to dam removal. Those include addressing needs for clean electricity, freight transport and irrigation. I encourage you to take the opportunity to invest in rural communities and tribes to develop clean energy solutions to replace power generation by those dams. We will also need modernized freight mobilization infrastructure to improve the transport of products in the region. These are projects that we can address, and investment will have positive economic development impacts for the region broadly.

The comments I have provided are my own and not necessarily the views of the entire commission I am elected to. Thank you for the chance to comment on this important topic.

Sincerely,  
Michael Alvarez Shepard Commissioner, Port of Bellingham

**SCHNEIDER**  
**FARMS-PASCO LLC**



3061 Dogwood Rd • Pasco, WA 99301  
(509) 266-4023 • Fax (509) 266-4217

Chairs Rodgers and Duncan and Ranking Members Pallone and DeGette

I am writing you today to show support for the Columbia River System and Lower Snake River Dams. I farm just north of Pasco in the Columbia Basin Irrigation project growing Potatoes, Wheat, Sweet Corn, and Grass Seed. We get an average of 7in of rain a year so without the water made available and the power generated by the dams I wouldn't grow any of it. I travel the country regularly and meet farmers from all over the country and the one thing I have learned and continue to appreciate is our access to our water supply and our low cost of power, neither of which would be possible without the dams.

Those of us in agriculture are under ever increasing pressure to become more sustainable over time. There is no bigger threat to our ability to achieve this than removal of our dams. The power generated from these dams is both reliable and renewable, something that no other source of power can claim. Removing the LSRD's would also require 310 more trucks per day year round hauling grain to Tri Cities just to replace the barges that would no longer be able to operate releasing over 1.25 million tons for CO2 into the air.

Removing the dams here would greatly impact an already challenged population. The 10 counties effected most by this change already have 1 in 5 people below the federal poverty level. The removal and replacement of these dams would result in a 25% increase in energy costs for those people.

Agriculture is tasked with growing more food on less ground every yr. It is estimated that by the year 2050 we will need to produce 60% more food than we are now. With the central valley of California drying up the Columbia Basin is the place for that to happen in the US. It is a national security issue with food supply. There are many crops in the Columbia basin like Potatoes where the yield and quality is the highest in the world. If we were to lose the ability to grow here, we would have to replace that in other areas of the country or world that are much less efficient and require much greater resources to grow the same amount of food.

In closing I cannot state firmly enough the importance of the dam system to not only my own but everyone's future going forward. They are our best option now and in the future.

Thank you for your time.

Grant Morris  
Owner  
Schneider Farms-Pasco LLC  
509-539-5071

**BRIAN SHINN**  
COMMISSIONER, FIRST DISTRICT

**CHUCK WHITMAN**  
COMMISSIONER, THIRD DISTRICT



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**CHRIS SEUBERT**  
COMMISSIONER, SECOND DISTRICT

**STACEY HARMAN**  
CLERK OF THE BOARD/HR SPECIALIST

1/23/24

Committee Chairs Rodgers and Duncan

Ranking Members Pallone and Degette

Energy And Commerce Committee on Protecting the Snake River Dams

Honorable Committee Members,

As an Asotin County Commissioner and Snake River Salmon Recovery Board member since 2011, I have watched the efforts of many groups and individuals try to breach or remove our four Lower Snake River Dams in the name of Saving our Salmon. Despite what is stated in the Confidential Mediation document prepared and distributed behind closed doors, removing the dams will not restore anadromous fish runs in the lower Snake River region. Science does not support that.

The final CRSO study for 2021-2022, like the previous system studies, did NOT recommend dam breaching to save the fish. How did the same NOAA Fisheries experts look at the same information and reach a totally different conclusion a year later? It was collusion for sure between environmental extremists, activists, some tribes, the CEQ and dam breaching advocates who will do and say anything to return the Snake River to its original free-flowing state. It culminated in the document entitled "U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative and in Partnership with the Six Sovereigns." This work represents another behind the scenes negotiation where only the dam breaching side was heard. Speaking with members of the negotiations, I know this to be true.

Not only will dam breaching not restore fish in an efficient and timely manner, but it will also guarantee the destruction of the economic infrastructure of Eastern Washington, Oregon and North Central Idaho. The environmentally friendly, fuel-efficient barging of 10 per cent of U.S. wheat exports will be destroyed. More than any community on the Snake River, the Lewis-Clark Valley's infrastructure and industry will be destroyed. We are ground zero of the devastation and impact and yet no one has included us in the talks.

The sewer treatment systems of both Clarkston, Washington and Lewiston, Idaho will no longer function without millions of dollars in relocating, rebuilding and retrofitting the beached wasteland left behind. Road and rail beds will collapse. Just look at what happened with the drawn down test in the 90's and the resulting catastrophic damage to our road and rail transportation infrastructure.

The loss of clean, carbon-neutral, pollution-free hydroelectric power will take away the economical power we have enjoyed since the dams installation. Wind and solar are neither consistent, efficient nor economical. They have no on-demand capability and cannot be relied upon to power our modern society.

Please stop this travesty and save both our dams and our fish. We can have both and the scientific data supports this conclusion.

A handwritten signature in blue ink that reads "Brian Shinn". The signature is written in a cursive, flowing style.

Brian Shinn

Asotin County Commissioner, Dist. 1

BOCC Chair



# City of Clarkston

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829 5th Street • Clarkston, WA 99403 • [www.clarkston-wa.com](http://www.clarkston-wa.com)

Honorable Cathy McMorris Rodgers,

Honorable Jeff Duncan,

Thank you for the opportunity to comment on the Columbia River System Operations on behalf of residents of the City of Clarkston.

The four Lower Snake River dams and their importance to the economy, environment, community, and energy reliability are at stake. We benefit from the stable sources of renewable power to our region.

The original justification for building dams was for flood control and navigation, water conservation and irrigation, hydroelectric power, public recreation, fish and wildlife habitat, and water quality improvement. A tall order but in most instances successful beyond anyone's vision.

Clarkston, WA is a city that is bordered on two sides by the Snake River as it makes a sweeping curve and moves west to join the Columbia River. Our waterfront is regulated by the Army Corps of Engineers.

The City of Clarkston is very small, approximately 2 square miles. We are not a wealthy community. We derive 45% of our City revenue from sales tax. Any downturn in the economy has a huge impact on our ability to generate revenue for needed services. Dam breaching would severely and negatively impact our economy.

When considering dam breaching, the long-term impacts must be considered. Restoring salmon habitat is a one-dimensional solution with dam breaching but creates multiple impacts for communities like Clarkston. The financial impact with dam breaching will be a huge burden and negative impact on our community.

Businesses, whether agricultural, or riparian have been cultivated for many years upon the river's present flow. For the Lewiston Clarkston Valley to suddenly have the level of the river altered will be changing an entire culture built upon the current operational level of the Snake River.

You have all the documentation and statistics that speak to the Snake and Columbia Rivers and the success of the levee system in Lewiston and Clarkston. You know the amount of agricultural products that are barged down our river, the switch to truck traffic to carry those products to market, and the future negative impact on our roads and infrastructure.

I want to convey to you what Clarkston would experience with dam breaching.

Dam breaching would lower water levels from 41 feet to 10 feet at our Waste Water Treatment Plant outfall line and to only six feet where our diffusers are located. TMDL (Total Maximum Daily Load) and temperature limits would have to be reassessed with WWTP modifications and stricter regulations and testing by Department of Ecology.

Breaching four dams would result in a lowered water level that would curtail many current recreational and tourism related activities on the river and negatively impact the recreation and associated businesses that benefit us as a City.

Cruise Boats have had an increasing benefit to us. Plans are for more visitors in the future. Cruise Boats and Jet Boats contribute to a robust economy for our region.

As we have learned more and more about the impacts of dam breaching, we realize that our community can expect a significant detrimental cascading financial effect to occur.



TREE CITY USA.

Fish returns are cyclical. Before we breach dams we need to look at degrading ocean conditions and impacts of increased shipping, environmental impacts of Seattle's growth, and the entire North Pacific Coast. Lower

We have not heard any guarantees that breaching the four Snake River Dams will increase fish populations. Clarkston is not in a position to make major sacrifices for negligible benefit.

Clarkston and our regional community would be financially decimated due to the effects of dam breaching. The loss of current recreational opportunities, tourism business and economically reliable shipping of agricultural products to the world would be devastating.

Respectfully,



Monika Lawrence

Mayor, City of Clarkston  
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## Big Bend Electric Cooperative, Inc.

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January 25, 2024

The Honorable Cathy McMorris Rodgers  
Chairwoman  
Committee on Energy and Commerce  
2188 Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
Chairman  
Subcommittee on Energy, Climate and Grid  
Security  
2229 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone, Jr.  
Ranking Member  
Subcommittee on Energy, Climate and Grid  
Security  
2107 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Subcommittee on Energy, Climate and Grid  
Security  
2111 Rayburn House Office Building  
Washington, DC 20515

RE: House Subcommittee Hearing: Exposing President Biden's Plan to Dismantle the Snake River Dams and the Negative Impacts to the U.S.

Dear Madam Chairwoman McMorris Rodgers, Chairman Duncan, Ranking Member Pallone, and Ranking Member DeGette:

Big Bend Electric Cooperative would like to submit the following information to add to the overall understanding of the vital importance of the Columbia River System and Lower Snake River dams.

The Columbia River System and specifically the lower Snake River dams provide critical infrastructure to the electrical grid of the Northwest and that of the entire West coast. This was witnessed as recently as the second week of January when record breaking cold descended on the Northwest as well as most of the country. During that time period –

**Hydropower made up more than 70% of our region's power supply while other generation sources failed to produce; and**

**Lower Snake River Dams alone produced 1,000 megawatts or more of electricity on average during the highest demand hours throughout the week of cold weather events.**

**Additionally, The Western Electricity Coordinating Council forecasts that all subregions of the Western Grid will be at risk of blackouts as early as 2025. (*this assumes all hydropower generating resources remain online, including the lower Snake River dams*)**

If breached, as the administration's plan encourages, the entire region will face a shortage of power capacity that will most certainly lead to rolling blackouts during extreme temperature fluctuations; both summer and winter. Blackouts during extreme heat would have the added detriment of threatening the U.S. food supply as irrigated farm acreage depends upon electricity to operate pumps. Without power to operate irrigation pumps, this could create total crop failure in the region. Food security is already a reality for many families and would be exacerbated by diminished reliability of the electric grid.

A portion of our service territory is included in the Columbia Basin Irrigation Project – a Bureau of Reclamation project which supports the country's food supply. The Project produces \$2.66 Billion annually in crop production plus another \$2.67 Billion in local animal production and food processing. ([Economic Contribution of Irrigated Agriculture Supported by CBP \(squarespace.com\)](#))

As a non-profit rural electric cooperative owned by our members, it goes without saying that energy reliability and affordability is our primary goal. According to the last census data, 29% of our co-op members are low-income and 10% are seniors (65+). We vehemently object to the administration's attempt to further create undue hardships on low-income rural citizens as well as all members of our co-op.

As a final observation, we are extremely concerned regarding the lack of transparency and inclusivity the administration displayed during the mediation process surrounding the Columbia River Power System operations. Conspicuously missing from the mediation was any contributions from energy related organizations in the Northwest. This blatant disregard for data on the vital role of hydropower in the region speaks volumes as to the one-sided view of the issue.

In what part of the world does it make sense to dismantle a clean, renewable, affordable energy resource?

Respectfully,



Yvette Armstrong  
General Manager/CEO

*Big Bend Electric Cooperative is a not-for-profit, consumer-owned electric cooperative that serves portions of Adams and Franklin counties in Washington state. Our core mission is to provide safe reliable service in accordance with sound business and environmental practices. We are committed to balanced environmental stewardship that honors all users of the river system while providing reliable electricity to our members.*



January 25, 2024

The Honorable Cathy McMorris Rodgers  
Chair, House Energy & Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

Dear Cathy:

On behalf of Greater Spokane, Inc. and our hundreds of business and civic partners and other stakeholders throughout the Spokane region, we write to express our strong support for the Columbia River System and, in particular, the Lower Snake River dams.

The maintenance of these dams is critical to the economy of our region. They have the capacity to provide about 3,000 megawatts of clean, reliable, affordable, and firm power. Replacing this power would be very costly (studies conclude up to \$860 million more *per year*) and would likely come (at least initially) from sources like natural gas that produce CO2 emissions.

Losing the power from these dams will slow development of new job-creating enterprises that rely on low-cost reliable electricity. Our area would lose a major competitive advantage in attracting new employers.

The dams are also absolutely essential to our agribusiness sector. Farmers depend on the dams for irrigation needed to grow their crops. The navigable highway the four Lower Snake River dams create allows farmers to get their products to market. About 60% of all wheat exports from the Pacific Northwest, or 10% of *all* U.S. wheat exports, are shipped through this water gateway.

The barge traffic also allows for important equipment and fertilizer to come upriver to sustain our agriculture-based economy. Replacing the river commerce with trucks or rail would be more expensive, less reliable, and more harmful to the environment.

Our support of these dams does not undercut our commitment to maintaining salmon runs, an iconic feature of our region's heritage. Dams and fish can co-exist. The four lower Snake River dams have invested hundreds of millions in upgrading their original fish passage systems, which other dams in the region lack. The survival rates for salmon passing through all four dams is about 75%, which is not much different than the survival rates for rivers without dams.

Breaching these dams, either physically or functionally, would have devastating consequences for our region. We very much appreciate your effective leadership to save these dams.

Sincerely,

A handwritten signature in blue ink that reads "Alisha Benson".

Alisha Benson  
CEO

A handwritten signature in blue ink that reads "Jay Allert".

Jay Allert  
Owner, Allert Cattle Ranch  
Chair, Agribusiness Council

cc: Representative Jeff Duncan, chair of the Energy, Climate & Grid Security Subcommittee  
Representative Diana DeGette, ranking member of the Energy, Climate & Grid Security Subcommittee

**TOGETHER WE'RE GREATER**

801 W RIVERSIDE | SPOKANE, WA 99201 | GREATERSPOKANE.ORG | ADVANTAGESPOKANE.COM



January 25, 2024

House Energy and Commerce Committee Chair Cathy McMorris Rodgers  
House Energy, Climate, and Grid Security Subcommittee Chair Jeff Duncan

Dear Representative McMorris Rodgers and Representative Duncan,

Thank you for the opportunity to provide comments to the Energy and Commerce Committee regarding the Hearing on Protecting the Snake River Dams. These comments are submitted on behalf of Tidewater Transportation and Terminals (“Tidewater”), which is headquartered in Vancouver, Washington.

Tidewater has been in business since 1932 and operates a fleet of tugboats, barges and marine terminals on the Columbia and Snake River System. Tidewater is the largest inland marine transportation company west of the Mississippi River and our vessels safely move millions of tons of freight every year on the commercially navigable 465 miles of the Columbia and Snake Rivers, reducing congestion and wear and tear on the state’s highways and railroads, while producing far fewer pollutants and carbon emissions than trucks and trains transporting equivalent tonnage. Tidewater is a proud steward of the environment with a sterling record of environmental protection and safety, supporting the Columbia and Snake River System as one of the most efficient networks for moving commodities in the nation.

The recent United States Government (“USG”) Commitments in Support of the “Columbia Basin Restoration Initiative” and the resulting Memorandum of Understanding (MOU) significantly underestimates the devastating impacts the loss of the Lower Snake River Dams (LSRDs) would have on businesses like Tidewater, as well as impacts to food and fuel security, affordable energy, climate, our local and state economies, rail and road infrastructure, public safety, and much more.

The Columbia Snake River System (CSRS) shipping corridor has been developed into an integrated system of inland and deep draft navigation. This corridor must be examined as a complete system, and not limited to separable parts, i.e., LSRDs. Over the years, some have proposed extreme modifications to river system operations and/or structures. These proposals have included:

- Reservoir drawdown, to increase water velocity. A month-long drawdown of the Lower Granite and Little Goose pools was tested in March 1992, taking those reservoirs nearly 30 feet below minimum operating pool. The drawdown was intended to help juvenile salmon migrate more quickly. This test drawdown delivered such negative results for migrating fish, river infrastructure, and trade, the Corps canceled all subsequent planned test draw-downs and has not conducted another one in the last 31 years. The Port of Lewiston’s website has a several photos of the damage caused by the 1992 drawdown; please visit <https://portoflewiston.com/our-port/media-room/photo-gallery/1992-drawdown-gallery> to view the photos.
- Breaching one or more of the multi-purpose dams on the Snake River. Breaching a dam



would permanently halt barge and other commercial navigation operations for the pool behind that dam, and all points east. The level of the reservoir behind the breached project would drop approximately 100 feet, making the stretch of river unnavigable for commercial vessels. This drop in the pool level is even lower than that of a drawdown. If all four LSRDs were breached, it is unknown whether the pool behind McNary Dam, the last main stem dam on the Columbia River, would remain navigable (due to water velocity, and shallow drafts created by sedimentation and shoaling). A similar shallow draft issue happens today at the confluence of the Clearwater and Snake Rivers. The constant need for dredging of that confluence requires funding requests through Federal appropriations for the U.S. Army Corps of Engineers, which can take years to obtain. In addition, if past experience shows us anything, lawsuits and litigation will follow any dredging plan on the Snake River, significantly delaying dispatch and administration.

This would potentially eliminate barge service to Tidewater's Snake River Terminal in Pasco, WA, and Tidewater's Umatilla Terminal in Umatilla, OR, as well as several other ports and terminals along the 35 mile stretch of the Columbia River leading to the confluence of the Snake River.

We would like to take this opportunity to expound on the impacts with regards to barging and navigation.

#### Impacts to Tidewater and local businesses

Tidewater has nearly 400 employees and is one of many companies that account for nearly 40% of all Washington State jobs that are tied to trade related activity. If barging was removed on the Snake River, Tidewater could no longer operate the majority of its fleet and the viability of our Pasco and Umatilla terminals will be jeopardized. We would have no choice but to lay off a significant number of our employees and seriously consider shuttering our entire operations. This would be devastating to Tidewater's employees and their families that rely on Tidewater to make a living. The impact would also trickle down to Tidewater's local vendors and suppliers that count on Tidewater's business, as well as to the river and export grain elevators, refined liquid product providers, agribusinesses, ports, consumers, and the hundreds of farmers we consider customers.

#### Impacts to food and fuel security

Sixty (60) percent of our nation's wheat moves from farms to global markets via the Columbia Snake River System, making this gateway first in the nation for wheat and second in the nation for soy exports. Wheat loaded and barged on the Snake River makes up ten (10) percent of all U.S. wheat exports. All told, this river system is the largest export gateway on the U.S. west coast.

Breaching the LSRDs would eliminate the ability to timely transport wheat from sixteen elevators on the Snake and Clearwater Rivers to market (20 elevators, if you include the four elevators behind McNary Dam). Tidewater also provides extra barge storage for when these river elevators reach capacity. The river elevators are not set up to load unit trains and building this infrastructure would be costly and unrealistic due to land and permitting constraints.



In addition to grain movements, Tidewater transports and our terminals handle fertilizer and chemicals for the agriculture community and wood chips for the paper industry on the Snake River. Our Pasco terminal is multi-modal, accessible by barge, pipeline, rail, and truck, and is one of the largest facilities with truck rack capabilities providing fuel for the region.

**The CSRS is crucial to fuel supplies into the eastern parts of Washington and Oregon** for consumers, the agriculture industry, the railroad, and aerospace, including to the Department of Defense Logistics Agency for Fairchild Air Force Base in Spokane, WA, as well as for regional fire-fighting season. Pipelines that extend from Salt Lake City, Utah into the Tri-Cities and from Billings, Montana into Spokane are not adequate at supplying the demand of the region. For decades, Tidewater has transported refined liquid products in double-hulled barges on the river system to markets in the eastern regions of Washington, Oregon, and western Idaho. We are the only connection between volumes in PADD 4 (Rocky Mountain District) and PADD 5 (West Coast District) and are considered the eastern arm of the Olympic Pipeline, helping keep fuel pricing competitive and volumes available to consumers and industries in these communities. We also barge downriver from our Pasco Terminal nearly 80% of the ethanol volume blended into the Portland refined petroleum supply.

The current reliable, safe, just-in-time barging of these energy commodities would be in jeopardy if the Snake River Dams were removed.

#### Impacts to affordable energy

Tidewater's Terminal Company, which includes four terminals on the CSRS, relies on affordable energy produced by the hydropower dams, not to mention our fleet of tugs and barges that plug into shoreside power. According to the Bonneville Power Administration, the LSRDs provide both baseload capabilities and backup generation flexibility and responsiveness, generating enough clean energy to power 1.87 million homes.

#### Impacts to climate

At a time when Washington state and the nation is implementing and investing in its decarbonization goals, it makes little sense to curtail barging on the Snake River. Barging is nearly 40% more fuel-efficient than freight trains and 270% more fuel-efficient than semi-trucks. According to the Pacific Northwest Waterways Association, in 2020, over 4.2 million tons of cargo was moved on the Snake River. It would take 42,160 rail cars or 162,153 trucks to move the same amount of cargo.

Shifting commodity flows from barge to truck and rail will have a detrimental impact on the environment. Annual emissions will increase as follows:

- 860,000 additional tons of CO<sub>2</sub> per year;
- 306.5 additional tons of NO<sub>x</sub> per year;
- 7.5 additional tons of Particulate Matter per year;
- 69.7 additional tons of CO per year; and
- 7 additional tons of Volatile Organic Compounds per year.



### Impacts to our local and state economies

The CSRS is a vital trade gateway for the region and the nation. The competitiveness of U.S. products overseas is greatly impacted by domestic transportation costs. Breaching the LSRDs would cut off access to several river ports, terminals, and river grain elevators. Farmers and other regional businesses (refined liquid products, agricultural nutrients, wood and paper products, project cargo shippers, etcetera) would need to turn to more costly, less efficient, higher polluting, and less safe modes of transportation.

Studies have found that some farmland values could be significantly decreased, and some farmland could be taken out of production altogether due to increased transportation costs. According to the Washington Grain Commission, Washington wheat farmers, together with the businesses and industries that directly and indirectly support the farms and their employees, provide Washington State with 18,885 jobs. Washington's wheat farmers and their employees contribute to the state's economy by spending \$0.87 of every \$1.00 earned for off-farm purchases.

It is also important to remember that commercial navigation on our inland system includes more than just barging cargo. The socioeconomic analysis must also capture the use of navigation infrastructure for cruise boats, yachts, and regular recreational boats. These vessels bring over 30,000 visitors to the Lewis-Clark Valley annually.

### Impacts to our rail and road infrastructure

While the dams themselves exhibited no damage from the earlier mentioned 1992 test drawdown, other structures in those pools, including roadway and railroad embankments, piers, and boat docks, were damaged. Without the appropriate water levels, weakened soil could not provide the proper support for in-river and shore side infrastructure. Road and rail embankments began to fail, resulting in cracking and movement of roads, damage to guardrails, and railroad track misalignment.

In addition to the impacts to existing in-water and adjacent infrastructure, the removal of barging and shift of cargo to other modes would bring significant surface transportation maintenance and construction costs as well.

### Impacts to public safety

Increased safety risks are also likely to accompany any modal shifts for Northwest cargo shipping. In 2007 the U.S. Maritime Administration (MARAD) commissioned a study to determine the impact to the general public resulting from various types of cargo shipping. The study found a dramatic difference in the ratios of accidents from each mode of transport. For every one barge accident that resulted in a fatality, there were 23 rail and 155 truck fatalities. For non-fatal incidents, the numbers were even starker, with every barge related injury corresponding to 125 rail injuries and 2,179 trucking related injuries. Using those numbers, the study looked at a test case of closing a major river to barging and found that after ten years, injuries and fatalities on the surrounding highways rose 36-45% from the increased congestion.



The USG Commitment document does not make any reference to public safety, nor does it allocate funds for a comprehensive safety analysis.

In consideration of the growing importance of national resilience amid the increasing frequency of record fires, floods, and transportation disruptions, it is crucial to prioritize investments that provide safeguards for resilient and redundant systems. This becomes particularly vital for marine highways, where river transportation stands out as the most dependable mode of surface transportation. Reinforcing global shipping routes with robust systems guarantees a continuous link to offshore markets, ultimately enhancing the resilience of regional economies.

Tidewater would like to express our sincere gratitude to both of you for calling this hearing on protecting the Snake River Dams. Your dedication to addressing this critical issue is commendable, and we hope that the insights gained from the hearing will contribute significantly to the preservation of our region's vital resources. Thank you for your leadership and tireless efforts in advocating for the well-being of our industry, community, and the continued prosperity of the Columbia Basin.

Please feel free to contact my office if we may be of any assistance.

Sincerely,

A handwritten signature in blue ink that reads 'Todd Busch'.

Todd Busch  
President and CEO, Tidewater

January 26, 2024

The Honorable Jeff Duncan  
Chairman  
Subcommittee on Energy, Climate & Grid Security  
House Energy & Commerce Committee  
2229 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Subcommittee on Energy, Climate & Grid Security  
House Energy & Commerce Committee  
2111 Rayburn House Office Building  
Washington, DC 20515

The Honorable Cathy McMorris Rodgers  
Chairman  
House Energy & Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Energy & Commerce Committee  
2123 Rayburn House Office Building  
Washington, DC 20515

Dear Chairs McMorris Rodgers, Duncan, Ranking Members Pallone and DeGette,

The Public Power Council (PPC) appreciates the opportunity to submit a statement for the record for the hearing on the Protection of the Lower Snake River Dams. The four Lower Snake River Dams (LSRDs) have for many years been a source of controversy and litigation in the Pacific Northwest. But the fact is, these dams play a key part of the Federal Columbia River Power System (FCRPS), the output of which is marketed by the Bonneville Power Administration (BPA), and provided to the non-profit, consumer owned utilities in the Pacific Northwest. Unfortunately, misinformation persists about the crucial role the LSRDs play in the Northwest's power supply and economy, as well as their impacts on salmon.

PPC is the non-partisan trade association representing the interests of these non-profit, consumer-owned electric utilities in the Pacific Northwest, which together serve millions of people and businesses in Washington, Oregon, Idaho, western Montana, and parts of Nevada and Wyoming. We wish to emphasize the following points for the record in today's hearing:

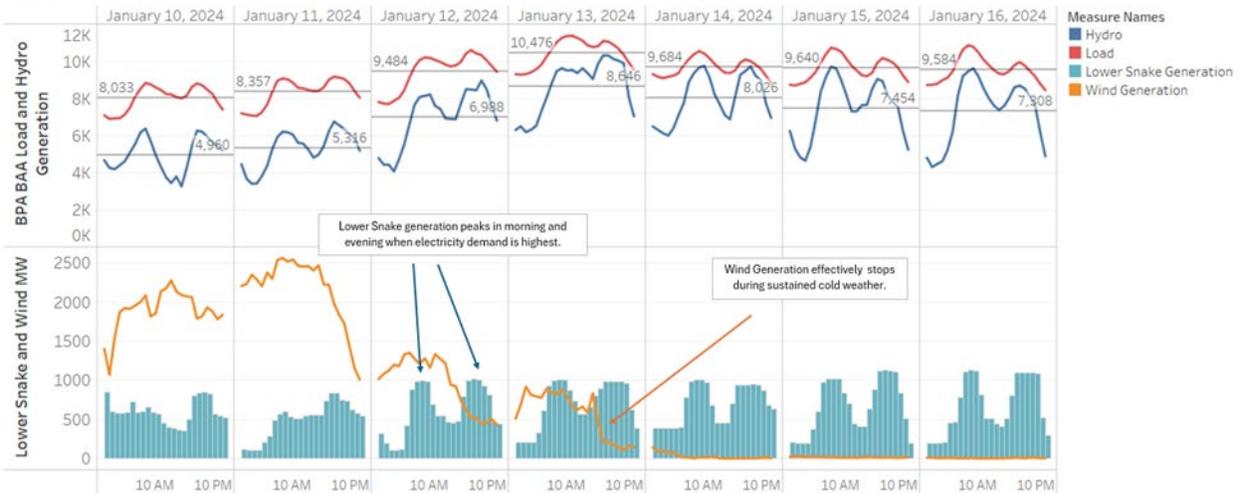
- **The LSRDs are among the lowest cost generating resources in the country.** The continued operation of these highly reliable and carbon-free projects is essential to meeting the region's carbon reduction goals while maintaining system reliability and affordable electricity rates. On average, these dams provide enough energy to power well over 600,000 homes, along with the ability to provide sustained peaking capability of over 2,000 MW to meet demand during extreme winter conditions.
- **Replacing these resources with new, carbon free resources is extremely difficult and expensive.** In addition to their average power output, because of the ability of the

LSRDs to be flexibly dispatched to meet peak demands, replacing their role for the grid would be prohibitively expensive – to the extent it is even physically feasible using existing technology. A 2022 study, sponsored by BPA, shows that carbon-free replacement resources would cost between \$415 to \$860 million annually, equivalent to a 21% to 43% increase to BPA power rates.<sup>1</sup>

- Returns for fish that migrate in rivers across the West Coast – both in dammed and undammed rivers are – are facing persistent challenges that go well beyond hydropower.** Juvenile salmon survival through the federal hydro system, including the LSRDs, is comparable to undammed rivers. Removal of the LSRDs is not a clear path to recovery of endangered species or overall abundance of salmon – structural improvements and operational changes have greatly improved in-river fish survival. More attention is needed on the common threats to these runs, such as changing ocean conditions and over-fishing. Even with these challenges, adult salmon returns to the Columbia Basin regularly exceed levels prior to the construction of the dams.

The importance of the LSRDs to grid reliability during times of peak demand and extreme weather is not an abstract issue. During a recent period of sustained cold across the Pacific Northwest, these dams, yet again, played a critical role in keeping the power flowing during extreme cold. As demand peaked to levels not seen in over a decade and intermittent renewable generation, such as wind power, went to zero, the LSRDs rose to the task yet again. Similarly, the LSRDs regularly come to the rescue in regional hot weather extreme events, too.

Pacific Northwest January Cold Event



As this graphic shows, hydropower and the LSRDs matched their production to peak demand in the morning and evening during this January 2024 cold weather extreme, even as wind generation went to zero. This type of performance is not possible for intermittent renewables –

<sup>1</sup> <https://www.bpa.gov/-/media/Aep/power/hydropower-data-studies/e3-bpa-lower-snake-river-dams-power-replacement-study.pdf>

even those with large battery storage – because the cold event lasted for *multiple days*, while battery storage, even with recent advances, is still measured in *hours*.

This recent event is yet another example of the value that the Lower Snake River Dams provide to the region, not only economically but in reliably meeting peak demand on the wholesale grid to ensure human health and safety in extreme weather conditions.<sup>2</sup> These dams provide a myriad of benefits to the region and the Administration’s plan to dismantle them is threatening the ability to provide reliable and affordable power to millions of homes, farms and businesses across the Northwest.

PPC commends the subcommittee for recognizing the importance of these dams and wishes to be a resource for the Committee as they consider additional legislative steps.

Sincerely,



Scott Simms  
CEO & Executive Director  
Public Power Council

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<sup>2</sup> For additional information, see “Impacts of Lower Snake River Dam Removal and Increased Spill Requirements on Cost, Carbon, Emissions and Reliability: Final Report” from EnergyGPS Consulting:  
<https://www.ppcpdx.org/wp-content/uploads/Cost-Carbon-and-Reliability-Impacts-of-Increased-Spill-Requirements-and-LSRD-Removal.pdf>



Legislative Building  
Olympia, WA 98504-0482

**Washington State Senate**

Phone: (360) 786-7550  
FAX: (360) 786-1999

January 26, 2024

United States House of Representatives  
Energy and Commerce Committee  
2125 Rayburn House Office Bldg.  
Washington, DC 20515

Chairperson Cathy McMorris Rodgers  
Ranking Member Frank Pallone, Jr.  
U.S. House Energy and Commerce Committee

Chairperson Jeff Duncan  
Ranking Member Diana DeGette  
Energy, Climate, and Grid Security Subcommittee

**Re: Energy, Climate, and Grid Security Subcommittee Hearing “Exposing President Biden’s Plan to Dismantle the Snake River Dams and the Negative Impacts to the United States”**

Dear Chair McMorris Rodgers,

We are writing as Washington State senators to express our support for the lower Snake River dams. As you know, the dams are essential for many important reasons, including agriculture, shipping, waterway management, and recreation. But dam opponents often overlook the importance of the dams for helping Washington achieve its clean energy goals.

Since 2019, Washington policymakers in the state legislature and executive branch have adopted aggressive new mandates for lowering greenhouse gas emissions in the electricity sector. These policies include enactment of the Washington Clean Energy Transformation Act and the Washington Climate Commitment Act.

Both laws require electricity producers and utilities to make deep cuts in their emissions profiles, and we contend that this will not be accomplished if the Snake River dams are breached or removed. The dams provide a large source of non-emitting—*clean*—baseload power. This

reliable source of carbon-free electricity can be delivered to customers even if the sun is not shining and the wind is not blowing, making the dams a crucial link in our regional grid while contributing to our carbon reduction efforts.

Importantly, we also believe that recovering salmon and strengthening hydropower are not incompatible goals. While there is more work to be done on fish passage, we are encouraged by dam operators' commitment to improving conditions for fish throughout the entire Columbia River System. Washington, as well, has made public investments in fish habitat restoration at the state level, and we will continue to do our part in the future.

Nevertheless, we worry that decision-makers in the federal government are on the verge of taking irreversible actions against the dams and undermining Washington's clean energy goals. Thank you for working on these important issues and shining a light on the effects that will be felt and experienced here in Washington state if the federal government abandons its commitment to providing reliable clean energy in the Pacific Northwest.

Thank you for your consideration.

Sincerely,



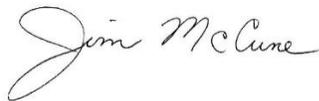
Senator Drew MacEwen  
35<sup>th</sup> Legislative District



Senator Mike Padden  
4<sup>th</sup> Legislative District



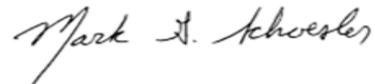
Senator Keith Wagoner  
39<sup>th</sup> Legislative District



Senator Jim McCune  
2<sup>nd</sup> Legislative District



Senator Jeff Wilson  
19<sup>th</sup> Legislative District



Senator Mark Schoesler  
9<sup>th</sup> Legislative District



Senator John Braun  
20<sup>th</sup> Legislative District



Senator Shelly Short  
7<sup>th</sup> Legislative District



Senator Phil Fortunato  
31<sup>st</sup> Legislative District



Legislative Building  
Olympia, WA 98504-0482

## Washington State Senate

Phone: (360) 786-7550  
FAX: (360) 786-1999

Senator Jeff Holy  
6<sup>th</sup> Legislative District

Senator Curtis King  
14<sup>th</sup> Legislative District

Senator Ann Rivers  
18<sup>th</sup> Legislative District

Senator Chris Gildon  
25<sup>th</sup> Legislative District

Senator Lynda Wilson  
17<sup>th</sup> Legislative District

Senator Matt Boehnke  
8<sup>th</sup> Legislative District

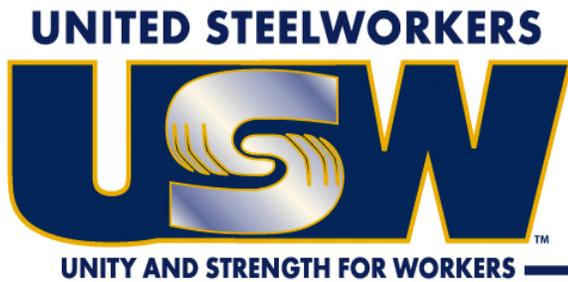
Senator Nikki Torres  
15<sup>th</sup> Legislative District

Senator Brad Hawkins  
12<sup>th</sup> Legislative District

Senator Ron Muzzall  
10<sup>th</sup> Legislative District

Senator Judy Warnick  
13<sup>th</sup> Legislative District

Senator Perry Dozier  
16<sup>th</sup> Legislative District



**LOCAL UNION 338**  
DANIEL R. WILSON – Legislative Affairs

January 26, 2024

Chairperson Cathy McMorris Rodgers  
Ranking Member Frank Pallone, Jr.  
U.S. House Energy and Commerce Committee

Chairperson Jeff Duncan  
Ranking Member Diana DeGette  
Energy, Climate, and Grid Security Subcommittee

*(Letter for the Record)*

Re: Support for the Columbia River System and Lower Snake River Dams

Dear Chairpersons McMorris Rodgers, Duncan, and Ranking Members Pallone and DeGette. Thank you for the opportunity to provide comment on keeping the four Lower Snake River Dams.

I am a former president of the United Steelworkers Union Local 338 located in the Spokane Valley, which represents over 1000 hourly workers who are employed by Kaiser-Aluminum. These are jobs with good working conditions that provide livable wages and excellent benefits.

Kaiser's Spokane facility produces aluminum sheet and plate products for the aerospace and general engineering markets. These locally produced materials are important to our national security as well as the security of our domestic supply chain. Kaiser-Aluminum is the largest industrial manufacturer in Eastern Washington and plays an important role in our region's economy.

Kaiser is categorized as an "Energy Intense Trade Exposed" entity. To compete domestically and globally Kaiser relies on electricity that is available on demand, affordable, and reliable.

Our hydroelectric system here in the Northwest is unique in that our dams on the Columbia and Snake Rivers provide 67% of our grid's electrical energy. These dams operate 24/7 to produce clean, renewable, reliable, and abundant power to residential customers as well as hundreds of Northwest manufacturers who employ thousands of workers.

The lack of transparency and disclosure in the recent negotiations between the U.S. Government, Tribes, and State Governors over the future of our dams is concerning. It is unfathomable that other expert stakeholders with vested interests in an equitable outcome were excluded. Subsequent removal of the dams, absent these other stakeholders' input will in the long-term lead to increased electricity rates and pose a grave risk to achieving our clean energy objectives.

DISTRICT 12 – AFL-CIO-CLC

P. O. Box 15286, Spokane, WA 99215-5286 – Phone: 509-924-2650 FAX: 509-924-2717

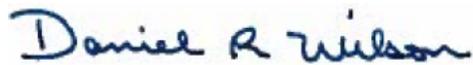
The projected onset of future increases to electricity rates and uncertain grid capacity will certainly impede and discourage future investment in manufacturing. This comes at a time when Washington State has a set goal of doubling its manufacturing output over the next 10 years.

Should the courts choose to take up this case it would only serve to create more division and distrust among bona fide stakeholders, government agencies, and the public at large.

Going forward we strongly encourage more comprehensive discussion on the future of our Columbia River System Operations prior to any final decisions being made. As a labor organization we always strive to engage in meaningful good faith negotiations whenever possible. It's important that at a minimum, any future negotiations must allow participation from the parties that will be most impacted: (Labor, Manufacturers, and other key stakeholders who were not included). Informed collaboration from everyone who would potentially be affected by the outcome should be treated as a positive not viewed as a negative.

Thank you again for the opportunity to provide written comment.

Sincerely,



**UNITED STEELWORKERS**  
Legislative Affairs – Local 338  
Spokane, Washington

cc: Brenda Mallory – Chair person, White House Council on Environmental Quality  
Mike Padden - Washington State Senator (LD4)  
Gaylan Prescott - United Steelworkers, District 12 Director  
April Sims – President, Washington State Labor Council (AFL-CIO)  
Kristina Sabestinas - District Director for Congresswoman Cathy McMorris Rodgers  
Kyle England – Kaiser Aluminum, Sr. Director, Manufacturing Human Resources, and External Affairs



**SEWEDA**  
Southeast Washington Economic Development Association

1/26/24

Committee Chairs McMorris Rodgers and Duncan

Ranking Members Pallone and Degette

Energy and Commerce Committee on Protecting the Snake River Dams

Honorable Committee Members,

SEWEDA represents Asotin and Garfield counties as the Area Development Office (ADO), working under the guidelines of the Washington State Department of Commerce. SEWEDA also is the ADO for the U.S. Department of Commerce serving Asotin, Columbia, Garfield and Whitman counties.

Our mission is “to promote economic vitality by creating and retaining jobs through business, tourism, and community development while preserving the culture and environment of the region.”

Removing the four lower Snake River dams will destroy our cruise ship business which brings in a minimum \$20M a year and over thirty thousand visitors a year, with numbers increasing yearly as cruise lines add more ships to the cruise from the mouth of the Columbia to the ports of the Lewis-Clark Valley.

The sewage treatment plants of the valley will need to be rebuilt with treated water effluent points in the Snake River exposed by dam breaching. Roads and rail into and out of the valley will need millions of dollars in restoration after the waters retreat from their beds, destroying the river systems position of shipping 10 percent of the nations wheat exports out of the system.

The loss of clean, carbon-neutral, pollution-free hydroelectric power will take away the economical power rates we have enjoyed since the construction of the dams. Wind and solar are neither consistent, efficient nor economical. They have no on-demand capability and cannot be relied upon to power our modern society.

All communities in the region would be heavily impacted by breaching the four lower Snake River dams, but none like the devastation that would destroy the economic infrastructure of the Lewis-Clark Valley, certainly the ground zero of impacts from dam breaching.

Science does not support dam breaching to restore anadromous fish runs and the behind-the-scenes attempts by the Biden administration to destroy our region are not acceptable. Please stop these efforts.

Brian Shinn

Board Chair of SEWEDA

1013 Bridge Street, Suite A

Clarkston, Wa. 99403

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**SouthEast Washington Economic Development Association**

1013 Bridge St, Ste A, Clarkston WA 99403 | 509-751-9144 | [www.seweda.org](http://www.seweda.org)

Chairs: Cathy McMorris-Rodgers and Jeff Duncan  
Ranking Members: Frank Pallone and Diana DeGette  
Subcommittee on Energy, Climate, & Grid Security, hearing titled “*Exposing President Biden’s Plan to Dismantle the Snake River Dams and the Negative Impacts to the United States*”  
2123 Rayburn House Office Building  
Washington, DC

Comments Submitted to: Energy and Commerce Committee Clerk, [Kaitlyn.Peterson@mail.house.gov](mailto:Kaitlyn.Peterson@mail.house.gov)

Greetings,

Thank you for gathering input on the important topic of the Columbia River System and Lower Snake River dams at the Jan. 30, 2024, Energy and Commerce Committee meeting.

The strength of a nation is not based on implementing policies on complex issues based on the desires of a few but on collaboration with a broad range of stakeholders, especially those with topical expertise, as well as impacted community representatives to form comprehensive solutions to difficult problems.

We are disappointed in the secrecy of promises and slanted outcomes associated with the negotiated solution<sup>i</sup>, referred to herein as “USG Commitments.” This so-called “mediated solution” to address Columbia River System Operations engaged significantly with only “Six Sovereigns”<sup>ii</sup>. The result of the process was a five-year stay of litigation filed in U.S. District court on December 14, 2023, that moves the nation toward breaching the four Lower Snake River dams (LSRD). It is myopic to assign responsibility for loss of salmon to just the LSRD. Due to deteriorating ocean conditions, overfishing, predation and climate change, salmon populations are declining worldwide.

Impacts of this narrow approach, impacting counties in Washington, Idaho, and Oregon, are:

- Creation of and/or expanding social *in*justice for large swaths of populations;
- Loss of economic vitality, not just in the region, but across the globe;
- Loss of energy reliability;
- Loss of safe transportation; and,
- Significant release of harmful emissions of greenhouse gases.

The Port of Clarkston (POC) is a member of one of the collaborative intervenor-defendant industry groups, Inland Ports and Navigation Group. Thank you for allowing us to share the meaningful contributions which were ignored in the “mediated solution.” POC will provide details around each of the categories listed above. First, however, it becomes necessary to show a larger context for this discussion.

The Inland Waterways User Board (IWUB)<sup>iii</sup> is an advisory board established to monitor the Inland Waterways Trust Fund and to make recommendations to the Army and to Congress on investment priorities using resources from the fund. Its mission is “to deliver vital engineering solutions, in collaboration with our partners, to secure our Nation, energize our economy, and reduce disaster risk<sup>iv</sup>.”

The 97<sup>th</sup> meeting of IWUB occurred August 16, 2022, in Walla Walla, WA,<sup>v</sup> with “the value of the Snake River Locks and Dams” as one of the topics for the meeting. More public comments and testimony were provided than was typical for IWUB meetings; the day following the meeting included a tour of Ice Harbor Dam.

During the meeting, IWUB member Rob Rich discussed the movement of wheat to feed the world, calling it “the third essential life support for humans behind air and water.” This is particularly important since 90% or more of the wheat produced in the impacted region is exported to feed the world.

General Graham discussed the role of the Corps of Engineers in creating and operating dams, saying “the navigable portion of the rivers [of the U.S.] are part of the silent infrastructure” that people have long taken for granted. Further, he discussed the value of the partnership and cooperation, saying the “Inland Waterways Users Board is a manifestation of cooperation between government and industry.”

The scale of the dams, the increasing volume of commodities being transported by water thereby keeping roads safe, the multi-purposes of the projects (energy, navigation, irrigation, and recreation), as well as the leading-edge fish passage impressed attendees familiar with dams in other parts of the U.S. They concurred that Lower Snake River Dams created valuable infrastructure *for our nation*.

River navigation in the Pacific Northwest offers the benefits of being more efficient, cleaner, safer, more reliable, and more responsive to customer needs than any other mode of transportation. Millions of tons of commodities are moved through LSRD. Without river navigation, barging commodities and river cruising are no longer possible. Dam breaching can lead to additional, immense impacts.

**CLIMATE AND SOCIAL JUSTICE IMPACTS:** According to current White House Climate and Social Justice data, the region that will be most impacted by dam breaching is at a relative disadvantage already in terms of unemployment, poverty, energy cost burdens, risk of natural hazards (such as fire), asthma and travel barriers.<sup>vi</sup> “These major climate and social justice concerns will grow exponentially should the land be left without a reliable, consistent water supply.”<sup>vii</sup>

**LOCAL AND STATE ECONOMIC IMPACTS OF DAM BREACHING:** “LSR dam breaching would significantly reduce river and groundwater levels, negatively impacting business establishments, especially farmers, industrial employers, and Lewiston/Clarkston area cruise ship operations. Concerns range from the inability to irrigate crops to logistics of shipping commodities and products from manufacturing firms through existing port terminals, mitigation costs for wastewater outfalls, and new investments in water intakes, filtration, and pumping/transmission systems.”<sup>viii</sup>

Over 10% of the wheat exported from the United States passes through LSRD. Potentially shifting commodity exports from barge to truck and rail would:

- Increase overall cost of shipping a bushel of wheat by 8%. Since wheat is sold in a global market, increasing wholesale prices is not an option;
- The potential for bankruptcy by regional farms and reduction of related government sectors will reduce local property tax revenue by over \$17 million/year in the tri-state region or \$520 million over 30 years. This will devastate local municipalities, schools, and special districts;<sup>ix</sup>

The Port of Clarkston has identified six specific businesses and cruise ship operations at risk<sup>x</sup> “which support 6,811 workers. These businesses generate \$625.7 million in total annual GDP. A subset of GDP includes \$65.5 million in state and local tax payments and \$86.6 million in annual Federal tax payments.”<sup>xi</sup> Multiple cruise lines would cease all operations on both the Columbia and Snake River system if the Snake portion was not available. This would cause a ripple effect on local economies and at several ports of call along the lower Columbia River in Oregon and Washington.

**TRANSPORTATION IMPACTS:** “LSR dam breaching would require at least 201 additional unit trains and 23.8 million miles of additional trucking annually; existing capacity is limited. Over \$1.3 billion in infrastructure investments needs to be invested in the near term to address transportation, railroad, grain storage capacity and local infrastructure changes to grow existing capacity.”<sup>xii</sup>

Loss of human lives will be a sad reality with LSR dam breaching. As General Graham stated on August 16, 2022, shippers and carriers put great importance on safe waterways.<sup>xiii</sup> Active safe waterways result in less traffic and thus, safer highways and safer railroad crossing. The desire in the

“mediated solution” to tweak spill endangers lives of tugboat crews, recreational water users, and especially clientele on cruise vessels who are generally in the older age groups; age contributes vulnerability in unpredictable waters. River cruising provides safer water than ocean cruising, provided the river remains safely navigable. Early-stage implementation of the mediated solution casts doubt on that possibility because the demanded spill in the USG Commitments: a) has not been modeled for navigation safety; nor b) been proven to help smolts in the emigration to the ocean.

Unfortunately, the theory of delayed mortality is the driving factor in the USG Commitments. This theory is not only *not* substantiated but is directly contradicted by peer-reviewed scientific analysis. As a result, the sacrifice required by the many impacted by LSRD breaching will not result in the benefits anticipated by the few. A four-year multi-million-dollar CRSO EIS followed the National Environmental Policy Act (NEPA) process wherein meaningful, scientifically supported input was sought and weighed. It’s sad that in the mediation, the Six Sovereigns’ wishful thinking carried more weight than the time-tested democratic NEPA process, and it is the Six Sovereigns’ opinions *only* that will be involved in implementing the USG Commitments.

The Port of Clarkston urges the Committee to look at the Inland Waterways Users Board model which manifests “cooperation/partnership between government and industry” instead of sanctioning the goals and desires of special interest groups.

Thank you again for this opportunity to comment.

Sincerely,



Chris Rasmussen  
Port of Clarkston, Executive Director

<sup>i</sup> Case 3:01-cv-00640-SI in the United States District Court for the District of Oregon.

<sup>ii</sup> The “Six Sovereigns” consist of the Nez Perce Tribe, Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, the State of Oregon, and the State of Washington. Their presumed expertise spills over into implementation, limiting the ability of critical stakeholders and impacted others to help mitigate impacts and develop acceptable alternatives. This reinforces the importance of the goals, desires and wishes of a few at the expense of many and strikes a serious blow to democracy.

<sup>iii</sup> Current members of IWUB include carriers and shippers from Louisiana, Kentucky, Indiana, Tennessee, Missouri, Arkansas, Oregon, Minnesota and Texas.

<sup>iv</sup> <https://www.iwr.usace.army.mil/Missions/Navigation/Inland-Waterways-Users-Board/>

<sup>v</sup> Federal Register 2022-07-20.

<sup>vi</sup> Source: White House Climate and Economic Social Justice Screening Tool.

<sup>vii</sup> FCS Group’s “Regional & National Impacts Triggered by Breaching Lower Snake River Dams: Summary of Transportation, Climate and Social Justice Concerns, August 2023.”

<sup>viii</sup> Ibid.

<sup>ix</sup> Ibid.

<sup>x</sup> POC provided this list informally to FCS Group.

<sup>xi</sup> List from POC extrapolated and data included in FCS Group’s “Regional & National Impacts Triggered by Breaching Lower Snake River Dams: Summary of Transportation, Climate and Social Justice Concerns, August 2023”.

<sup>xii</sup> FCS Group’s “Regional & National Impacts Triggered by Breaching Lower Snake River Dams: Summary of Transportation, Climate and Social Justice Concerns, August 2023.”

<sup>xiii</sup> Minutes of 8-16-22 IWUB meeting in Walla Walla, WA.



**MODERN**  
Electric Water Company  
reliably serving the Spokane Valley since 1905

Chairperson Cathy McMorris Rodgers  
Ranking Member Frank Pallone, Jr.  
U.S. House Energy and Commerce Committee

Chairperson Jeff Duncan  
Ranking Member Diana DeGette  
Energy, Climate, and Grid Security Subcommittee

January 26, 2024

**Letter for the Record**

**Re: Support for the Columbia River System and lower Snake River dams**

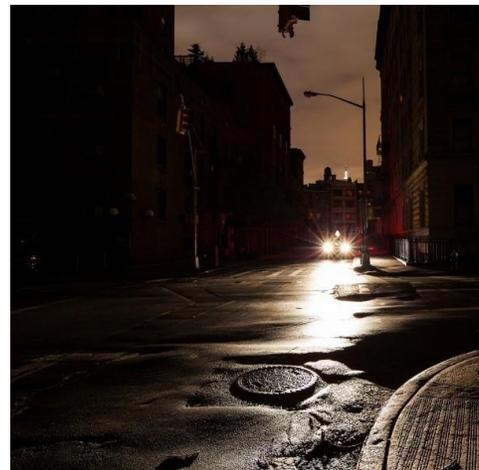
Dear Chairpersons McMorris Rodgers and Duncan and Ranking Members Pallone and DeGette,

I am writing to you on behalf of Modern Electric Water Company (Modern), a customer-owned, not-for-profit electric and water utility company that serves 25,000 residents and businesses in Washington's Spokane Valley.

The White House Council on Environmental Quality's discussions on the potential breach of the lower Snake River dams—Ice Harbor, Lower Monumental, Little Goose, and Lower Granite—have compelled us to express our profound concerns. If these critical dams are breached, it could unleash a cascade of adverse effects, including electricity price hikes, energy shortages, and the looming threat of power blackouts for residents living in the Pacific Northwest.

**Power Supply Shortages & Rolling Blackouts**

The Washington state Commerce Department predicts that demand for electricity will nearly [double by 2050](#), and [studies demonstrate](#) this demand for electricity will outpace supply. In our state, three in five households already use electricity as their primary heating source, accounting for more than two-fifths of Washington's electricity sales. The commercial sector currently uses almost one-third of the state's electricity, and the industrial sector accounts for almost one-fourth. Furthermore, more than [167,000 electric vehicles](#) are registered in Washington today, the fourth-most of any state. This number has grown fivefold in just five years.



With this projected growth in energy need, our power grid will soon be under unsustainable pressure. With soaring electricity demand, climate change, and the aggressive movement to retire fossil fuel generation in the West, our region faces an energy resource deficit of unprecedented proportions, putting Washington's residents at growing risk of blackouts.

*(See Modern's short explanatory video, "[Washington's 'Perfect Storm' for Rolling Blackouts](#)" [here.](#))*

The lower Snake River dams produce about as much annual, carbon-free energy ([1,000 average megawatts](#)) as a large nuclear power plant. (For reference, that's roughly the same average output as [Washington's Columbia Nuclear Generating Station.](#)) But the dams can produce up to *three times* that amount during periods of high demand. The combined nameplate capacity of the four lower Snake River dams is over [3,000 megawatts](#). As many as 750,000 homes rely on the carbon-free power generated by the dams. During times of extreme need, they can power up to 2.25 million homes.

Hydropower is some of the cleanest energy in the United States and balances our power grid, compensating for shortfalls created by intermittent energy sources such as wind and solar, especially in the Pacific Northwest, where [wind and solar production nearly flatlines through single-digit winters](#). Hydropower also prevents [50 million metric tons of carbon emissions](#) from entering our atmosphere. This affordable, dependable, carbon-free electricity is critical to our region, as nearly two-thirds of Washington's renewable energy comes from hydropower.



*Figure 1 - The Lower Granite Lock and Dam (US Army Corps of Engineers)*

## Why the Lower Snake River Dams Really Matter

The lower Snake River dams are essential to Washington for many reasons, playing a significant role in the economic, agricultural, energy, and transportation sectors of the Pacific Northwest. The following are some of the top reasons the lower Snake River dams are so important to our region:

- 1) **Hydropower Generation:** These dams generate a substantial amount of clean and renewable hydropower, contributing to Pacific Northwest energy needs and reducing our reliance on fossil fuels. Breaching the dams would disrupt our region's clean energy production.
- 2) **Irrigation & Agriculture:** The dams provide water for irrigation of 60,000 acres of farmland, enabling agricultural productivity in Washington's arid regions. Reliable water supply from the dams supports crop growth and helps sustain the region's farming communities.
- 3) **Navigation & Trade:** These dams facilitate navigation along the Snake River, allowing for transportation of goods, commodities, and resources. This supports our economy by providing a cost-effective means of moving our products to markets. Equipped with navigational locks, each dam along the Snake River serves as a vital conduit for inland farmers to reach global markets. In a mere nine months during 2017, over [3.5 million tons of cargo found passage through the Snake River via barges](#). The Snake River holds special importance for Northwest wheat farmers, enabling the transportation of almost 40 percent of all U.S. wheat exports annually through barging, the most fuel-efficient, secure, and environmentally friendly method of cargo conveyance. If these dams are breached, it would disrupt our supply chains.
- 4) **Recreation & Tourism:** The reservoirs created by the dams offer recreational opportunities such as boating, fishing, camping, and wildlife viewing. These activities contribute to our tourism industry and provide Washington residents with opportunities for outdoor recreation.
- 5) **Water Supply:** The dams contribute to water supply management, ensuring a consistent supply for domestic, industrial, and agricultural use, especially during dry periods.
- 6) **Cultural & Historic Significance:** The dams have become part of our region's cultural and historical fabric, representing a key aspect of its development and growth over the decades.

[\(See Modern's short explanatory video, "The TRUTH about the Lower Snake River Dams" here.\)](#)

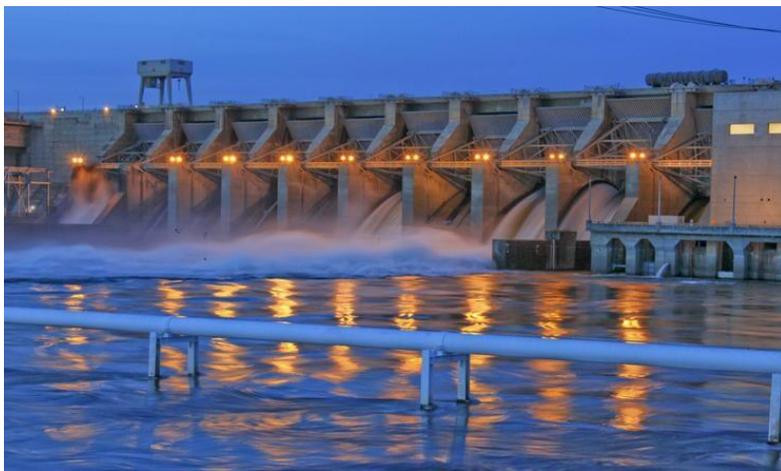


Figure 2 - Ice Harbor Dam (Photo: D.G. Rigg/US Army Corps of Engineers)

## An Honest Discussion About Saving Our Salmon

It's time we had a real, open, honest conversation about saving our beloved salmon—and why that honorable goal does not begin and end with U.S. hydropower, our Columbia River System and our lower Snake River dams.

Rest assured, we believe preservation of our salmon population is a significant and worthy ambition. Salmon are essential to tribal and non-tribal communities across the Northwest, for cultural, economical, and recreational needs. They play a key role in ecosystem health, from our oceans, to streams and forests. While some vocal critics resort to a "blame the dams" approach when discussing salmon population decline, hydropower's track record in robust fish mitigation activities is solid.



Figure 3 - Coho salmon spawning (Photo: Bureau of Land Management Oregon & Washington)

Thanks to hydropower technologies such as fish ladders, turbine bypass systems, fish screens, spillway weirs and other tools, fish survival rates at dams are between 93-99%. The four lower Snake River dams feature some of the most advanced and successful fish passage systems in the world. US Army Corps of Engineers testing of a new turbine installed at Ice Harbor Dam revealed a survival rate of [98.25% for Chinook salmon](#). These rates are comparable to those of free-flowing rivers. Additionally, Washington has seen three consecutive years of improved salmon returns. In 2023, the numbers of fall Chinook coming back to the Columbia River tributaries were the best since 2015, due primarily to colder ocean conditions. In September, the Snake River fall Chinook run was 44% higher than the 10-year average.

[A 2020 NOAA report](#) notes that the lower Snake River dams rank among the most contemporary and well-maintained dams providing fish passage on the West Coast. They facilitate fish passage for approximately 95% of the fish navigating through them. The report also notes that even rivers without dams cannot achieve 100% survival rates, due to factors such as predation and river conditions.

For decades, the lower Snake River dam fish mitigation efforts have produced meaningful results. NOAA has repeatedly indicated that fish passage through the dams was notably effective. In June, [the Wall Street Journal's Faith Bottum noted](#): "In the years since, however, the salmon population has rebounded thanks to improved fish ladders, which allow the fish passage around the dams. This is why NOAA said in 2008, and again in 2014, that it is no longer necessary to breach the Snake River dams. A 2020 report from the Energy Department and the Bonneville Power Administration (the federal agency that manages the electricity from dams on the Columbia River system) concluded that rebuilding salmon stocks didn't require sacrificing electrical power."

The lower Snake River dams all meet and even exceed federal and state standards for safe fish passage. For each of the four dams, NOAA upholds distinct survival standards for downstream-bound juvenile salmon. The agency aims for a 96% survival rate for yearling chinook and steelhead, and 93% for "subyearling" chinook less than a year old. The lower Snake River dams are consistently meeting those performance standards, according to [NOAA Columbia Hydropower Branch Chief Richie Graves](#).

## What's Killing Our Salmon?

Even 100% dam passage rates and robust mitigation efforts could be totally upended if salmon can't survive threats such as:

**1) Hostile Oceanic Conditions:** The single greatest threat to salmon and steelhead is not from hydropower or the lower Snake River dams; [it's from rising sea temperatures](#), which could lead to a 90% decline in Chinook salmon runs, NOAA reports. The young fish are extremely vulnerable and spend most of their lives (3-4 years) in salt water. Warm ocean conditions shift the balance of predators and prey and expose them to deadly threats. Oceanic conditions are so critical to salmon survival that scientists predict adult salmon returns to the Columbia River based on these conditions when the young fish migrate out to sea.

[A 2020 study published in the science journal Fish and Fisheries](#), by Dr. David Welch, revealed that Chinook salmon survival has dropped by 65%, on average, over the last 50 years in rivers along the whole West Coast of North America. [Dr. Welch noted](#), "We were shocked to discover that the survival of salmon across British Columbia or in the Puget Sound is now as low or lower than the reported survival of Snake River populations, which everyone thought had terrible survival because of the dams." This 50-year decline in the population of salmon coincides with same timeframe the Intergovernmental Panel on Climate Change referred to as a period of [50 years of unabated oceanic warming](#).

**2) Warming Rivers:** Salmon need cold water to survive, and their survival is threatened when water temperatures rise above 68 degrees. The water flowing from hydroelectric dams actually stays colder than undammed portions of the Snake River Basin, according to [a 2020 study by the National Oceanic and Atmospheric Administration](#). Dams in the Columbia and Snake River basins have been proven to [stabilize extreme water temperatures](#) by redistributing summer heat into the fall, thereby minimizing temperature fluctuations. Additionally, studies indicate that temperature levels before and after dam construction generally remain stable or decrease, despite rising air temperatures. In many cases, dams mitigate water temperatures by storing cooler water and releasing it when ambient temperatures rise. Based on U.S. Army Corps of Engineers models, NOAA determined that breaching dams along the Lower Snake River would have a minimal impact on temperature exceedances.

**3) Sea Lions:** Sea lions prey on endangered salmon as they migrate up the Columbia River. Sea lions are an overabundant predator, and their population has exploded from several thousand in 1972 to more than 300,000 today. The estimated sea lion population in the Columbia River, spanning from Bonneville Dam to Astoria, Oregon, is [approximately 4,500](#). Below Bonneville Dam, 32 wild salmon populations in the Upper Columbia River and Snake Rivers face the threat of predation by sea lions. The Upper Columbia River spring chinook run, classified as threatened under the Endangered Species Act, is particularly vulnerable to sea lion predation downstream from the Bonneville Dam. The Washington Department of Fish and Wildlife predicts a 90 percent chance of winter steelhead runs facing extinction if the sea lion issue is not addressed.

**4) 6PPD-quinone & Pollution:** Salmon face perils from pollution, including 6PPD, a highly toxic preservative found in old car tires that is carried into waterways during heavy rains. In 2020, a report published in [the scientific journal Science](#) connected the mortality of coho salmon in the Pacific Northwest to 6PPD-q. Subsequent studies, [including one in 2022](#), proposed that this

chemical may also adversely affect steelhead trout and Chinook salmon. They also face threats from insect-killing chemicals that contain carbaryl and methomyl, among other contaminants including drugs and microplastics.

**5) Predatory Birds:** As many as 14 colonies of predatory birds have been devouring juvenile salmon and steelhead in the Columbia River. They eat millions of migrating fish every year.

All of these factors are significant when addressing the health and stability of the entire salmon ecosystem. This is why policymakers must consider a large-scale approach to salmon recovery, one that considers hydropower's successes and that doesn't destroy critical dams or put the bulk of financial responsibility on Washington's energy ratepayers.



*Figure 4 - Lower Monumental Dam fish ladder (Photo: Bonneville Power Administration)*

### **Breaching the Dams: A Price That's Too Big for Washingtonians**

Breaching the four lower Snake River dams comes with a price that's simply too big for Washingtonians. We have yet to see an independent engineering, and cost-benefit and fish-benefit analysis, but recent studies concluded that breaching the four lower Snake River dams would cost taxpayers between **\$10.3 billion** ([Sen. Patty Murray and Gov. Jay Inslee Report](#)) and **\$77 billion** ([2022 Columbia River System Operations \(CRSO\) Environmental Impact Statement](#)).

The [2020 Columbia River System Operations Environmental Impact Statement](#) found that breaching the lower Snake River dams could:

- Double the risk of region-wide blackouts
- Add 3 million metric tons of carbon to the atmosphere every year from fossil-fueled electricity

- Increase the region’s electricity costs by \$800 million a year and the Bonneville Power Administration’s power costs by 50%, which could increase home energy costs 25% or more
- Result in the loss of \$540 million per year in regional economic productivity
- Result in the loss of 4,900 jobs due to higher electricity costs
- Reduce social welfare by \$458 million annually from the loss of irrigated land and farm laborers
- Add 79,000 more semi-trucks to the road each year (an extra [17,617,000 tons of CO2 emissions per year](#))

Additionally, it takes 5 megawatts of wind/solar/batteries to replace one megawatt of hydropower capacity, so removing the lower Snake River dams (3,000 megawatts) would require a new buildout of 15,000 megawatts of new energy resources.

Furthermore, there is no scientific evidence that breaching the lower Snake River dams would effectively boost Pacific Northwest salmon populations, particularly if the most significant factor killing our Chinook—*oceanic warming*—is not addressed.



Figure 5 - Little Goose Lock and Dam (Photo: US Army Corps of Engineers)

On the other hand, preserving the lower Snake River dams will help keep Washingtonians' energy costs low. Hydropower is the reason our utility has some of the lowest residential energy rates in the nation—starting at just 5.4 cents per kWh (compared to the [U.S. average of 16.9 cents per kWh](#)).

That low-cost, reliable energy is not just a privilege; it's a life-saving necessity, particularly to heat homes during bitter cold winter months—such as this January, when temperatures dipped as low as -13 degrees in Washington—or to prevent blackouts from threatening public safety and human lives. In fact, hydropower made up more than 70% of the region’s power supply during the recent cold snap. On January 19, [the Public Power Council reported](#):

“[The] federal Lower Snake River Dams (LSRDs) reliably produced 1,000 megawatts (MW) or more of electricity on average during the highest electric demand hours throughout the past week of cold weather events. These LSRDs, in conjunction with the other federally-operated Columbia River Basin hydro units, together produced more than 10,000 total MW of output – yet again serving as the backbone of the Pacific Northwest electricity supply. ...

“The Lower Snake River Dams in particular played a major role, consistently ramping up to 1,000 MW or more of generation twice each day to meet morning and evening peak demand. This scale of carbon-free, dispatchable generation cannot be replaced with existing technology. This event is yet another example of the value of the Lower Snake River Dams to the region, not only economically but in reliably meeting peak demand on the wholesale grid to ensure human health and safety in extreme weather conditions.”

Make no mistake, hydropower as an existing, clean baseload energy resource is more critical than ever in the Pacific Northwest, and the lower Snake River dams are a large part of the solution.

Thank you for your time and consideration of this important matter.

Sincerely,



Chelsea Martin  
Government Relations & Communications Coordinator





**Idaho Grain Producers Association**

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January 29, 2024

Cathy McMorris Rodgers, Chair  
Frank Pallone, Ranking Member  
House Energy and Commerce Committee  
Jeff Duncan, Chair  
Diana Degette, Ranking Member  
Energy, Climate, and Grid Security Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

Dear Chairs, Ranking Members, and Members of the Committee:

The Idaho Grain Producers Association appreciates the opportunity to submit a letter for the record for the Energy, Climate, and Grid Security Subcommittee of the House Energy and Commerce Committee's hearing entitled: "Exposing President Biden's Plan to Dismantle the Snake River Dams and the Negative Impacts to the U.S." With over 600 wheat and barley farm families as members, IGPA is the key policy advocacy organization working on behalf of Idaho's grain industry with local, state, and federal leaders. Idaho's grain industry relies heavily on the benefits of the Lower Snake River Dams, including ready access to international ports and low-cost, low-carbon-emission hydropower.

The Columbia Snake River System is critical to Idaho agriculture. In particular, the System moves about 50% of the wheat grown in Idaho and more than 55% of the nation's wheat, as well as a large amount of corn, soybeans, lumber products, and crop inputs – with harvested crops coming to the Port of Lewiston, the most inland port in the U.S., from as far as the Midwest. The total value of wheat exported through the PNW is nearly \$4 billion per year.

While it is true that eliminating barging as an option for these goods would significantly increase the cost of transportation for growers, it's also true that the environmental impact of replacing barging with trucks or rail would be tremendous – barges produce 10 times less carbon dioxide than trucks per ton-mile of cargo moved. Annually, the amount of wheat transported on the Snake River would require an additional 113,187 truck trips, each carrying 910 bushels of wheat to replace the 103 million bushels shipped on the Snake River via barge annually. That is 310 more trucks each day, making round trips, 365 days per year. None of this acknowledges the infeasibility or impossibility of increasing rail or truck capacity in the region or finding trucks or drivers for them. Each barge that must be replaced by a truck means more pollution, more traffic, increased costs and increased wear and tear on our roads.

One of the significant challenges facing our country today is that of food security. In recent years, we have experienced the impacts of a pandemic, the war in Ukraine, trade disruptions, supply chain disruptions, and at home, extended drought, the escalating cost of inputs, and increased regulation. All of these have placed extreme pressures on our food systems and have reiterated the fact that food security is an issue of national security. Our nation's food system cannot afford to have additional stressors placed upon it, like contemplating the removal of the dams on the Columbia Snake River

System. It's estimated that over 1,100 family farms would be lost if the ability to barge wheat was lost, which would have a terrible ripple effect through rural communities in the region.

Additionally, the importance of affordable, clean energy to all residents and businesses in the Pacific Northwest cannot be overstated – nor can it currently be replaced.

On December 14, 2023, the U.S. government released an agreement titled "U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative and in Partnership with the Six Sovereigns." The commitments made by the U.S. government in this document were reached without adequate input from stakeholders who would ultimately be impacted by the decisions.

Due to the closed-door nature of the process, agriculture voices were largely excluded from discussion regarding impacts and commitments for funding and mitigation. Given agriculture's strong ties to the dams, it is unconscionable that agriculture's voice was not adequately included in these deliberations. As stakeholders who are directly impacted, we are concerned that there was a failure to take the agricultural impacts of dam removal into account.

Notably, throughout the entirety of the process, impacted stakeholders from the agriculture and power industries have been willing to share perspectives and provide insight to find a solution that protects the integrity of the dams as well as health of salmon. There is no concrete science that shows removing the LSRD will quantifiably improve salmon returns. We are concerned that the impacts of these commitments will be severe for agricultural producers who rely on the dams for transportation and irrigation, as well as for affordable clean energy from hydropower and may not produce the desired results for salmon.

We strongly believe that dams and salmon can and do co-exist. With a myriad of challenges facing the salmon population, we are committed to building upon current investments and technological advancements. Currently, the LSRD have world-class fish passage and juvenile survival rates upwards of 95 percent. We believe any work moving forward should work to increase fish passage, instead of eliminating it. We also support investments made at the federal and state level for culvert removal, fish habitat restoration, toxin reduction, and predator abatement. One thing we know: the benefits of the Lower Snake River Dams, including ready access to international ports and low-cost, low-carbon-emission hydropower, cannot be replaced.

Sincerely,

A handwritten signature in black ink, appearing to read "Stacey Satterlee", written over a light gray rectangular background.

Stacey Satterlee  
Executive Director, Idaho Grain Producers Association

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***Exposing President Biden's Plan to Dismantle the Snake River Dams and the Negative Impacts to the U.S.***

Subcommittee on Energy, Climate, and Grid Security Hearing  
2123 Rayburn House Office Building, Washington, D.C.  
January 30, 2024 | 10:00 AM E.T.

Honorable Chairs McMorris-Rodgers & Duncan, Ranking Members Pallone & DeGette:

**We can have healthy rivers and a healthy economy, casting aside backdoor deals and smug secrecy.**

Greetings to you, Cathy, and your colleagues. I'm Alex McGregor, managing partner of our wheat and livestock ranch on the Snake River 'breaks' and chairman of The McGregor Company, which provides essential nutrients to thousands of family farms in thirty-six Inland Northwest farm communities. I've been sharing the concerns of farm families about breaching the lower Snake River dams for more than a quarter century since my tour of duty as an officer and president of the Washington Association of Wheat Growers.

As agriculturalists we are actively interested in healthy rivers and a healthy economy. We know and care about salmon, about the river and the environment and we work hard to be good stewards of our lands and adjacent waterways. This is serious business and we'd best be getting at it. It's been too often oversimplified, as in a bulk fund raising letter I received this fall from American Rivers. When you read the letter, I was told, "You'll be so mad about outdated dams, you might feel like taking a wrecker's ball to one yourself!" Instead for just seven cents a day or more I could get a stuffed Roger the River Otter and help "take down dams that are tearing rivers and communities apart." Trial lawyers and fund raisers—the people of the Northwest deserve better.

Court ordered mediation could have been a step forward. Howard Susskind of the Program on Negotiation at Harvard Law School this past fall suggested that for mediation to work as a problem-solving tool required an agreement on procedure and two other things—*a willingness on the part of all the relevant stakeholders to work together to resolve the issue and the availability of a trusted neutral*. The Federal Mediation and Conciliation Service, called into the fray, touted its skills in mitigating conflict through "dialogue, honest communication, and responsive strategies."

Only one problem stood in the way---someone pushed the mute button and, in the name of confidentiality, the determined efforts of river users to have a voice were ignored. Tough for "all the relevant stakeholders to work together," as Susskind suggested, when you listen only to one

side. The goal of the Administration and of the plaintiffs who sued them is shown in the document prepared – breaching dams mentioned 68 times, irrigation once, navigation not at all. U.S. government (USG) commitment speaks of collaboration. In secrecy, even from those a party to the process? And without a clue to communities, businesses, and the people of the Inland Northwest? Empty words, alas.

We urge Congress to call for a more collaborative approach. Sound science and meaningful dialogue must be the cornerstones to real progress, not lawsuits, secret negotiations, and ignoring concerns of those who would be harmed. The benefits of the dams are substantial and shutting us out from consultations won't make them disappear.

Let's look at those benefits, for they are vital, and the future of jobs and our economy depend on them.

Three million Public Utility District customers depend upon reliable hydropower when they turn on the lights. Demand will grow with more electric vehicles mandated. Breaching dams would eliminate thousands of megawatts of clean energy when the region already is facing an 8,000 megawatt deficit in the next decade. With the dams in place, shortages would be severe and costs high – a crisis for all, particularly those on tight budgets, living from paycheck to paycheck. Affordable energy is vital for agriculture—to cool crops in storage, to heat the shops where we care for equipment, for running irrigation pumps, and for food processing. Rising costs impact agriculture and rural people, among whom are a substantial number of disadvantaged people.

With severe cold weather early this month, solar and wind energy produced very little indeed, and hydropower pulled us through without blackouts. Hydro kept the lights on earlier during the deadly heat domes of 2021 and 2022 and the cold snap of December 2022.

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. The 50,000 acres of the Columbia Basin irrigated by Snake River waters (from one of the dams critics want to dismantle) produce enough apples to feed 18.5 million people, enough sweet corn for 19 million (enough for every citizen of New York state), potatoes to feed 6.5 million. We've been shipping grain from the hills of the Palouse and other districts to feed hungry people overseas for more than 150 years.

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<sup>1</sup>.

A maritime superhighway, the M-84 Columbia-Snake River System, authorized by the United States Congress, is a keystone to the efficient transport network upon which so much depends.

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

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. The Columbia is the largest wheat terminal in the nation, third largest in the world. 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 has struggled mightily in the last couple of years, with more than 142,000 shipments delayed eleven days or more across the nation during the first quarter of 2022 alone. The National Grain and Feed Association said its members who depend upon rail that spring “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 in the fall of '22, 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. Barges are vital every season – not only when products are in short supply – their reliability cannot be matched by any other type of delivery. We’ve invested in two river ports along the lower Snake to meet the need—the newest one the biggest investment we’ve ever made by far. Our customers need timely deliveries and barges are crucial in meeting their needs.

We ship by rail, too, though capacity and timeliness have been chronic problems. We were stunned in '22 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.”<sup>2</sup> 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 Bronaugh told the Surface Transportation Board<sup>3</sup> (STB) 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.” After the crisis abated Ag Secretary Tom Vilsack thanked the STB for cracking down on

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

<sup>3</sup> Surface Transportation Board Docket No. EP 770, April 26, 2022

embargoes but stated rail service “remains inadequate and unreliable for many agricultural shippers.”<sup>4</sup>

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,”<sup>5</sup> 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 CO<sub>2</sub> 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.

The shift from barge to rail and truck would mark a setback in goals of reducing greenhouse gases that warm oceans and harm fish. Fuel consumption up 4.67 million gallons a year, 860,000 additional tons of CO<sub>2</sub> per year and on and on. More than six hundred miles of railroad track have been removed since pioneer days—replacing lines now costs \$1.25 million a mile just for rail, tie, and ballast. Nearly 24 million miles per year of additional truck traffic. The pollution caused by this draconian move would equal putting one coal fired power plant onto the grid every two to three years.

Much could, and should, be done to help our iconic fish. The U.S. government commitments were not shared with any of the intervenor-defendants until after they had been fully negotiated. There should be a fast pace of new fisheries scientific data—more than three hundred projects east of the Cascades and a similar number on the other side have been funded. Fish habitat restoration, funding for hatcheries, predator control. It would be helpful to know if any solid scientific evidence is found to back up the ‘delayed mortality hypothesis’ – the idea that salmon and steelhead traversing the fish passage at the dams get ‘beaten up’ and are vulnerable to predators when they get back to the ocean. So much of this process is geared on the theory. It’s devilishly hard to analyze and prior studies have been unable to tell.

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<sup>4</sup> [USDA AMS Secretary Vilsack Letter on Rail Service Issues, May 12, 2023](#)

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

The Capital Press writes: “every American should be insulted by how this case has played out behind closed doors.”<sup>6</sup> The process has been unseemly at best—changing the Endangered Species Act to amorphous ‘healthy and harvestable’ to coax NOAA Fisheries to support breaching; a cozy relationship between government and plaintiffs, a curt and dismissive attitude towards those who would be harmed by breaching. Responding to the document thrust forward for action in which they’d had no chance to offer input, intervenor-defendants raised safety concerns dismissed by the USG and plaintiffs as “irrelevant and unfounded” which could be ignored as they “do not require the judge or intervenor-defendants” to implement the MOU...”.<sup>7</sup>

While we oppose breaching the four Lower Snake River dams, we support efforts to ensure the long-term health of salmon. Rather than a relentless and single-minded attack on dams there is much that can be done—habitat restoration, predator control, hatchery updates, scientific study of the dismal ocean conditions that are putting many salmon species, here and across the Pacific and the Atlantic, at risk on free running streams and those that have dams. With so many projects now funded and underway there is a lot to be learned.

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.

Thank you.



Alex McGregor, Chairman

Cc: Leslie Druffel, Outreach Director  
Hali Gruber, Legislative Director, Congresswoman McMorris Rodgers  
Neil Maunu, Executive Director, Pacific Northwest Waterways Association  
Michelle Hennings, Executive Director, Washington Association of Wheat Growers  
Casey Chumrau, CEO, Washington Grain Commission  
Stacey Satterlee, Idaho Grain Producers Association  
Amanda Hoey, CEO, Oregon Wheat

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<sup>6</sup> [https://www.capitalpress.com/opinion/editorials/editorial-secrecy-serves-no-purpose-in-snake-river-dam-litigation/article\\_5c6bc810-7a8b-11ee-8208-9b6b69268736.html](https://www.capitalpress.com/opinion/editorials/editorial-secrecy-serves-no-purpose-in-snake-river-dam-litigation/article_5c6bc810-7a8b-11ee-8208-9b6b69268736.html) ; Nov 9, 2023

<sup>7</sup> Mehaffey, K.C., “Proposed Stay in CRSO Lawsuit Defended in New Filing”, *Clearing Up*, January 19, 2024, No. 2141



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January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair  
Committee on Energy & Commerce  
U.S. House of Representatives  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
Committee on Energy & Commerce  
U.S. House of Representatives  
Washington, DC 20515

The Honorable Jeff Duncan  
Chair  
Subcommittee on Energy, Climate &  
Grid Security  
U.S. House of Representatives  
Washington, DC 20515

The Honorable Diana Degette  
Ranking Member  
Subcommittee on Energy, Climate & Grid  
Security  
U.S. House of Representatives  
Washington, DC 20515

RE: January 30, 2024, Committee Hearing on Snake River Dams

Ladies and Gentlemen,

Thank you for this opportunity to speak into the record concerning the importance of the hydroelectric dams on the Columbia and Snake Rivers in the Pacific Northwest (PNW). As a representative of agricultural retailers who supply farmers in the region, and also as a native of the PNW, I have personally witnessed the importance and value of the dams in the Columbia-Snake River system.

It's frankly unfathomable to me how anyone who claims to be interested in low-carbon renewable energy, reducing carbon emissions associated with transportation, efficient use of fuel, economic growth and competitiveness, food security or quality of life for residents can even entertain the extreme idea of breaching those dams. Countless reports and studies – the most recent by Washington Senator Patty Murray and Washington Governor Jay Inslee – have concluded that breaching the dams would inflict unacceptable harm on the region; yet this unfounded idea still apparently has legs.

Let me briefly unpack each of the attributes mentioned above:

- **Renewable energy:** The Biden Administration has put an enormous amount of effort and taxpayer dollars into transitioning the economy away from fossil fuels. One of the best sources of low-carbon renewable energy is hydropower, and it doesn't require any new investment because that work has already been done. Maintenance of the locks, dams and river channel is all that is required to keep generating this environmentally friendly low-cost power. Not only does this electricity power much of the PNW economy, but if the Administration's vision for converting motor vehicles to electricity is to come true, even more renewable power will be necessary to charge those vehicles. Reducing that production by breaching dams would be a monumental mistake.

- **Emissions from transportation and efficient use of fuel:** The barge transportation system enabled by the Columbia and Snake River dams provides a significant economic benefit in efficient freight and an environmental benefit in the form of reduced fuel consumption and road wear. Each barge on the river system replaces either 35 jumbo hopper rail cars or 134 trucks<sup>1</sup> to haul the same amount of product, whether that product is wheat moving downriver destined for world markets or fertilizer and fuel moving upriver to the inland northwest. Breaching the dams would shift that transportation load to a rail system that is already having difficulty providing reliable and timely service. Moving it to trucks would result in substantially more wear on highways – if drivers for those trucks could be found at all. Either shift would result in more fuel consumed to move a ton of commodity and more resulting greenhouse gas emissions. One gallon of diesel fuel can move a ton of commodity 647 miles by barge, but only 477 miles by train and 145 miles by truck<sup>2</sup>.
- **Economic growth & competitiveness.** Inexpensive and renewable hydropower, efficient transportation and irrigation water are essential components of the PNW economy. Much of the inland northwest high-value crops like grapes, apples or potatoes depend on irrigation water from the river system. Efficient competitive transportation to world markets is a vital link to remain competitive in those markets. The United States needs to invest *more* in infrastructure to ensure our ongoing competitiveness, not let the system deteriorate through lack of investment and certainly not destroy it intentionally through breaching.
- **Food security.** Much of the nation’s agricultural bounty that is exported moves through the Columbia-Snake River System. In the 2019/20 and 2020/21 marketing years, more than 55% of all wheat exports from the United States moved through this system<sup>3</sup>. Corn and soybeans from the Midwest also move to export destinations through the Columbia-Snake system, and the presence of barge transportation in the system maintains competitive pressure on rail rates for those movements.
- **Quality of life.** Recreation is one of the significant benefits of the dams on the Columbia-Snake River system. Individual boating and fishing and commercial river cruises make a meaningful contribution to the economy which would not exist if the dams did not make the channel navigable.

Salmon runs also are an especially important component of the northwest economy and culture, particularly for the Native American tribes who live there. The tribes have invested in hatcheries and habitat projects in cooperation with other regional interests to support the runs. All of the dams in the Lower Columbia and Snake Rivers have fish passage, and no doubt this function can be further improved with investments in new technology and systems.

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<sup>1</sup> Pacific Northwest Waterways Association – *Columbia Snake River System Facts*. <https://www.pnwa.net/wp-content/uploads/2022/08/CSRS.pdf>

<sup>2</sup> The Maritime Executive – *Barge Transport Wins on Fuel Efficiency*. <https://maritime-executive.com/article/barge-transport-wins-on-fuel-efficiency>

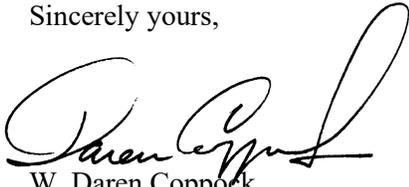
<sup>3</sup> Washington Association of Wheat Growers – *Facts about U.S. Wheat Exports and the Columbia Snake River System*. <https://www.wawg.org/facts-about-u-s-wheat-exports-and-the-columbia-snake-river-system/>

Chair Cathy McMorris Rodgers  
Ranking Member Frank Pallone  
Chair Jeff Duncan  
Ranking Member Diana DeGette  
January 29, 2024  
Page 3 of 3

The bottom line is that ways can be found through innovation and cooperation to have the benefits of the dams and healthy salmon runs, but to do that we must move beyond the impractical and ruinous idea of dam breaching. Economic interests will be much more willing to contribute if they don't find it necessary to defend themselves from extreme proposals that should have been permanently dismissed decades ago.

Thank you for holding this hearing. Hopefully it will be a turning point away from contentious controversy toward cooperation on practical solutions that will work for everyone.

Sincerely yours,

A handwritten signature in black ink, appearing to read "W. Daren Coppock". The signature is fluid and cursive, with a large loop at the end.

W. Daren Coppock  
President & CEO



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chairwoman  
House Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
Chairman  
House Energy, Climate and Grid Security  
Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana Degette  
Ranking Member  
House Energy, Climate and Grid Security  
Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

**RE: Lower Snake River Dam Removal**

Dear Chairwoman Rodgers, Chairman Duncan, Ranking Member Pallone and Ranking Member Degette,

Waterways Council, Inc. (WCI) writes to express our opposition to the removal of dams on the Lower Snake River. WCI was established to advocate for a modern, efficient, and well-maintained inland waterways transportation system which relies on a network of lock and dam infrastructure. Our membership consists of 180 organizations representing inland waterways operators, shippers, and America's skilled building trades.

America's inland waterways system is a crucial component of our Nation's agriculture, energy, and manufacturing supply chains. More than 60% of the Nation's grain exports move by barge, helping our agricultural exports stay competitive in global markets. Moving football field-sized cargoes across tens of hundreds of miles via the inland waterways also burns less fuel than other modes of surface transportation, providing 675 ton-miles/gallon compared to 472 ton-miles/gallon for rail and 151 ton-miles/gallon for tractor trailers.

As the largest wheat export gateway in the America, the Columbia Snake River System is a critical component of the inland waterways system and relies on a network of federal dams and locks that enable barge traffic to travel from the mouth of the Columbia River in Oregon to Lewiston, Idaho. Breaching dam infrastructure would end river transportation on the Lower Snake River and have devastating economic, societal, and environmental consequences on agriculture and communities. Without the option to move commodities by barge, farmers will have to shift their freight distribution network to more expensive and less environmentally friendly long-haul trucking or rail service. The increased demand for alternative and more costly modes of transportation will drive up freight rates and devastate America's competitiveness in



**WATERWAYS**  
COUNCIL, INC.

the global agricultural market as commodities that are low in value per ton, like grain, are very sensitive to freight rates. Given the significant negative consequences dam removal will impose on our Nation's economy and global competitiveness coupled with the dramatic increase in greenhouse gas emissions that would result from diverting barge traffic to road or rail, WCI opposes removing dams on the Lower Snake River.

Sincerely,

A handwritten signature in black ink, appearing to read 'T-Z', is positioned below the word 'Sincerely,'.

Tracy Zea  
President and CEO  
Waterways Council, Inc.

cc: The Honorable Bruce Westerman, Chairman, House Natural Resources Committee  
The Honorable Doug Lamborn, Vice Chairman, House Natural Resources Committee  
The Honorable Raul Grijalva, Ranking Member, House Natural Resources Committee  
The Honorable Sydney Kamlager, Vice Ranking Member, House Natural Resources Committee



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chairwoman, Committee on Energy and  
Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Frank Pallone  
Ranking Member, Committee on Energy and  
Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chairman, Energy, Climate, and Grid Security  
Subcommittee  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Diana DeGette  
Ranking Member, Energy, Climate, and Grid  
Security Subcommittee  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chairs Rodgers and Duncan and Ranking Members Pallone and DeGette:

On behalf of the Washington Association of Wheat Growers (WAWG), thank you for the opportunity to provide a letter for the record on the House Energy and Commerce Committee Energy, Climate, And Grid Security Subcommittee hearing titled "Exposing President Biden's Plan To Dismantle The Snake River Dams And The Negative Impacts To The United States."

WAWG represents over 4,000 producers across the state of Washington, who rely on the Columbia Snake River System (CSRS), and the Lower Snake River Dams (LSRD) in particular, for their livelihoods. The CSRS system moves a significant volume of wheat, corn, soybeans, lumber products, and crop inputs. Specifically, wheat growers in the Pacific Northwest (PNW) utilize the river system daily. In fact, Washington is the fourth largest wheat exporter in the nation<sup>1</sup>, exporting 90% of the wheat produced in the state. <sup>2</sup> Nationally, more than 55 percent of all U.S. wheat exports move through the PNW by barge or rail. Specifically, 10 percent of wheat

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<sup>1</sup> State Agricultural Trade Data. USDA ERS - State Agricultural Trade Data. (2022).

<https://www.ers.usda.gov/data-products/state-agricultural-trade-data/>

<sup>2</sup> Fortenbery, T. R., & Nadreau, T. P. (n.d.). Contribution of Wheat Production to the Washington

Economy. <https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:43500d5f-3bf2-4b1d-a6bc-670d94acc4b3>



that is exported from the United States passes through the four locks and dams along the Lower Snake River<sup>3</sup>.

The wheat industry along with key partners at the U.S. Department of Agriculture have spent decades building strong relationships with international trading partners. The reliability of U.S. wheat exports can largely be attributed to our world class infrastructure system, which allows us to ship products safely and efficiently around the world. Should that infrastructure be disrupted, we will put those relationships at risk; therefore, weakening the United States' standing in the global marketplace.

In addition, some have claimed that the transportation benefits of the Dams can be replaced; however, we believe that is not an accurate assessment. Other alternatives such as rail may not be feasible in certain areas and additional trucks on the road could increase pollution and congestion on the roads. In fact, one loaded covered hopper barge carries over 58,000 bushels of wheat. It would take 113,187 semi-trailers each year carrying 910 bushels of wheat to replace the 103 million bushels shipped on the Snake River via barge annually. That is 310 more trucks each day, making round trips to the Tri-Cities, 365 days per year.<sup>4</sup> Notably, there is already a driver shortage in the trucking industry so finding people to drive trucks will likely be virtually impossible.

Moving forward, we believe that any decisions made should be based on sound science and reliable research. A 2020 Environmental Impact Statement (EIS) released jointly by the Army Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration revealed that removing the LSRD goes against environmental statutes and public interests. The report indicated that continued operation of the dams, along with maintaining and improving fish passage technology and implementing operational water management flexibilities to improve flow would “provide the most balanced way to fulfill all of the CRS [Columbia River System] projects’ congressionally authorized purposes, meets a majority of the CRSO EIS [Columbia River System Operations Environmental Impact Statement] objectives, minimizes and avoids adverse impacts to the environment, benefits tribal interests and treaty resources, and provides

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<sup>3</sup> Facts about U.S. wheat exports and the Columbia Snake River system. U.S. Wheat Associates. (2022, March 28). <https://www.uswheat.org/wheatletter/facts-about-u-s-wheat-exports-and-the-columbia-snake-river-system/>

<sup>4</sup>Compare cargo capacities. US Army Corps of Engineers - Walla Walla District . (n.d.). <https://www.nww.usace.army.mil/Portals/28/docs/navigation/CargoComparison.pdf>



additional improvements for ESA-listed species."<sup>5</sup> As such, we strongly believe that dams and salmon can and do co-exist.

The opportunities to ensure salmon populations continue to grow do not have to come at the cost of destroying the integrity of the CSRS. We support investments made at the federal and state level including the installation of mechanisms along the river to ensure salmon runs remain intact, culvert removal, fish habitat restoration, toxin reduction, and predator abatement.

As farmers are already faced with significant increases in cost of production, the importance of the LSRD cannot be overstated. In addition, we have grave concerns regarding the precedence that dam breaching could set on inland waterways across the country. WAWG stands ready to work with other stakeholders and decision makers to ensure farmers across the country have access to critical inland waterways needed to transport their goods.

Sincerely,

A handwritten signature in black ink, appearing to read 'Michelle Hennings'.

Michelle Hennings  
Executive Director

A handwritten signature in black ink, appearing to read 'Anthony Smith'.

Anthony Smith  
President

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<sup>5</sup> U.S. Army Corps of Engineers – Northwestern Division, Bureau of Reclamation – Columbia-Pacific Northwest Region, & Bonneville Power Administration (DOE/EIS-0529). (2020, September). Columbia River System Operations Environmental Impact Statement Record of Decision. <https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll7/id/16248>



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## Helena Agri-Enterprises, LLC

Northwest Division Office  
1330 E Kartchner  
Pasco, WA 99301  
Phone 509-544-0417  
Fax 509-544-0418

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The Honorable Cathy McMorris Rodgers  
Chair  
Committee on Energy & Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Frank Pallone  
Ranking Member  
Committee on Energy & Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chair  
Subcommittee on Energy, Climate &  
Grid Security  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Diana Degette  
Ranking Member  
Subcommittee on Energy, Climate &  
Grid Security  
U.S. House of Representatives  
Washington, D.C. 20515

January 29, 2024

Dear House Energy and Commerce Committee,

On behalf of Helena Agri-Enterprises, LLC (Helena), we appreciate the opportunity to comment on the proposal to remove the dams of the Lower Snake River. Helena has been one of the foremost agricultural formulators and distributors in the United States for more than 65 years. Our business covers both rural and urban areas across the country, and our longevity and geographic diversity have provided us a unique perspective on the impacts of the modernization of agriculture and environmental stewardship. With this in mind, we have carefully reviewed the recent proposals regarding the removal of dams on the Lower Snake River (LSR) and would like to share our key concerns.

The food and fiber production of the region relies heavily on the LSR for importing materials such as fertilizer and exporting key crops such as wheat. Removal of these dams will result essentially end the use of the LSR as a cargo lane, and force Helena, growers and other agricultural companies to use other forms of transportation for the movement of products into and out of the region. As it stands, there are not nearly enough trucks, trains and labor to replace the volume of cargo moved through the LSR. A recent study conducted by the Pacific Northwest Waterways Association and the FCS Group concludes that this proposal would result in \$2.2 billion in additional transportation costs. This means hundreds of thousands of truckloads annually, in addition to tens of thousands of new railcar shipments. The increase in traffic would require massive infrastructure improvements, which is estimated to cost around \$1.6 billion. And even if necessary funds were allocated for the construction and the infrastructure was built to handle the increased traffic flow, there are serious questions as to whether the roads, railways, grain storage and terminals could truly support the type of traffic this would create.

Aside from food production and farm inputs, businesses and families in the Pacific Northwest and bordering states often rely on energy tied to the LSR dams for reliable, affordable power generation. With the phasing out of coal fired and natural gas fired peaking plants in Washington and Oregon, there are no suitable replacements for the power provided by the LSR dams. Having just gone through an extended period of subfreezing temperatures many parts of the country, we saw that solar/wind generation, coupled with batteries, is not a reliable and/or effective solution to replace the hydro-electric power generated by the LSR dams. In addition to resiliency issues, it is also concerning that the cost of wind/solar could reach levels 5-6 times higher than other electrical sources. While subsidies and production have brought costs down, production costs and supply chain challenges associated with importation of goods indicates that costs are likely to increase.

The agricultural industry has subscribed to key sustainability practices long before they were discussed in the light they are today. We have continued to modernize, innovate and do more with less. The earth, its soil and the resources that use are critical to the sustainability of agriculture in the Pacific Northwest, and the country. That said, this proposal would seemingly result in a notable increase in carbon emissions. The carbon footprint of more trucks and trains would staggeringly increase greenhouse gas emissions significantly negating any progress the citizens of Washington, Oregon and Idaho have made to reduce its carbon footprint.

We encourage the Committee to critically review this proposal and ask that you thoughtfully assess all impacts of the proposal. We are eager to find a mutually beneficial solution that benefits efforts to protect the endangered salmon population, while also ensuring that communities across the region do not suffer through irreparable damage to the food production and energy consumption sectors. Thank you for your attention and thoughtful consideration.

Best Regards,



Brandon Byington  
Northwest Division Manager  
Helena Agri-Enterprises, LLC  
Pasco, WA 99301



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Frank Pallone  
Ranking Member  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chair  
Subcommittee on Energy, Climate, Grid  
Security  
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Washington, D.C. 20515

The Honorable Diana Degette  
Ranking Member  
Subcommittee on Energy, Climate, Grid  
Security  
U.S. House of Representatives  
Washington, D.C. 20515

## **RE: Subcommittee Hearing on Exposing the Plan to Dismantle the Snake River Dams**

Far West Agribusiness Association is pleased to provide background information on the impacts to our industry should the lower Snake River dams be removed through executive action by the Biden administration. Far West represents fertilizer and agricultural input retailers, distributors and manufacturers in a five-state region of the Pacific Northwest. Our members use the Columbia River transportation system to move fertilizer, potash and other critical agricultural inputs up and down the Columbia and Snake Rivers. Removing dams on the Lower Snake would devastate our members and ruin the economic stability of the region.

Here is a list of just some of the impacts of dam removal to our businesses and to the economic wellbeing of one of the nations most important agricultural production regions. Many of these impacts come from a study conducted by the FCS Group in 2023, on behalf of the Pacific NW Waterways Association.

1. The Pacific Northwest is more trade dependent per capita than any other region of the United States. As a major supplier of the world's wheat, 90% of the region's crop is exported and the river transportation system is critical to the movement of this most important crop. This volume cannot be shifted to truck or rail. (Alex McGregor, June 2023 testimony to Committee on Natural Resources)



2. The cost of breaching is staggering while the impacts to the long-term economy are devastating. The breaching and related mitigation costs of four Lower Snake River Dams are conservatively expected to range from \$10.3 to \$31.3 billion (expressed in discounted 2022 dollars).
3. It is now clear that LSR dam breaching would have detrimental economic, climate and social justice impacts on local governments, communities, property owners, farmers, and businesses in Washington, Oregon, and Idaho.<sup>1</sup>
4. With the elimination of the Snake River barge transportation option and reduction in the aquifers that over 7,640 farms in Washington, Oregon, and Idaho depend upon, LSR dam breaching will fundamentally change this tri-state region.
5. The removal of four lower Snake River dams will increase transportation and related environmental costs in the U.S. by well over \$7.3 billion over 30 years. This equates to a net present value of approximately \$4 billion (based on a standard 7.0% annual discount rate).
6. Removing the Snake River locks would cause diesel fuel consumption to increase by nearly 5 million gallons per year as barges are replaced by less efficient truck-to-rail shipments.
7. Related engineering studies have concluded that over \$1.3 billion in infrastructure investments would need to be constructed in the near term to address transportation, railroad, grain storage capacity, and local infrastructure changes that would result with LSR dam breaching.
8. Negative air quality emissions would result from dam breaching— creating unintended consequences. Shifting commodity flows from barge to truck and rail will result in increases in NOx, CO2, and other harmful emissions by over 1,251,000 tons per year (source: Appendix C, FCS Group)

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<sup>1</sup> FCS Report. Findings based on Lower Snake River Benefit Replacement Final Report, August 2022, a study prepared for Governor Jay Inslee and U.S. Senator Patty Murray of Washington.

In conclusion, breaching the dams on the Lower Snake River will have little impact on the survival of endangered salmon but will have a long term, generational impact on the viability of the region's economy and the wellbeing of its residents.

Sincerely,

A handwritten signature in black ink, appearing to read "Craig Smith". The signature is fluid and cursive, with a long horizontal stroke extending to the left.

Craig Smith  
Executive Director



January 29, 2024

The Honorable Cathy Mc Morris-Rodgers  
House of Representatives  
2188 Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
House of Representatives  
2229 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
House of Representatives  
2107 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
House of Representatives  
2111 Rayburn House Office Building  
Washington, DC 20515

**RE: Subcommittee on Energy, Climate, & Grid Security hearing titled “Exposing President Biden’s Plan to Dismantle the Snake River Dams & the Negative Impacts to the United States.”**

Dear Madam Chairwoman Mc Morris-Rodgers, Mr. Chairman Jeff Duncan, & Ranking Members:

Benton PUD is an electric distribution utility located in Kennewick, Washington with over 57,000 service connections. We are one of 127 not-for-profit utilities served by the Bonneville Power Administration (BPA) with statutory preference rights to the electricity generated by the Federal Columbia River Power System (FCRPS).

As you know, contrary to the talking points of anti-hydro interests, the Lower Snake River (LSR) **dams are not surplus, outdated, or high cost.** And for those of us who have sincerely engaged in efforts to better understand how salmon and dams can continue to co-exist, while working to improve conditions and outcomes over time, it is clear “the science” is far from settled; and certainly, is not adequate to justify radical plans like breaching the LSR dams.

Like most consumer-owned utilities served by BPA, Benton PUD relies on the hydro and nuclear generating resources in the FCRPS portfolio for 100% of our wholesale electricity. The fact is, the Lower Snake River (LSR) dams, like all federal dams managed by BPA, are foundational to the reliable (firm) and low-cost electricity we count on every day. And when you add the Washington and Oregon state mandates for 100% carbon-free electricity, the value of the LSR dams goes up exponentially.

We are deeply grateful to all of you for taking a stand against the secretive partnership forged by the Biden Administration with anti-hydro interests, which on its face is an egregious act. But for those of us in Washington and Oregon, the fact our own elected officials and agencies have joined

forces with the federal government in closed-door meetings to “sell us down the river” is truly infuriating.

Attached, for the record, is an article I recently published on Substack titled, “Sawing Off the Branch We’re Sitting On and Deepening Our Dependence on Northwest Hydro for ‘Blackout Insurance’ “. The article was published on January 13, 2024, and has garnered more than 4,350 views so far with overwhelmingly positive and supportive feedback.

Publishing on Substack is part of our community education and outreach efforts to better inform our customers and regional partners using real data and information to push back against federal and state energy policies that are frankly detached from reality.

I trust you will find the article to be helpful in the subject deliberations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rick Dunn", with a stylized flourish extending to the right.

Rick Dunn, General Manager  
Benton PUD

# Sawing Off the Branch We're Sitting On and Deepening our Dependence on Northwest Hydro for 'Blackout Insurance'

Washington and Oregon have Teamed with the Federal Government to Undermine the Very Hydropower on Which 100% Clean Electricity Mandates were Based



RICK DUNN, P.E.  
JAN 13, 2024

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Reliable electricity is critical to every aspect of modern civilization, including food, shelter, medical care, education, and entertainment. 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*.

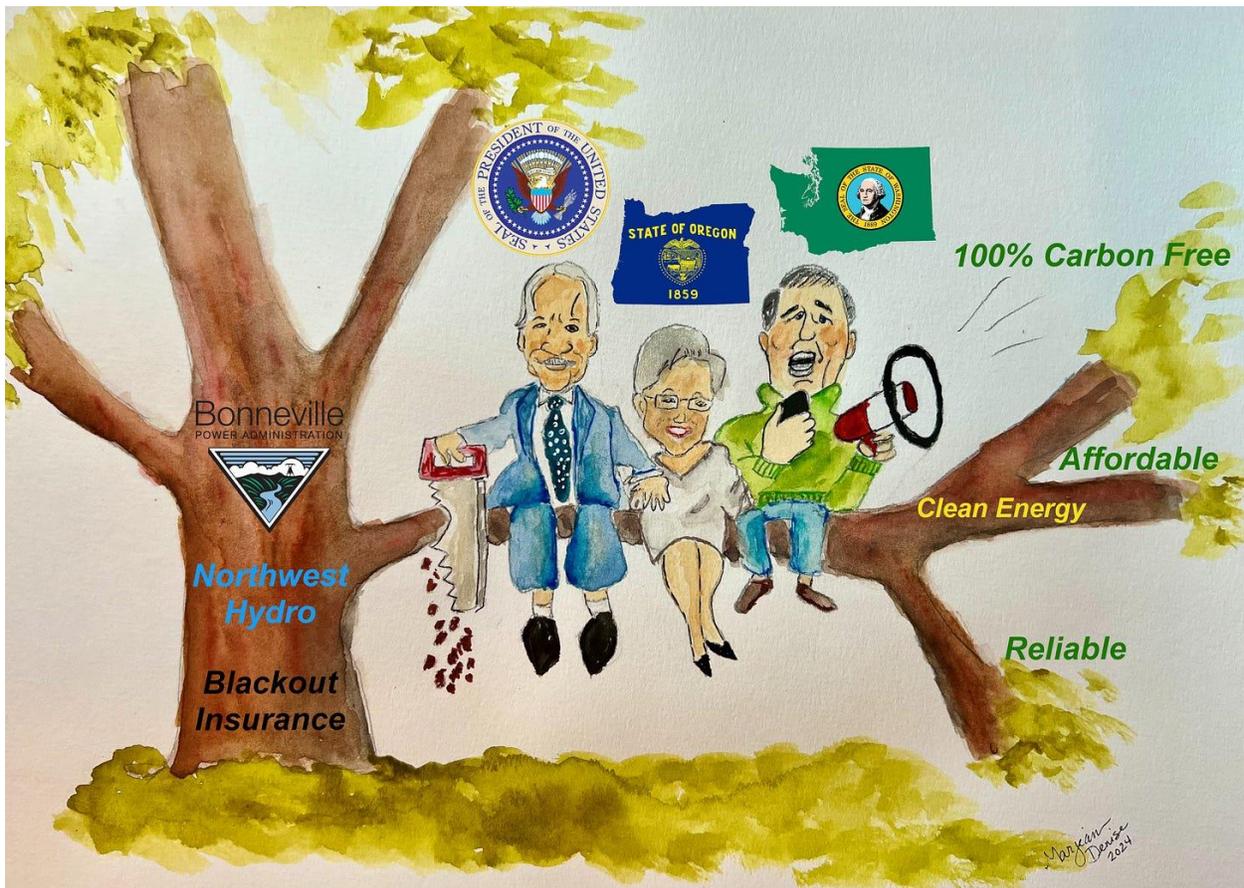
Failure to “keep the lights on” can be a *matter of life and death* and will always be the metric by which utilities will receive their harshest critiques and ultimate judgments.

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## ***CLEAN ENERGY LAWS & THE POLITICS OF HYDRO***

Unfortunately, overly aggressive clean energy laws in Washington and Oregon have boxed many northwest utilities into a corner by taking reliable technologies off the table before we have dependable carbon-free replacements like nuclear in place.

One frustrating irony is that some of the same entities who helped force-feed a deepening dependence on wind and solar power, are continuing to irresponsibly call for the *erosion of carbon-free hydroelectric generating capacity*. The very hydropower on which Washington and Oregon’s 100% carbon-free electricity laws and bragging rights were established.



**Art Credit: Marjean, my beautiful wife and best friend for more than 40 years**

And rather than celebrating existing nation-leading clean and low-cost energy capabilities, highly-funded special-interest-groups have capitalized on a shift in political power, together with emotionally charged arguments and pseudoscience, to undermine hydropower; while *falsely promoting* wind and solar technologies backed up by batteries as environmentally benign, low-cost and operationally equivalent replacements.

While the general public is likely unaware, it's important citizens understand political leaders and agencies in Washington and Oregon have been working behind the scenes for a number of years to diminish hydropower through regulatory actions like endorsement of *risky and excessive spillway flows*.

The next time you drive by a hydroelectric dam and observe frothy downstream river conditions created by multiple spillway waterfalls, keep in mind no electricity is being generated with this water. And as a consequence of high volumes of plunging water, the total dissolved gas (TDG) levels in the river are increasing.



McNary Dam on Columbia River. Photo courtesy of U.S. Army Corps of Engineers

And when TDG levels get too high, salmon and other aquatic species can be *injured or even die*. In the case of salmon smolt, high TDG levels can cause gas bubble disease (GBD), a non-infectious, physically induced trauma.

While salmon science is complex it is important to know, with support from Washington and Oregon agencies, federal dam operations have been changed in recent years to allow long periods of 125% TDG levels; which is *well above the 110% criteria* previously enforced by state water quality regulators to avoid acute levels of GBD and the salmon mortality that can come with it.

It has yet to be determined whether dangerously high spill is helping or hurting salmon. But one thing is for sure, these risky operations are reducing the amount of electricity generated by dams.

Additionally, over the past three years, state officials in Washington and Oregon have helped set the stage for *possible future degradation* of hydropower through a much broader than intended application of water temperature regulations included in the federal Clean Water Act.

In summary, US Environmental Protection Agency (EPA) water temperature regulations are now being unfairly applied to each of the eight federal dams located on the lower portions of the

Columbia and Snake rivers. While nobody wants river temperatures to be too high for salmon survival, Columbia and Snake River temperatures at the Canadian and Idaho borders are often too warm to meet state requirements. So the *standards may be impossible to meet* and may set the dams up to fail.

And as if it wasn't going to be hard enough for Washington and Oregon utilities to balance affordability and reliability while meeting the electrify-everything clean energy policies of their respective states, we are now forced to contend with an unprecedented effort by our states to coordinate with the federal government in *undermining hydropower like never before*.

This coordination culminated in the Biden Administration's public release of a United States Government (USG) "commitments" document December 14, 2023 that puts the *full force of the federal government* behind further eroding support for hydropower by going as far as advocating for future breaching of the Lower Snake River (LSR) dams.

### **Leaked 'secret plan' reveals Biden admin's \$1B-plus proposal preparing for Snake dam breaching**



Source: Annette Cary, Tri-City Herald, November 28, 2023

While it depends on who you ask as to whether LSR dam breaching is a real possibility, *anti-hydro interest groups are publicly celebrating* the USG commitments as a "roadmap" to do just that. And no matter how you slice it, *LSR dam breaching has now been normalized* by the Biden Administration as one of several "center piece actions" required to restore salmon runs to non-specific "healthy and harvestable abundances" while claiming "replacement energy" in the form of intermittent and variable wind and solar can provide the basis for a breaching decision.

To add insult to injury, the Biden Administration developed their comprehensive plan using a legal strategy which *intentionally excluded utility and hydropower interest groups* from their negotiations with anti-hydro entities, four tribal nations, and yes, once again, the states of Washington and Oregon.

Scott Simms, CEO & Executive Director of the Public Power Council summed it up succinctly in a December 14, 2023 press release . . . “Almost two years of a closed-door process that began with a pro-dam breach agenda from the US Government ended today with, not surprisingly, *a blueprint for how to devalue, deplete and ultimately demolish* our region’s clean, renewable federal hydro power projects.”

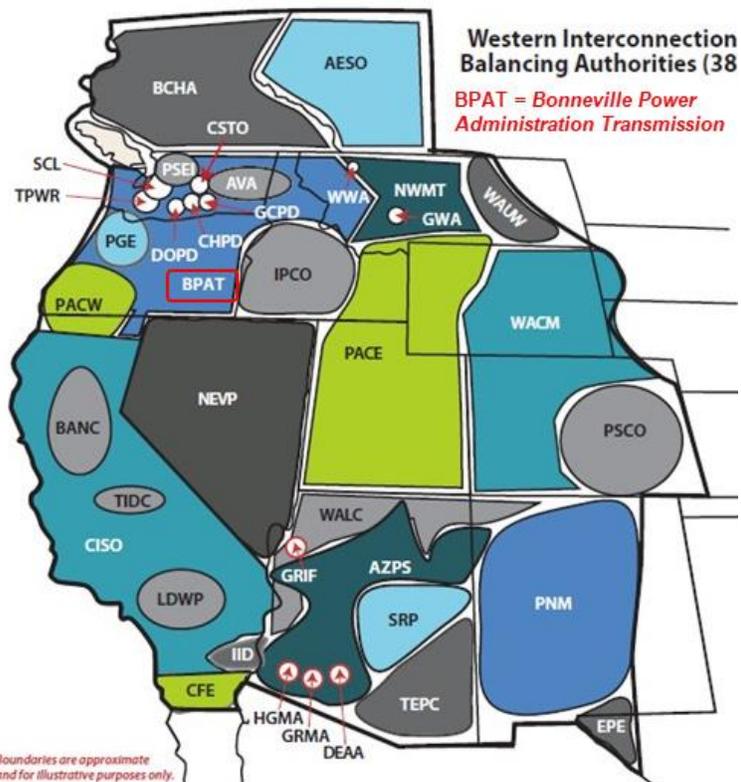
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## ***SO HOW BIG A DEAL IS NORTHWEST HYDRO?***

Not only would LSR dam breaching eliminate sources of emissions-free electricity, it would also remove 3,483 nameplate megawatts (MW) of generators that historically have delivered as much as 2,500 MW of dependable generating capacity when it’s most needed.

While anti-hydro interests always downplay the annual amount of electricity produced by the LSR dams, they fail to mention the transmission grid stability services and up to **25% of operating reserves** these dams provide to the Bonneville Power Administration (BPA). Reserves are the backup capability standing by to meet critically high demand during a polar-vortex winter weather event or when other generators experience an unplanned outage. Basically, operating reserves are “*blackout insurance*”.

Not only does BPA market the output of the Federal Columbia River Power System (FCRPS) to 142 customers (including **127 not-for-profit utilities**) located throughout the Northwest who count on the electricity derived from 31 hydroelectric dams, they are also one of 38 balancing area authorities (BAA) in the western power grid.



Source: Western Electricity Coordinating Council; BPA is a federal agency responsible for marketing the output of 31 federal dams and the CGS nuclear plant as well as operating 75% of the Pacific Northwest Transmission Grid

BAAs are responsible for coordinating regional exchanges of electricity and for maintaining *minute-by-minute* power grid *demand and supply balance* which is most challenging during extreme temperature and weather conditions.



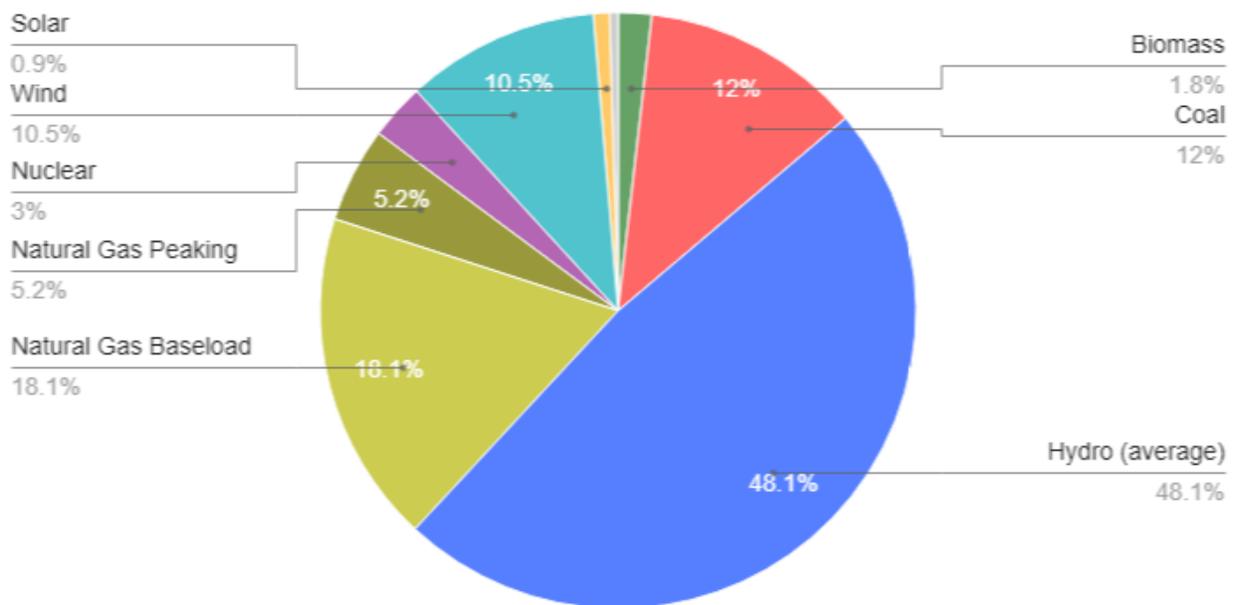
**Demand & Supply Balance is an Unforgiving Law of Power Grid Physics with Blackouts as a Consequence of Failure**

One of the elements included in Biden’s USG commitments and supporting documents is to provide federal funds to form a new Pacific Northwest Tribal Energy Program with the goal of tribal development of between 1,000 MW and 3,000 MW of wind and solar generation backed up by energy storage; which in theory could be used as *replacement power* for the LSR dams in the event Congress authorizes breach in the future.

Setting aside the legal arguments as to why the USG cannot commit to “sole sourcing” BPA replacement power, lets take a look at the reality of BPA’s balancing area responsibilities today and what it would look like to “replace” the LSR dams with wind and solar farms.

First, it’s helpful to know Pacific Northwest hydro is capable of producing just over 16,000 average megawatts (cal) or almost half of the annual electricity generated in the region. And on average, *BPA’s federal-dams represent around 50%* of the total regional capability or about 8,000 MWa.

**Pacific Northwest Generating Capability: 33,828 MWa\***



Source: Northwest Power and Conservation Council

While these are big energy numbers, when it comes to power grid reliability, *averages are mostly irrelevant*. What counts is what generation shows up during specific hours, on particular days, and under critically high demand conditions.

One of my favorite quotes in recent years is something northwest utility expert and consultant Randy Hardy said during a regional meeting . . . “*averages are the enemy of reliability planning*”. What Mr. Hardy was alluding to is that utilities are expected to deliver electricity around the clock no matter what the weather and with 100% always-on customer expectations. Utility customers will not (and should not) accept that utilities are planning to keep the lights on most of the time, on average.

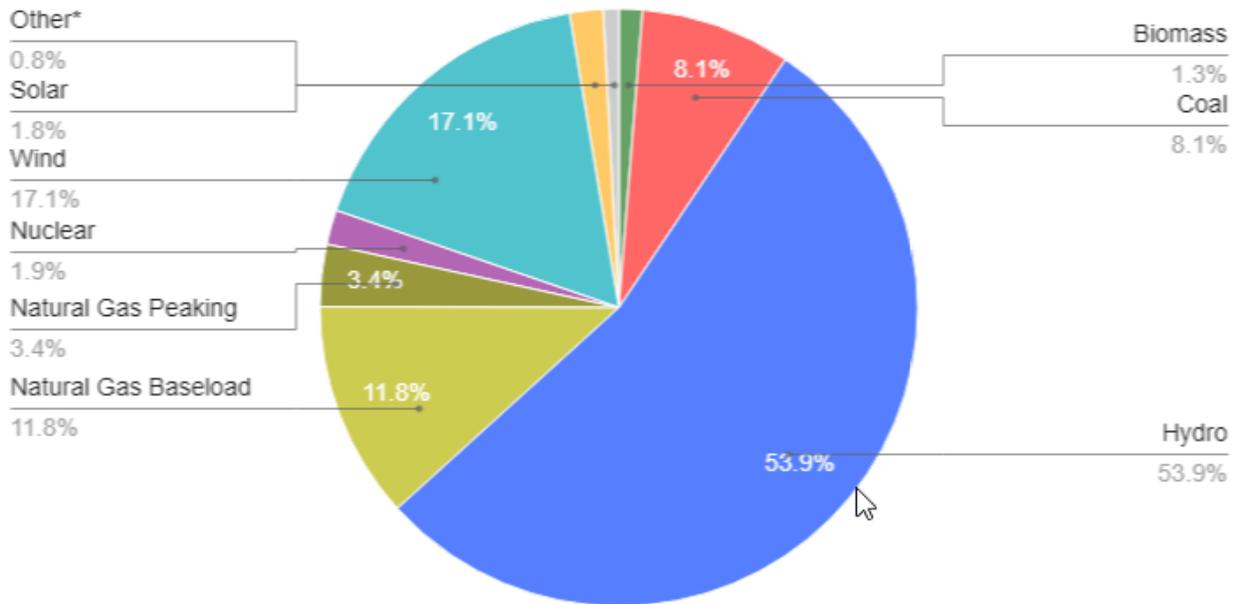
With that said, utilities do not plan the grid to provide 100% reliable power. A common planning standard is referred to as a “1-in-10” which translates to one day (24 hours) in ten years or 2.4 loss-of-load-hours (LOLH) per year, regardless of the magnitude or number of outages. The point of bringing up these numbers is to emphasize that to meet modern grid reliability planning standards, utilities must have generating technologies in place that can be *counted on down to the hour*.

This means generators that have predictable fuel supplies and are *controllable* and capable of operating across a range of outputs optimized for electricity demand currently on the grid and what is forecasted for future days, months, and years. In utility vernacular, generators with these traits are referred to as *dispatchable*.

While this may go without saying, *dispatchable does not include wind and solar* farms which only produce electricity proportionate to wind speeds and the position of the sun in the sky respectively.

In addition to being controllable, dispatchable generators also have the ability to operate at their maximum (nameplate) generating capacity when called upon. Pacific Northwest total hydro nameplate generating capacity is over 34,000 megawatts (MW). Of this amount, BPA manages just over 22,000 MW (65% of the total).

**Pacific Northwest Generating Capacity: 64,340 mw\***



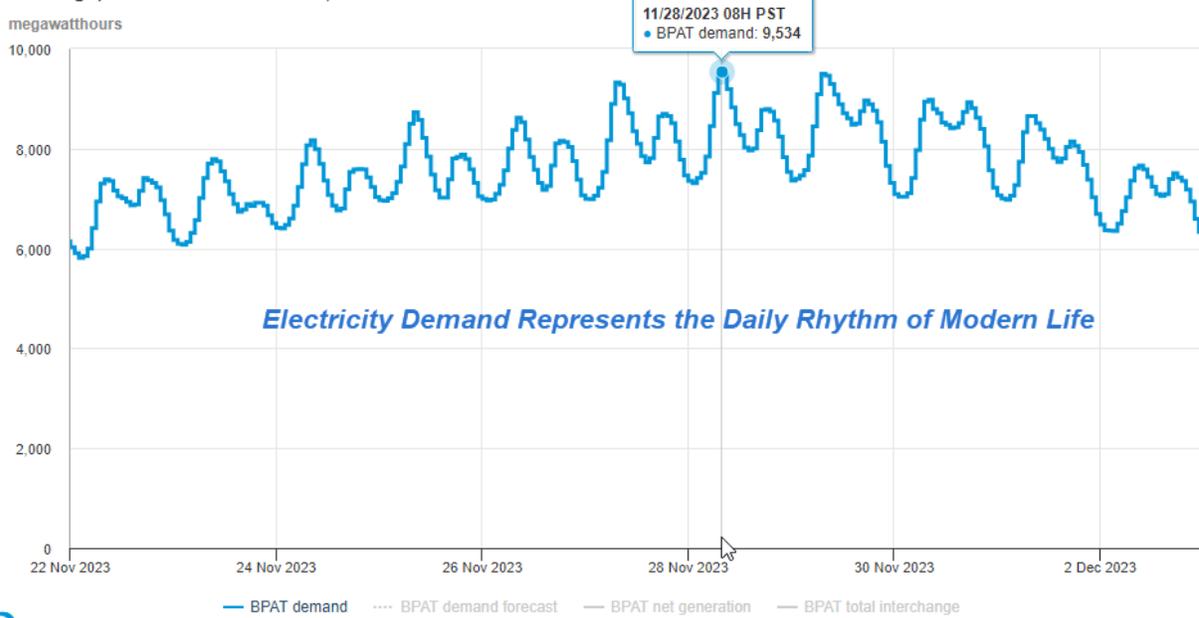
Source: Northwest Power and Conservation Council

While hydropower is a great technology in many ways, it is also a variable generation resource subject to available water supplies and whether turbine-generators are out of service on a scheduled or unscheduled basis.

Given these variables, BPA hydro can be counted on to produce just over 16,000 MW during peak demand hours; however, this level cannot be maintained across all hours due to water constraints. According to BPA’s most recent “Loads and Resources Study” federal hydro can be counted on to produce just over 11,800 MW across the hours of highest winter demand for electricity in January. So clearly, the **2,500 MW provided by the LSR dams is significant.**

Now, let’s take a look at some recent days in the life of the BPA functioning as a Balancing Area Authority (BPAT). While the eleven-day period illustrated in the following graph did not include particularly cold weather, it does provide a recent and real-world example of how critical **controllable generating technologies** like hydro are to keeping the lights on.

**Bonneville Power Administration (BPAT) electricity overview (demand, forecast demand, net generation, and total interchange) 11/22/2023 – 12/2/2023, Pacific Time**



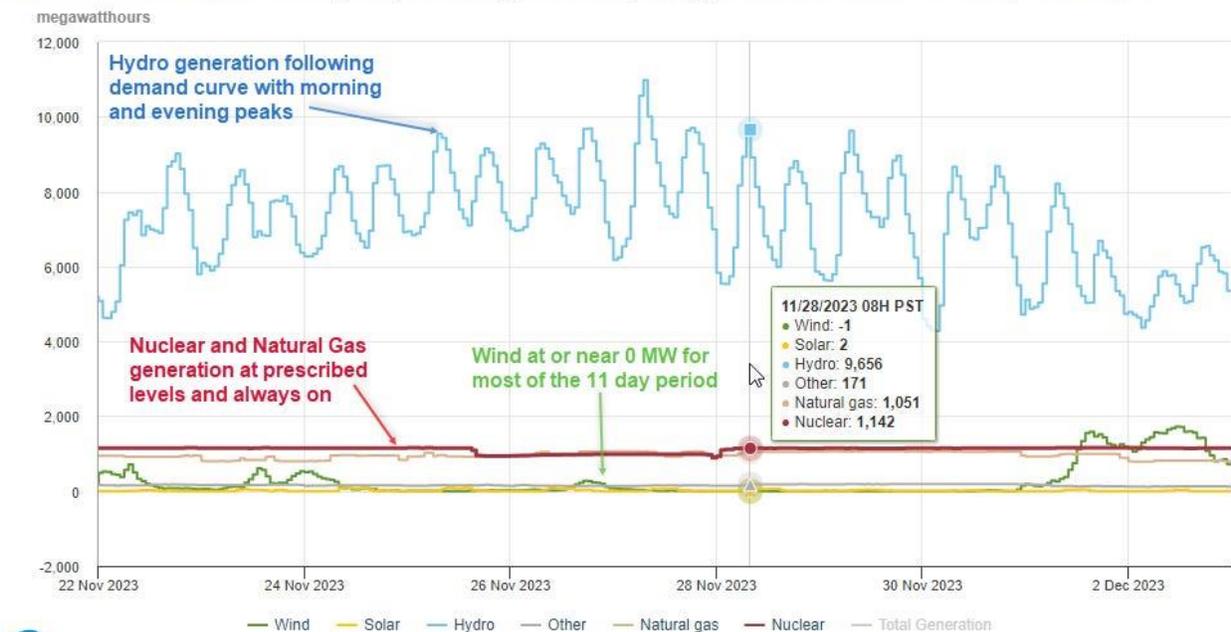
**eia** Data source: U.S. Energy Information Administration

**Only Controllable Generating Technologies Can Provide the Continuous and Perfect Balancing of Demand and Supply Required by Power Grid Physics**

As is always the case, the demand for electricity follows a pattern corresponding to the season of the year and the *daily rhythm of modern life*. In the case of late fall (winter), the daily pattern includes early morning and late evening maximums corresponding to hours of highest residential space heating occurring simultaneously with the use of appliances and other electrical equipment that define the “good life”.

In the previous graph you can see BPAT experienced a maximum demand of 9,534 megawatthours which occurred between 7 am and 8 am on November 28th. And in the next graph, you can see the generation technologies being used by BPAT to achieve demand and supply balance each hour and at the time of maximum demand.

Bonneville Power Administration (BPAT) electricity generation by energy source 11/22/2023 – 12/2/2023, Pacific Time



BPAT Wind Nameplate = 2,827 MW; Solar = 138 MW. Wind increases to maximum of 1,727 MW (61% of nameplate) after peak demand period has passed.

Clearly, hydro dominates the BPAT generation supply stack with the hourly shape of output following the same pattern of the demand curve shown previously. Nuclear which represents the Columbia Generating Station along with natural gas can be seen to be operating in an always on fashion (flat line) with some adjustments to their output to prescribed levels. This operating mode is what is referred to as *base-load* capability.

It should be noted, while BPAT is providing grid balancing services for just over 1,000 MW of natural gas, this generation is *not part* of BPA’s utility customer wholesale power supply portfolio. The same can be said for the vast majority of the 2,827 MW of Wind and 138 MW of Solar. The output from these technologies would normally be part of an exchange BPAT makes with another BAA elsewhere in the region or may be serving a BPA customer utilities’ demand inside the BPAT footprint.

The key take away from reviewing the BPA generation stack is to note hydro is providing *both base-load and demand (load) following* capability.

Additionally, you will note that wind power is supplying *near zero* generation across the majority of the 11 day period with only 61% (1,727 MW) of the nameplate capacity showing up

randomly after the highest demand period has passed. And solar generation within BPAT's footprint is too small at this point to make a difference.

Just imagine how this *multi-day wind drought* scenario would play out during a deeply cold winter weather event without the controllable generating capacity of hydropower. And the idea that 2,500 MW of LSR dam generating capacity can easily be replaced by 1,000 to 3,000 MW of wind and solar backed up by batteries is *clearly suspect*.

In fact, a 2022 study commissioned by BPA revealed, using currently available technologies without the help of new natural gas power plants, it would require an "*impractically large*" 10,600 MW of wind and 1,400 MW of solar to do the job under a deep decarbonization scenario driven by Washington and Oregon clean energy laws. And batteries were shown not to be economical due to "antagonistic" interactions characterized by the inability to store enough energy during periods of simultaneously low hydro, wind and solar output.

And just to get a picture of what this would look like ecologically speaking, the prescribed amount of wind would cover an area equivalent to between *20 and 40 times* the Seattle land area and the solar farms would require more than *4.2 million* individual panels.

Additionally, the wind and solar replacement plan would cost between \$277 to \$517 per megawatt-hour (MWh) compared to the LSR dams which cost between \$13 and \$17 per MWh. This multiple orders of magnitude increase in costs would drive northwest retail electricity rates in 2045 to levels between *34% and 65% higher* than today. The BPA study did show these big increases would be nullified if technologies like advanced nuclear, hydrogen turbines and carbon-capture are available and cost-effective; but there are some *heavy lifts* required to get to that point.

The BPA study also assumed the rest of the Pacific Northwest hydropower system would stay in place and be operated the way it is today. Not under some diminished condition resulting from additional *regulatory constraints* orchestrated by Washington and Oregon, with an assist from the US Government.

Another *critically important* point for citizens and elected officials to understand is that BPA's *firm* (essentially guaranteed), nation-leading, and low-cost output from federal dams is already *100% spoken for* through contractual allocations to their utility customers; i.e. there is no surplus.

This means going forward, ‘routine increases’ in electricity demand of less than ten average megawatts served with BPA power will be priced at their “Tier-2” rate which is currently **72% higher** than their coveted “Tier-1” rate. Tier-1 rates represent the low-cost power the northwest has long been known for that keeps attracting economic development interest. News flash, *there’s none left!*

And as for economic development opportunities associated with electricity intensive manufacturing and industry demanding ten average megawatts or more, BPA offers a “New-Resource” rate which on average is currently **136% higher** than their Tier-1 rate. Suffice it to say, there are no takers to date, at least as far as I know.

While BPA is not the only game in town, their Tier-2 and New-Resource rates are a reflection of the cost utilities can expect to pay to secure additional dependable supply for at least the next four to five years. And after that, all indications are the *glory days* of low-cost electricity in the northwest *are over*.

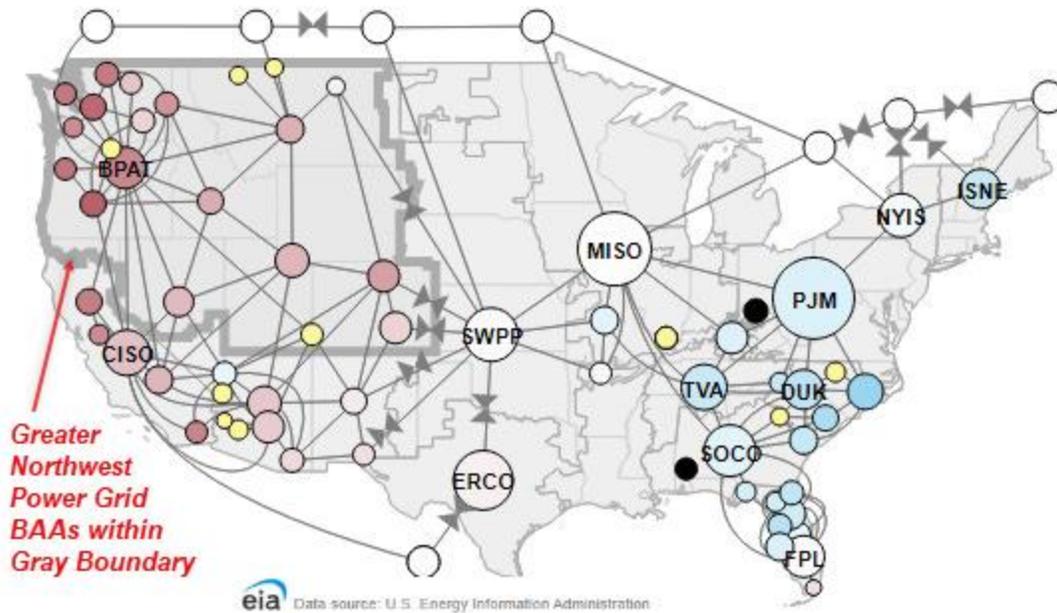
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## ***WE ARE GOING TO LEAN ON NORTHWEST HYDRO AND NATURAL GAS MORE THAN EVER AS COAL SHUTS DOWN***

And if you think Northwest hydropower is only critical to BPA and its utility customers, think again. BPA’s hydro resources along with the other 50% of non-federal hydro located throughout the Pacific Northwest are also critical to big municipalities like Seattle and Tacoma as well as investor-owned utilities (IOUs) who are the *predominant owners* of coal and natural gas power plants in the region.

As planned shutdowns of coal plants proceed and punitive financial penalties included in Washington and Oregon clean energy laws make natural-gas more expensive, IOUs will continue to *hope for surplus hydropower* as a means of economically balancing their demand and supply.

To put this in perspective, let’s look at the same 11-day period previously analyzed for BPAT but expand the footprint to include the aggregate demand and supply balancing for the geographical area shown inside the dark gray boundary on the following U.S. map.

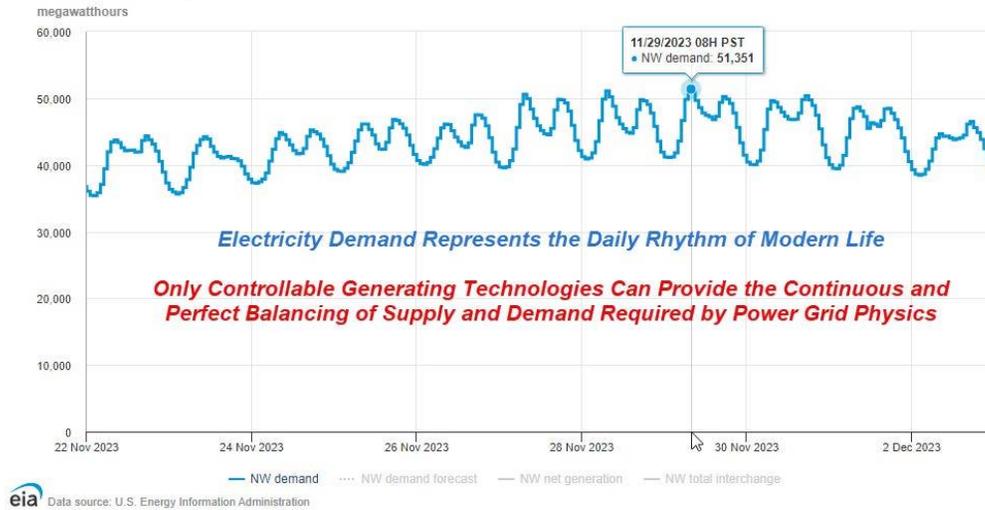


Dark Gray Boundary Line Includes BAAs within Pacific NW as well as Eastern Montana, Northern Nevada, Utah, Wyoming and Colorado

In the highly interconnected power grid illustrated by the BAA map of circles and lines, the lines represent transmission interconnections that allow certain amounts of electricity to flow from one BAA to another. Keep in mind, just because there are transmission lines, doesn't mean electricity can easily be routed precisely where it needs to go. More on that in a future post.

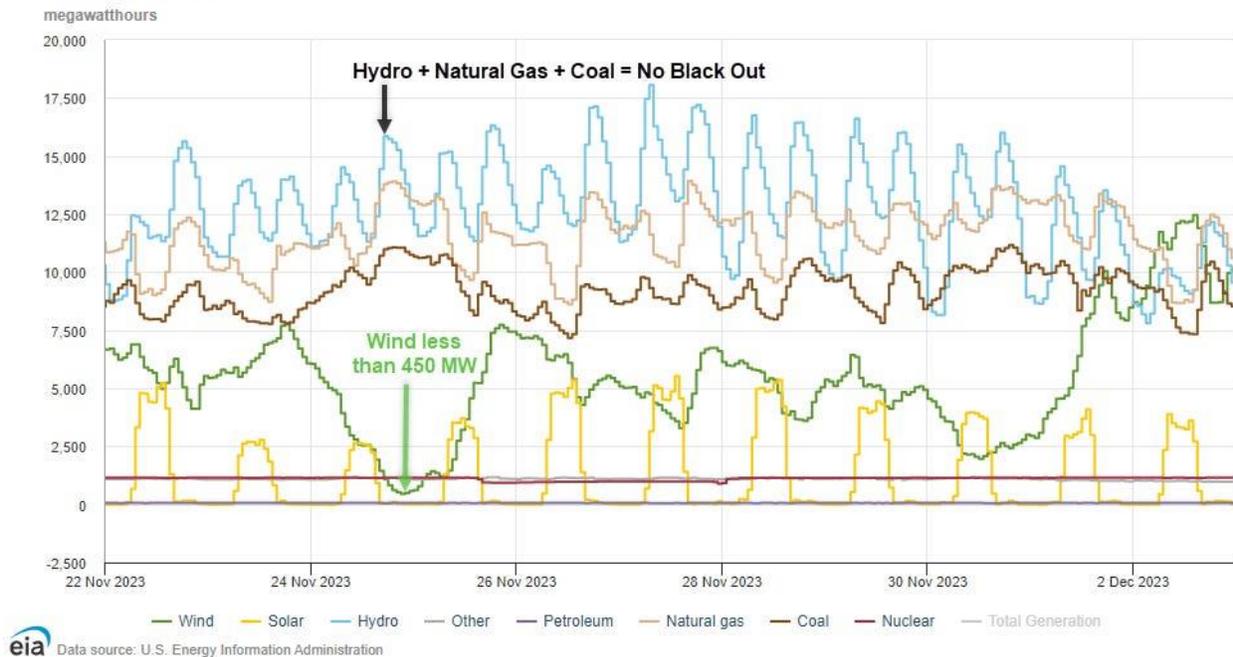
For the same 11-day period we previously looked at for BPAT, the aggregate electricity demand across the greater Northwest (NW) power grid reached 51,351 megawatt-hours on November 29th, once again between the hours of 7 am and 8 am.

Northwest (NW) region electricity overview (demand, forecast demand, net generation, and total interchange)  
11/22/2023 – 12/2/2023, Pacific Time



In the next set of graphs, you can see the different patterns and levels of generation from the various technologies used to meet demand across the NW geographical area that extends beyond the Pacific Northwest into Eastern Montana, Northern Nevada, Utah, Wyoming and Colorado.

Northwest (NW) region electricity generation by energy source 11/22/2023 – 12/2/2023, Pacific Time



**LOOK CLOSELY!** Hydro is not expected to grow in capacity and may go down if politicians have their way. So how do we avoid blackouts if we shut down coal and they are trying to bankrupt natural gas?

Once again, just like inside the BPAT footprint, *hydro* is the single technology providing the *most base-load and balancing* power inside the greater Northwest (NW) footprint, followed by natural gas and then coal.

Imagine on November 24th at 10 pm trying to meet 45,000 MW of electricity demand without the nearly 25,000 MW of dependable coal and natural gas generating capacity that showed up to assist 16,000 MW of hydro that night. And ask your elected officials this. If hydro capacity is going to shrink, then how do we *avoid blackouts* if we shut down coal and your policies are aimed at bankrupting natural gas?

As for solar. Not only does it have a '*night-time problem*' when it's producing 0 MW, it is also subject to big changes like the 2,500 MW drop in maximum mid-day production that occurred over the first two days of the period we're reviewing.

And as for wind, you can definitely aggregate a whole lot of wind farms across a big geographical area to produce a big MW number for a relatively short time. But the problem is you can *lose all of that generating capacity* relatively quickly when mother nature doesn't cooperate. This is illustrated by the more than 12,000 MW difference in wind generation that occurred between the low of 450 MW on November 24th and the high of 12,500 MW on December 2nd.

Yes, I know batteries are beginning to be deployed. But it's not a simple matter to predict when to charge batteries and when to discharge them. And batteries don't come cheap in terms of both dollars and cost to the environment. Particularly when you consider the volume of electricity we are talking about today. And don't forget Washington and Oregon policy makers are saying we need to *double the capacity* of the power grid in order to electrify transportation and natural-gas end uses.

Scroll back to the previous graphs, then try to imagine what the Northwest would do without the 17,500 MW of hydropower that showed up and did the heavy lifting to balance demand and supply across so many states.

It truly is unimaginable, but yet we have political leaders who have legislated the rapid shutdown of coal and are *demonizing and attempting to bankrupt* natural gas; while simultaneously advocating for the *removal* of the Lower Snake River dams and setting up hydro to fail.

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## **CONCLUSIONS**

When it comes to grid demand and supply balancing, controllable hydropower is to the Northwest as natural gas plants are to California and most of the rest of the United States. And based on multiple studies and common sense, many utilities are deeply concerned drought conditions affecting hydro, together with an unwarranted belief that uncontrollable wind and solar can replace coal and natural gas power, may be walking us closer-and-closer to a **blackout cliff**.

To compound the growing reliability risks, Northwest utilities are facing significant uncertainty in planning for an ‘electrified’ future driven by inflation, supply chain constraints and long lead times that come with capital intensive and impactful infrastructure projects. Thankfully **hydropower is standing in the gap** for now.

The next round of Northwest coal plant shutdowns will be in 2025 when the total amount of capacity removed from the grid will reach 4,000 megawatts (MW). This is equivalent to removing the dependable electricity provided by four Columbia Generating Station nuclear plants.

While plans to retrofit two coal-fired power generation facilities with natural gas burners have been proposed, one in Nevada and another in Wyoming, going forward hydropower will **increasingly carry the grid reliability burden**.

Unlike the intermittent and variable generation from wind farms, the availability of affordable and reliable electricity provided by Northwest hydro has been considered a certainty for decades. But we **must not take it for granted**.

Electric utility customers always expect their service provider to hold the line on rates. And they will always hold their local power company responsible when the lights go out. Citizens must recognize that political leaders and the **special interest groups** that fund their campaigns **will not pay the price for blackouts**, utilities will.

Please understand, the Lower Snake River dams are **not surplus, outdated or expensive**. Nor are any of the other federal dams on the main stem Columbia and Snake Rivers. They are the basis of the low-cost power supply portfolios of 127 not-for-profit utilities in the Pacific Northwest

today and are the foundation of 100% clean electricity goals. And we ***cannot get there by 2045 without hydro.***

We must demand more from our elected state and federal officials and hold them accountable for unnecessarily ***destabilizing*** the Northwest power grid. And as for their unjustified and dangerous “Hail Marry” attempt to save salmon by advocating breach of the LSR dams, does anyone really believe this action would not be the first domino in the game being played by anti-hydro interests to further diminish and even eliminate hydropower in some cases.

How about we use our limited intellectual and financial capital to find some common ground where we continue to ***invest*** in improving salmon survival while also prioritizing the preservation of natural landscapes through the development of ***energy-dense***, small-footprint, always-on technologies like nuclear and natural gas.

And we must stop electing ***energy ignorant*** politicians driven more by ideology than science and engineering; and a true desire for human flourishing. Our collective ***health, safety and well being*** depend on it. We all want a better future for our children and grandchildren. But if we don’t get involved and demand a change of course soon, a lot of damage will be done, both to natural landscapes and our pocket books. And it will be costly and painful to unwind.



# Montana Electric Cooperatives' Association

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DeeDee Isaacs  
*President*

Larry Trexler  
*Vice President*

Dennis Nelson  
*Secretary/Treasurer*

Gary Wiens  
*Chief Executive Officer*

January 29, 2024

The Honorable Jeff Duncan  
Chairman  
Subcommittee on Energy, Climate & Grid  
Security  
House Energy & Commerce Committee  
2229 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Subcommittee on Energy, Climate & Grid  
Security  
House Energy & Commerce Committee  
2111 Rayburn House Office Building  
Washington, DC 20515

The Honorable Cathy McMorris Rodgers  
Chairman  
House Energy & Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Energy & Commerce Committee  
2123 Rayburn House Office Building  
Washington, DC 20515

Dear Chairs McMorris Rodgers, Duncan, Ranking Members Pallone and DeGette,

Montana's electric cooperatives strongly oppose the Biden Administration's decision to move forward with the confidential agreement: "U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative and in Partnership with the Six Sovereigns" that was developed in secret without input from public power.

The agreement, if executed, would significantly reduce availability of clean, renewable hydroelectricity from the Bonneville Power Administration system, requiring Montana utilities to procure replacement power from other sources. This situation will impact Montana ratepayers and threaten the reliability of electricity supply when it's most needed, as the dams on the Columbia River Basin system provide dispatchable baseload generation that is particularly essential in winter months and extreme weather events when electricity demand pushes the grid to its limits.

The planned operational changes at eight hydroelectric dams on the Columbia River system called for in the agreement would purposely reduce hydroelectricity generation and pave the way for breaching of the lower Snake River dams. Western Montana rural electric cooperatives receive an average of 328.87 megawatts of power from the Columbia River system, an important source of electricity for more than 220,000 Montana homeowners, businesses, farms, and ranches.

The dams on the lower Snake River also provide some of the lowest cost electrical generation in our region, helping keep overall power costs affordable for Montana ratepayers. Not only does this agreement replace that generation with higher-cost resources, but it also includes substantial commitments to unknown future costs. Montanans cannot afford exposure to the much higher rates and financial uncertainty that could come out of this agreement.

Montana's electric cooperatives are most alarmed at the agreement's plans to alter water flows to reduce electricity generation, adversely impacting much more than power generation. Other affected interests include irrigation and municipal water supply, recreation, and even Montana grain shipments.

The agreement would also commit the government to fund and provide technical assistance to non-Montana tribes to develop replacement power, should Congress authorize lower Snake River dam breaching. Western Montana's cooperatives would likely see significantly escalated costs, higher rates, and limited power availability, creating a greater risk of rolling blackouts in the region.

The electric cooperatives I represent are significantly concerned that the agreement transfers spending and decision-making authority over fish and wildlife management in the Columbia River Basin from the federal government to the six sovereigns. Since 2000, nearly \$2 billion have been invested in the lower Snake River dams to enhance salmon survival. These upgrades were built to facilitate fish passage and actually achieve spring juvenile survival at 96% and summer migrating fish survival at 93%, meeting or exceeding performance standards. Much of these investments come directly from Montana ratepayers, despite the fact that we have no anadromous fish in our state. Just since 1980, customers of the Bonneville Power Administration have funded close to \$16 billion in fish technologies. Nearly \$1 billion of that has come from Montana ratepayers. It is highly inappropriate for the federal government to surrender control of these investments.

Our concerns, however, are not limited to the terms outlined in the agreement. We strongly object to the process in which it was negotiated. By all accounts, this was a backroom deal, developed in secret – without input from important stakeholders and Congress – a deal that will cost taxpayers and ratepayers billions and upend the reliability of the electric grid.

Transparency, accountability, and communication are essential for our government to be effective and to earn public trust. Our region's history of collaboration emphasizes the need for genuine consensus to create a successful path forward. An agreement of this significance, which will greatly impact electricity supply, irrigation, agricultural commodity shipment, flood control, recreation, and other beneficial purposes of the Columbia River system, should have been negotiated with significant public and stakeholder involvement and Congressional oversight.

This agreement is wrong for Montana. The 2023 Montana Legislature overwhelmingly approved a joint resolution on a bipartisan vote expressly opposing breaching the lower Snake River dams, with near-unanimous support from the Montana Indian Caucus. And a 2022 scientific statewide poll of Montana voters showed strong support for hydroelectric dams, including the lower Snake River dams.

We urge the Committee and the United States Congress to exercise their authority over federal appropriations and operational changes to the federal hydroelectric system to prevent this agreement from being executed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gary Wiens", with a long horizontal flourish extending to the right.

Gary Wiens  
Chief Executive Officer



January 29, 2024

Congresswoman Cathy McMorris Rodgers  
Chair House Energy and Commerce Committee

Congressman Jeff Duncan  
Co-Chair House Energy and Commerce Committee

Congressman Frank Pallone  
Ranking Member House Energy and Commerce Committee

Congresswoman Diana Degette  
Ranking Member House Energy and Commerce Committee

Dear: U.S. House Energy and Commerce Committee

On behalf of Washington state employers, the Association of Washington Business (AWB), Washington state's chamber of commerce, and its nearly 7,000 members, we are deeply concerned by the details of Biden Administration's plans to dismantle the Snake River Dams and the negative impacts of this on the state of Washington and the United States. As representative voices of the business community, our members rely on the clean energy and transportation benefits derived from the four Lower Snake River Dams. We are extremely concerned that this decision would be negotiated and agreed to in one-sided, closed to the public negotiations. This is not the path towards a solution that meets the needs of our region, especially as we are projected to grow by over a million people. Those new residents will need the clean power and economic advantages that the entire Pacific Northwest hydro system provides.

Based on reports of the decision, there does not appear to have been any substantive negotiation that occurred. The U.S. government has given the pro-breaching groups everything they might have wished for without receiving anything in return apart from the possibility of a potential chance of pausing litigation. The agreement would hand the future of investments critical to our national and climate security to the very groups looking to remove them at any cost. Litigant groups have proved they are not interested in science or negotiated settlements. Removing the dams leaves our region poorer, subject to significantly higher energy costs, and threatens our climate goals.

The Columbia River System is responsible for 50% of U.S. wheat exports. Due to Russia's ongoing invasion of Ukraine, a major alternative source of wheat has been locked away and is unable to be shipped to the developing nations that rely on those exports. U.S. farmers have risen to the occasion and our exports are a critical alternative source of wheat for those countries. Farmers as far inland as South Dakota can utilize the barging system on the Snake River to move their crops to international markets. Without the inland barge system, crops will have to shift to more expensive modes of transport which are already at overcapacity. Any shortfall in U.S. crop exports to the Pacific would also likely be filled by U.S. geopolitical rivals.

Beyond the economic and geopolitical importance, keeping the dams in operation is critical to our states' efforts to reduce carbon emissions. The dams provide 1100 MWs of carbon free energy which are used to help integrate the region's massive investment in renewable resource generation. According to the 2016 CRSO EIS, any scenario that involves breaching the dams would result in a net increase of 3.3 million GHG emissions, representing "a 9% increase in power-related emissions across the Northwest".

BPA has long been an economic cornerstone of the Pacific Northwest's economic vitality. With the added threat of climate change making it more urgent to reduce our emissions, it is irresponsible to entertain the removal of infrastructure which helps our region meet our climate objectives. Furthermore, it ignores the vast preponderance of scientific data that shows that the dams and salmon can coexist.

We urge our Congressional delegation to insist that the administration continue to follow the plan laid out in the CRSO EIS, completed in 2021. This EIS, which reflects six years of open, transparent public engagement and the best available scientific data, shows how to manage the Columbia Snake River system for the balanced benefit of all users. Any plan agreed to in private negotiations with only a select portion of the broader stakeholder community should not be the basis for how to manage the Columbia Snake River System.

Thank you,



Kris Johnson  
President & CEO

# **CITIZENS FOR THE PRESERVATION OF FISH AND DAMS, INC.**

**PO Box 73, Lewiston, ID 83501**

**[citizensforfishdam@gmail.com](mailto:citizensforfishdam@gmail.com)**

**[cfpfd.org](http://cfpfd.org)**

January 29, 2024

U.S. House Energy and Commerce Committee Chairperson Cathy McMorris Rodgers, Ranking Member Frank Pallone, Jr. and Energy, Climate, and Grid Security Subcommittee Chairperson Jeff Duncan and Ranking Member Diana DeGette:

Citizens for the Preservation of Fish and Dams, Inc. (CFPFD, Inc.) is concerned for the welfare of our community and our economy in the Pacific Northwest. We are a 501(c)3 nonprofit organization located in Lewiston, ID. We have only recently been made aware of the "Hearing on Protecting the Snake River Dams" to be held in DC on January 30, 2024. We are hoping to get some of our research data out to supporters of keeping the dams in place and hence the packet we are sending you. It doesn't look like any of the government witnesses will be advocating for the salmon and their survival which will have extreme economic impacts to the Pacific Northwest should breaching occur. This data, which is included in the attachments and compiled from the Fish Passage Center, Columbia River DART, and multiple experienced fish biologists who have spent their lives working on increasing and managing Salmon populations, provides clear and conclusive information which indicates that the dams are a part of the fish management system that supports fish survival and without the dams the fish populations could drop drastically from their already decreasing numbers.

Current mis-management of the dams incorporating high spill rates and low transport of smolts are major factors effecting the recent decline in fish populations. For the first 10 years of the 21<sup>st</sup> Century when barging was at peak and spill levels were lower the total was 4,014,400 returning steelhead compared to 1,274,530 from 1938 to 1947 when Bonneville Dam was the only dam on the river system, a 315% increase and for Spring Chinook the numbers were 618,952 vs 1,634,639, a 264% increase. This proves with proper management we can have both FISH AND DAMS. We encourage you to share this information with all that will use it to save our fish and dams especially for this hearing next Tuesday, January 30, 2024.

Thank you for helping us in our mission to educate others by sharing this information with all who truly care about the future survival of the salmon and our way of life here in the Pacific Northwest. Please visit our website at [cfpfd.org](http://cfpfd.org) where we have more educational materials and videos to share.

If you have questions please email us at [citizensforfishdam@gmail.com](mailto:citizensforfishdam@gmail.com) Thank you for your time and support of the Four Lower Snake River Dams.

Sincerely,

Marvin F. Dugger, President

**Citizens for the Preservation of Fish and Dams, Inc.**

**Please refer to the following Attachments:**

Numbered Bullet Point List of Important Facts

Bonneville Dam Fish Counts Graph with Data

10 year Comparisons Fish Count Charts

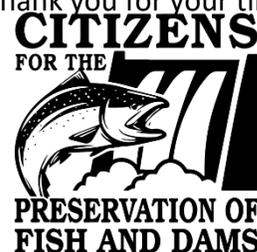
Ice Harbor and Lower Granite Fish Count Graphs

John McKern Letter, Rusty Bentz Rebuttal of Dam Breaching Letter

Fred Mensik Adaptive Management with Graphs, Summary of the Symposium Presentations

Brief Biographies of Symposium Presenters/Authors

See Full Symposium Presentations and full Biographies at [cfpfd.org](http://cfpfd.org)



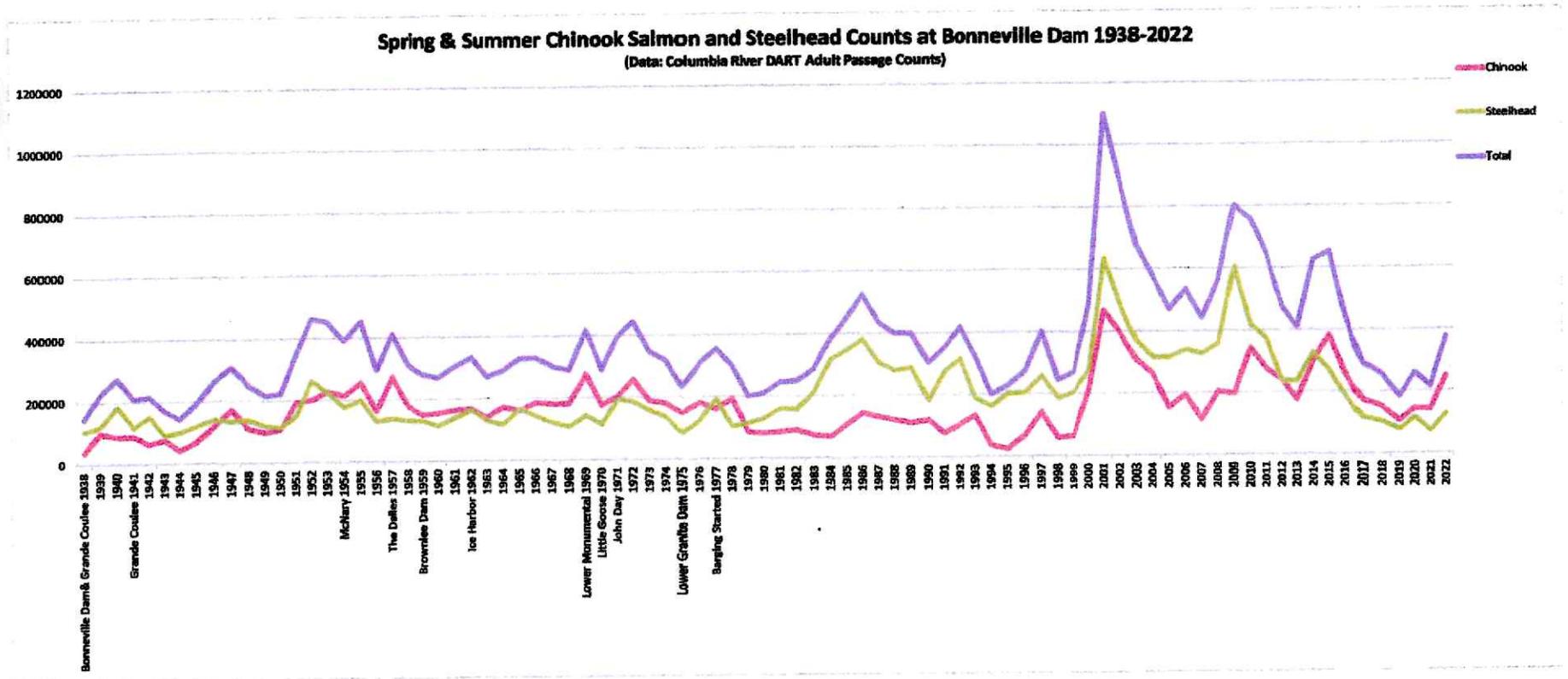
Citizens for the Preservation of Fish and Dams, Inc. (CFPFD), promotes the welfare of anadromous fish and the Columbia River/Snake River system. Recently we presented the Pacific Northwest Fish Symposium in which we discussed the reasons that dams, when operated properly, are conducive to more and better returns of adult Salmon and Steelhead. These important issues are listed below.

1. The only argument for breaching the four lower Snake River dams, is to save the threatened and endangered fish.
2. Far more fish returned in the first 15 years of the 21st century, over 25 years after the last dam was finished, than at any time in the 20th century.
3. Constant improvement to fish facilities and barging aided in this result.
4. Recent declines in fish numbers are due to total dissolved gas resulting in delayed mortality from increased spilling rates at the dams.
5. Wild spring and summer chinook are the only fish not doing well in the 21<sup>st</sup> century.
6. Rivers without dams are having the same issues of declining returns of spring and summer chinook as dammed rivers.
7. Steelhead had the two largest return years in 2001 and 2009. These returns were preceded by the two highest years of fish barging from the Lower Snake River dams.
8. Dams without fish ladders contributed to a 60%-80% loss of original spawning habitat.
9. Hatcheries are important for sustaining fish numbers and re-establishing lost runs.
10. Dams are a necessity to collect and transport smolts.
11. Turbines have been redesigned and screened off to lessen smolt entry.
12. Predators have a major impact on the survival of outgoing in river smolts and returning adults.

CFPFD stands ready to present these facts to you at your request. More information confirming the symbiotic relationship of fish and dams with fish ladders is available on the website [cfpfd.org](http://cfpfd.org) and in the video recording of the symposium.

# Graph 2

By Dr. Charles Pottenger (2023)



| Year                           | Chinook | Steelhead | Total  | Dam Built                    |
|--------------------------------|---------|-----------|--------|------------------------------|
| Bonneville Dam & Grande Coulee | 37744   | 107011    | 144755 | Columbia Bonneville          |
| 1939                           | 100150  | 121932    | 222082 |                              |
| 1940                           | 88324   | 185161    | 273485 |                              |
| Grande Coulee 1941             | 88691   | 118087    | 206778 | Columbia Grande Coulee       |
| 1942                           | 65087   | 151395    | 216482 |                              |
| 1943                           | 78966   | 92151     | 171117 |                              |
| 1944                           | 43466   | 100473    | 143939 |                              |
| 1945                           | 71116   | 120086    | 191202 |                              |
| 1946                           | 118853  | 142806    | 261659 |                              |
| 1947                           | 172318  | 135434    | 307752 |                              |
| 1948                           | 109953  | 139062    | 249015 |                              |
| 1949                           | 96805   | 119285    | 216090 |                              |
| 1950                           | 106893  | 114087    | 220980 |                              |
| 1951                           | 194171  | 149539    | 343710 |                              |
| 1952                           | 200461  | 260990    | 461451 |                              |
| 1953                           | 227873  | 223914    | 451787 |                              |
| McNary 1954                    | 214117  | 176260    | 390377 | Columbia McNary              |
| 1955                           | 254519  | 198411    | 452930 |                              |
| 1956                           | 164614  | 131116    | 295730 |                              |
| The Dalles 1957                | 271444  | 139184    | 410628 | Columbia The Dalles          |
| 1958                           | 177064  | 131347    | 308411 |                              |
| Brownlee Dam 1959              | 150052  | 129026    | 279078 |                              |
| 1960                           | 154765  | 113676    | 268441 |                              |
| 1961                           | 165129  | 139726    | 304855 |                              |
| Ice Harbor 1962                | 168591  | 164025    | 332616 |                              |
| 1963                           | 139337  | 129418    | 268755 |                              |
| 1964                           | 171868  | 117252    | 289120 |                              |
| 1965                           | 160243  | 166445    | 326688 |                              |
| 1966                           | 184507  | 143661    | 328168 |                              |
| 1967                           | 180407  | 121872    | 302279 |                              |
| 1968                           | 181999  | 106974    | 288973 |                              |
| Lower Monumental 1969          | 275741  | 141782    | 417523 | Snake River Lower Monumental |
| Little Goose 1970              | 175854  | 113510    | 289364 | Snake River Little Goose     |
| John Day 1971                  | 203428  | 193966    | 397394 | Columbia John Day            |
| 1972                           | 256970  | 185886    | 442856 |                              |
| 1973                           | 187508  | 157823    | 345331 |                              |
| 1974                           | 180431  | 137054    | 317485 |                              |
| Lower Granite Dam 1975         | 148455  | 85540     | 233995 | Snake River Lower Granite I  |
| 1976                           | 182461  | 124177    | 306638 |                              |
| Barging Started 1977           | 160531  | 193437    | 353968 |                              |
| 1978                           | 194186  | 104431    | 298617 |                              |
| 1979                           | 85679   | 114007    | 199686 |                              |
| 1980                           | 80052   | 129254    | 209306 |                              |
| 1981                           | 85190   | 159270    | 244460 |                              |
| 1982                           | 90140   | 157640    | 247780 |                              |

|      |        |        |         |
|------|--------|--------|---------|
| 1983 | 72944  | 213779 | 286723  |
| 1984 | 69187  | 315587 | 384774  |
| 1985 | 107418 | 343961 | 451379  |
| 1986 | 144293 | 379891 | 524184  |
| 1987 | 131402 | 303081 | 434483  |
| 1988 | 121673 | 279072 | 400745  |
| 1989 | 110055 | 287798 | 397853  |
| 1990 | 119141 | 183027 | 302168  |
| 1991 | 76236  | 274545 | 350781  |
| 1992 | 103488 | 314975 | 418463  |
| 1993 | 132865 | 188377 | 321242  |
| 1994 | 37800  | 161978 | 199778  |
| 1995 | 25222  | 202448 | 227670  |
| 1996 | 67526  | 205216 | 272742  |
| 1997 | 141939 | 258385 | 400324  |
| 1998 | 59775  | 185094 | 244869  |
| 1999 | 64838  | 206488 | 271326  |
| 2000 | 208918 | 275178 | 484096  |
| 2001 | 467523 | 633073 | 1100596 |
| 2002 | 396249 | 480309 | 876558  |
| 2003 | 306818 | 365821 | 672639  |
| 2004 | 262295 | 313371 | 575666  |
| 2005 | 153246 | 315650 | 468896  |
| 2006 | 193975 | 339301 | 533276  |
| 2007 | 114506 | 325275 | 439781  |
| 2008 | 203814 | 357816 | 561630  |
| 2009 | 196461 | 604970 | 801431  |
| 2010 | 341989 | 416603 | 758592  |
| 2011 | 275376 | 369365 | 644741  |
| 2012 | 239738 | 235276 | 475014  |
| 2013 | 176396 | 234047 | 410443  |
| 2014 | 297812 | 326001 | 623813  |
| 2015 | 381985 | 268730 | 650715  |
| 2016 | 256767 | 188132 | 444899  |
| 2017 | 171660 | 117878 | 289538  |
| 2018 | 148947 | 102920 | 251867  |
| 2019 | 105706 | 77320  | 183026  |
| 2020 | 143757 | 114423 | 258180  |
| 2021 | 141721 | 71967  | 213688  |
| 2022 | 248543 | 126367 | 374910  |

**Graph 1**

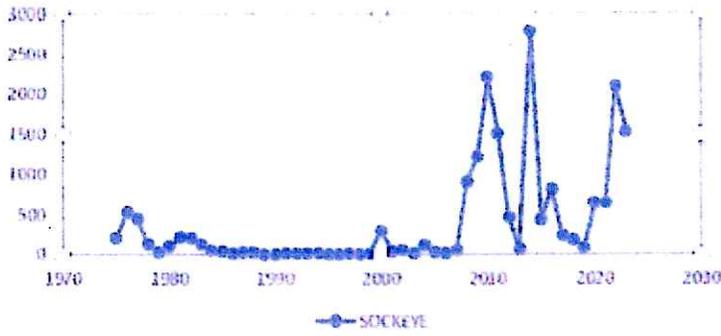
**Steelhead and Chinook Returns 1938-1947\* vs Returns 2000-2009\*\***

| <b>STEELHEAD RETURNS</b> |                  |      |                  | <b>SPRING CHINOOK</b> |                |      |                  |
|--------------------------|------------------|------|------------------|-----------------------|----------------|------|------------------|
| 1938                     | 107,000          | 2000 | 275,178          | 1938                  | 22,371         | 2000 | 178,302          |
| 1939                     | 121,932          | 2001 | 663,073          | 1939                  | 76,708         | 2001 | 391,367          |
| 1940                     | 185,161          | 2002 | 483,956          | 1940                  | 66,378         | 2002 | 269,520          |
| 1941                     | 118,087          | 2003 | 365,821          | 1941                  | 72,295         | 2003 | 195,770          |
| 1942                     | 151,391          | 2004 | 313,337          | 1942                  | 40,471         | 2004 | 170,308          |
| 1943                     | 92,151           | 2005 | 315,650          | 1943                  | 65,550         | 2005 | 74,053           |
| 1944                     | 100,473          | 2006 | 339,301          | 1944                  | 30,865         | 2006 | 96,458           |
| 1945                     | 120,086          | 2007 | 325,275          | 1945                  | 43,515         | 2007 | 66,646           |
| 1946                     | 142,806          | 2008 | 357,845          | 1946                  | 67,337         | 2008 | 125,585          |
| 1947                     | 135,434          | 2009 | 604,970          | 1947                  | 133,462        | 2009 | 66,630           |
| <b>TOTALS</b>            | <b>1,274,530</b> |      | <b>4,014,400</b> |                       | <b>618,952</b> |      | <b>1,634,639</b> |

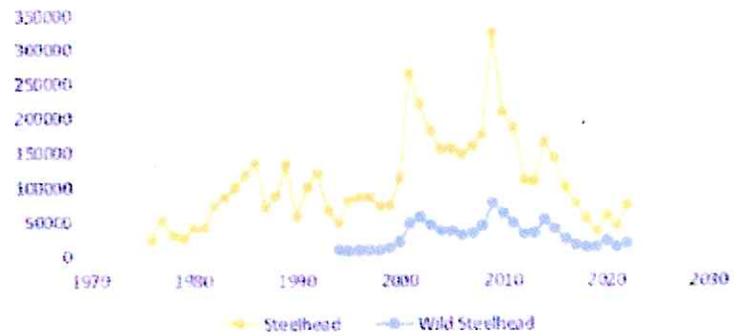
**\*1 dam at Bonneville- no barging**

**\*\*8 dams (including Snake River Dams) with barging**

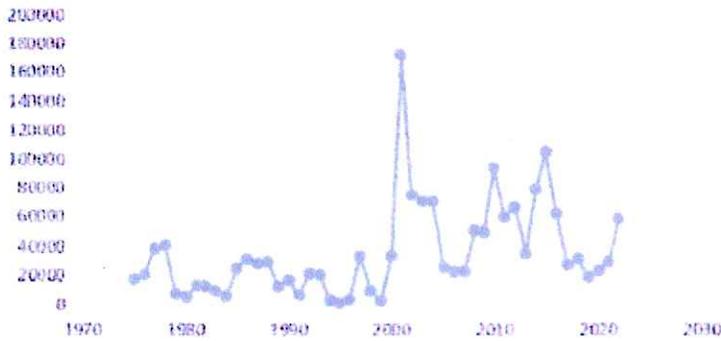
**SOCKEYE COUNTS AT LOWER GRANITE DAM  
1975 TO 2023**



**HATCHERY STEELHEAD AT LGR 1975 TO 2022  
WILD STEELHEAD AT LGR 1994 TO 2022**



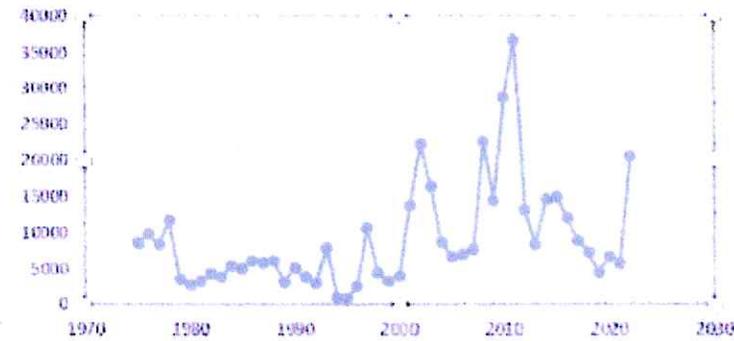
**SPRING CHINOOK AT LOWER GRANITE DAM  
1975 TO 2022**



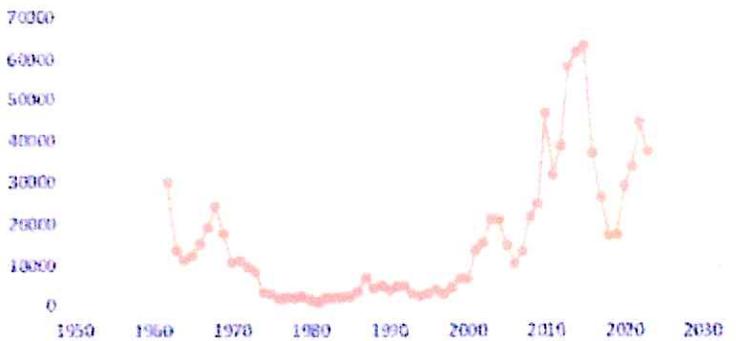
**SPRING CHINOOK ICE HARBOR DAM  
1962 TO 2022**



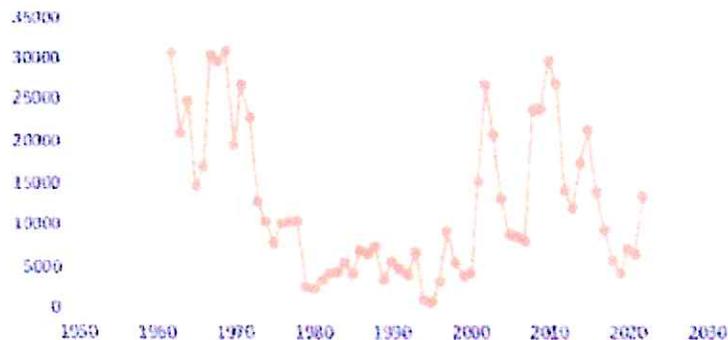
**SUMMER CHINOOK AT LOWER GRANITE DAM  
1975 TO 2022**



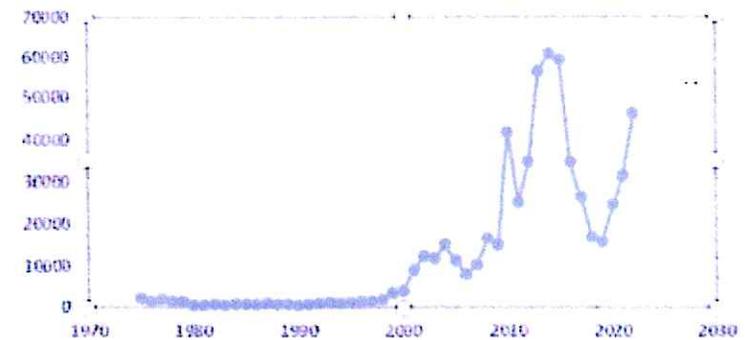
**FALL CHINOOK AT ICE HARBOR DAM  
1962 TO 2022**



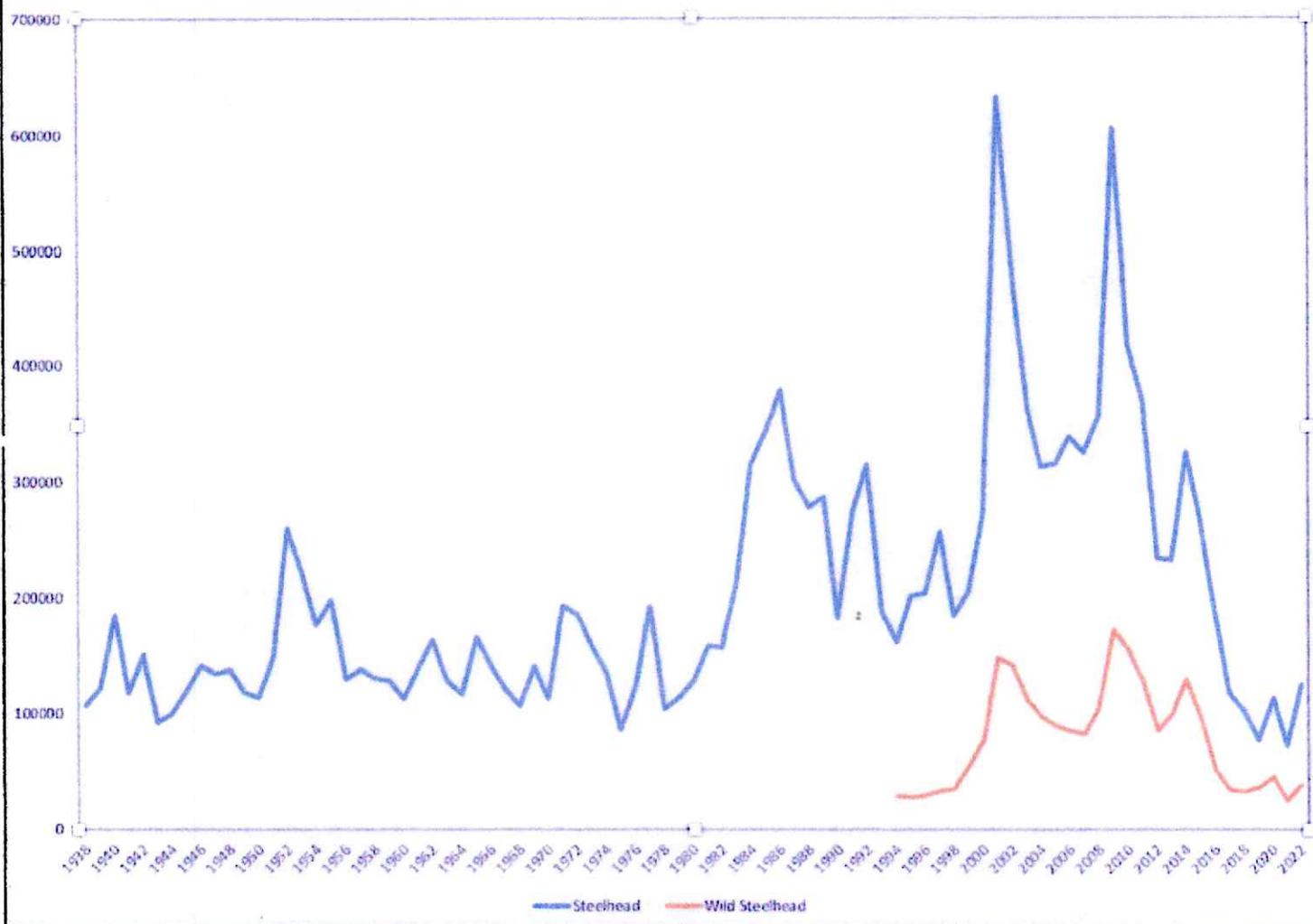
**SUMMER CHINOOK AT ICE HARBOR DAM  
1962 TO 2022**



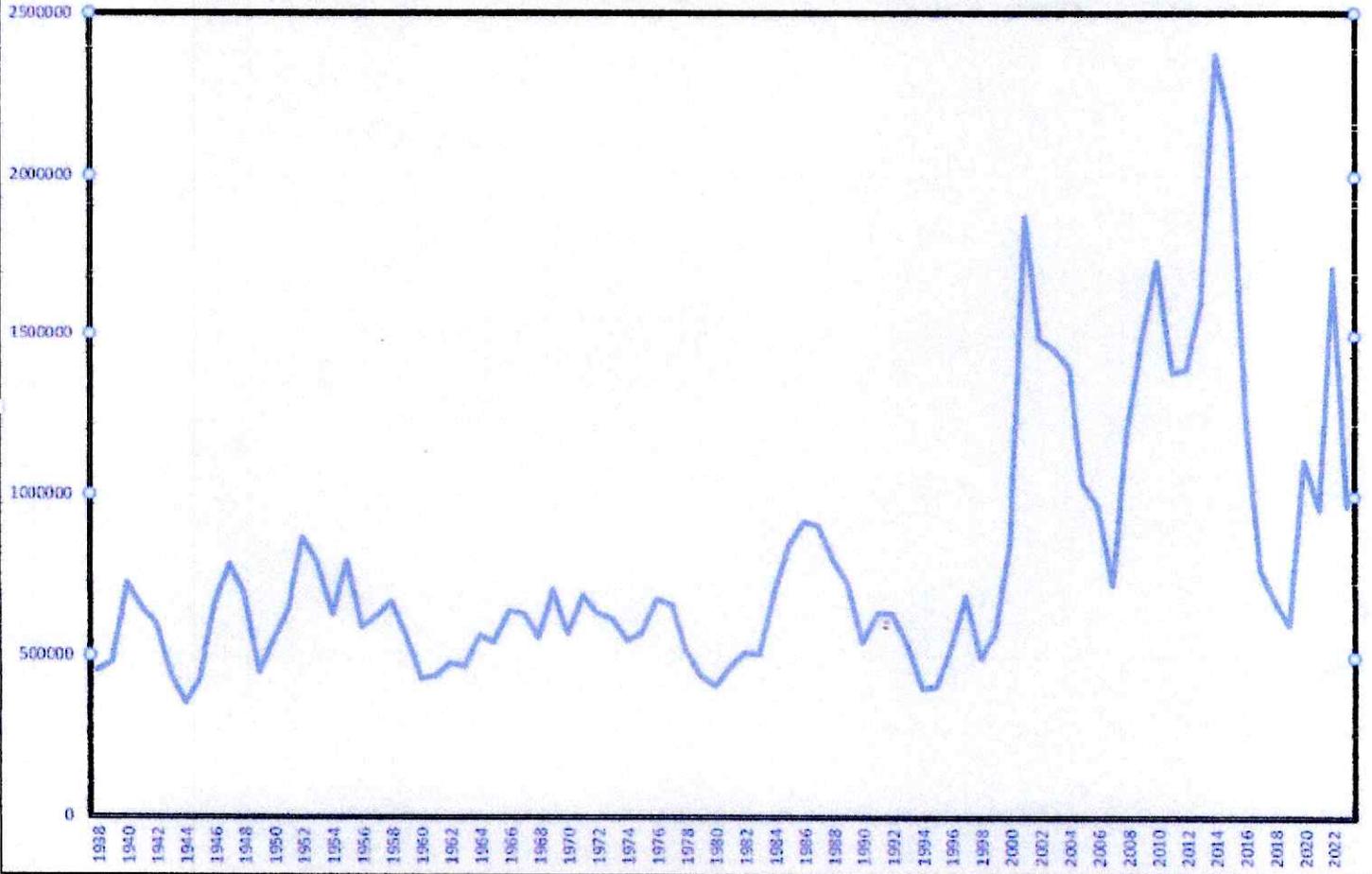
**FALL CHINOOK AT LOWER GRANITE DAM  
1975 TO 2022**



TOTAL AND WILD STEELHEAD AT BONNEVILLE DAM 1938 - 2023



BONNEVILLE TOTAL SALMON 1938 - 2023



There have been many letters from proponents of breaching the lower Snake River dams. This hoax, based on omitted or obscured facts, has reached all the way to the Whitehouse.

Commercial harvest and loss of spawning habitat reduced the salmon returns 95% before Bonneville Dam (1938).

The Wallowa River salmon were wiped out by an Oregon Fish Commission Dam installed in (1898-1914) where all the salmon eggs were taken, fertilized, and sent to Bonneville Hatchery where hatchlings were put in the Columbia River.

In a few years, chinook, sockeye, and coho above that dam were extinct.

Sunbeam Dam on the Salmon River blocked chinook, steelhead, and sockeye from the Stanley Basin from (1917-1934) until it was breached.

The dam at Lewiston, ID, blocked almost all chinook and coho, and barely passed steelhead from 1907 to 1973 when it was removed by the Corps of Engineers.

Logging and forest fire suppression in the 1900s led to roads in many remote river basins that silted spawning areas, and removing forests allowed runoff that was heated and no longer retained by the trees.

In 1956, to combat a spruce budworm outbreak, substantial areas of the Lochsa River Basin were sprayed with DDT, not only killing the fish, but insects, crayfish and other food for fish, birds, and other wildlife.

There are basically two types of reservoirs, storage reservoirs and run-of-river reservoirs. Stored water heats up, and stratifies, warm water over cold. The lower Snake run-of-river reservoirs pass hot water from Hells Canyon heated in southern Idaho and eastern Oregon, and until 1994, from the Clearwater River. The lower Snake River reached up to 77 °F in August and September at Ice Harbor Dam; now it rarely reaches 70 °F. Cold water released from the Corp's Dworshak Reservoir is used to cool the lower Snake River.

Improvements to fish passage now yield over 99% survival for adult salmon, and over 95% survival for juvenile salmon per lower Snake River dam.

Foolish use of spill to "increase survival" of juvenile salmon exposes both adult and juvenile salmon to dangerous levels of gas supersaturation from Lower Granite Dam all the way to the estuary below Bonneville Dam.

Collection/bypass systems at the dam move juvenile fish from one reservoir to the next at over 99% survival.

Juvenile fish transported from Lower Granite, Little Goose, and Lower Monumental dams reach the estuary with less than 2% mortality compared to 40% to 50% mortality by spill and in river passage.

For more facts of the truth, go to <https://cfpfd.org/>, or join the Citizens for the Preservation of Fish and Dams, Inc. on Facebook and YouTube.

John McKern

[mckernj@charter.net](mailto:mckernj@charter.net)

Fish Passage Solutions, LLC

1444 Lowell Drive

Walla Walla, WA 99362

509.386.5423

P.S: I was a biologist for the Walla Walla Corps of Engineers for 30 years (1971-2000) and have been a fish passage consultant for 23 years. I am a technical advisor to the Citizens for the Preservation of Fish and Dams, Inc

This is what we believe is wrong with the dam breaching concept. There were far more fish that returned in the first 15 years of the 21<sup>st</sup> century than ever did in the 20<sup>th</sup> century, fully 25 years after construction of the last dam on the lower Snake River. That is the case for both steelhead and spring and summer chinook. The total steelhead run over Bonneville Dam for the first 10 years following dam construction when Bonneville Dam was the only dam blocking access to the Snake River for salmonoids, was 1,274,530 steelhead. For the first 10 years of the 21<sup>st</sup> century the total was 4,014,400 steelhead. A 315% increase, for spring chinook, the numbers are 618,952 vs 1,634,639, a 264% increase. This proves we can HAVE FISH AND DAMS. Sockeye salmon were poisoned out and blocked from returning to their spawning grounds in the mid- 20<sup>th</sup> century. Fall chinook have rebounded from a low of less than 200 returning over Lower Granite Dam to a high of over 50,000. Coho salmon which did not return to the Snake River until the 21<sup>st</sup> century and are now returning in high enough numbers to have a general fishing season.

We have lost 80% of our fall chinook spawning grounds, 70+% of spring and summer chinook spawning grounds, 65% of our steelhead spawning grounds, to dams with no fish ladders (think Grand Coulee Dam and the Hells Canyon Dam). Fish hatcheries were constructed to make up for this loss of spawning habitat. These hatcheries have done a good job of producing juvenile salmonoids as evidenced by the high number of adults returning in the 21<sup>st</sup> century.

The other essential element to high adult returns is barging and smolt collection facilities. In 2000, 5,039,620 steelhead smolts were collected and 95.1% barged, the next year, 633,073 adult steelhead returned, the highest number ever recorded. 2/3 of those fish were 1-ocean fish. 2005 was the last year that 5 million+ fish were collected in the 21<sup>st</sup> century, then it drops to 2 million+ to just 275,073 collected in 2021 and only 37.5% were barged. WE ARE HAVING A DISASTRUS RETURN THIS YEAR in spite of having the best ocean conditions in 2021 in 24 years.

In the final analysis, how we should measure our success is by adult returns. However, how many fish we get back is related to the number that starts the journey downstream. It is obvious by the number collected at Lower Granite Dam is declining rapidly. As noted in previous Columbia Basin Bulletins articles smolt detection is a problem when we spill. This inaccurate count combined with no method to account for the difference in adult harvest in good years versus bad years makes SAR'S a poor measure.

Steelhead counts started declining in 2016 which corresponds with low barging numbers in 2015. Very low runoff insured that travel times for smolts left in the river were long. Low hot water behind the 4 lower Columbia River dams kept the sockeye salmon from going over the fish ladders and they died by the thousands. After a lawsuit against NOAA judge Simon ordered spill for 2016. The steelhead return for 2017 dropped to 117,878 adults. The lowest number since 1979. Judge Simon ordered even more spill for 2017 and adult returns dropped even lower to 102,920 adults. High spill cause two problems, the major one is gas bubble disease and the second is the inability to trap smolts at Lower Granite Dam. Gas bubble disease is a well-known phenomenon dating back to the 1960's and a flip lid was put on John Day Dam to try to solve the problem. We know what the problem is and we know how to solve it. Run the water thru the turbines which produces power as well as solving the dissolved gas problem. With spill becoming the preferred alternative to get smolts downstream has guaranteed that we are going to

have poor returns as evidenced by the 2021 low return of 71,980 adult steelhead. This low return is in spite of having 3 years of El Nina which produced the best ocean conditions in 2021 in the past 24 years.

For us to return to 600,000+ adult returns enjoyed in the first decade of the 21<sup>st</sup> century we need to up hatchery production so we can capture the 5 million+ smolts at Lower Granite Dam instead of the 3-year average of 1,188,442 smolts collected 2019-2021 and we need to barge a high number of those smolts. Barging solves 2 major problems, the problem associated with gas trauma disease and predation problems caused by other fish and birds. There has been a number of improvements in barging since the start of barging in 1977. Modern barging gets the smolts below all 8 dams with a 98.5% survival.

There are 2 articles published recently in the CBB that detail the advantage of letting straying hatchery steelhead and salmon spawn in the wild with wild fish. The 10- year average for wild steelhead in the first decade on the 21<sup>st</sup> century is 117,000 fish which is over 92% of the 127,000 over Bonneville Dam 1938-1947. Wild steelhead are doing great despite losing 65% of their spawning grounds.

In conclusion without barging and smolt collection facilities provided by the dams we are guaranteed to have fewer returning salmonoid adults.

Rusty Bentz

Idaho Outfitter and Guide for Steelhead and Salmon

bentzrusty@gmail.com

## Adaptive Management

Data for the following graphs and charts was obtained from the Fish Passage Center website.

In-river (bypassed fish) are prey for walleye, bass, northern pike minnow, sea gulls, terns, cormorants and pelicans. In-river survival rate is only 50%.

Transported fish (barged) have a survival rate greater than 98% from Lower Granite Dam to the estuary.

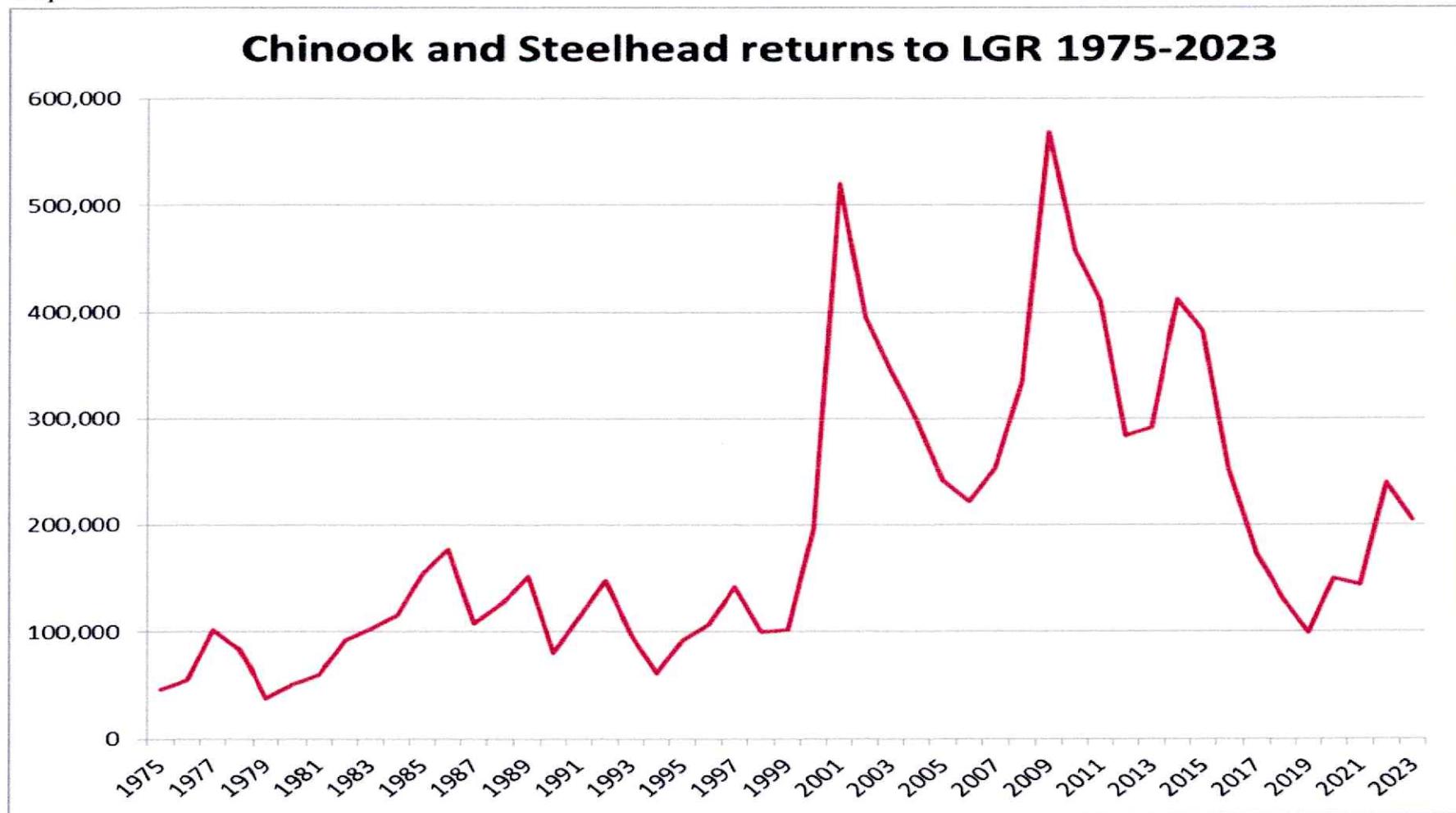
Dwindling salmon returns continues and will exacerbate over the next two years. The current “spread the risk” management of river flows (spill) has critically damaged the Snake River salmon populations. If this misguided management continues, salmon returns will continue to decline. Their decline will drive the uninformed notion and confused mantra that Snake River dams are the cause.

This is far from the truth.

If river resources are properly managed, salmon increases will be seen in the future. However, those increases will require a significant change from current resource mismanagement of “spread the risk”. An adaptive management plan is presented here in graphs and charts.

Graph 1 shows Chinook and steelhead returns at Lower Granite Dam from 1975 through 2023. There was a reservoir drawdown in 1994-1995. Those bypassed fish did not favorably impact salmon returns. Barging at Lower Granite Dam began in 1977 with an improvement in returns in 1981-1985. With improvements in barge design, returns increased. Please note the significant returns after 2000.

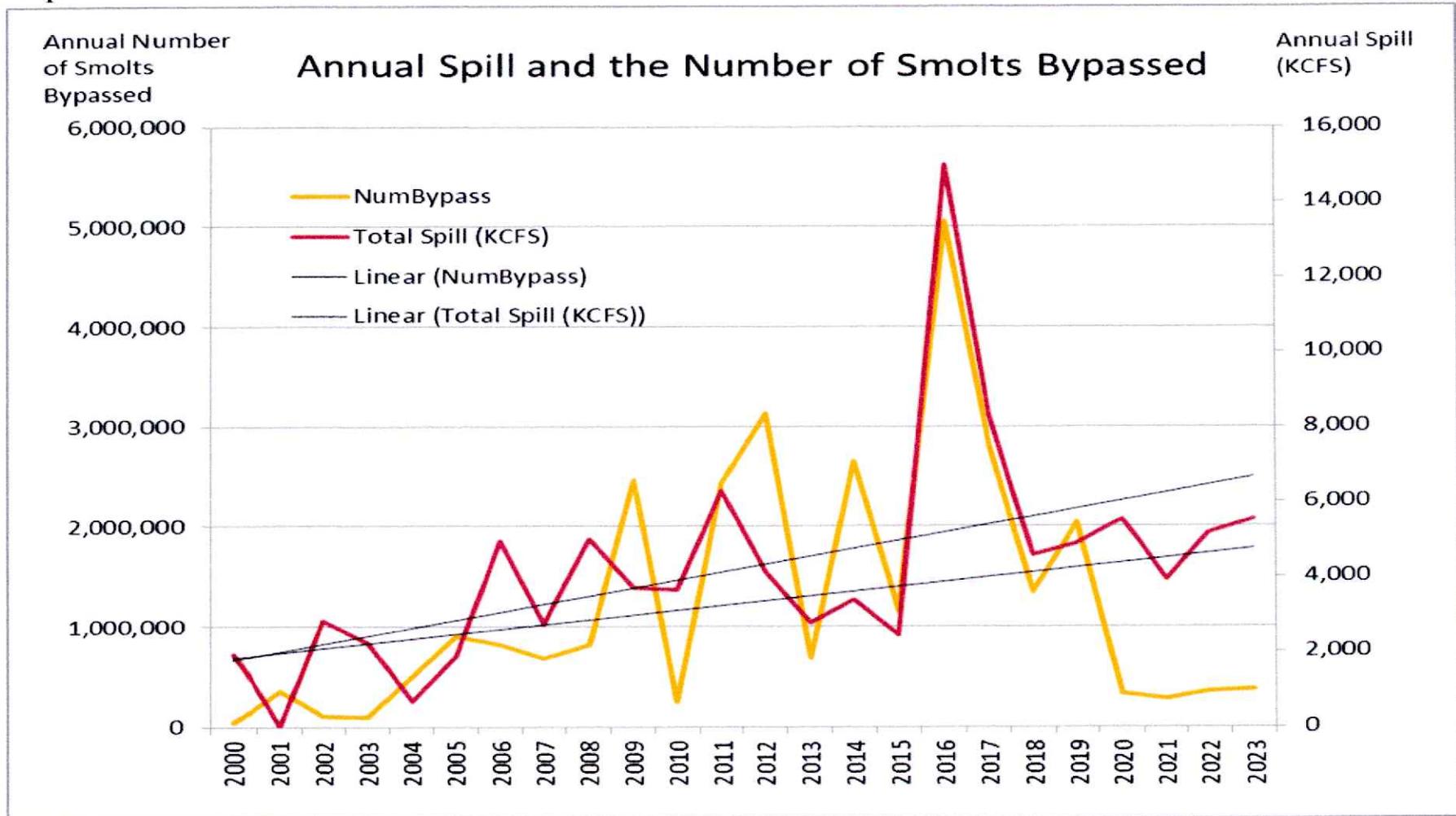
Graph 1.



Fish traveling downstream are a product of the water. If the water is spilled, fish are also spilled with that water, called bypassed.

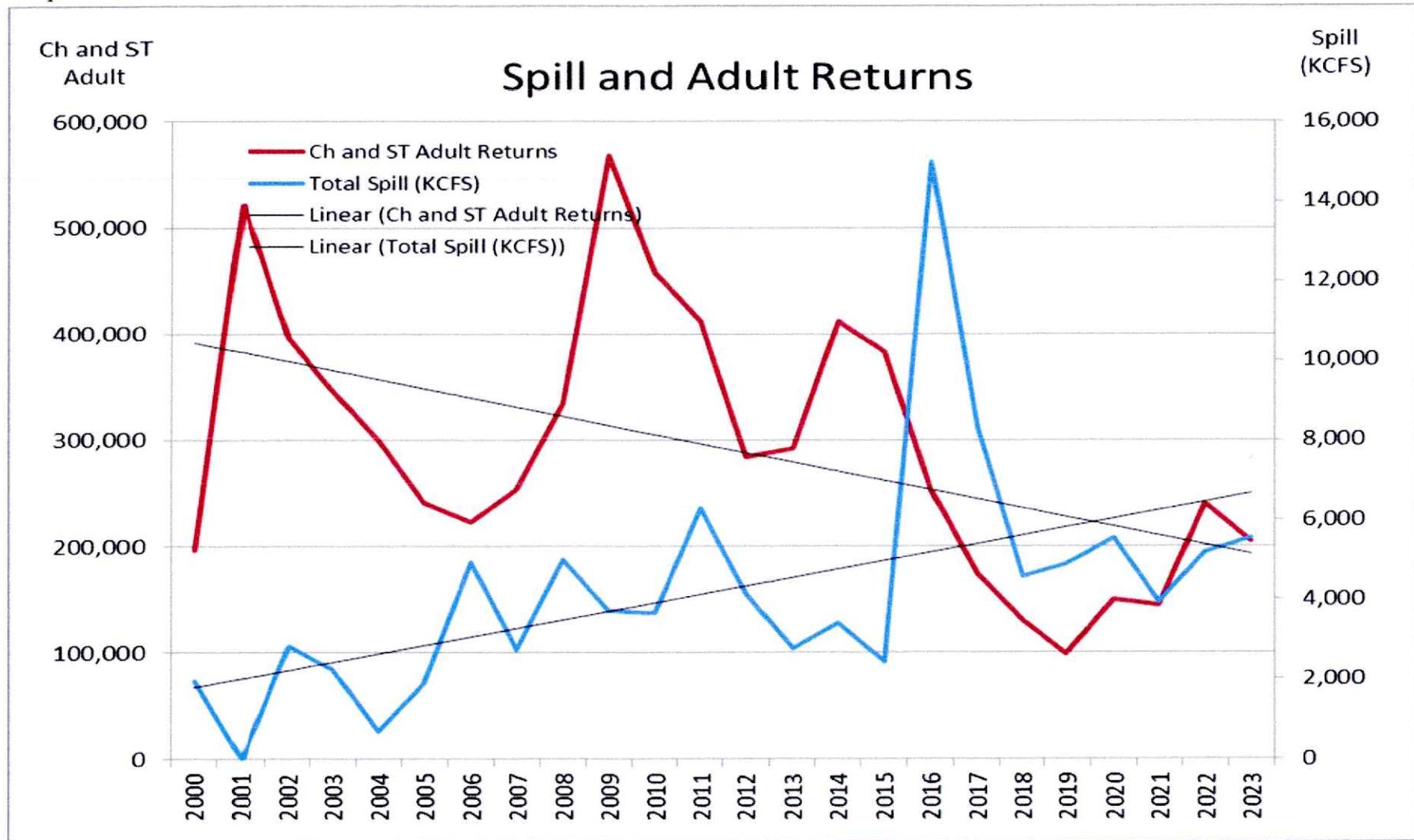
Graph 2 shows the relationship between spill and the number of smolts bypassed. The trend lines show that as spill is increased (upper trend line) the number of smolts bypassed also increases. Smolts can also be bypassed from the collection system.

Graph 2.



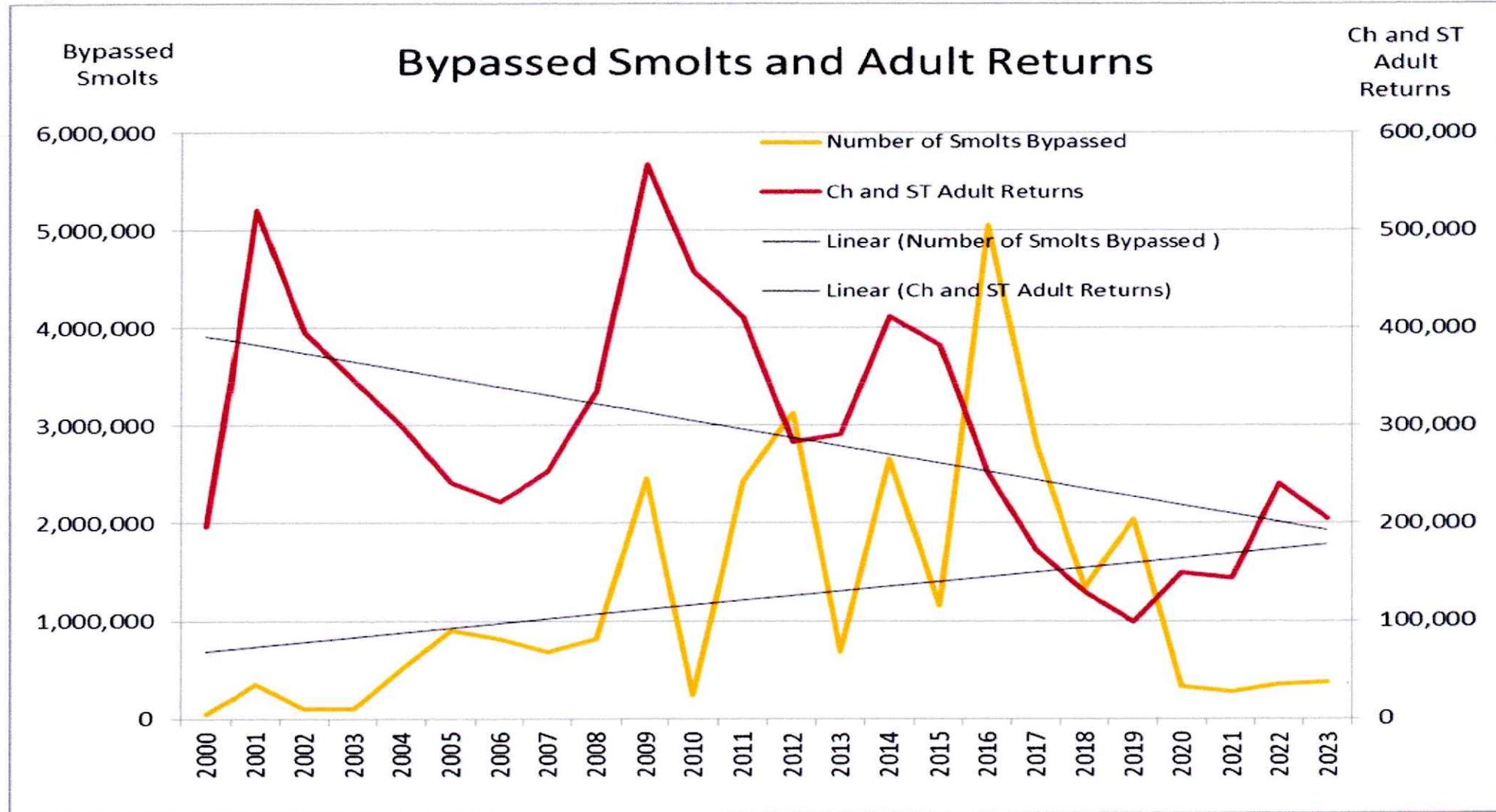
Graph 3. Although some smolts are bypassed through the collection system, when spill is high, a greater percentage of smolts are bypassed through the spill. Increased spill decreases adult returns.

Graph 3.



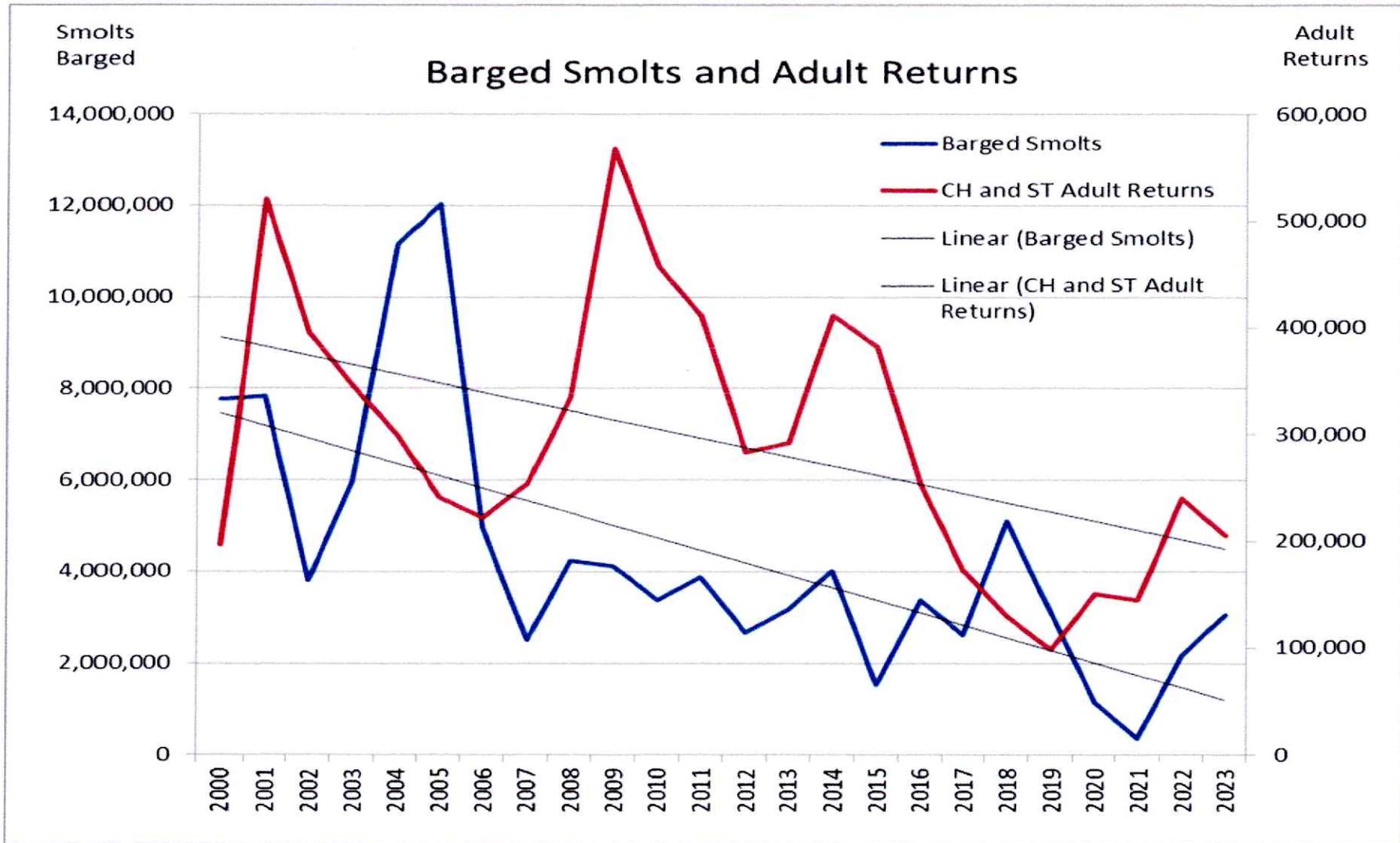
As identified Graph 2, fish migrating downstream are a product of water. When water is spilled, smolts are also spilled, or bypassed. As a result, the number of in-river migrants is increased and exposed to a 50% mortality rate. Graph 4 shows that as the number of in-river (bypassed) smolts increases, (bottom trend line) the number of returning adults decreases (top trend line).

Graph 4



In Graph 5 the top trend line is the number of adult returns; the bottom trend line is the number of smolts transported (barged), showing that decreased barging (transportation) of smolts produces decreased Chinook and steelhead returns. When barging is reduced, adult returns are reduced and when barging is increased, adult returns increase. The nearly parallel trend lines show the close association between barging and Chinook/steelhead returns.

Graph 5



Transported smolts correlate to adult returns that occur four years later. Graphing this correlation results in trend lines that are almost parallel (Graph 6). The following Fish Passage Center data was used, comparing barged smolts (2000) with returning Chinook and steelhead adults four years later (2004).

Chart 1.

| <u>Data from FPC</u> |                      | <u>Data from FPC</u> |  |
|----------------------|----------------------|----------------------|--|
| <u>Year</u>          | <u>Barged Smolts</u> | <u>Year</u>          | <u>Returning Chinook and Steelhead</u> |
| 2000                 | 7,779,353            | 2004                 | 299,659                                |
| 2001                 | 7,848,436            | 2005                 | 241,290                                |
| 2002                 | 3,809,665            | 2006                 | 221,819                                |
| 2003                 | 5,957,881            | 2007                 | 253,830                                |
| 2004                 | 11,164,132           | 2008                 | 334,791                                |
| 2005                 | 12,032,623           | 2009                 | 567,932                                |
| 2006                 | 4,963,248            | 2010                 | 457,557                                |
| 2007                 | 2,509,548            | 2011                 | 411,250                                |
| 2008                 | 4,235,017            | 2012                 | 283,550                                |
| 2009                 | 4,112,943            | 2013                 | 291,470                                |
| 2010                 | 3,378,007            | 2014                 | 411,406                                |
| 2011                 | 3,859,265            | 2015                 | 382,307                                |
| 2012                 | 2,659,998            | 2016                 | 252,795                                |
| 2013                 | 3,170,685            | 2017                 | 172,961                                |
| 2014                 | 4,008,679            | 2018                 | 129,800                                |
| 2015                 | 1,526,694            | 2019                 | 98,778                                 |
| 2016                 | 3,379,603            | 2020                 | 149,782                                |
| 2017                 | 2,612,019            | 2021                 | 144,033                                |
| 2018                 | 5,112,569            | 2022                 | 240,102                                |
| 2019                 | 3,099,442            | 2023                 | 204,851                                |
| 2020                 | 1,144,545            |                      |  |
| 2021                 | 489,010              |                      |  |
| 2022                 | 2,159,088            |                      |  |
| 2023                 | 3,041,835            |                      |  |

Note the trend lines in Graph 6 are almost parallel and many transported smolts and returning adult data points are almost parallel.

The percentage of adult returns compared to the number of smolts transported four years earlier (S:A+4) is found by dividing the number of returning adults by the number of smolts transported four years earlier.

$$\frac{\text{number of returning adults} + 4}{\text{number of smolts barged}}$$

Between 2000 to 2019 (twenty years of data) the percent average is .06606. This percentage is applied to barged smolts in 2020-2023 to fill in Chart 1 and Graph 7 for the number of projected returning adults for years 2024-2027.

Chart 2.

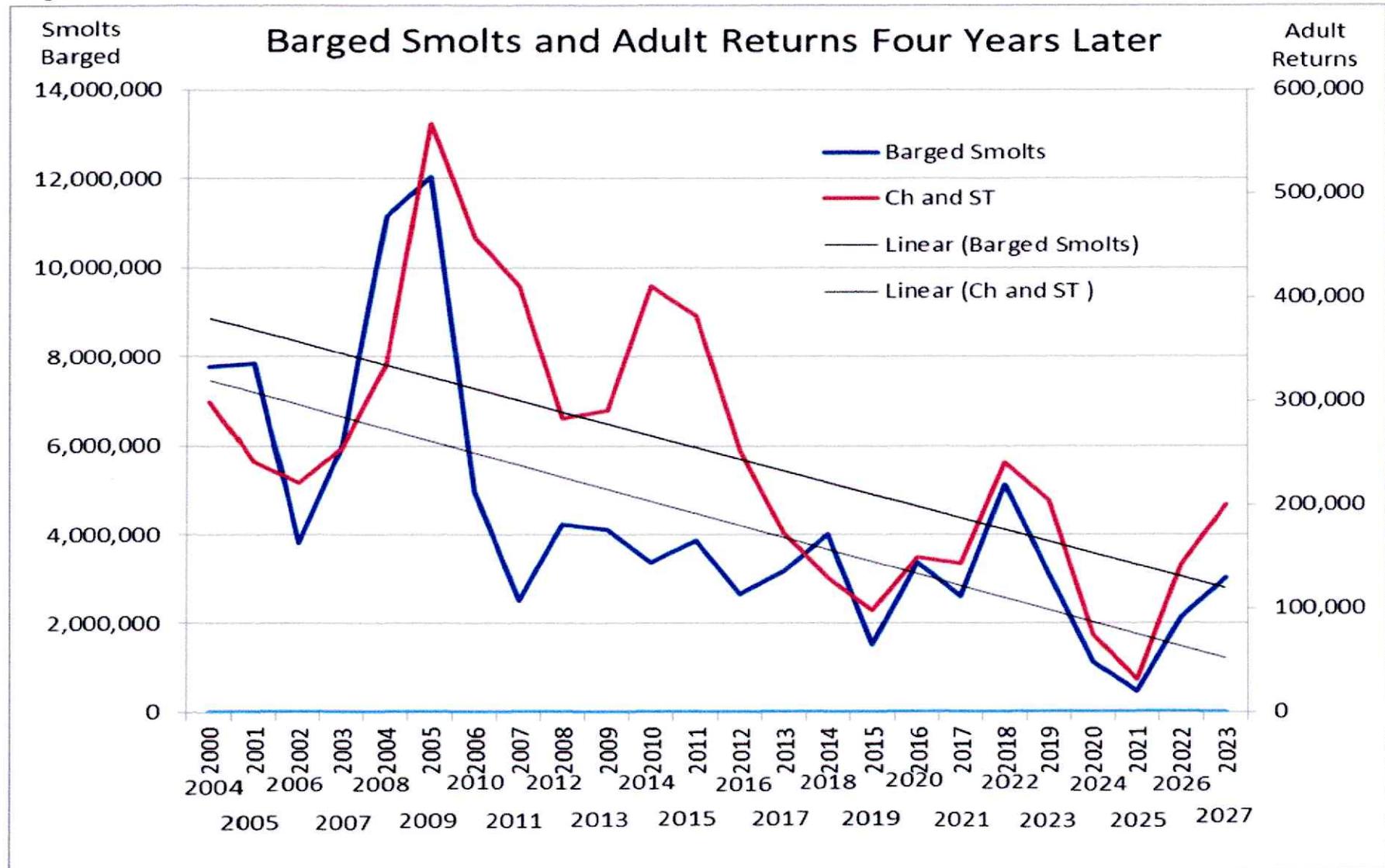
| Data from FPC |               | Data from FPC |                       |             |
|---------------|---------------|---------------|-----------------------|-------------|
| year          | Barged Smolts | Years         | Chinook and Steelhead |             |
| 2000          | 7,779,353     | 2004          | 299,659               | 0.038519784 |
| 2001          | 7,848,436     | 2005          | 241,290               | 0.030743705 |
| 2002          | 3,809,665     | 2006          | 221,819               | 0.05822533  |
| 2003          | 5,957,881     | 2007          | 253,830               | 0.042604073 |
| 2004          | 11,164,132    | 2008          | 334,791               | 0.02998809  |
| 2005          | 12,032,623    | 2009          | 567,932               | 0.047199351 |
| 2006          | 4,963,248     | 2010          | 457,557               | 0.092189026 |
| 2007          | 2,509,548     | 2011          | 411,250               | 0.163874132 |
| 2008          | 4,235,017     | 2012          | 283,550               | 0.066953686 |
| 2009          | 4,112,943     | 2013          | 291,470               | 0.07086653  |
| 2010          | 3,378,007     | 2014          | 411,406               | 0.121789564 |
| 2011          | 3,859,265     | 2015          | 382,307               | 0.099062127 |
| 2012          | 2,659,998     | 2016          | 252,795               | 0.095035786 |
| 2013          | 3,170,685     | 2017          | 172,961               | 0.054550042 |
| 2014          | 4,008,679     | 2018          | 129,800               | 0.032379744 |
| 2015          | 1,526,694     | 2019          | 98,778                | 0.064700588 |
| 2016          | 3,379,603     | 2020          | 149,782               | 0.044319407 |
| 2017          | 2,612,019     | 2021          | 144,033               | 0.055142401 |
| 2018          | 5,112,569     | 2022          | 240,102               | 0.046963083 |
| 2019          | 3,099,442     | 2023          | 204,851               | 0.066092864 |
| 2020          | 1,144,545     | 2024          | 75,609                | 0.06606     |
| 2021          | 489,010       | 2025          | 32,304                | 0.06606     |
| 2022          | 2,159,088     | 2026          | 142,629               | 0.06606     |
| 2023          | 3,041,835     | 2027          | 200,944               | 0.06606     |

Average of 06606.

Multiply 2020 transported smolts (1,144,545) by 0.06606, returns an approximate adult return in 2024 at 75,608.  
 The 2021 transported smolts, multiplied by 0.06606 is a return of approximately 32,304 adults in 2025.  
 The 2026 adult returns are estimated at 142,629 and 2027 at 200,944.

In 2021, the new bypass system at Lower Granite Dam was installed, with the bypass of an unknown number of smolts. Graph 7 includes these adult returns figures for 2024-2027.

Graph 7.



Estimated adult returns for 2024 and 2025 look bleak due to low number of transported smolts in 2020 and 2021.

If we want healthy returns of salmon in the near future, we have to properly managing our river and fishery resources now.

Spilling river flows to benefit fish is a fallacy.

The nitrogen gas saturation of the river is a problem for both smolts and returning adults. When spill and transport are incorporated together in a “spread the risk” management program, the in-river fish are subject to a 50% mortality (predation) rate.

The turbulence of water being spilled for fish passage damages fish in the misguided attempt to “flush” fish down river. Remember, these are run of river dams. Whatever water comes to the dam is released, either through the turbines or by spill. Spill requires that turbines are shut down or used at a lower volume of water. For example, if 100 kcfs comes to the dam, it may all be used for the turbines unless spill is required. If spill takes 50 kcfs, the turbines only get 50 kcfs. Flushing fish does not mean more water, just a different distribution of water that increases nitrogen gas saturation, smolt disorientation and damage due to the turbulence.

The research has been done. NOAA Fisheries, Northwest Fisheries Science Center, Fish Ecology Division wrote the report, “Analysis of Juvenile Chinook Salmon and Steelhead Transport from Lower Granite and Little Good Dams” in which they stated,

“...transported fish in the run at large returned at a higher rate than migrants in the run at large.”

The Fish Passage Center was asked to evaluate the NOAA report. FPC review stated,

“Smolts that were not bypassed returned as adults at a greater rate than smolts that were bypassed.”

(FPC review of the NOAA Transportation analyses and potential effects of reducing spill for fish passage in May and beginning the transportation program earlier in the spring and supporting analyses, Page 2, February 9, 2010)

For years, and continuing today, smolts are pit-tagged for, “Research related to transportation of juvenile salmonids on the Columbia and Snake Rivers, 2000”. The 2000 report can be found at:

<https://repository.library.noaa.gov/view/noaa/50373>

or

[https://repository.library.noaa.gov/view/noaa/50373/noaa\\_50373\\_DS1.pdf](https://repository.library.noaa.gov/view/noaa/50373/noaa_50373_DS1.pdf)

## Symposium Presentation Summaries Page 1

### **John McKern Presentation Summary:**

A historical review is important to understand the collective scope and magnitude of the issues surrounding the production, transportation and return of salmon and Steelhead fish to the area in which they were spawned.

The loss of spawning habitat due to dams with no fish ladders on the Snake and Columbia rivers has been a big part of the decline of anadromous fish. Also, the over harvest of millions of salmon by the canneries during the 1800's led to a large decline in the genetics of the large salmon so prevalent at that time.

Spilling water at high volumes causing nitrogen super saturation is detrimental to smolt survival. Whereas running water through the turbines to produce power and barging of smolts is historically the most productive.

The four Lower Snake River dams have been improved over time to provide at least a 96% survival for juveniles with barging and a 99% survival for Adult Salmon and Steelhead.

Smolt to adult return rates, used to judge the mitigation of Lower Snake River dams, are manipulated by the harvest management agencies. When runs improve they impact harvest, increasing incidental bycatch of ESA listed salmon and steelhead.

### **Rusty Bentz Presentation Summary:**

From my sportsman's perspective, the presentation of facts at the symposium indicated that the years from 2000-2015 were the best returning fish runs in the past 85 years. Also, the years of 2016-2017 were the poorest returning results, after a court ordered increase in spill and a decrease in barging. The thought was that an increased spill was the best way to move smolts down river, because barging wasn't natural. This has been a disaster due to extreme levels of nitrogen gas produced, that are lethal to smolts via gas bubble disease.

This activity is creating a poor return of adult steelhead and Spring Chinook that are important to recreational fishing for many months of the year. There have been more fish returning in the 21<sup>st</sup> century than ever did in the 20<sup>th</sup> century.

**Charlie Pottenger Presentation Summary:**

Anecdotal facts were presented about declining fish runs from about 1850 to the early 1930's. Since then, even with the building of many dams within the Columbia River system, there has been no demonstrable continuing decline in salmonid fish runs. However, during this period, dams built without fish ladders have contributed to a 55+% loss of spawning habitat.

Dams built with fish ladders to help returning adults have been effective for the past 85 years and have not impeded adult salmon runs when spill patterns were properly adjusted at the dams.

Barging provides 98% survival versus high volume spilling which kills 40-60% of smolts before they reach the estuary. Charlie also presented a chart that shows in detail how returning fish numbers increased when barging was improved after the last dams were in place in 1975. Dams are necessary to be able to collect and transport fish without issues from the remaining dams on the Snake and Columbia rivers.

**Dan Caldwell Presentation Summary:**

Dan discussed in detail his experience with barging and the process of collecting and handling smolts. He also gave a brief history of the evolution of the process that shows the importance of understanding the constant ongoing development of fish facilities and dam review and upgrade. He discussed how new turbine designs and the addition of diversion screens at the entrance to the turbines dramatically increased the survival of outgoing juvenile fish.

He discussed dam nomenclature, as well as the barge design and improvement that has helped with the reduction of nitrogen saturation from lethal levels to a more natural environment on the trip downriver to a release site below Bonneville dam. The degasifying water flow system makes this possible. Barging prevents time delays, predation by fish and avian species, delayed mortality, temperature increases and the passing through the remaining 7 dams that are all producing high nitrogen levels because of high volume spilling.

## Symposium Presentation Summaries Page 3

### **Jerry McGehee Presentation Summary:**

The life cycle of both wild and hatchery Salmon and Steelhead smolts have intricately interlinked mysteries with their environment. For example, a tiny window of time when their instinctive drive starts an internal clock and a focused mission to reach the ocean. The early rearing and smolt life stage of our wild and hatchery Salmon and Steelhead smolts is a complex business. Several of these pieces were presented in a jigsaw puzzle format. These puzzle pieces form the beginning of a picture showing you that there is more than one piece responsible for the success or failure of their mission.

Elements of water quality, essential nutrients for early rearing grounds carried from the ocean by spawning adults, predation, spilling and nitrogen saturation at dams, ocean conditions, ocean harvest, commercial harvest, gill netting, increased barging and increases in hatchery output are a few of the pieces of the picture of their life.

It is *past* time for people to take a deep breath, step back and work together to determine *all* the details that contributed to the historic number of Salmon and Steelhead returning to Idaho 2001 to 2015. This presentation will inform you of some of the helpful and harmful issues.

**WE SHOULD DO ALL WE CAN TO DUPLICATE THESE ACTIONS TO SAVE OUR FISH.**

### **John McKern Presentation Summary #2:**

John discussed the concept of predation in detail regarding the decline of outbound juvenile smolts and the return of adults. Pelicans, cormorants, Caspian terns, sea gulls, pike minnows, catfish, bass, and walleye are all responsible for a large decline of smolts between dams and then lethal doses of nitrogen saturation from high volume spill is waiting for them at each dam. Barging fish at a 98% survival rate around the dams prevents all the above.

Sea lions and seals are responsible for the loss of 40% of returning chinook salmon. All of this has a direct toll on the expectations of tribal members, river guides and the sport fishing community in general.

He also discussed the possible replacement of the dams with other unrealistic and questionable alternatives.

The conclusion of the symposium was clear, that fish and dams can co-exist. Fish counts can be returned to acceptable numbers and all the benefits that the dams provide would still be available.

## Symposium 2023 Brief Biographies

We are proud to announce our **Keynote Speaker, Mr. John McKern**, a retired Fish and Wildlife Biologist. He came to the Walla Walla District of the Corps in 1971 after attaining his BS in Wildlife Science and an MS Degree in Fisheries Science. He brings his many years of experience and detailed understanding of these complex issues to the forefront in his presentations **“The History of the Decline of the Columbia River Salmon”** and **“Predation and Snake River Salmon”**.

**Mr. Rusty Bentz**, professional Idaho Outfitter and Fishing Guide with many decades of experience together with **Dr. Charles Pottenger, PhD**, retired VP Operations of Potlatch Corporation Northwest Paper Division Lewiston, ID and McGehee, Arkansas, and lifetime fishermen, share their vast knowledge and experience in their presentation **“Sportsmen’s Historical Perspective of Salmon and Steelhead Runs”**.

**Mr. Dan Caldwell**, a Biological Technician with the U.S.G.S. & U.S.A.C.E., has vast work experience and training in smolt recovery spill research, smolt release operations for out migration research and other requirements regarding smolt research. He brings all of his valuable barging knowledge together in his compilation **“Fish Barge Transportation = 98% Smolt Survival Rate”**.

**Mr. Jerry McGehee**, from a 36 year Aquaculture career with Idaho Fish and Game, delivers his observations of rearing 33 million steelhead smolts and 65 million chinook smolts in his presentations **“Salmon & Steelhead Smolt Migration to the Ocean”**, **“Total Gas Saturation and Gas Bubble Disease”**, and **“Missing Spawning Grounds Nutrients”**.

Our speakers’ full biographies will be posted on our website [cfpfd.org](http://cfpfd.org) and also available at the symposium.



Powering Strong Communities

January 29, 2024

The Honorable Jeff Duncan  
Chairman  
Subcommittee on Energy, Climate & Grid Security  
House Energy & Commerce Committee  
2229 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Subcommittee on Energy, Climate & Grid Security  
House Energy & Commerce Committee  
2111 Rayburn House Office Building  
Washington, DC 20515

The Honorable Cathy McMorris Rodgers  
Chairman  
House Energy & Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Energy & Commerce Committee  
2123 Rayburn House Office Building  
Washington, DC 20515

Dear Chairman Duncan, Ranking Member DeGette, Chairman Rodgers, and Ranking Member Pallone:

The American Public Power Association (APPA) appreciates the opportunity to submit a statement for the record for the January 30, 2024, hearing, “Exposing President Biden’s Plan to Dismantle the Snake River Dams and the Negative Impacts to the United States.”

APPA is the voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide. APPA represents public power utilities before the federal government to protect the interests of the more than 49 million people they serve, and the 96,000 people they employ.

Public power has a strong presence in the Pacific Northwest and a long and proud history of providing low-cost, reliable electricity that has been a bedrock of the region’s growth and prosperity, much of which can be attributed to hydropower. Many of APPA’s members buy power produced by the Lower Snake River Dams (LSRDs), which are part of the broader Columbia River Power System, or own and operate their own hydropower projects. Making full use of the nation’s hydropower resource is key to ensuring that the nation’s – and the Pacific Northwest’s – grid remains reliable and resilient, and that utilities can meet emission reduction goals. Hydropower is an abundant source of emissions-free, baseload power. Furthermore, hydroelectric generators can be started or stopped quickly, which make them more responsive than most other energy sources for meeting demand for electricity at its “peak” or highest volume. Hydropower’s “black start” capability makes it especially valuable in restoring power when there are widespread outages or disruptions on the system—this capability allows the generating units to cycle back on quickly if they have been tripped off in a power outage.

It is difficult to overstate how critical it is to maintain the LSRDs as the region – and the nation – seeks to lower emissions while maintaining electric reliability and affordability over the long-term. Recent extreme weather events have demonstrated that the LSRDs are an irreplaceable resource not just in the future but right now– both in terms of energy, capacity, and other grid services key to maintaining reliable electricity. Moreover, public power utilities recognize and are committed to scientific, cost-effective mitigation for the impacts of the federal hydropower system. Costs related to fish and wildlife mitigation, including the cost of lost power generation,

comprise a quarter or more of the Bonneville Power Administration’s power rates. The LSRDs feature state-of-the-art fish passage technology that greatly improves in-river fish survival, achieving spring juvenile survival at 96 percent and summer migrating fish survival at 93 percent.

Given the criticality of the LSRDs to maintaining electric reliability in the Pacific Northwest, APPA was alarmed and dismayed with the settlement agreement (“agreement”) that was filed on December 14, 2023, in federal district court in Oregon that sets commitments made by the U.S. Government and implemented through a Memorandum of Understanding, “Columbia River Basin Restoration Initiative,” between the United States; the States of Oregon and Washington; the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes; and environmental non-profit organizations. While the U.S. Government says that the agreement does not “constitute a decision by the [U.S. Government] to support legislation to authorize dam breaching, the [U.S. Government] continues to be committed to exploring restoration of the Lower Snake River, including dam breach.” The agreement then outlines a plan to consider many of the issues that would need to be addressed – most notably, replacement power – to get to a place where the dams can be removed.

The agreement clearly shows that the Biden administration’s goal is dam breaching, a conclusion that runs counter to decades of studies, science, and governmental actions, and an outcome that would destabilize the economy of an entire region of the nation. Not only does this expose a severe lack of understanding about the importance of keeping the lights on, it also reveals a misplaced desire to undermine our nation’s essential emissions-free hydropower system without considering the cost. Implementation of the agreement would weaken the administration’s stated greenhouse gas reduction goals by undermining hydropower, an always available, emissions-free source of electric generation critical to grid stability. As our nation depends on electricity to power more of the economy, we need more generating resources – not fewer. Simply put, this proposal flies in the face of common sense.

APPA strongly opposes the agreement and is alarmed with the opaque process by which it was developed. Removal of the LSRDs may prove to be a tipping point, nudging the Northwest system into acute scarcity of electric supply. The federal hydropower system, and particularly the LSRDs, are in a critical position to maintain grid reliability and prevent blackouts in the West. Moreover, no existing alternative technologies can provide the same combination of low cost, reliable, and flexible attributes, and it is far from clear that dam removal will result in meaningful fish recovery commensurate with costs.

Sincerely,



Scott Corwin  
President & CEO

Attachments:

- APPA Resolution: “*In Support of Hydropower, the Federal Columbia River Power System, and Opposing Breach of the Lower Snake River Dams*” (2022).
- APPA and NRECA Letter to Energy Secretary Jennifer Granholm (December 1, 2023).

**Sponsors: Oregon Municipal Electric Utilities Association; Northwest Public Power Association; Northwest Requirements Utilities; Washington Public Utility Districts Association; Oregon People’s Utility District Association; Idaho Consumer-Owned Utilities Association; Benton Public Utility District; Cowlitz Public Utility District; Franklin Public Utility District; City of Richland; Chelan Public Utility District; Grant Public Utility District; Douglas County Public Utility District**

**In Support of Hydropower, the Federal Columbia River Power System, and Opposing Breach of the Lower Snake River Dams**

1 Hydropower is a premier renewable resource that provides cost-effective, clean electricity. It plays a  
2 critical role as our nation works to lower greenhouse gas emissions and maintain an affordable, reliable,  
3 and resilient grid. As policies are adopted to increase the electrification of other sectors of the economy,  
4 such as transportation, it has become increasingly important. Hydro generation is unique in its ability to  
5 instantly increase or decrease generation and in maintaining the constant balance of generation and  
6 electric demand. It provides a foundation for reliability that is necessary with increasing levels of variable  
7 renewable resources, such as wind and solar.

8  
9 The recently concluded Columbia River System Operation (CRSO) Environmental Impact Statement  
10 (EIS) studied the environmental, biological, power supply, and socioeconomic impacts of the entire  
11 Federal Columbia River Power System, which is marketed by the Bonneville Power Administration  
12 (BPA). This multi-year, \$50.4 million analysis of the system was conducted by federal government  
13 experts with consultations by federal natural resources agencies, state and tribal entities, and with input  
14 from the public. The EIS included analysis of the impacts of removing or breaching the Lower Snake  
15 River Dams (Lower Granite, Little Goose, Lower Monumental, and Ice Harbor). The unambiguous  
16 conclusion of this comprehensive federal study is that the Lower Snake River Dams play a critical role in  
17 the Northwest power system and economy, and that their continued operation does not jeopardize the  
18 existence of endangered or threatened salmon species.

19  
20 The Lower Snake River Dams are among the lowest cost generating resources in the region and are a  
21 critical part of providing affordable, clean electricity to several of the region’s most vulnerable  
22 communities. On an annual basis, the plants on the Lower Snake River provide about 1,000 average  
23 megawatts of electricity, enough to serve over half a million Northwest businesses, industries, and  
24 households.

25  
26 The continued operation of the Lower Snake River Dams is central to reliably meeting the region’s clean  
27 energy goals, providing dispatchable capacity to prevent blackouts and ramping capability to integrate  
28 other renewable resources. The Lower Snake River Dams can provide over 2,000 megawatts of sustained

29 peaking capacity and represent a quarter of the Federal Columbia River Power System’s reserves holding  
30 capability. As extreme weather events, like ice storms and heatwaves, have become more commonplace,  
31 the Lower Snake River Dams have also proved critical to ensuring public safety.

32

33 The Lower Snake River Dams are important to maintaining an affordable power supply for Northwest  
34 communities. Breaching the Lower Snake River dams and replacing them with other non-emitting  
35 resources—the most likely scenario given coal plant retirements and state clean energy policies—could  
36 raise BPA’s power supply rates up to 50 percent. For most utilities relying on BPA, that translates to a 25  
37 percent rate increase for their customers.

38

39 Public power utilities are committed to scientific, cost-effective mitigation for the impacts of the federal  
40 hydro system. Costs related to fish and wildlife mitigation, including the cost of lost power generation,  
41 comprise a quarter or more of BPA’s power rates. The Lower Snake River Dams feature state-of-the art  
42 fish passage technology greatly improving in-river fish survival, achieving spring juvenile survival at 96  
43 percent and summer migrating fish survival at 93 percent. Academic studies have shown that fish survival  
44 through the Federal hydro system is comparable to undammed rivers, such as the Fraser River in British  
45 Columbia. Removal of the Lower Snake River Dams is not a clear path to recovery of endangered species  
46 or overall abundance of salmon. More attention is needed to the threats of ocean conditions, avian  
47 predation, and over-fishing.

48

49 In addition to delivering affordable and reliable clean power, the Lower Snake River Dams contribute to  
50 the region’s economy by providing irrigation, navigation, recreation, and employment.

51

52 **NOW, THEREFORE, BE IT RESOLVED:** Consistent with environmental protection, the American  
53 Public Power Association (APPA) opposes efforts to remove productive dams that provide, or have the  
54 potential to provide, clean and economic hydropower generation; and

55

56 **BE IT FURTHER RESOLVED:** That APPA opposes proposals to breach the Lower Snake River  
57 Dams, or the development of additional federal studies that presuppose removal of the Lower Snake River  
58 Dams, and encourages collaboration to help salmon in every part of their life cycle.

**Adopted at the Legislative & Resolutions Committee Meeting**

**March 1, 2022**

**Sunsets in March 2030**



December 1, 2023

The Honorable Jennifer Granholm  
Secretary  
U.S. Department of Energy  
1000 Independence Ave. SW  
Washington, D.C. 20024

Secretary Granholm:

The National Rural Electric Cooperative Association (“NRECA”) and American Public Power Association (“APPA”) are alarmed by the Draft Mediated Agreement, entitled “U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative and in Partnership with the Six Sovereigns” (“Draft Agreement”) recently released by Congress. If this Agreement is ratified, it would jeopardize electric reliability and increase costs for millions of Americans throughout the Pacific Northwest.

The Draft Agreement clearly shows that the Administration’s goal is dam breaching, a conclusion that runs counter to decades of studies, science, and governmental actions, and an outcome that would destabilize the economy of an entire region of the nation. Not only does this expose a severe lack of understanding about the importance of keeping the lights on, it also reveals a misplaced desire to undermine our nation’s essential emissions-free hydropower system without considering the cost.

The Draft Agreement would weaken the Administration’s stated greenhouse gas reduction goals by undermining hydropower, an always available, emissions-free source of electric generation critical to grid stability. As our nation depends on electricity to power more of the economy, we need more generating resources – not fewer. This proposal flies in the face of common sense and would make hydroelectric operations unnecessarily costly and unstable. BPA’s hydropower system forms the backbone of reliability in the region. Communities across the West, including those in rural America, many of which are located in persistent poverty counties, would suffer the brunt of these impacts.

In addition to the severely questionable obligations of the Draft Agreement, NRECA and APPA also have significant concerns about the lack of transparency inherent in this Columbia River System Operations (CRSO) mediation, as well as the Council on Environmental Quality’s (CEQ) Request for Information on the management of the CRSO (Docket No: CEQ-2023-0002). This process has shut critical stakeholders and parties out of this Agreement and the administrative process. It has deprived our members in the Northwest, intimate stakeholders in CRSO operations, and millions of their customers of having fair representation in these proceedings.

We strongly oppose the ratification of the Draft Agreement. The reliability of the Western electric grid is critical to continued national security, stability of our domestic food and mineral supplies, national economic stability, and our nation’s energy security. Reliability should be prioritized as the U.S. Government moves forward in assessing the legality and appropriateness of these proposed obligations.

Moreover, the Administration should engage in an open and transparent process with our members, all CRSO stakeholders, and Congress to address our concerns going forward.

Respectfully,



Jim Matheson  
CEO  
National Rural Electric Cooperative Association



Scott Corwin  
CEO  
American Public Power Association

Cc. John Podesta, Senior Advisor to the President of the United States  
The Honorable Deb Haaland  
The Honorable Tom Vilsack  
The Honorable Pete Buttigieg  
The Honorable Michael Connor  
The Honorable Brenda Mallory

Washington Congressional Delegation  
Idaho Congressional Delegation  
Montana Congressional Delegation  
Oregon Congressional Delegation



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair  
House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
Chair  
Energy, Climate, & Grid Security  
Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Energy, Climate & Grid Security  
Subcommittee  
Rayburn House Office Building  
Washington, DC 20515

Dear Chair McMorris Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, and Subcommittee Ranking Member DeGette:

Northwest RiverPartners (NWRP) represents not-for-profit, community-owned electric utilities in Washington, Oregon, Idaho, Montana, Utah, Nevada, and Wyoming that rely on the hydropower generated from the Columbia Snake River System to meet the needs of their more than three million customers. NWRP also represents farmers, labor industries, private businesses, ports, and users of clean, reliable transportation and navigation.

The federal dams in the Pacific Northwest provide renewable, reliable, and clean hydropower, contribute to electrification and decarbonization mandates, keep energy costs low for our vulnerable populations, provide valuable irrigation and cargo movement, support municipal water and wastewater treatment facilities, and have contributed to the establishment of important recreation economy. Importantly, in May 2023 NOAA's Columbia Hydropower Branch Chief confirmed that the Lower Snake River dams are meeting their yearling, subyearling, and adult survival objectives for ESA listed species.<sup>1</sup>

Given these essential benefits provided by the dams, on behalf of our member organizations and customers they serve in the West, we are pleased to comment on the House Committee on Energy & Commerce hearing entitled "Exposing President Biden's Plan to Dismantle the Snake River Dams and the Negative Impacts to the U.S."

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## ***How We Got Here***

As a defendant intervener in the decades-long litigation over the Columbia River System Operations (CRSO), NWRP had a front row seat to the “mediation” efforts undertaken by the Council on Environmental Quality (CEQ) to achieve an out of court settlement. As we maintained and communicated throughout that process, the Federal Government truly had an opportunity to achieve a consensus agreement regarding salmon recovery but instead opted not to consider meaningful contributions by experts in the energy and river transportation sectors.

Before getting into the substantive concerns regarding the actions recently taken by the Biden Administration in relation to the Federal Power System, we think it is important for the Committee to have some detail on how we got here.

The framework for the discussions were defined by objectives identified in the August 4, 2022 stay order for the litigation regarding the CRSO, stating:

“The Biden Administration is committed to supporting development of a durable long-term strategy to restore salmon and other native fish populations to healthy and abundant levels, honoring Federal commitments to Tribal Nations, delivering affordable and reliable clean power, and meeting the many resilience needs of stakeholders across the region.”<sup>ii</sup>

The process was led by CEQ and the Federal Mediation and Conciliation Service (FMCS).

Later in 2022, CEQ presented NWRP and parties to the mediation with a draft “CRSO Litigation Stay –Schedule of Actions and Critical Milestones for the Long-Term Strategy” that sought to establish a more detailed framework for the mediated discussion as well as a rough outline of a timeline for those discussions. NWRP and other stakeholders were asked to make suggestions and comments on the draft document and so we did. We received no written response to our submission. When we asked about the status of this document and the identified timeline in later discussions, CEQ staff acted as though the document had not ever been produced.

The process then proceeded with the establishment of a series of “work groups” that were designed to foster dialogue and idea exchange around a range of topics including, for example, “Reintroduction,” “Long-Term Power System Reliability and Clean Energy Goals,” “Climate Change and Ocean Conditions,” and “Fisheries/Harvest and Hatcheries.” On January 5, 2023, NWRP and the Inland Ports and Navigation Group (IPNG) wrote a letter [ENCLOSED] to the FMCS detailing concerns about how the process was being conducted. We received our response [ENCLOSED] from Sarah Cudahy, FMCS’ Associate Deputy Director for Field

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Operations on February 7, 2023 in which she stated, “I encourage you to continue to bring any substantive suggestions for adjustment or proposals you may have to any of the upcoming Working Group 2 meetings that will address a number of topics including those detailed in your letter.”

Beginning in early 2023, NWRP and other parties to the mediation participated in work group meetings and submissions of written responses to prompts provided by CEQ. NWRP provided and presented hundreds of pages of responses, reports, and analyses to help inform the dialogue and that were responsive to meeting the multiple objectives articulated in the original stay order. To date, we have not received a single substantive response to any of these submissions.

And then, without notice or disclosure as to the reason, the “work group” meetings stopped. We did not know it then but know now that termination of the “work group” process coincided with the initiation of secret negotiations between the Biden Administration and the “Six Sovereigns.”

After some period of time, NWRP and other parties to the mediation learned of the secret negotiations, though we were not fully aware of who was participating. On August 30, 2023, we and other parties to the mediation process wrote a letter to CEQ Chair Mallory detailing our concerns regarding the process her agency was leading [ENCLOSED]. We received no written response.

While CEQ and FMCS were unwilling to accommodate us in the process, strangely, the Federal Government repeatedly acknowledged the validity of our concerns about being excluded from negotiations, even prompting a U.S. Justice Department attorney to call the process they utilized “a mistake.” Remarkably, despite this admission, the Biden Administration forged ahead on this errant course without making any adjustments.

After spending at least five months in secret negotiations with the “Six Sovereigns” without meaningfully engaging other stakeholders, including defendant intervenors, CEQ provided NWRP and other parties to the mediation only eight business days to respond to a draft “Commitments Document” the Biden Administration had produced as a settlement proffer to the “Six Sovereigns.” NWRP produced a 15-page letter and detailed redline of the draft “Commitments Document” that, like all previous submissions, received no response. Similarly, requests that FMCS facilitate discussions to walk through both our comment letter and our redline of the “Commitments Document” with the appropriate U.S. Government representatives, and to facilitate a meeting with representatives of the “Six Sovereigns” were never acknowledged or fulfilled.

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We think it is important for the Committee to understand the many ways that the U.S. Government’s management of the process has failed to not only live up to the letter and spirit of the approach the Biden Administration articulated at the start of the mediation process, but failed to meaningfully accommodate the views of experts in the region working to maintain grid reliability and energy affordability, particularly for some of our most vulnerable populations, as we struggle to meet the challenges of climate change.

We entered this dialogue in good faith, knowing that we would not agree with everything we heard or was being suggested, but we were prepared to listen, learn, and engage. We had hoped that the Biden Administration and other parties would approach the process with the same spirit. Unfortunately, we were told by the mediators and Administration representatives that because the plaintiffs found it too uncomfortable to hear facts and positions they might not agree with, we needed to be excluded from the dialogue. Predictably, the settlement agreements resulting from this process reflect the paucity of meaningful engagement across a broad cross section of regional stakeholders. That is more than a pity; this is a disservice to the people of the Pacific Northwest and the communities who rely on the clean, affordable power produced by the Federal Power System.

Unfortunately, meaningful stakeholder engagement in the process going forward remains in jeopardy. The “Commitments Document” obligates the U.S. Government to multiple further analyses, report development and additional policy adjustments. The U.S. Government essentially handed the pen to the plaintiffs in writing the unauthored 2022 NOAA “Rebuilding Interior Columbia Basin Salmon and Steelhead” report which provides the foundational “science” that is now being used as the predicate for dam removal. The way the environmental and other reviews are structured in the “Commitments Document” and the corresponding MOU strongly suggests that the “Six Sovereigns” will retain their ability to exclude other stakeholders and will use those processes to deliberately undermine the value of the hydropower system, put further stress on its operations and drive-up costs for ratepayers. To assume otherwise would be naïve, at best. In fact, efforts to engage the Biden Administration in recent days regarding how NWRP may be able to access information or participate in ongoing workstreams associated with the Presidential Memorandum on salmon recovery have resulted in Administration officials telling us we may not be allowed to receive information or join the process at all. This does not curry favor for inclusion with the “Commitments Document” either.

### ***The Agreements***

Hydropower enjoys immense support in the Pacific Northwest due, in no small measure, to the fact that over three-fourths of the region’s renewable generation and half of its total electricity production is supplied by hydroelectric dams. As a result, the Pacific Northwest has the most affordable clean energy in the nation and provides the greatest promise of any U.S. region for

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achieving aggressive decarbonization mandates.

Because hydroelectric dams and salmon share the same river system, it is understandable that if salmon populations falter, dams will be blamed. However, the U.S. Government's own data estimates that from 1915-1938, less than one million adult salmon returned to the Columbia River Basin each year, on average.<sup>iii</sup> 1938 was the year the first federal Columbia River dam went into operation. Since then, adult salmon returns have more than doubled, peaking at over 2.5 million salmon in 2014, thanks in large part to the hatchery programs funded by the Bonneville Power Administration (BPA). Adult salmon returns in 2022 neared 2 million.

While this recovery represents a true success story, more can and must be done to address the causes of coastal-wide declines in adult salmon return rates.

Separate from the "Six Sovereigns" process, the U.S. Government also settled litigation with the Confederated Tribes of the Colville Reservation, the Coeur d' Alene Tribe, and the Spokane Tribe of Indians by committing an additional \$200 million in BPA funds to continue the study of reintroduction of salmon above Chief Joseph and Grand Coulee Dams—unlike other Columbia and Snake River dams, they were built without fish passage. Knowing the importance of addressing truly blocked areas, the NWRP board unanimously supported the Phase Two Implementation Plan (P2IP) proposal and looks forward to working with the Upper Basin Tribes for its implementation. NWRP was pleased to support P2IP, the funding allocated for the program's success, and the considerable stay in litigation that was included.

Campaigning in Portland for the presidency in 1932, future-President Franklin Delano Roosevelt spoke of his vision of developing the Columbia and its tributaries:

*"This vast water power can be of incalculable value to this whole section of the country. It means cheap manufacturing production, economy and comfort on the farm and in the household."*

And so, it has. Numerous communities, industries, and economies sprang forth from the federal government's progressive endeavors in the West, including the construction of dams to provide flood control, irrigation, clean energy, navigation, and recreation with the majority of these federal projects containing successful fish passage.

The settlement agreement with the "Six Sovereigns" is concerning due to the lack of clarity in its implementation and the strong likelihood to inject chaos into the region's efforts to achieve its clean energy objectives and salmon recovery efforts. The following areas raise particular concern moving forward:

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- **An undefined cap on BPA costs and Ratepayer’s financial exposure.** The U.S. Government asserts that the vague language contained in the settlement agreement addresses BPA’s financial responsibilities, but the agreement quite conveniently provides them an out where it states, “The Federal agencies agree to coordinate before incurring any new reimbursable expenditure in support of the USG Commitments.”<sup>iv</sup> Given the further analyses, report development and additional policy adjustments contemplated by the “Commitments Document,” this clause potentially opens the door to additional spending that the Administration would define as reimbursable by BPA. The agreement to coordinate in advance is cold comfort given the secretive, opaque process we have just been forced to endure. At a minimum, this part of the agreement contradicts Biden Administration representations that there is a hard cap on ratepayer exposure. Additionally, the Joint Motion for the stay agreement filed on December 14, 2023 and the MOU governing the settlement contain references to the “Columbia Basin Restoration Initiative” (CBRI) put forward by the “Six Sovereigns.” The MOU states that the parties “intend to advance” the CBRI, which represents nothing short of a wholesale re-ordering of the Federal Power System and would cost billions of additional dollars to implement.
- **No long-term operational certainty due to lack of true forbearance.** To be a truly durable solution, the plaintiffs should have committed to not merely discontinuing their own Endangered Species Act litigation for the next decade, but also to abstaining from other litigation which could adversely impact Federal Columbia River Power System (FCRPS) operations. The plaintiffs maintained their ability to sue BPA on other issues, including in rate proceedings. Instead of preserving their right to sue the U.S. Government, they should have instead agreed to join as co-defendants with the U.S. Government in case of lawsuits from other organizations that would potentially diminish FCRPS hydropower capabilities. Without these basic assurances, the agreement the U.S. Government made with the plaintiffs is too one-sided to count as a true settlement and fails to protect the region’s electricity customers and others who depend on the hydropower system.
- **An unprecedented shift in data access and decision-making regarding the future of BPA and CRSO.** The “Commitments Document” creates a roadmap and infrastructure that privileges the “Six Sovereigns” in obtaining information from the U.S. Government and embedding them in the decision-making process regarding the CRSO to the exclusion of other regional stakeholders. This access and the systems embedded in the “Commitments Document” provide the “Six Sovereigns” with the unique ability to influence policy outcomes without transparency or accountability. While members of the “Six Sovereigns” are most famously on the record for calling for the breaching of the four Lower Snake River dams, members of this group have also publicly called for the

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removal of the Bonneville, The Dalles and John Day hydroelectric dams on the Columbia River.<sup>v</sup> Furthermore, the settlement appears to put the Congressionally authorized decision making and fish programs delineated by the Northwest Power Act and administered by the Northwest Power and Conservation Council at risk. At a minimum, this creates substantial uncertainty regarding the Council’s role. As bad as it is that the State of Idaho, State of Montana, numerous other sovereign Columbia Basin Tribes, and users of the system including utilities, the agriculture industry, navigation, ports and municipalities were excluded from the secret negotiations between the U.S. Government and the “Six Sovereigns,” our continued exclusion from the process of implementing the agreement is unwarranted and unprecedented.

- **A requirement to outline revisions to environmental reviews by the Fall of 2024, such as a new Environmental Impact Statement (EIS).** The “Commitments Document” states:

“The USG commits to working with the Six Sovereigns on potential changes in response to the CBRI such as interim project operations identified in Appendix B, more aggressive advancement of mid- Columbia River habitat restoration, and fish passage. The USG anticipates that supplemental or additional environmental compliance will be required to evaluate and implement some or all of these changes. If so, review and revisions to the current biological opinion and/or additional ESA consultations will be required. These supplemental environmental review processes will inform and be informed by the analyses identified above related to the consideration of LSR dam breach. The Federal Government will review existing environmental compliance documents and any additional information provided by the States, Tribes, and other stakeholders and initiate any additional environmental compliance its review determines to be necessary during the fall of 2024.”

A new EIS based on the NOAA “Rebuilding Interior Columbia Basin Salmon and Steelhead” report would likely mandate breaching the LSRD and perhaps other Federal dams, and promote more spill, thereby exposing BPA to operational uncertainty and significant cost increases.

- **A requirement for the U.S. Army Corps of Engineers to conduct dam breaching “feasibility studies.”** Studies of this nature are not to be initiated by the U.S. Army Corps of Engineers without approval by Congress, yet the settlement agreement establishes a path for dam breach by trying to elude the legislative process.
- **A False Narrative Regarding the Impacts of Breaching the LSRD.** Under the terms of the settlement, the U.S. Government must agree that 1,000 – 3,000 MW of new



intermittent generation counts as “replacement power” for the lower Snake River dams. They also must present that information to Congress.

Every credible analysis to date underscores the fact that the LSRD cannot be replaced without an advancement in technology that is not currently commercially available. Our read of the “Commitments Document” and the MOU strongly suggest that the USG is endorsing the proposition that they can be. And that is confirmed by comments plaintiff’s attorneys are making to the press.

Additionally, every credible analysis, including the U.S. Government’s 2020 EIS, demonstrates that LSRD removal would result in more GHG emissions.

In 2022, the Bonneville Power Administration commissioned a study by E3 entitled “BPA Lower Snake River Dams Power Replacement Study” that examined the costs associated with replacing the Lower Snake River dams. This study reached a number of significant conclusions, including:

“Even in a best-case scenario, replacement power would cost several times as much as the lower Snake River dams costs. This is driven by both energy replacement as well as replacement of firm capacity and operational flexibility. The firm capacity value is a significant driver of replacements costs.”

“Compared to ~\$13-17/MWh for the lower Snake River dams, replacement resources cost between \$77-139/MWh. Replacement costs rise to over \$500/MWh in a deep decarbonization scenario absent emerging technology.”

“Emerging technologies such as hydrogen, advanced nuclear, and carbon capture can limit the cost of replacement resources to meet a zero emissions electric system, but the pace of their commercialization is highly uncertain. Replacing the dams in deep decarbonization scenarios without any emerging technologies requires impractical levels of renewable additions at a very high cost (\$46 billion NPV cost).”

“No new combustion case drives impractically high levels of new renewable energy to meet firm capacity needs without new firm generation options.”<sup>vi</sup>

Senator Murray and Governor Inslee’s 2022 report reached a similar conclusion when it stated, *“Replacing the characteristics of energy provided by hydropower, however, requires energy technologies that must continue to be developed.”*<sup>vii</sup>

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But we know that plaintiffs intend to ignore these conclusions and pursue dam breaching in accordance with their read of the “Commitments Document.” We know this because they have said so publicly. Amanda Goodin, a supervising senior attorney with Earthjustice, a lead plaintiff in the litigation, was quoted in a December 1, 2023 press article saying she “...disagreed that new technologies will be needed.”<sup>viii</sup>

And we know just how dangerous this would be if they were successful.

As the Fifth National Climate Assessment, released by the Biden Administration late last year states:

“While U.S. greenhouse gas emissions are falling, the current rate of decline is not sufficient to meet national and international climate commitments and goals. U.S. net greenhouse gas emissions remain substantial and would have to decline by more than 6% per year on average, reaching net-zero emissions around midcentury, to meet current national mitigation targets and international temperature goals; by comparison, U.S. greenhouse gas emissions decreased by less than 1% per year on average between 2005 and 2019.”

The Assessment highlights the impacts to the region resulting from our lack of progress in meeting our climate objectives by noting:

“In 2020, record-breaking heat and widespread drought contributed to concurrent destructive wildfires across California, Oregon, and Washington, exposing millions to health hazards and straining firefighting resources. Ongoing drought amplified the record-breaking Pacific Northwest heatwave of June 2021, which was made 2° to 4°F hotter by climate change. The heatwave led to more than 1,400 heat-related deaths, another severe wildfire season, mass die-offs of fishery species important to the region’s economy and Indigenous communities, and total damages exceeding \$38.5 billion (in 2022 dollars).”<sup>ix</sup>

One of the four stated objectives of the original stay order was to promote our clean energy future and the region’s resiliency. By substantially altering the governance and allocation of resources from the FCRPS operations, the agreement exposes everyone in the region to greater risks when it comes to grid reliability, costs, and meeting our region’s clean energy goals. We intend to work as hard as we can to ensure these realities are considered in the ongoing analyses called for by the agreement.

Our members and the market we operate in are governed by state laws in California, Nevada, Oregon, and Washington related to GHG emissions that are having profound

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impacts on reliability, affordability, and our ability to meet climate policy objectives. These laws, and other factors, are influencing western energy markets today in ways that are de-stabilizing the grid and driving up costs.

The “accounting” language contained in the “Commitments Document” appears to have been drafted under the false pretense that any single increment of installed power is sufficient to replace another installed generation source, irrespective of their capabilities. The implication that the dams can be replaced before the region achieves its clean energy mandates is particularly egregious precisely because we believe the government knows we are decades behind on achieving clean energy mandates. It is not possible to breach the dams without extending the life of fossil fueled generation by years.

Analysis performed by Energy GPS on behalf of NWRP in 2022 indicated that even if the build rate of currently available renewable technology (solar + wind + batteries) within the Western Power Pool were doubled, the region would not meet mandated emissions objectives until 2076 *with the LSRD in place*. Removal of the dams before that time adds five years of delay and millions of tons of GHG emissions.

More GHG emissions are bad for salmon. Published scientific analysis titled, “Climate change threatens Chinook salmon throughout their life cycle” by Lisa G. Crozier (NOAA Fisheries), Brian J. Burke (NOAA Fisheries), Brandon E. Chasco (NOAA Fisheries), Daniel L. Widener (Ocean Associates – under contract to NOAA Fisheries) & Richard W. Zabel (NOAA Fisheries); February 18, 2021; states, in part:

“Previous population models that have used global climate model (GCM) projections have focused on drivers in freshwater life stages only (e.g., stream temperature, winter flooding, and drought). While these are useful for evaluating restoration actions within those contexts, they completely ignore the large impacts of climate change on the marine stage.

Nonetheless, negative effects from SST [sea surface temperature] still drove most populations extinct within the century.

Climate impacts were most dramatic in the marine stage, where survival was reduced by 83–90%.

Our analysis showed relative resilience in freshwater stages, with the dominant driver toward extinction being rising SST (sea surface temperature), which tracked a ~90% decline in survival in the marine life stage.”<sup>x</sup>

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Any comprehensive effort to recover listed species must acknowledge the role climate change is playing in impacting their survival, and for listed salmon species the impacts of the marine stage of their lives have been identified by NOAA scientists as the most significant. By extending the life of fossil fueled generation sources, efforts to reduce the amount of electricity from the Federal Power System have the effect of making recovery of listed salmon more challenging and improbable.

- **No defined framework or structure for settlement agreement implementation.** There is nothing associated with this agreement that identifies a lead entity or point agency for implementation. As recently as this past week, the federal government was to follow-through on deadlines established in the Presidential Memorandum regarding salmon restoration in the Columbia River Basin. When NWRP inquired about access and availability of said documents, we were told they may not even be made public. As the settlement agreement was between the U.S. Government and “Six Sovereigns” only, it seems unlikely that any framework or agreement implementation structure would be made public either.
- **Legal questions regarding the move from Endangered Species Act (ESA)-established “not likely to jeopardize threatened or endangered species” to “healthy and abundant” salmon recovery targets.** The NOAA “Rebuilding Interior Columbia Basin Salmon and Steelhead” report is not based on Section 7 of the ESA as previous federal bi-ops have been. It is also unauthored, included no peer review or public comment, and was drafted with support from plaintiffs, yet remains the federal government’s basis for almost the entirety of the settlement agreement. Questions regarding the legality of the standards established therein have been consistently rebuffed. On the other hand, the most recent federal bi-op that established “no jeopardy” was the result of a \$40M process with 27 public meetings, two webinars, and more than 459,000 comments from tribes, state and local governmental agencies, nongovernmental organizations, stakeholders, and the general public.
- **Death by 1,000 cuts.** As agreed-to, this complicated, multi-jurisdictional, confusing settlement agreement was generated by design to slowly make the hydropower system unusable and unworkable. Despite the fact that only Congress has the authority to remove dams, anti-hydropower advocates deliberately negotiated this agreement to devalue the system and employ other methods to make them inoperable. They have indicated as much public.

Northwest utilities take the responsibility for delivering power to customers that is clean, affordable, and reliable very seriously. With electrification and decarbonization targets

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established by states, this settlement agreement is asking them to do more with less and is inviting more chaos into an energy system that is already fraught with challenges. We will not as a region meet these aggressive targets without every, single, clean megawatt available to the system, and any endeavor to remove hydropower from that system represents a setback on climate change targets.

Furthermore, energy analyses across the nation and region have indicated a surge in load growth in the future with not enough energy to match the need. In late 2023, the Western Electricity Coordinating Council (WECC) determined that in the West “Demand is expected to increase by 16.8% over the next 10 years, almost double the 9.6% growth reported in WECC’s 2022 assessment.”<sup>xi</sup> Also in late 2023, the North American Electric Reliability Corporation (NERC) determined that the Northwest is at “elevated risk” for electricity supply shortfalls.<sup>xii</sup> Ironically, both of these analyses were conducted assuming the Columbia and Snake River dams were fully operational.

While there are several items in the settlement agreement that, under different circumstances, NWRP could support, this process has created operational, litigation, and cost uncertainty. We know there are additional measures that can and should be taken to recover salmon, steelhead, bull trout, and other listed species, and we have acknowledged those efforts would result in additional costs for ratepayers. But in its current form, we cannot support the settlement.

Thank you, Rep. McMorris Rodgers, for your continued efforts to support hydropower in the Pacific Northwest. As always, we are prepared to answer any questions or concerns you may have and would be happy to provide any additional correspondence or analyses.

Sincerely,

A handwritten signature in black ink, appearing to read "HAS", is positioned below the word "Sincerely,".

Heather Stebbings  
Interim Executive Director

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<sup>i</sup> [“Amid a battle over Snake River dams, a look at how the salmon are doing”](#); *Capital Press*; by Matthew Weaver  
May 28, 2023

<sup>ii</sup> [Stay of Litigation on Columbia River System Operations, Exhibit 2](#)

<sup>iii</sup> “The Whole Dam Story: A 100-year perspective on salmon and dams co-existing in the Columbia River Basin.”  
Bonneville Power Administration Version 04212016



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- <sup>iv</sup> [U.S. Government Commitments in Support of the “Columbia Basin Restoration Initiative” and in Partnership with the Six Sovereigns](#); page 17
- <sup>v</sup> [“Yakama, Lummi tribal leaders call for removal of three lower Columbia River dams,”](#) by Lynda Mapes, *The Seattle Times*, Oct. 14, 2019
- <sup>vi</sup> [“BPA Lower Snake River Dams Power Replacement Study”](#); E3; July 2022
- <sup>vii</sup> [“Recommendations of Governor Inslee and Senator Murray following the Conclusion of the Joint Federal-State Process on Salmon Recovery”](#); August 2022
- <sup>viii</sup> [“Success Success Hinges on Who Pays and Tech Advancements”](#); *Clearing Up*; by Steve Ernst & K.C. Mehaffey; December 1, 2023
- <sup>ix</sup> [“The Fifth National Climate Assessment”](#); GlobalChange.gov; November 14, 2023
- <sup>x</sup> [“Climate change threatens Chinook salmon throughout their life cycle”](#) by Lisa G. Crozier (NOAA Fisheries), Brian J. Burke (NOAA Fisheries), Brandon E. Chasco (NOAA Fisheries), Daniel L. Widener (Ocean Associates – under contract to NOAA Fisheries) & Richard W. Zabel (NOAA Fisheries); February 18, 2021
- <sup>xi</sup> [“Western Assessment of Resource Adequacy”](#); WECC; November 2023; page two
- <sup>xii</sup> [“2023 Long-Term Reliability Assessment”](#); NERC; December 2023

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[REDACTED]  
[REDACTED]

January 29, 2024

The Honorable Cathy McMorris Rodgers,  
Chair U.S House Committee on Energy and Commerce  
United States House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chairman, Subcommittee on Energy, Climate, and Grid Security  
Committee on Energy & Commerce  
United States House of Representatives  
Washington, D.C. 20515

Re: President Biden's Plan To Dismantle The Snake River Dams

Dear Chair McMorris-Rodgers and Chairman Jeff Duncan:

Thank you for the opportunity to submit this statement for the record regarding tomorrow's committee hearing.

In December 2023, it was announced that the federal government had committed to an agreement that impacts the future of the Columbia River System and Snake River Dams. We understand that the energy industry was NOT included in the negotiations leading to the agreement. Many in the industry have stated "Negotiations in the dark, could leave our region in the dark." It is not just a "catchy" phrase, it is a problem with the process and the "policy it creates could be even worse" according to Arie Callaghan, our District One Commissioner for the Grays Harbor PUD.

Hydropower from the Columbia River System provides low cost, reliable and emission free energy to our area of the Pacific Northwest, Grays Harbor County. A poor county, with a majority of those in our community low income and/or seniors. Grays Harbor PUD suggests that customer rates may increase as much as 50%. The health and safety of all our citizens is threatened by the removal of the dams BEFORE there is a cost effective alternative in place.

As a former Ocean Shores city council member, chair of the Olympic Area Agency on Aging and Legislative co-chair for the Washington State Council on Aging, and executive director of North Beach Project Connect, a non profit who helps seniors remain in their own homes, I have first hand knowledge of the well being (or lack of it) for our local and state senior population.

This plan to dismantle the Snake River Dams has not received much media coverage in our area. As we move forward, we ask you to consider visiting with us for a community town hall to bring the issue to the attention of those who will be most negatively impacted by this policy. I stand ready to make all necessary arrangements to make this information readily available for our citizens.

Thank you for your consideration.

Susan Conniry-Beasley





Chris Peha  
P.O. Box 310  
Walla Walla, WA 99362

1/29/2024

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2107 Rayburn HOB  
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The Honorable Representative DeGette  
2111 Rayburn HOB  
Washington, DC 20515

Dear House Committee on Energy and Commerce,

Northwest Grain Growers, Inc (NWGG) is a member-owned grain warehousing and seed cooperative headquartered in Walla Walla, WA. We serve over 2,200 members at 35 locations in Walla Walla, Columbia, Garfield and Whitman Counties in Washington and Umatilla County in Oregon. The company generates over \$300 million in annual gross sales of raw agricultural products, mainly wheat, the vast majority of which is exported overseas to Pacific Rim Nations using the navigation locks on the Snake and Columbia Rivers helping to feed the world. *NWGG and our members are strongly opposed to dam breaching or operational modifications that adversely impact the current river transportation system.*

Northwest Grain Growers owns and operates four barge loading grain terminals on the Columbia & Snake Rivers in Southeastern Washington shipping over forty million bushels of grain to export elevators located in the Portland, OR & Vancouver, WA region. Barging bulk grain to the export elevators located down river is the most cost effective, environmentally sound, and safest transport method available in the world. Any disruption or curtailment of the current river transportation system would adversely impact our members, employees, and local communities where we live, work, and raise our families.

Removal of the four Lower Snake River Dams (LSRD) would cause irreparable damage to our members, employees, and communities. Here are a few examples, as estimated by recent studies:

- Removal of the four LSRD will likely eliminate 15% of the regional workforce.
- More than 40% of US wheat exports are barged via the Columbia/Snake River system.
- Current distribution of agriculture commodities moving out of the 10-county bi-state region is 90% barge and 10% rail.
- Breaching the LSRD would require at least 23.8 million miles of additional trucking activity annually and more than 201 additional unit trains. This would increase greenhouse gas emissions by the equivalent of adding one new coal-fired power plant to the grid every 2-3 years.
- Shifting commodity exports from barge to truck and rail would increase the overall cost of shipping commodities an estimated \$55 million annually to export terminals.
- Engineering studies have concluded that over \$1.3 billion in infrastructure investments would need to be constructed in the near-term to address transportation, railroad, grain storage capacity and local infrastructure changes that would result from LSRD removal.

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WITH OFFICES LOCATED IN DAYTON, WA (509) 382-2571 & ST. JOHN, WA (509) 648-3316

- The region's geography also presents logistical hurdles to increasing the capacity of rail and truck. The proposition of expanding rail lines and corridors in close proximity of the Snake and Columbia River, as well as through sensitive airshed and cultural heritage sites, will make expansion nearly impossible.
- Barging is substantially safer than rail or truck. A MARAD-commissioned study showed that for every one barge fatality, there are 23 rail fatalities and 155 truck fatalities; and for every one barge related injury, there are approximately 125 rail injuries and 2,179 trucking related injuries.
- The devaluation of farmland will devastate local schools and emergency services, reducing local tax revenue by \$18 million annually.
- Removal of the four LSRD will increase transportation and related environmental costs in the U.S. by well over \$7.3 billion over 30 years.
- Approximately 8,000 farmers across OR, WA and ID would face significant disruption to their irrigation systems bankrupting many farms in the process.
- Many private and municipal drinking water wells will be impacted by lower river levels and municipal sewer systems will need to reconfigure or rebuilt completely.
- The LSR dams are a critical component of the Northwest's energy solution. They have the capability of generating over 3,000 megawatts of carbon-free power. They are among the lowest cost generating resources in the region and are critical to system reliability. Dam operators can start, stop, increase, or decrease generation in seconds to minutes.
- Under normal operating conditions, the 4 LSRD supply up to one-quarter of the reserve capacity used to meet unexpected changes in generation of electrical demand, decreasing the possibility of blackouts.

The monetary, social, and environmental costs associated with dam breaching go well beyond the navigation, irrigation and energy issues outlined above. The socioeconomic impacts of dam removal would be catastrophic and would disproportionately affect disadvantaged communities and people of color. The economy in the impacted area is centered on agriculture, government, and manufacturing employment and earnings. Nearly 1 in 5 people live at or below the federal poverty level, and many residents working in agricultural sector are from underrepresented and marginalized immigrant communities. These are the people who would suffer the most with higher power rates, congested roadways, few jobs, and a more polluted environment.

Diverting billions of dollars to dam breaching is illogical rather than investing in proven strategies that improve salmon runs, particularly given the devastating economic, social, and environmental impacts breaching will have on the region. Thank you for the opportunity to provide comments. Please let me know if you have any questions.

Sincerely,



Chris Peha

CEO

(509) 525-6510



January 29, 2024

The Honorable Cathy McMorris Rodgers  
House Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

The Honorable Frank Pallone, Jr.  
House Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

The Honorable Jeff Duncan  
Subcommittee on Energy, Climate, and Grid Security  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

The Honorable Diana Degette  
Subcommittee on Energy, Climate, and Grid Security  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Dear Chair Rogers and Subcommittee Chair Duncan,

Thank you for holding this hearing to examine the management and operations of the federal dams on the Columbia River and its tributaries, which include the Lower Snake River. As you may know, the National Association of Wheat Growers (NAWG) is a federation of 20 state wheat grower associations and industry partners that works to represent the needs and interests of wheat producers before Congress and federal agencies. Based in Washington, D.C., NAWG is grower-governed and works in areas as diverse as federal farm policy, transportation, trade, environmental regulation, agricultural research, and sustainability. NAWG appreciates the opportunity to provide a letter for the record expressing our support for the Columbia River system and Lower Snake River dams, which afford wheat growers the ability to get their products to market in a safe and affordable way.

The Lower Snake River Dams are a vital piece of infrastructure in the Pacific Northwest that plays an essential role in the livelihood of wheat growers not only within the region, but nationally. These dams are a critical infrastructure system required to move U.S. grown wheat to high value markets around the world. Breaching the dams would have serious economic consequences for producers and grain handlers while contradicting carbon reduction goals.

More than 55 percent of all U.S. wheat exports move through the Columbia River and its tributaries. Specifically, 10 percent of all U.S. wheat exports pass through the four locks and dams along the Snake River system. This vital corridor is the third largest grain export corridor in the world, and it is the single largest corridor for U.S. wheat exports. The river system plays an essential part of the logistical web that moves over half of all U.S. wheat exports to more than 20 Pacific Rim countries and encompasses some of the largest U.S. wheat buyers in the world. Our industry has worked hard to foster relationships with customers and countries worldwide. These relationships are vital to help supply food for their customers, who have come to rely on U.S. farmers to provide a stable, affordable, and high-quality supply.

Disruption to our dam system would significantly hurt our ability to consistently provide a low-cost, high-value food product compared to our foreign competitors. The proposed changes in altering flow regimes and even removing certain dams and locks would detrimentally impact both the agriculture and energy industry. Such drastic actions would eliminate clean transportation as well as clean hydroelectricity. The alternative measures proposed would release

significantly higher carbon emissions as grain handlers are forced to rely on railroads and semi-trucks for transportation.

Wheat producers would bear significant financial costs if the system of locks and dams along the Snake River is removed by an act of Congress or halted due to various administrative procedures. The long-term economic impacts of breaching the dams would be devastating. The potential financial hit would be due to a loss of value for wheat currently exported out of the PNW, loss of wheat value for growers in other parts of the U.S., loss of jobs and economic activity, and loss of regional farmland values. In addition to the direct impact on wheat growers, further analysis is needed to evaluate the broad implications dam breaching would have on the agriculture sector and the economy, such as existing physical assets—namely 197 inland grain elevators, 28 river terminals, and 8 terminal export facilities located along the river systems—which would lose significant value by breaching the dams.

For decades, the benefits of the Columbia Snake River System have contributed to thriving communities in the Pacific Northwest. We recognize the need for further dialogue to discuss collaborative approaches to aid in West Coast salmon recovery, and we strongly support science-based efforts to reassess mitigation strategies and deploy the newest technological advancements to recover endangered salmon populations in the Columbia-Snake River System while ensuring U.S. farmers maintain access to this vital navigation system. NAWG supports those efforts and many more throughout the basin. Still, we cannot support the removal of the Snake River dams and this critical trade gateway for the region and nations' agricultural products.

NAWG supports maintaining barge access and navigability throughout the Columbia Snake River System and will continue emphasizing its importance in serving wheat buyers worldwide. Breaching of the dams on the Lower Snake River System would have a devastating economic impact on wheat production and market competitiveness, not just in the Pacific Northwest Region but nationally.

Thank you,

A handwritten signature in blue ink, appearing to read "Chandler Squire".



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chairwoman, Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chairman, Energy, Climate, and Grid Security Subcommittee  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Frank Pallone  
Ranking Member, Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Diana DeGette  
Ranking Member, Energy, Climate, and Grid Security Subcommittee  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chairs Rodgers and Duncan and Ranking Members Pallone and DeGette:

On behalf of the National Corn Growers Association (NCGA), thank you for the opportunity to provide a letter for the record on the House Energy and Commerce Committee Energy, Climate, and Grid Security Subcommittee hearing titled "*Exposing President Biden's Plan to Dismantle the Snake River Dams and the Negative Impacts to the United States.*"

NCGA represents more than 36,000 dues-paying corn growers in all 50 states, and the interests of more than 300,000 farmers who contribute through corn checkoff programs in their states. Corn growers heavily rely on barging as a critical method of transportation for their goods. The Columbia Snake River System is the second largest gateway for corn exports, following only the Port of New Orleans. As drought and low water conditions continue to plague the Mississippi River, corn growers will become more dependent on the health and efficacy of this key transportation corridor in the Pacific Northwest.

The precedence that breaching the Lower Snake River Dams could have on other inland waterways is extremely concerning. To that end, we oppose any efforts to breach the Lower Snake River Dams or alter other inland waterways. U.S. Agriculture's competitiveness relies on our inland waterways. Inadequate infrastructure leads to reduced transportation capacity, which also leads to higher freight weights, lower farm income and a loss of global competitiveness. The Columbia/Snake River System is

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the third-largest grain export corridor in the world, along with the Mississippi River at number one and the Parana River in South America at number two. There are 2.2 million tons of agricultural products – mostly grain destined for export – that move by barge through the four dams on the Lower Snake River each year.

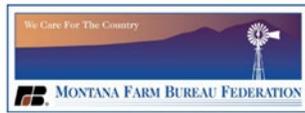
Without the ability to transport corn through inland waterways, family-farmers and rural communities across the country could face devastating impacts.

- Agriculture, food and related industries contributed \$1.055 trillion to U.S. gross domestic product (GDP) in 2020, and in 2020 jobs related to agriculture accounted for 10.3 percent of total U.S. employment – 19.7 million full and part time jobs.
- According to the U.S. Grains Council, international export markets for U.S. grains supported nearly \$38 billion in business sales in the U.S. Economy in 2019.
- Exports are responsible for 33 percent of U.S. corn farmers' income. More than 20 percent of the U.S. corn crop is exported annually when accounting for corn and value-added products.
- According to USDA's Agriculture Marketing Service (AMS), inland waterways provide approximately 4.1 million jobs, \$391 million in gross domestic product (GDP) and \$841 million in sales for the twelve states along the Mississippi river system annually.

As farmers are already faced with significant increases in cost of production, the importance of inland waterways cannot be overstated. The National Corn Growers Association stands ready to ensure that inland waterways, including the Lower Snake River Dams on the Columbia Snake River, continue to be an effective and efficient way for growers to transport their goods.

Sincerely,

Harold Wolle  
President  
National Corn Growers Association



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair  
Energy and Commerce Committee  
U.S. House of Representatives  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
Energy and Commerce Committee  
U.S. House of Representatives  
2322A Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
Chair  
Energy, Climate, and Grid Security  
Subcommittee  
U.S. House of Representatives  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Energy, Climate, and Grid Security  
Subcommittee  
U.S. House of Representatives  
2322A Rayburn House Office Building  
Washington, DC 20515

Dear Chairs and Ranking Members:

American Farm Bureau Federation, Idaho Farm Bureau Federation, Montana Farm Bureau Federation, Oregon Farm Bureau, and Washington Farm Bureau appreciate the House Energy and Commerce Committee’s focus on the value and importance of federal dams and other infrastructure on the Columbia River and its tributaries, including the Lower Snake River Dams (LSRD). We are farm and ranch families working together to build a sustainable future of safe and abundant food, fiber and renewable fuel for our nation and the world.

America’s farmers and ranchers are among the most productive in the world, feeding our country and people all over the world. Exports of U.S. agricultural products are critical for our economy. The roughly 20 percent of U.S. farm income that comes from agricultural exports especially helps support rural communities across the country. Our members benefit from both the barge transportation capabilities and energy production provided by the existence of federal dams on the Columbia and Snake rivers. The LSRD system not only barges 10% of the country’s wheat exports, but the entire Columbia-Snake River System represents the third-largest grain export corridor in the world, transporting up to 29 million tons of grain annually. Replacing barges with trucks and railcars is not realistic and would cripple the transportation system, negatively impacting businesses throughout our region.

The Columbia River System Operations Environmental Impact Statement 2020 estimated that the removal of the dams could increase retail electricity rates by 25% or more. Many of our members are served by utilities that receive their power from the Bonneville Power Administration and could not bear

such a substantial hike in electricity costs, especially when coupled with the impacts of ongoing supply chain problems, labor shortages and inflation.

Our members believe that dams and fish can co-exist, and that recovery of fish species does not have to come at the expense of critical agricultural production in our rural communities. Only by all parties working together and valuing the perspectives and insights of others can we continue to improve the river system ecosystem and river management in such a way that all can benefit, and fish populations improve.

We are gravely concerned about the document released in December, "U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative and in Partnership with the Six Sovereigns." Negotiations that resulted in commitments by the U.S. government were made without critical input from agricultural voices like ours, even though our farm and ranch families would be directly and negatively impacted by the breach or removal of dams in the Pacific Northwest.

We appreciate the Committee's focus on this serious issue.

Sincerely,

American Farm Bureau Federation  
Idaho Farm Bureau Federation  
Montana Farm Bureau Federation  
Oregon Farm Bureau  
Washington Farm Bureau



1626 6th Avenue N., Lewiston, ID 83501  
(208) 743-5531

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January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair  
House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
Chair  
Energy, Climate, & Grid Security  
Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Energy, Climate & Grid Security  
Subcommittee  
Rayburn House Office Building  
Washington, DC 20515

Dear Chair McMorris Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, and Subcommittee Ranking Member DeGette:

I am writing this letter from the Port of Lewiston, the furthest inland seaport on the West Coast. We are the state's only seaport and sit at the extreme eastern end of Marine Highway M-84 in Lewiston, Idaho. On behalf of our Port Commissioners and the 65,000 residents of the Lewis-Clark Valley, we implore you to protect the Lower Snake River Dams (LSRD) and the economy and lifestyle they provide.

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 volume of grain transported along the Snake and Columbia River system make it the third largest grain export corridor in the world.<sup>1</sup>

One of the Port of Lewiston's most river-dependent tenants, Lewis Clark Terminal (LCT), loads approximately 200 barges 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 that depend on barge transport for their livelihoods. If river transport did not exist, it would take at least 25,000

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<sup>1</sup> [United States Department of Agriculture, Agriculture Marketing Service, "Barge Dashboard"](#)

trucks a year to move just LCT's grain to the Tri-Cities, all on largely two-lane, curved, and unsafe highways.<sup>2</sup> 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 recent bitter temperatures here in Lewiston demonstrated in sharp relief the extreme value of the LSRD to our residents, as the Bonneville Power Administration (BPA) experienced some of its highest ever demand during this cold spell. While our residents huddled in warm heated homes to keep the subzero temperatures at bay, the BPA was able to ramp up the flow of hydropower to support the record-breaking demand on the power grid. The flexibility and reliability of hydropower is unmatched and is a life-saving necessity for the residents of Idaho.

In addition to manufacturing and barging in our region, the LSRD support 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 expanding and exciting industry represents enormous potential for our valley.

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. Accordingly, the Lewiston-Nez Perce County Airport is preparing for an influx of new visitors to enjoy these cruising opportunities to explore the Snake River canyon and our region. Without the dams, this economic development does not exist.

Often ignored 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 draws 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 bring significant local investment and support from local, state, and federal jurisdictions.

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 us that the positive effects of the dams will be easily replaced and make no comments about potential negatives.

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

In our case, we know what will happen if dams are breached. In 1992, a drawdown experiment was conducted in the Lower Granite pool. The results 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 quickly that the drawdown of the river would not support the communities and economy we had worked so hard to build.

The drawdown also exposed the harsh truth about what would happen to local infrastructure absent the LSRD. Water systems would no longer reach the depleted river and would require major re-design. Levies would crumble without the support of the river water. Our major employers that use the rivers could no longer operate normally for intake or discharge of the water that is critical to their processes. Jobs would be lost. Local governments would be tasked with costly repair or replacement projects requiring millions of dollars that simply do not exist in their budgets. The burden would consequently fall on taxpayers. Risking the economic viability of our communities is not acceptable, especially when those risks are based on pure speculation.

Our community cannot survive on this kind of dangerous gamble. 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 is an unnecessary gamble on our future when there are so many other things we can do to support salmon – funding hatcheries, addressing predation, removing obstructions from blocked areas that do not support fish, advancing ocean research, addressing climate change, habitat restoration, upgrading fish passage facilities, and finding the funding needed 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 barging operations in the United States, and created recreational and economic development opportunities along a stretch of river that previously did not have much. While we continue working hard to nurture and support our salmon population, we cannot lose sight of all the progress we have made on the Snake River. It would be a disgrace to turn back the clock on all that progress. It would be a disgrace to ignore the economies and the lifestyle in the LC Valley created by the LSRD.

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 forget. We are not expendable.

To those of you who advocate for our communities, I cannot thank you enough. I appreciate the opportunity to submit these comments. Thank you.

Sincerely,



Scott M. Corbitt

General Manager

Port of Lewiston

[scott@portoflewiston.com](mailto:scott@portoflewiston.com)

(208)743-5531



**World Headquarters  
3103 10<sup>th</sup> Street North, Suite 300  
Arlington, VA, 22201**

**January 29, 2024**

**The Honorable Cathy McMorris Rodgers, Chair  
The Honorable Frank Pallone, Ranking Member  
House Energy and Commerce Committee**

**The Honorable Jeff Duncan, Chair  
The Honorable Diana DeGette, Ranking Member  
Energy, Climate, and Grid Security Subcommittee**

**2125 Rayburn House Office Building  
Washington, DC 20515**

Dear Chairs, Ranking Members, and Members of the Committee:

U.S. Wheat Associates (USW) is the export market development organization representing the interests of U.S. wheat farmers in international markets. We are sharing important information about, and full support of, the locks and dams on the Columbia Snake River System for the record for the Energy, Climate, and Grid Security Subcommittee of the House Energy and Commerce Committee hearing on January 30, 2024.

The Columbia Snake River System provides essential service and critical infrastructure for U.S. wheat farmers, their customers, and the wheat export system in the Pacific Northwest (PNW).

Barging on the Columbia Snake River System is a crucial part of a logistical web that moves over half of annual U.S. wheat exports. Six PNW export elevators serve some of the world's largest U.S. wheat buyers in more than 20 Pacific Rim countries. That wheat is delivered by truck, rail, and barge. The Snake River moves more than 10 percent of all wheat exported from the United States each year. An estimated 75 percent of all exported soft white wheat grown by farmers in Washington, Oregon, and Idaho moves by barge.

The sustainability and reliability of wheat transportation by barge to port locations is unquestioned. Research indicates that one four-barge tow can move the same volume of grain as 144 rail cars or 538 semi-trucks with far greater fuel efficiency and lower carbon emissions. Barging also supports economic sustainability for farmers who bear the cost of wheat transportation. Moving a larger volume of wheat by barge provides a check on the increasing cost of rail transportation and helps ensure U.S. wheat export costs remain competitive in the global wheat market. Loyal U.S. wheat buyers agree.

Mr. Sergio Morales, Director of Molino San Cristobal flour mill in Chile, said “for the United States to continue to be a competitive supplier for our company, the transportation system that feeds wheat through the Columbia Snake rivers must continue working in a stable and efficient way.”

Japan imports approximately 85 percent of wheat consumed by its citizens. More than half its imports are from the United States, and all is shipped from PNW ports. Mr. Kenichi Hirano, Director of the Grain Trade and Operations Division of Japan’s Ministry of Agriculture, Forestry and Fisheries (MAFF), said “U.S. Western White wheat is a vitally important ingredient in Japanese confectionary products and fine cakes, and I expect the United States will continue providing a stable supply, barged economically and efficiently on the Snake and Columbia rivers.”

“The Philippines has a long history of using flour made from U.S. wheat that is milled by our domestic flour mills and has become the world’s top destination for hard red spring and soft white wheat classes,” said Mr. Ric Pinca, Executive Director, Philippine Association of Flour Millers (PAFMIL). “As I have traveled to the United States and seen its robust supply chain from the farm to inland elevators, the railroads and barges along the Snake and Columbia rivers, and finally to its export facilities, it has become clear to me how each piece is essential to maintain the reliability and competitiveness of the U.S. wheat supply which is critically important for Filipino flour mills and consumers.”

Locks and dams on the Lower Snake River and the Columbia River provide essential infrastructure for moving U.S.-grown wheat to high-value markets around the world. We cannot overstate the positive value they create for U.S. farms, as well as the industrial economy of the Pacific Northwest and far beyond. U.S. Wheat Associates appreciates the opportunity to share this information and restate our unwavering support for the Columbia Snake River System.

Sincerely,



Vincent R. Peterson  
President  
U.S. Wheat Associates

cc: Casey Chumrau  
Amanda Hoey  
Britany Hurst Marchant  
Michael Peters  
Jacob Westlin



*Submitted electronically*

January 29, 2024

The Honorable Jeff Duncan  
Chairman  
Subcommittee on Energy, Climate & Grid  
Security  
House Energy & Commerce Committee  
2229 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Subcommittee on Energy, Climate & Grid  
Security  
House Energy & Commerce Committee  
2111 Rayburn House Office Building  
Washington, DC 20515

The Honorable Cathy McMorris Rodgers  
Chairman  
House Energy & Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Energy & Commerce Committee  
2123 Rayburn House Office Building  
Washington, DC 20515

Dear Chairs McMorris Rodgers, Duncan, Ranking Members Pallone and DeGette,

The Oregon Municipal Electric Utilities Association (OMEU) appreciates the opportunity to submit a statement for the record for the hearing on the Protection of the Lower Snake River Dams. OMEU, an affiliate of the League of Oregon Cities, represents cities that own and operate not-for-profit municipal electric utilities. Our eleven member utilities are located in each of our state's six congressional districts. While our communities are unique, we are all "full requirements" customers of the Bonneville Power Administration (BPA), purchasing nearly all of our energy from the BPA.

As BPA customers, we have the cleanest energy resources of all the utilities in the country. Our resource mix averages 95% carbon free *today*. The bulk of this power is an allocation of the Federal Columbia River Power System (FCRPS), including the Lower Snake River dams (LSRD).

We were extremely dismayed to learn about the recent decision of the State of Oregon to partner with the U.S. Government on a "package of actions and commitments" that could have dire consequences for over one million Oregonians served by public power. Our utilities and ratepayers had no meaningful participation in shaping this agreement. We are particularly alarmed to hear the agreement touted as a "roadmap for LSRD breaching."

The LSRD are key to maintaining a reliable electric grid. Oregon and Washington both have 100% clean energy mandates. As electric demand increases and baseload resources are being replaced by massive amounts of intermittent generation, the LSRD's ability to provide power—on-demand—has

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become increasingly important for reliable grid operations and public safety, especially during extreme weather events, like ice storms and heatwaves. During the heat dome events in 2021, the LSRD provided much-needed energy, balancing and contingency reserves. Without those four dams, powering through the heatwave could have been much more expensive and operationally challenging. The LSRD are important assets to mitigate the impacts of climate change.

“Replacement” resources for potential LSRD breaching are the largest exposure under the agreement. BPA’s own analysis pegs these costs at \$415 to \$860 million annually, equivalent to a 21% to 43% increase to BPA power rates. <https://www.bpa.gov/-/media/Aep/power/hydropower-data-studies/e3-bpa-lower-snake-river-dams-power-replacement-study.pdf> This type of financial hardship would irreparably harm the communities we serve, particularly our low income and vulnerable customers.

BPA ratepayers have funded state-of-the-art fish passage technology at the LSRD which has greatly improved in-river fish survival. Academic studies have shown that fish survival through the Federal hydro system is comparable to undammed rivers, such as the Fraser River in British Columbia. Significantly, removal of the LSRD is not a clear path to recovery of endangered species or overall abundance of salmon.

The LSRD play a critical role in the Northwest power system and economy. The unambiguous conclusion of the comprehensive federal Columbia River System Operations (CRSO) Environmental Impact Statement, completed in September 2020, was that the continued operation of the LSRD does not jeopardize the existence of endangered or threatened salmon species. More attention is needed to the threats of ocean conditions, avian predation, and over-fishing.

Beyond their importance to our electric grid, the LSRD contribute to our region’s economy by providing irrigation, navigation, recreation, and employment.

Thank you for your attention to this critical issue.

Sincerely,

*/s/ Jennifer Joly*

Jennifer Joly, Director

Oregon Municipal Electric Utilities Association



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair, Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, DC 20515

Dear Chairman Rodgers,

The Family Farm Alliance appreciates your consistent leadership to protect the lower Snake River dams and the critical, multiple benefits they and the Columbia/Snake River system provide. The Alliance has long opposed misguided and ill-informed attempts to tear out the dams and we proudly join you and many others to reiterate our strong support for the four lower Snake dams.

The Alliance also has raised concerns with regard to the Biden Administration's lack of transparency and failure to include all stakeholders in the closed-door process leading up to the recently issued MOU that appears laser focused on using federal funds on actions that could lead to removing the dams.

Last April, the Alliance sent a letter expressing these concerns to Agriculture Secretary Vilsack, and key officials of the Department of Interior, the Army Corps of Engineers, and the Bureau of Reclamation. We never received a response to our letter. I am attaching it to this letter and would request that both our letters be included in the record of the important hearing you are holding on January 30, 2024.

Thank you for your continued support and leadership on our mutual western agriculture, irrigation and energy priorities.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Keppen".

Dan Keppen  
Executive Director

cc: Ranking Member Frank Pallone, Committee on Energy & Commerce  
Chairman Jeff Duncan, Subcommittee on Energy, Climate & Grid Security  
Ranking Member Diana DeGette, Subcommittee on Energy, Climate & Grid Security



April 10, 2023

The Honorable Thomas J. Vilsack  
Secretary, U.S. Department of Agriculture  
1400 Independence Ave., S.W.  
Washington, DC 20250

Dear Secretary Vilsack:

On behalf of the Family Farm Alliance (Alliance), we write to voice our concerns with the current state of the mediation regarding the Federal Columbia River Power System (FCRPS). Altering operations along the Columbia and Lower Snake Rivers, whether through shifted flow regimes or dam removal, would send ripple effects throughout the broader agricultural community.

The Alliance is a grassroots organization of family farmers, ranchers, irrigation districts, and allied industries in 16 Western states. We have particularly strong representation in our membership from Idaho, Oregon and Washington. Our organization is committed to the fundamental proposition that Western irrigated agriculture must be preserved and protected for a host of economic, sociological, environmental and national security reasons – many of which are often overlooked in the context of other national policy decisions. The American food consumer nationwide has access to fruits, vegetables, nuts, grains and beef throughout the year largely because of Western irrigated agriculture and the projects that provide water to these farmers and ranchers.

**All Voices – Including those of Pacific Northwest Food Producers – Must be Heard**

Agricultural water users throughout the Pacific Northwest region have a strong interest in these discussions. Unfortunately, their voices have not been included in these processes. The Alliance’s request to speak at the March 31 listening session was not granted. Still, Alliance members participated in the listening sessions, which were advertised as opportunities for “non-parties” to the litigation to provide input. Instead, the vast majority of the comments generated at the sessions came from the plaintiff groups involved in the litigation, and their affiliates. Our members “listened” in dismayed silence as pro-dam breaching advocates dominated the discussion with their talking points.

**Inclusive Participation is Critical to Realistic and Meaningful Solutions**

With that said, we certainly appreciate the hard efforts of the Administration and its mediation team to find a path forward that steers away from the courtroom. For far too long, the region has found

itself embroiled in a litigation cycle that has done nothing to advance or protect the interests of the communities relying on the river system. Tribes, sportsmen and others find themselves looking for more abundant and predictable stocks. At the same time, those who rely on the network of dams and locks find themselves fighting to preserve their operations. It is frustrating to observe that many appear to have convinced themselves that for one to survive, the other must perish. We reject this type of win-lose mentality. Our members pride themselves on the ability to tackle seemingly impossible challenges and find a path forward. We have done it time and time again. It is not easy ... but is it possible if the parties involved are truly committed to the task.

However, in order to attack complex challenges, like those facing the Columbia River Basin, all voices must be heard, and all must be permitted to participate. Absent this, no solution will truly be successful in the long term. While we appreciate the hard work of those leading this effort, we are concerned that many voices in the region are not being heard in this process. Ironically, those who chose not to fight this battle in court – many with the hopes of finding a collaborative solution elsewhere – are being shut out of these efforts to find a meaningful solution.

### **There Has Never Been a More Important Time to *Protect* American Food Production**

If our representatives had been permitted to speak at the March 31 listening session, we would have underscored the critical importance of maintaining our country's food security and locally sourced foods. The multiple-year drought we have faced in many parts of the West – coupled with other domestic and global developments– has already affected the availability and price of food for many Americans. Rising food prices and global hunger are linked to the war in Ukraine, extreme climate events like the Western U.S. drought, and other global stressors.

As the Secretary of Agriculture in two Administrations, we know you are well aware that the Western U.S. is a critical part of what has long been a proud national agricultural powerhouse, where our country consistently has run an agricultural trade surplus. But in 2019, for the first time in more than 50 years, the U.S. agriculture system ran an agricultural trade deficit, importing more than it exported. The USDA forecasts the U.S. will again run a deficit in 2023 for the third time since 2019. This growing deficit is driven primarily by our dependence on imported Mexican fruits and vegetables. Increased reliance on foreign food has never been a policy our Nation has intentionally embraced in the past.

At the global level, hunger is on the rise, and the world community is not prepared to address this looming crisis. The 2022 *State of Food Security and Nutrition in the World* report<sup>1</sup> prepared by the United Nations Food and Agriculture Organization found that an unprecedented count of up to 828 million people went hungry in 2021, an increase of 46 million from the previous year, and a leap of 150 million people since the start of the COVID-19 pandemic. Even before the latest inflationary woes hit us and after years of seeing global hunger numbers drop, global hunger is back at record levels and rising.

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<sup>1</sup> <https://data.unicef.org/resources/sofi-2022/>

Our organization has been tracking the Global Agricultural Productivity (GAP) Report since 2010, when it first quantified the difference between the current rate of agricultural productivity growth and the pace required to meet future world food needs. That report predicted that total global agricultural output would have to be doubled by the year 2050 to meet the food needs of a growing global population. The 2022 GAP report<sup>2</sup> - released earlier this month- shows that our global agricultural productivity is on a downward trajectory. Reversing this, the GAP report says, “demands urgent action from policymakers, leaders, donors, scientists, farmers and others in the agri-food system”.

We are seeing increased reports of world leaders sharing fears that global price spikes in food, fuel and fertilizers will lead to widespread famine, prompting global destabilization, starvation and mass migration on an unprecedented scale.

Given recent developments, many of us in agriculture are concerned that the grim global conditions we once expected to encounter in 2050 may now hit us a decade or more ahead of schedule. Our number one global priority should be ensuring the ability of world food producers – especially those in the American West - to meet the future food demands of the U.S. and the world. Any federal action that impacts U.S. food production or distribution means increased reliance on food production in other countries with lesser production standards. We cannot risk losing control of our reliable and safe U.S.-grown food supply. The expulsion of Sri Lanka’s president from his country in July and the downfall of Britain’s prime minister earlier this month reflects the political peril that awaits those who fail to address the erosion of living standards, no matter the cause.

### **Dam Removal Will Impact Americans and Our National Food Production Capacity**

Much of the discussion relating to the FCRPS includes potential changes to the CSRS – including altering flow regimes and even removing certain dams and locks. Such drastic actions, however, would detrimentally impact agriculture. For example, eliminating barging would lead to significantly increased transportation costs for growers. The negative environmental impacts of replacing barging with trucks or rail in the region would be as unthinkable as it is infeasible to increase rail or truck capacity in the region. Finally, the loss of clean and affordable, non-fossil fuel driven base-load energy produced by the CSRS would be devastating to producers, residents and businesses throughout the Pacific Northwest and beyond.

Our nation’s food system currently cannot afford to have additional stressors placed upon it, especially from actions that result in changing the operation of or contemplating the removal of the locks and dams on the CSRS. We are witnessing both severe drought conditions and damaging flooding in parts of the Western U.S., significantly inflated food costs, global food supply challenges, and a looming global famine. Any proposed federal actions that impact our domestic food production capacity must be carefully and thoughtfully evaluated in light of these backdrop conditions.

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<sup>2</sup> <https://globalagriculturalproductivity.org/2022-gap-report/>

The Family Farm Alliance stands poised to support our Columbia Basin members as they work with the region's states, tribes and stakeholders to develop a long-term, meaningful and balanced solution that benefits the environmental, tribal interests, and American food producers. Thus far, we are concerned that there has been a failure to take agricultural impacts into account in the current mediation process. Given agriculture's strong ties to the Snake River dams in the Pacific Northwest, we respectfully encourage you to engage in this issue to provide an added perspective to the ongoing conversations.

Sincerely,



Patrick O'Toole  
President



Dan Keppen  
Executive Director

cc: The Hon. Michael Connor, Assistant Secretary of the Army, Civil Works  
The Hon. Tanya Trujillo, Interior Department Assistant Secretary for Water and Science  
The Hon. Camille Calimlim Touton, Commissioner, Bureau of Reclamation



January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chair  
House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Frank Pallone  
Ranking Member  
House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Jeff Duncan  
Chair  
Energy, Climate, & Grid Security Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Energy, Climate & Grid Security Subcommittee  
2125 Rayburn House Office Building  
Washington, DC 20515

Dear Chair McMorris Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, and Subcommittee Ranking Member DeGette:

We appreciate the attention the Committee is bringing to the recent Columbia River System Operations (CRSO) mediation and the continued attack on the Lower Snake River dams. Shaver Transportation is one of the main tug and barge lines operating along the Columbia Snake River System (CSRS). We are a 6th generation family-owned company that has been providing waterborne transportation to and from the inland empire of the Northwest for nearly 144 years.

Shaver's fleet of 16 tugs and 22 grain barges service ports and facilities along the entire CSRS, from Astoria, Oregon, 465 miles inland to Lewiston, Idaho. Barge operations like ours are part of a robust transportation network that connects our region to the world. Barge, rail and truck work together to allow farmers and shippers a more resilient, lower cost supply chain that keeps our region and the nation competitive in the global market.

Barge operations like ours also serve as the most efficient, lowest emitting mode of transportation. Each of our 4-barge tows moves as much product as 1.4-unit trains or 538 semi-trucks, and we do so with the highest amount of fuel efficiency. Barging moves one ton of cargo 647 miles on a gallon of diesel, compared to 145 miles for truck and 477 miles for rail.

Barging also has the lowest carbon footprint amongst transportation modes. In moving the same amount of cargo by barge, rail generates 40% more carbon dioxide and trucks generate 270% more. As the nation looks to decarbonize the transportation sector, there is no question that moving goods by barge along our inland transportation networks should be a big part of that effort.

This is just one of the reasons that we struggle to understand the Biden Administration's motivation to remove the four Lower Snake River dams. If the dams were breached, the over 4 million tons of cargo moved on that portion of the river system would need to shift to rail and truck. At a time when we are looking to do better by the environment,



this would be a step in the opposite direction. This modal shift would require an additional 5 million gallons of diesel per year with an associated 1.2 million tons of CO2 and other harmful emissions. We would see a regional increase of 23.8 million miles of travel each year on county, state, and federal highways, requiring over \$1 billion in capital investment in roads, rail, grain elevators and local infrastructure. And our communities would see an increased safety risk with the higher fatality and injury rates of rail and truck.

Shaver is a member of the Inland Ports and Navigation Group (IPNG), which has participated as an intervenor defendant in the ongoing CRSO litigation for decades. IPNG has historically been involved to support and help defend the U.S. Government's science-based approach to balancing the Congressionally authorized purposes of the dams with the needs of fish. There is no doubt that this requires a delicate hand, but for decades navigation, irrigation, clean power production and recreation have existed along with state-of-the-art fish passage for endangered salmon and steelhead. And for years, despite the small but loud contingency of dam breaching advocates in the West, our region could rely on both Democratic and Republican Presidential Administrations in Washington, DC to base their decisions on science and facts rather than emotions and politics.

As Co-Chair of the IPNG, I have had a front row seat to the CRSO mediation led by the Biden Administration's Council on Environmental Quality (CEQ). I can personally attest to the lack of transparency, absence of responsiveness and denial of facts that took place over the last two years. IPNG provided verbal and written feedback from marine transportation experts, submitted credible studies and scientific analysis and received no substantive response. It has been extremely disappointing to bear witness to the secrecy and process manipulation utilized by CEQ to reach their ultimate end goal of dam breaching.

Thank you again for scheduling this important hearing. It is critical that decision makers understand the wide-ranging benefits the four Lower Snake River dams provide to the Northwest and the nation, as well as the intentional tactics used by the Administration to undermine and devalue these projects and the river system as a whole. I am happy to provide additional information if requested.

Sincerely,

*Robert D. Rich*

Robert D. Rich  
Vice President, Marine Services  
Shaver Transportation Company

January 29, 2024

Honorable Cathy McMorris Rodgers  
United States House of Representatives  
House Energy and Commerce Committee Chair  
2188 Rayburn House Office Building  
Washington, DC 20515

Honorable Jeff Duncan  
United States House of Representatives  
House Energy, Climate and Grid Security  
Subcommittee Chair  
2229 Rayburn House Office Building  
Washington, DC 20515

**Re: Subcommittee Hearing on Exposing President Bident's Plan to Dismantle the Snake River Dams and the Negative Impacts to the United States.**

Dear Chairwoman Rodgers and Subcommittee Chairman Duncan, Subcommittee Ranking Member DeGette and members of the Subcommittee:

Thank you for the opportunity to provide this letter outlining the importance of hydropower to our community and region prior to the scheduled hearing in the House Energy, Climate and Grid Security Subcommittee on January 30.

Grant County is a rural, predominantly agricultural region located in Central Washington state. It covers a total surface area of more than 2,700 square miles and is home to approximately 100,000 people. Grant County Public Utility District's (Grant PUD) renewable energy portfolio is rooted in hydropower. Thanks to the vision and efforts of the pioneers of Grant County and our local utility, Grant PUD is the owner and operator of two hydroelectric dams located on the Columbia River, Priest Rapids Dam and Wanapum Dam.

In total, these resources have a combined generating capacity of more than 2,100 megawatts of clean renewable energy. Collectively known as the Priest Rapids Project, these dams are licensed by the Federal Energy Regulatory Commission (FERC). Priest Rapids Dam first began generating power in 1959 and Wanapum Dam began shortly after in 1963.

These locally owned and operated hydroelectric resources have been the main engines powering Grant County's economy for six decades, as they have enabled Grant PUD to serve the homes, businesses, and farms of Grant County with some of the lowest cost and most reliable electricity in the country.

Since the mid-2000s, we have been one of the fastest growing utilities in the Northwest. While most of our county is agricultural, some of our largest power purchasers are high-tech data centers and a mixture of manufacturing companies, including many manufacturers that are developing technologies that will support the nation's transition to carbon-free technologies.

The brief outline of our history is just one example of how hydropower has allowed our region to flourish. This is why Grant PUD is concerned with the general disconnect that the recently filed U.S. Government (USG) agreement shows regarding the importance of hydropower to our region. The USG's recently filed agreement in the state of Oregon is an attempt to resolve the Endangered Species Act lawsuit against the federally owned dams on the Columbia and Snake Rivers. However, it seemingly discredits the value and extensive role hydropower has in supporting the Northwest.

The apparent goal of the agreement appears to bring our region closer than ever to the breaching of the four Lower Snake River Dams without any certainty of how to replace the energy and other benefits these dams provide. To discuss breaching these dams at a time when, according to a report by the Pacific Northwest Utilities Conference Committee, projected energy use for the Northwest is expected to rise at its most rapid pace in recent history seems illogical. The committee's report anticipates growth of nearly 20 percent in the next five years driven by factors such as the increased demand in industrial growth and this growth needs reliable power service. The continued transition to electrification of transportation, homes, and business, all while state and federal policies increasingly require that electricity be emission-free, means that existing hydropower is now more important than ever to help achieve the goal of a reliable, carbon-free power grid.

Knowing the impact this agreement would have on the overall stability of the energy grid due to the growing electricity demand our region is experiencing, the commitments outlined in the agreement would also seemingly adversely impact electricity rates for electricity customers throughout the Northwest. This means not only would these proposed actions noticeably impact businesses and their ability to provide jobs to our region, but they would also most seriously harm the low-income energy-burden customers. Our experience has shown that these customers already find themselves struggling to manage the impacts of inflation in their daily lives and can't afford to see their electricity rates rise as a result of this agreement.

The overall ambiguity of the commitments contained in the agreement has us concerned, especially since utilities were left out of any of the negotiations that occurred to reach the proposed agreement. We'd like to better understand what type of analysis the parties have done, or plan to do, to understand the impact this agreement would have on electrical ratepayers in the region. Additionally, when will the USG look to engage utilities and other stakeholders directly regarding the agreement and its commitments? Also, what are USG's plans if funding proposed in the agreement are not appropriated by Congress?

Our Grant PUD-specific concerns are not unique and utilities across the region have expressed similar frustration. That is why we appreciate you holding the hearing to see what additional information and details the witnesses can provide.

Sincerely,

Rich Wallen



General Manager / Chief Executive Officer



*“The Voice of Oregon’s Wheat Producers Since 1926”*

**OREGON WHEAT GROWERS LEAGUE**

115 SE 8th Street 📍 Pendleton, OR 97801 📞 541.276.7330 🌐 [www.owgl.org](http://www.owgl.org)

January 29, 2024

The Honorable Cathy McMorris Rodgers  
Chairwoman, Committee on Energy and  
Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Frank Pallone  
Ranking Member, Committee on Energy  
and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chairman, Energy, Climate, and Grid  
Security Subcommittee  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Diana DeGette  
Ranking Member, Energy, Climate, and  
Grid Security Subcommittee  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chairs, Ranking Members, and Members of the Committee:

Thank you for the opportunity to provide a letter for the record for the House Energy and Commerce Committee Energy, Climate, And Grid Security Subcommittee hearing scheduled for January 30, 2024. The Oregon Wheat Growers League is a nonprofit trade association that represents the nearly 2,000 farms across the state producing wheat. We are fully supportive of maintaining and enhancing operations of the locks and dams system on the Columbia Snake River System.

The Columbia Snake River System is the nation’s single largest wheat export gateway, transporting over half of all U.S. wheat to markets overseas. Oregon wheat producers, in particular, rely heavily on the system as more than 85% of Oregon’s wheat production is bound for export markets. The ability to barge products along the Columbia Snake River System is vital for enabling Oregon to compete in international markets and to support domestic and international food security objectives.

Our customers rely on timely delivery of Oregon wheat. Our ability to meet the needs of our customers requires the predictability and reliability offered by barging along the river system. It is also the most cost-effective. Without competitive river transportation, expenses will increase for grain suppliers and shippers and those costs will be borne by farmers. Setting aside the fact that no realistic proposals have been made during the process to address the insufficient rail and road infrastructure, a shift from barge to road and rail transport would result in substantial cost increases for transporting grain. Rail and truck transportation for wheat costs significantly

more on a per bushel basis and reducing competition by eliminating barging can only be expected to drive these costs higher for farmers.

In addition to the direct and devastating harm that would be caused to agricultural producers, the impacts would have far-reaching consequences. Barging is our most fuel-efficient mode of transportation and has the lowest emissions. Further, barging is the safest method of moving cargo, with a lower number of injuries, fatalities and spill rates than both rail and trucks. It would take over 100,000 semi-truck trailers to replace the wheat shipped on the Snake River via barge annually.

Throughout the most recent process, our voice and the voices of other agricultural interests were largely excluded from discussion. Yet the impacts and commitments for funding and mitigation will have direct impact to us. We are concerned that our perspectives could not be adequately represented. We seek to engage in efforts that can arrive at a durable solution that protects the integrity of the dams and the health of salmon, allowing us to simultaneously support a thriving river and thriving communities.

Hydroelectric dams, navigation locks, and salmon can and do co-exist and we support a balanced system. We support the investments made at the federal and state levels into solutions that recognize the importance of the river system and substantially contribute to the improvement of fish runs, along with the long-term viability of our agricultural economy. We support retention of the essential infrastructure provided by the locks and dams along the Columbia Snake River system and the capability to move grain to markets efficiently, safely and sustainably.

Sincerely,

A stylized signature of Wade Bingaman in black ink, overlaid on a light gray circular background. The background features a white graphic of a wheat stalk with a vertical line through its center.

Wade Bingaman, President  
Oregon Wheat Growers League



302 N. Mill Street  
Colfax, WA 99111

T/ 509-397-3791  
F/ 509-397-4758

[www.portwhitman.com](http://www.portwhitman.com)

*January 29, 2024*

The Honorable Cathy McMorris Rodgers  
Chair, Energy and Commerce Committee  
The United States House of Representatives  
1035 Longworth House Office Building  
Washington, D.C. 20515

The Honorable Jeff Duncan  
Chair, Energy and Commerce Committee  
The United States House of Representatives  
1035 Longworth House Office Building  
Washington, D.C. 20515

The Honorable Frank Pallone, Jr.  
Ranking Member  
Energy and Commerce Committee  
The United States House of Representatives  
2322A Rayburn House Office Building  
Washington, DC 20515

The Honorable Diana DeGette  
Ranking Member  
Energy and Commerce Committee  
The United States House of Representatives  
2111 Rayburn House Office Building  
Washington, DC 20515

**RE: Port of Whitman County Comments for January 30, 2024 Subcommittee on Energy, Climate, & Grid Security Hearing on the Snake River Dams**

Dear Chairs McMorris Rodgers and Duncan and Ranking Members Pallone and DeGette:

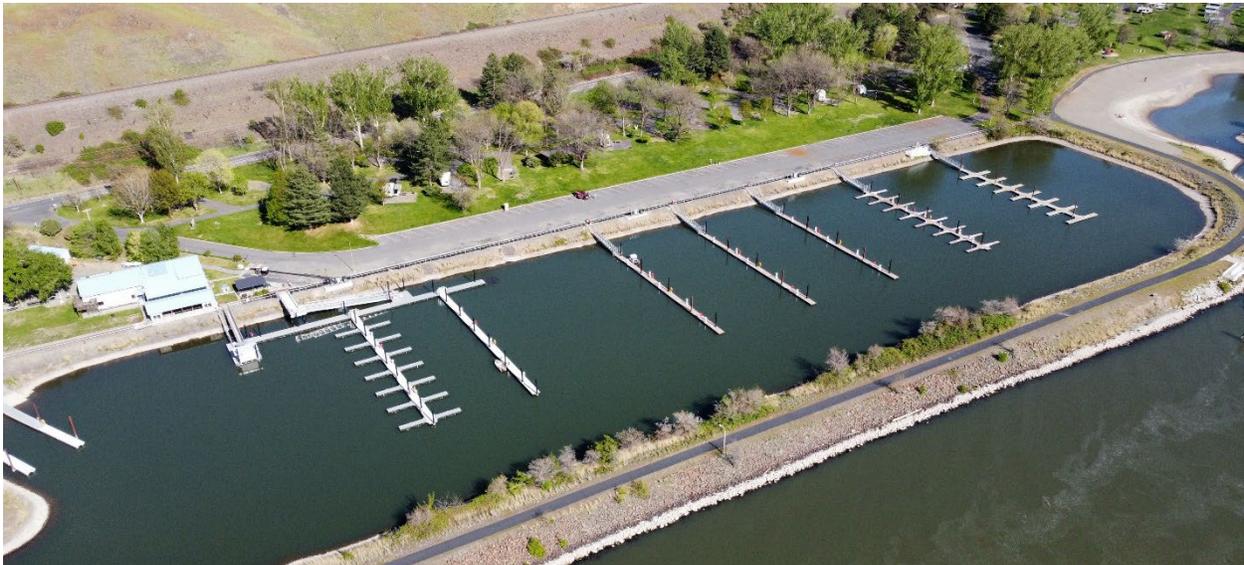
Thank you for convening this Congressional hearing to discuss the importance of the Snake River dams and the detrimental impacts dam breaching would inflict on the state of Washington and the greater United States. We appreciate the opportunity to provide this letter for the record.

The Port of Whitman County (“the Port”) is the leading economic development agency in Whitman County, Washington, the top wheat producing county in the United States. The Port owns and operates three on-water port sites that support our county’s agriculture-based economy—the Port of Almota four miles downriver of Lower Granite Lock and Dam, the Port of Central Ferry on State Route 127 between Walla Walla and Colfax, Washington and the Port of Wilma, located directly across the Snake River from historic Lewiston, Idaho and Clarkston, Washington.

These Snake River ports serve as crucial transportation hubs for the region, shipping grain and other commodities to a market ranging from the Tri-Cities in Central Washington State, to the ports of Portland, Seattle, and the international markets beyond. About 10-12 million bushels of wheat pass through the Port of Wilma each year. The Ports of Central Ferry and Almota also serve as major grain terminals for the Palouse region, offering 7.2 million bushels of grain storage and 3.7 million bushels of storage capacity, respectively. The Ports of Almota, Central Ferry and Wilma collectively employed 662 people, generated nearly \$212 million in output, created over \$131 million in gross regional product and contributed over \$45 million in total compensation in 2022.

If the lower Snake River dams were breached, grain shipping at the Port of Wilma would cease entirely. The port was designed with rail serving a supplemental role to barging. There does not exist sufficient real estate to build rail infrastructure to handle the commodities currently shipped by barge. Approximately 75 percent of the jobs at the Port of Central Ferry would be eliminated. In order to survive, it would require additional land and rail infrastructure for shipping commodities. Further study would be required to assess the scope of the needed infrastructure. As a port exclusively shipping grain, the Port of Almota would not survive dam breaching and the subsequent lack of slack water navigation. All jobs at this on-water port would be eliminated, and the two grain elevators and accompanying infrastructure would be abandoned.

The Port also operates Boyer Park and Marina, a 56-acre full-service marina and campground one mile downriver of Lower Granite Lock and Dam on a long-term lease from the U.S. Army Corps of Engineers. Boyer Park & Marina draws nearly 530,000 people every year, about 11 times the population of Whitman County, Washington. The Port recently invested nearly \$6 million in rehabilitating and replacing the original docks at Boyer Park. Over the past 10 years, the Port has also expanded the campground, built riverfront cabins and installed a new playground structure. Boyer Park and Marina represents a critical recreation site for the region, offering the only public marina within 60 miles, one of only a few places to recreate on water in Whitman County and a gathering place for ongoing community events such as the annual Snake River Family Festival.



*Figure 1 The marina at Boyer Park is seen from an aerial view after the Port of Whitman County completed its longtime project to replace and rehabilitate the original docks in 2023.*

If the Lower Granite Lock and Dam were breached, the park would lose its marina, and with it, virtually all of its recreational value. This would represent a loss of nearly \$6 million of investment in replacing and repairing the docks in 2023. The water table would also be adversely impacted. The green spaces of the 140-acre park are highly reliant on irrigation. After dam breaching, it would be decades before the riparian habitat would be restored and provide the park with any recreational value. In the meantime, the park would likely not survive this transition.

Beyond the Port of Whitman sites, Snake River dam breaching would have broad adverse impacts across Whitman County, Washington. There is currently inadequate infrastructure to ship the commodities grown and produced in Whitman County. This would impact farmers with higher transportation costs. [A FCS Group study](#) commissioned by the Pacific Northwest Waterways Association found that moving commodities by truck/rail would increase the cost per bushel of wheat by 8% or more. An increase in the wholesale cost of grain would push the breakeven price for grain up to nearly \$8 per bushel — well above the spot price of \$6.55 in today’s market. Because wheat’s market price depends on international factors, simply increasing the wholesale price is not an option. “[This] has a high probability of bankrupting over 7,600 farms unless U.S. farm subsidies to the tri-state region are increased by \$55M/year or \$1.65 billion over 30 years,” according to the study.

We are deeply disappointed the Biden Administration has not sought out the input of these affected stakeholders in forming its “commitments” on the fate of the Columbia Snake River System. We appreciate the Energy and Commerce Committee holding this forum today and urge members of Congress to protect this invaluable federal system of locks and dams for the future of navigation, energy, irrigation and flood control in the western United States. To this end, we support the legislation recently introduced by Chair McMorris Rodgers – the [Defending Against Manipulative Negotiators \(DAMN\) Act](#) – as it prohibits the use of federal funds to allow or study the breach or alteration of the Lower Snake River dams or implement the Columbia Basin Restoration Initiative.

Sincerely,



Karl Webber  
District 1



Kristine Meyer  
District 2



Tom Kammerzell  
District 3



January 30, 2024

The Honorable Cathy McMorris Rodgers  
Chair, Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

Chair Rodgers,

We write in opposition to the Columbia-Snake River System Agreement Between Federal Government and Six Sovereigns and in support of your efforts to conduct rigorous oversight over this ill-conceived and opaque process.

We represent the fifty-five electric cooperatives in eight Western states who receive electricity from the Bonneville Power Administration (BPA). Those cooperatives serve different communities, with different electric generation mixes and different consumer expectations, but we all consider the Lower Snake River Dams (LSRDs) to be an essential component for the reliability of our electric grid.

Hydropower is an extremely valuable resource in the West. It reliably and affordably produces vast amounts of clean power for our communities. Intermittent renewables like wind and solar can also play an important role in our generation mix, but they are no replacement for hydropower, as the settlement agreement proposes. While wind and solar fluctuate with the weather, hydropower – and the Lower Snake River Dams in particular – can be controlled to meet changes in demand.

Over the last month, our region experienced record-breaking cold temperatures. Correspondingly, we've set records in electric demand as consumers turned their thermostats up to stay warm. During that time, BPA's wind did not perform – producing only 5% of normal output. Hydropower, and the Lower Snake River Dams, were able to ramp up to fill the gap and keep the lights on.

If the LSRD settlement agreement goes into effect, we will lose those vital capabilities and consumers will lose the affordable, clean energy they currently rely upon. The management plan envisioned by the settlement will, over time, cause the LSRDs to become uneconomical to operate for electric generation purposes, even if Congress never authorizes funding to tear them down. We cannot let that happen.

Frustratingly, electric cooperatives, and anyone who understands the basic reliability functions of the electric grid, were left out of the negotiations which led to this unworkable settlement agreement. We applaud your efforts to highlight this issue and urge you to continue to push for a process that yields a better long-term plan for the communities we serve.

Sincerely,

Ted Case  
Executive Director  
Oregon Rural Electric Cooperative Association

Will Hart  
Executive Director  
Idaho Consumer-Owned Utilities Association



Paul Griffin  
Executive Director  
Washington Rural Electric Cooperative Association

Shawn Taylor  
Executive Director  
Wyoming Rural Electric Association

Gary Wiens  
Chief Executive Officer  
Montana Electric Cooperatives' Association

Carolyn Turner  
Executive Director  
Nevada Rural Electric Association

Jessica Nelson  
General Manager  
Golden State Power Cooperative

Nathaniel Johnson  
Executive Director  
Utah Rural Electric Cooperative Association



**National Grain and Feed Association**  
TRANSFORMING AMERICA'S HARVEST<sup>®</sup>

1400 Crystal Drive, Suite 260  
Arlington, VA 22202  
(202) 289-0873  
ngfa.org

**WRITTEN STATEMENT**

**OF**

**NATIONAL GRAIN AND FEED ASSOCIATION**

**JANUARY 30, 2024**

**EXPOSING PRESIDENT BIDEN'S PLAN TO DISMANTLE THE SNAKE RIVER DAMS AND THE  
NEGATIVE IMPACTS TO THE UNITED STATES**

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**BEFORE THE**

**HOUSE COMMITTEE ON ENERGY AND COMMERCE  
ENERGY, CLIMATE, AND GRID SECURITY SUBCOMMITTEE**



The National Grain and Feed Association (NGFA) thanks the Energy, Climate, and Grid Security Subcommittee for holding a hearing focusing on the conclusion of the mediation and resulting Memorandum of Understanding laying out a plan to study and potentially implement the future removal of the Lower Snake River 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 more than 780 companies that handle most U.S. grains and oilseeds utilized in domestic and export markets. 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.

NGFA is concerned with the precedent that will be set if the plan outlined in the MOU is carried out and the dams are removed. The U.S. inland waterways are critical infrastructure for our industry. While outside of the scope of today's hearing, it is important to note the impact breaching the dams on the Columbia and Snake Rivers would have on industries beyond just fishing and hydropower. 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.

We are deeply concerned with the settlement agreement between the White House, several of the tribal governments, and NGOs in the Pacific Northwest, as its implementation will have devastating impacts on U.S. farmers, ranchers and agribusinesses throughout the United States.

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 alternative infrastructure capacity simply does not exist at this time, and it is highly unlikely that it could be created in an economically viable amount of time – if it can be developed at all.



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.

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 and their employees 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 could also impact global food security.

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

Respectfully submitted,

Michael J. Seyfert

President and Chief Executive Officer

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202-289-0873



January 5, 2023

Mr. Gregory Goldstein  
Acting Director  
Federal Mediation & Conciliation Service  
250 E Street, SW  
Washington, DC 20219

Dear Mr. Goldstein:

As you know, several of your colleagues met with us on December 12, 2022 regarding the process the Federal Mediation & Conciliation Service (FMCS) is conducting regarding the Columbia River System Operations (CRSO) litigation. We appreciate the opportunity to discuss our letter dated November 16, 2022 outlining our concerns about how this process is being conducted and the resulting invitation by FMCS to provide inputs to help remedy the deficiencies we believe exist with the current process.

As discussed, we have both procedural and substantive concerns with how the mediation is being conducted. To be sure, we know that a dialogue on an issue as complex and emotionally evocative as this one is not going to be satisfying to everyone at every step of the way. We understand and appreciate that a successful mediation necessarily involves some give and take. That said, at this point we should have some confidence the process is adhering to the objectives and parameters identified at the outset. Right now, we think the current mediation process is failing that test.

Regarding process, we believe there is a lack of equity in participation and allowed inputs by different parties to the mediation. During our December 12 conversation we cited four significant discussions in which defendant interveners were not permitted a meaningful opportunity to provide input, including:

- Negotiating the extended stay agreement;
- Contributing to Exhibit 1 and Exhibit 2 of the extended stay agreement;

- Submitting comments on the “Rebuilding Interior Columbia Basin Salmon and Steelhead” report released by NOAA Fisheries (the “NOAA Report”); and
- Commenting on the Columbia River System Operational changes for 2023 that the U.S. Government (USG) committed to on October 31, 2022

We believe the inequitable treatment in the process is resulting in substantive errors in the work product associated with the mediation effort. The NOAA Report is an example, and specifically, that document’s treatment of “latent mortality.”

The NOAA Report states, “This report does not constitute a regulatory or policy requirement and does not supersede or modify existing analyses 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.”<sup>i</sup> With this caveat, it would be reasonable to assume that the NOAA Report would explicitly outline areas identified in other recovery analyses of impacts that are unresolved or require further research.

Unfortunately, the NOAA Report does not rise to that standard of transparency. Instead, it concludes, without explanation, that:

“In general, the CBP found the biggest threats and limiting factors to be:

- Large-scale tributary and estuary habitat and water quality degradation.
- Hydrosystem impacts, including direct mortality, **and indirect mortality, where delayed effects from transiting the hydrosystem occur during the first year of ocean residence.** [emphasis added]
- Impassable human-constructed barriers prohibiting access to much of the habitat historically accessible throughout the basin.
- Predation from pinnipeds, native and non-native fishes, and colony nesting waterbirds that are taking advantage of habitats altered by the CRS.”

In asserting its claims regarding the impact of latent mortality, the NOAA Report relies heavily on the Columbia Basin Partnership (CBP) *Phase 2 Report* to justify its description of impacts to salmon recovery and recommended actions. Given the weight being assigned to the NOAA Report in the mediation discussions, it would be valuable to all parties participating in this discussion to understand what the *Phase 2 Report* says about latent mortality, and why the NOAA Report comes to a different conclusion.

Consistent with the best available science, the CBP *Phase 2 Report* confirms a lack of certainty regarding the impact of latent mortality – a lack of certainty that is ignored in the NOAA Report. Specifically, the CBP *Phase 2 Report* states, “The magnitude of latent mortality is **highly**

*uncertain,*”<sup>ii</sup> and goes on to say, “The ISAB [Independent Science Advisory Review Board] has also noted that ***competing hypotheses about latent mortality have different implications for hydropower system operations*** and that ***alternative explanations should be considered and further research conducted*** to resolve related issues.”<sup>iii</sup> [emphasis added]

The referenced ISAB report, which is foundational to the understanding of latent mortality in the CBP *Phase 2 Report*, provides even more detail regarding the uncertainty surrounding the impacts of latent mortality, stating, “The significant association between fish bypass and latent mortality ***might only reflect a non-random sampling of smolts at the bypass collectors*** (the selection hypothesis) rather than injury or stress caused by the bypass event (the damage hypothesis). Because these hypotheses have very different implications for hydrosystem operations, ***FPC and CSS conclusions should be re-examined to consider alternative explanations discussed in this review. Further research will be needed to resolve this issue.***”<sup>iv</sup> [emphasis added]. The ISAB’s conclusions are consistent with size-selectivity research performed by James Faulkner, a NOAA scientist, as well as other published, peer-reviewed research calling into question the latent mortality hypothesis.

Simply put, the NOAA Report misrepresents the level of certainty assigned to the impact of latent mortality, and it does so without providing any explanation as to why its conclusion in that regard is inconsistent with the literature upon it rests. It also ignores the LCM model, which NOAA has historically used in its determinations. We believe this troubling outcome is the result, at least in part, of failing to provide equitable opportunities for all parties to provide meaningful input on the document and instead relying exclusively on the opinions of the plaintiffs in the underlying litigation in writing the initial draft.

Denying defendant interveners the ability to provide meaningful input, analysis, and review of materials which are being introduced into the mediation as materially significant is seriously undermining the integrity of the process. Most recently, on the December 20 call with all litigants in the process, this issue was brought up, and the reply from the Council on Environmental Quality (CEQ) was that we are not here to “litigate the science.” However, the science is the foundational element of the mediation and a key driver of any ultimate policy recommendation, and it is also significantly disputed, not only by the parties involved (including the Federal Defendants in the underlying litigation), but also by the scientific community. In that context, adopting the plaintiffs’ version of the correct interpretation of the existing literature without any meaningful debate, analysis, or critique is inappropriate.

Notably, scientific debate was a central component of the Everglades mediation, which we have been told is serving as the roadmap here. In that case, the mediation included a robust discussion among the scientists themselves, and those discussions formed the technical basis for the ultimate consensus resolution. Here, by contrast, the NOAA Report is, thus far, being regarded as the final word on the science, even though it draws conclusions that are both hotly disputed among the

scientific community and inconsistent with NOAA's previous work. That approach, if it continues, is not likely to lead to consensus. While we understand that the mediation involves a wide variety of policy and legal considerations, the decision-making process on those issues should be grounded in the scientific method and a search for consensus on the "truth" regarding delayed mortality and other disputed scientific questions.

We are also concerned that a number of the mediation's key objectives have been cast aside. Throughout these discussions, CEQ has informed the parties that Exhibit 2 of the August 2022 Stay Order outlines the Biden Administration's objectives and provides the framework for the mediation process. The first sentence of the "Guiding Principles" section of Exhibit 2 states four objectives:

"The Biden Administration is committed to supporting development of a durable long-term strategy to restore salmon and other native fish populations to healthy and abundant levels, honoring Federal commitments to Tribal Nations, delivering affordable and reliable clean power, and meeting the many resilience needs of stakeholders across the region."

Exhibit 2 does not assign different weight or priority status to the four objectives, but the current construction of the mediation process and the resulting work product does. Whether deliberate or not, the concepts of "delivering affordable and reliable clean power" and "meeting the many resilience needs of stakeholders across the region" have received little to no attention during the mediation process thus far.

Evidence for this can also be found in the draft "Schedule of Actions and Critical Milestones for the Long-Term Strategy" ("Milestones document") released by the FMCS on behalf of the USG on November 30, 2022. While the preamble and goals section of this document recommits to promoting the region's clean energy future, the words "clean energy" could be found nowhere in the "Objectives for All Parties," "Key Actions," "Elements of a comprehensive basin-wide plan," or "Schedule and Milestones for the Coming Year" sections in the remainder of the document. Resiliency was abandoned completely.

While we appreciate the opportunity to comment on the draft "Milestones document" the omission of any meaningful exploration concerning these key objectives from the first draft strongly suggests the process is straying from its original intent as articulated in Exhibit 2. We have raised our concerns regarding the process and the lack of opportunities for defendant interveners to participate on several occasions, both orally and in writing, to both FMCS and CEQ, including but not limited to the letter we sent on November 16, 2022. Those concerns have not been addressed.

In addition to supporting fish and wildlife mitigation, the core essential services authorized by Congress for operation of the Columbia River System are hydropower production, navigation, flood control, irrigation, and recreation. As organizations representing millions of ratepayers and

the communities and economies that are dependent on the services provided by the Columbia River System, including the underserved, we remain concerned that matters related to these functions are not receiving the attention they deserve.

Furthermore, it will be impossible to render a consensus outcome as long as dam removal remains a foregone conclusion. That is particularly troublesome when the no consensus-based scientific justification has been offered for that action, and the impacted parties are prevented from participating in the formulation of key documents associated with the mitigation and the decision-making processes regarding these outputs.

We appreciate FMCS taking the time to listen to our concerns and the invitation for us to offer amendments to the process that we think might help to yield better results. To that end, we believe that changes should be made to the working group structure currently in place. In particular, we are concerned that the working groups formed to date are inadequate to address the key issues outlined in Exhibit 2, or to address the disputed science underlying this entire dispute.

Currently, there are three working groups: the Short-Term Funding and Near-Term Action Group, the Long-Term Exploration/Planning Work Group, and the Schedules and Milestones Group. At this point in the process this structure is insufficient for the deliberations required to accommodate consideration of all four of the guiding principles articulated in Exhibit 2. As such, we would respectfully request the addition of two additional work groups with one dedicated to “clean energy” and the second focused on “resiliency.”

We also believe a working group should be formed to address the disputed scientific questions discussed above, and that discussions within that be driven by technical experts, rather than interested parties, as was the case in the Everglades mediation. In our most recent private caucus, one suggestion was to convene a private caucus meeting between NOAA Fisheries and our groups to explain the clear evolution in NOAA’s thinking regarding latent mortality. We would like to take you up on your idea to facilitate that meeting. However, we also believe that relegating these critically important scientific issues which, again, are hotly contested, to private, specifically requested caucus meetings is insufficient. As in the Everglades mediation, substantially more attention must be paid to the scientific consensus concerning the efficacy of the measures being considered. From our perspective, resolving those issues should be the first step in the mediation process and at the forefront of any dialogue concerning the appropriate result of this mediation.

While finding consensus on CRSO operations is challenging, we believe there is a path forward that supports salmon recovery, honoring Federal commitments to Tribal Nations, supporting our clean energy future, and promoting resiliency throughout the region, with a particular focus on vulnerable populations. Unfortunately, we don’t have confidence that the mediation process is

currently on a path to help us identify that consensus. Adjustments along the lines of what we have suggested above could help to restore some confidence.

Again, thank you for the opportunity to raise both our concerns and to provide input into the process. We welcome the chance to discuss these issues further should you have any questions or concerns.

Sincerely,



Kurt Miller  
Executive Director  
Northwest River Partners



Heather Stebbings  
Executive Director  
Pacific Northwest Waterways Association (PNWA)  
Inland Ports & Navigation Group (IPNG)

cc: Mr. Joshua Flax  
Chief Strategy Officer  
Federal Mediation & Conciliation Services

Ms. Sara Gonzalez-Rothi  
Senior Director for Water  
Council on Environmental Quality

Mr. Mike Eitel  
Senior Trial Attorney  
Department of Justice

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<sup>i</sup> “Rebuilding Interior Columbia Basin Salmon and Steelhead,” National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, September 30, 2022. pp. 1 - 2

<sup>ii</sup> “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. p. 69

<sup>iii</sup> “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. p. 70

<sup>iv</sup> Follow-up to ISAB reviews of three FPC memos and CSS annual reports regarding latent mortality of in-river migrants due to route of dam passage, “Independent Scientific Advisory Board for the Northwest Power and Conservation Council, Columbia River Basin Indian Tribes, and National Marine Fisheries Service, Memorandum (ISAB 2012-1)



August 30, 2023

Ms. Brenda Mallory  
Chair  
Council on Environmental Quality  
Executive Office of the President  
750 Jackson Place  
Washington, DC 20503

Dear Chair Mallory:

We are writing as representatives of millions of Western public power customers, food producers, low-emission transportation providers, and countless other stakeholders to register yet again our deep and unmitigated concern about the quality of the involvement afforded to us in the CEQ-led Columbia River System Operations (CRSO) mediation process.

To date, we have received no substantive update on the status of talks between the U.S. Government (USG) and plaintiffs despite the undersigned being intervenor-defendants in the CRSO litigation. A draft Schedule and Milestones document was circulated by CEQ in March of this year. That draft document included the following schedule milestones:

**“February - May**

- a. Commence specific topic meetings to identify authorities and funding strategies for each major plan element.
- b. Coordinate with various forums to look for synergies on specific actions to move forward.
- c. Develop outline and procedures of governance structure and/or process.

**April - May**

- a. Congressional coordination to address development of legislative initiatives.

**June - July**

- a. Using the identified key elements of a restoration plan, develop an annotated outline of a basin-wide restoration plan, including relevant regulatory and decision-making steps needed for implementation.
- b. Seek necessary Administration and parties’ concurrence.

- a. Develop timeline for completion of the final basin-wide restoration plan with collaborative milestones.
- b. Further socialize the work accomplished to date with the regional parties and Congress, including listening sessions.

**August**

- a. Finalize agreement on basin-wide restoration plan approach.”

We understand FMCS and CEQ have been in ongoing private caucuses with plaintiffs that also involve others in the USG, yet we have been provided no updates on the progress of any of these negotiations. We have not been involved in any meaningful or substantive discussions regarding specific objectives or other considerations plaintiffs are discussing with the USG. We have serious concerns that these topics are likely outside the plaintiffs’ areas of expertise, or at a minimum, are topics where we have immense expertise that we could share and therefore, should be involved in the discussion.

Particularly worrisome is that we are uncertain as to whether the inputs and edits we and our members have worked tirelessly to provide in good faith throughout this process are being reviewed or considered by the USG. For instance, in our efforts to engage in the process, two detailed reports and a technical letter raising extensive issues and considerations were submitted to the USG: one recent report was a scientific literature review addressing the “delayed mortality” hypothesis<sup>1</sup>, and the other report was a comprehensive study on the potential impacts of breaching, titled: “Regional & National Impacts Triggered by Breaching Lower Snake River Dams: Summary of Transportation, Climate and Social Justice Concerns.”<sup>2</sup> Additionally, almost a year ago to the day, a detailed letter citing official technical and scientific documents pointed out the many inaccuracies and shortcomings of NOAA’s “Rebuilding Interior Columbia Basin Salmon and Steelhead” draft report, which has been used extensively as a basis for CEQ’s breaching advocacy efforts during the stay in litigation.<sup>3</sup>

Although all of these materials were submitted for review from different sources, their biggest area of commonality is that we have encountered little response of significance from the USG. Consequently, we remain uncertain about the status of these and prior submissions awaiting review.

In terms of recent engagements with the USG, we were invited to a meeting on August 18, 2023 that provided no substantive information and was held only thirteen days prior to the expiration of the stay and corresponding mediation. In that meeting and in successive engagements, when we asked questions regarding the mediation process, our involvement, and our ability to review substantive proposals that may affect the people we represent, our frustrations were registered but dismissed without remedy. This puts us and our constituents in the untenable position of facing a looming deadline that affects countless lives and livelihoods and yet we have no opportunity to be a part of a solution. Further, in a last ditch-effort to glean substantive information prior to the expiration of the stay tomorrow, we were

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<sup>1</sup> [“Potential impacts of lower Snake River dams on salmon and steelhead survival in the ocean: A scientific perspective about \*delayed mortality\*”](#); Mount Hood Environmental; Ian Courter & Tara Blackman; June 25, 2023

<sup>2</sup> [“Regional & National Impacts Triggered by Breaching Lower Snake River Dams: Summary of Transportation, Climate and Social Justice Concerns”](#); FCS Group; August 13, 2023

<sup>3</sup> [Response to “Rebuilding Interior Columbia Basin Salmon and Steelhead” Review Draft](#); Public Power Council; August 26, 2022

granted a USG engagement earlier today that also yielded no additional information. Our organizations, and the millions of constituents we represent, are once again in the same position with regard to continued uncertainty with the process.

We originally entered these discussions with some trepidation because of the secrecy of the process regarding topics that have such broad societal – and potentially dangerous – impacts, especially on the heels of the very transparent and highly publicized CRSO review that culminated in the government’s non-breach preferred alternative. Nonetheless, we entered these mediation engagements in good faith and have attempted to participate by putting forward ideas that advance our shared goals of salmon recovery and protecting our region’s economy while working to usher in a clean future for our energy and transportation sectors.

We are well aware that discussions and negotiations have been ongoing within other private caucuses which we have not been privy to for at least two months. We are discouraged that during this time, we were provided with no substantive updates about the mediation and no opportunity to help further the discussions.

In the end, our trepidation was well-founded as the implementation of this process has not met our expectations. It’s impossible to counsel our constituencies about how this process moves forward because we aren’t allowed in these caucus discussions. If the process does move forward, it must evolve into something with more meaningful involvement that includes a balance of perspectives if it is to truly inform a sustainable, collaborative path forward.

Sincerely,



Kurt Miller  
Executive Director  
Northwest RiverPartners



Neil Maunu  
Executive Director  
Pacific Northwest Waterways  
Association  
Inland Ports and Navigation Group



Scott Simms  
CEO & Executive Director  
Public Power Council

cc: John Podesta, Senior Advisor for Clean Energy Innovation and Implementation, Executive Office of the President

David Turk, Deputy Secretary, U.S. Department of Energy

Matthew Lee-Ashley, Chief of Staff, Council on Environmental Quality

Sara Gonzales-Rothi, Senior Director of Water, Council on Environmental Quality

Pacific Northwest Congressional Delegation



**FEDERAL MEDIATION AND CONCILIATION SERVICE**  
OFFICE OF FIELD OPERATIONS  
250 E Street, SW  
Washington, D.C. 20427

February 7, 2023

Mr. Kurt Miller  
Executive Director  
Northwest River Partners  
[kurt@nwriverpartners.org](mailto:kurt@nwriverpartners.org)

Ms. Heather Stebbings  
Executive Director  
Pacific Northwest Waterways Association (PNWA)  
Inland Ports & Navigation Group (IPNG)  
[heather.stebbing@pnwa.net](mailto:heather.stebbing@pnwa.net)

*RE: Letter Dated January 5, 2023  
Columbia River System Operations (CRSO) Litigation Mediation*

Dear Mr. Miller and Ms. Stebbings:

We are in receipt of the above referenced letter.

On behalf of the FMCS team working with you and many others on the Columbia River Basin project, I thank you for the feedback on the process you offered in your letter. By necessity our work is dynamic, and we constantly make adjustments along the way. I encourage you to continue to bring any substantive suggestions for adjustment or proposals you may have to any of the upcoming Working Group 2 meetings that will address a number of topics including those detailed in your letter.

Please direct any future inquiries to me at the contact information listed below.

The FMCS team looks forward to seeing you at future meetings.

Respectfully,

**Sarah Cudahy**  
Associate Deputy Director for Field Operations (National)  
Federal Mediation & Conciliation Service  
(202) 606-8090  
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cc: Mr. Joshua Flax  
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Ms. Sara Gonzalez-Rothi  
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## MEMORANDUM OF UNDERSTANDING

Through mediated discussions in *National Wildlife Federation v. National Marine Fisheries Service*, 3:01-cv-640-SI (D. Or.) (*NWF v. NMFS*), *Pacific Coast Federation of Fishermen's Associations v. Bonneville Power Administration*, 20-73761 (9th Cir.) (*PCFFA v. BPA*), *Coeur d'Alene Tribe v. Bonneville Power Administration*, 20-73762 (9th Cir.), and *Spokane Tribe of Indians v. Bonneville Power Administration*, 20-73775 (9th Cir.), the National Wildlife Federation et al. Plaintiffs, the State of Oregon, the State of Washington, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Nez Perce Tribe, and the United States (the "Parties") have entered into this Memorandum of Understanding ("MOU").

WHEREAS, the U.S. Fish and Wildlife Service ("FWS") and the National Marine Fisheries Service ("NMFS") issued biological opinions on Columbia River System ("CRS") operations in July 2020, the U.S. Army Corps of Engineers ("Corps"), the Bureau of Reclamation ("Reclamation"), and the Bonneville Power Administration ("Bonneville") completed a Final Columbia River System Operations Environmental Impact Statement in July 2020, and the Corps, Reclamation, and Bonneville issued a Final Record of Decision in September 2020;<sup>1</sup>

WHEREAS, in *PCFFA v. BPA*, the National Wildlife Federation et al., Plaintiffs ("NWF Plaintiffs")<sup>2</sup> filed a petition for review in the Ninth Circuit Court of Appeals against Bonneville in December 2020; and in *NWF v. NMFS*, the NWF Plaintiffs filed an eighth supplemental complaint in January 2021 (ECF 2311, as corrected by ECF 2396), the Spokane Tribe of Indians filed a complaint-in-intervention in February 2021 (ECF 2320), Oregon filed a fifth supplemental complaint in March 2021 (ECF 2325), and the Coeur d'Alene Tribe of Indians filed a complaint-in-intervention in March 2021 (ECF 2330);

WHEREAS, NWF Plaintiffs and Oregon filed and the Nez Perce Tribe supported motions for injunctive relief in *NWF v. NMFS* in 2021 (ECF 2390; ECF 2392; ECF 2387);

WHEREAS, in *NWF v. NMFS*, the United States, the NWF Plaintiffs, the State of Oregon, and the Nez Perce Tribe jointly requested a stay of litigation through July 31, 2022 to implement certain negotiated short-term CRS operations while the parties worked to develop and begin implementing a long-term comprehensive solution that could resolve the claims in the litigation (ECF 2411), which the district court granted (ECF 2415); and the parties to the Ninth

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<sup>1</sup> For purposes of this MOU, the Columbia River System (CRS) consists of 14 Federal dam and reservoir projects addressed in the 2020 CRSO EIS and 2020 CRSO EIS ROD: Libby, Hungry Horse, Albeni Falls, Grand Coulee, Chief Joseph, Dworshak, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles, and Bonneville dams.

<sup>2</sup> For purposes of this MOU, the NWF Plaintiffs are: the Pacific Coast Federation of Fishermen's Associations, the Institute for Fisheries Resources, Sierra Club, Idaho Rivers United, Northwest Sport Fishing Industry Association, NW Energy Coalition, National Wildlife Federation, Columbia Riverkeeper, Idaho Conservation League, and Fly Fishers International.

Circuit proceedings subsequently sought to administratively close their petitions for review through August 2, 2022, which the Ninth Circuit granted (ECF 25);

WHEREAS, the United States, the NWF Plaintiffs, the State of Oregon, and the Nez Perce Tribe, joined by the Coeur d'Alene Tribe and the Spokane Tribe of Indians, subsequently moved to extend the litigation stay through (1) August 2023 (ECF 2423), which the district court granted on August 4, 2022 (ECF 2425) and the Ninth Circuit granted on August 11, 2022 (ECF 42); and (2) through October 2023 (ECF 2438), which the district court granted on September 1, 2023 (ECF 2441) and the Ninth Circuit granted on September 6, 2023 (ECF 47);

WHEREAS, during the litigation stay, the United States engaged the Federal Mediation and Conciliation Service ("FMCS") and, with the assistance of FMCS, participated in mediated discussions with States, Tribes, and other parties on timely, basin-wide, durable solutions that have the potential for resolving the litigation (ECF 2423-2);

WHEREAS, on March 21, 2022, the United States convened a Nation-to-Nation consultation between Federal departments and agencies and various leaders and representatives from the Tribes of the Columbia River Basin, where the Federal representatives heard clearly the request for accountability for United States Government ("USG") actions that have caused harm to the ecology of the river, its tributaries, and importantly, its first residents;

WHEREAS, on March 28, 2022, the Secretary of the Interior, the Secretary of Energy, the Assistant Secretary of the Army for Civil Works, the Chair of the Council on Environmental Quality, and the Under Secretary of Commerce for Oceans and Atmosphere/NOAA Administrator committed to identifying a strong and lasting path forward to restore healthy and abundant wild salmon and other native fish to the Columbia River Basin;<sup>3</sup>

WHEREAS, the Parties continued to engage through good faith mediation, including the United States' production of documents relevant to the mediation process, such as NOAA's September 30, 2022, Rebuilding Interior Columbia Basin Salmon and Steelhead Report (Rebuilding Report) (*see* <https://media.fisheries.noaa.gov/2022-09/rebuilding-interior-columbia-basin-salmon-steelhead.pdf>; *see also* ECF 2429; ECF 2430; ECF 2433; ECF 2434 (mediation progress reports));

WHEREAS, on March 21, 2023, President Biden announced a call to action to bring healthy and abundant salmon runs back to the Columbia River System;<sup>4</sup>

WHEREAS, on September 21, 2023, the United States entered into an agreement with the Coeur d'Alene Tribe, the Confederated Tribes of the Colville Reservation, and the Spokane Tribe of Indians to support and fund the Tribally led effort to restore salmon to the blocked habitat in the Upper Columbia River Basin above Chief Joseph and Grand Coulee Dams,

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<sup>3</sup> Columbia River Basin Fisheries: Working Together to Develop a Path Forward, *available at* <https://www.whitehouse.gov/ceq/news-updates/2022/03/28/columbia-river-basin-fisheries-working-together-to-develop-a-path-forward/>.

<sup>4</sup> <https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/03/21/remarks-by-president-biden-at-the-white-house-conservation-in-action-summit/>.

including the habitats above private dams on the Spokane River. In accordance with the agreement, the Coeur d'Alene Tribe, the Spokane Tribe of Indians, and United States moved to stay and voluntarily dismiss without prejudice to reinstatement the existing litigation relating to the Coeur d'Alene Tribe's and Spokane Tribe of Indians' complaints-in-intervention (ECF 2442) and petitions for review, which the district court granted on September 28, 2023, and the Ninth Circuit granted on October 11, 2023;

WHEREAS, on September 27, 2023, President Biden issued a Memorandum on Restoring Healthy and Abundant Salmon, Steelhead, and Other Native Fish Populations in the Columbia River Basin ("Presidential Memorandum")<sup>5</sup> that identified a priority for the Administration "to honor Federal trust and treaty responsibilities to Tribal Nations — including to those Tribal Nations harmed by the construction and operation of Federal dams that are part of the Columbia River System;"

WHEREAS, the Presidential Memorandum further directed that all relevant Federal agencies "work with the Congress and with Tribal Nations, States, local governments, and stakeholders: to pursue effective, creative, and durable solutions, informed by Indigenous Knowledge; to restore healthy and abundant salmon, steelhead, and other native fish populations in the Basin; to secure a clean and resilient energy future for the region; to support local agriculture and its role in food security domestically and globally; and to invest in the communities that depend on the services provided by the Basin's Federal dams to enhance resilience to changes to the operation of the CRS, including those necessary to address changing hydrological conditions due to climate change;"

WHEREAS, during the mediation, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Nez Perce Tribe, the State of Oregon, and the State of Washington (the "Six Sovereigns") provided to the United States a proposed Columbia Basin Restoration Initiative ("CBRI" (Attachment 1)), which they intend to advance. The CBRI is informed by decades of collective experience and represents the collaborative efforts of the Six Sovereigns to develop a comprehensive solution to shared and complex challenges in the Columbia River Basin;

WHEREAS, the United States worked with the Six Sovereigns to review, evaluate, and respond to the CBRI, which culminated in the United States Government's Commitments in Support of the CBRI ("USG Commitments" (Attachment 2)), including 10-year interim operations (2024-2033) for the four lower Snake River and four lower Columbia River dams ("USG Operations" (Attachment 2, Appendix B));

WHEREAS, as set forth in this MOU, the Parties agree to seek a five year stay of litigation from the district court and to move to extend the litigation stay for an additional five years if the Parties are continuing to work in partnership on Columbia River Basin restoration and have not terminated the MOU; the Parties further agree not to litigate over the USG Operations for a period of 10 years so long as this MOU remains in effect, to enable fulfillment

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<sup>5</sup> <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/09/27/memorandum-on-restoring-healthy-and-abundant-salmon-steelhead-and-other-native-fish-populations-in-the-columbia-river-basin/>.

of the USG Commitments and allow for additional collaboration and partnership between the Parties to further advance the objectives of the Presidential Memorandum and the CBRI;

WHEREAS, the Parties remain committed to good faith collaboration with the regional sovereigns, and with other non-Party litigation participants as appropriate, including coordination on this MOU, the USG Commitments, USG Operations, and addressing questions or concerns over the MOU, the USG Commitments, and USG Operations;

NOW, THEREFORE, THE PARTIES STATE THE FOLLOWING UNDERSTANDING:

**1. Parties.** The signatories to this MOU are the United States, acting through the Federal agencies, the States of Washington and Oregon, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Nez Perce Tribe, and NWF Plaintiffs.

1.1. “Federal agencies” refers to the U.S. Army Corps of Engineers, the Bureau of Reclamation, Bonneville Power Administration, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service.

1.2. “United States Government” or “USG” refers to the Departments and Agencies involved in salmon and native fish restoration and include, but are not limited to, the Executive Office of the President, the Departments of Interior, Commerce, Army, Energy, Transportation, and Agriculture, the Departments’ component agencies, and the Environmental Protection Agency.

1.3. “Non-Federal Parties” refers to the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Nez Perce Tribe, the State of Washington, the State of Oregon, and the NWF Plaintiffs.

**2. USG Commitments in Support of the Columbia Basin Restoration Initiative.** Subject to the provisions of the MOU, the Federal agencies agree to implement the USG Commitments, consistent with the Presidential Memorandum and in partnership with the Six Sovereigns and other stakeholders in the region, to make headway on the objectives in the CBRI. The Parties agree that nothing in this MOU is intended to modify, or will be interpreted as modifying, the USG Commitments, Presidential Memorandum, or the CBRI.

2.1. The Parties recognize that the USG Commitments and actions identified in this MOU are conditioned on and subject to the completion of any potential new and/or supplemental environmental compliance, as needed, under the National Environmental Policy Act (“NEPA”), the Endangered Species Act (“ESA”), and other laws. The Parties recognize that the USG Commitments and actions identified in this MOU could change depending on (1) the outcome of the environmental compliance and associated Federal agency decision-making processes, or (2) congressional action to authorize and fund the breach of the four lower Snake River dams, and that such changes could lead to modification or termination of this MOU in accordance with the terms of this MOU.

2.2. To the extent the Federal agencies' new or supplemental environmental compliance, or congressional action to authorize and fund breach, leads to actual or potential impacts to the USG Commitments or this MOU, the Parties agree to work collaboratively to consider modifications to the USG Commitments or this MOU in the new or supplemental environmental compliance documents or other forums as appropriate. This includes considering any actions that could be needed to complement, mitigate, or offset any potential modifications to the USG Commitments or this MOU.

**3. USG Operations.** While the MOU is in effect, the Federal agencies will implement the USG Operations for a 10- year period, and the Parties agree the USG Operations will remain in place: (1) unless the Federal agencies modify operations after completing any potential new or supplemental environmental compliance; (2) subject to any adaptive management consistent with the USG Commitments and other provisions identified therein; or (3) unless and until the Corps awards construction contracts for breach following congressional action to authorize and fund the breach of the four lower Snake River dams. If circumstances arise as identified in this section, the Parties agree to work together to consider modified operations in light of changed circumstances.

3.1. The Parties further agree that the Federal agencies will use the provisions contained in the 2023 Water Management Plan, 2023 Fish Passage Plan, and 2023 Fish Operations Plan for in-season management unless expressly modified by or through implementation of the USG Commitments.

3.2. As addressed in the USG Commitments, the Parties agree to work in partnership to continue monitoring and evaluating the USG Operations during the term of this MOU.

3.3. Consistent with section 9.2, the non-Federal Parties agree that they will not seek injunctive relief that would modify the USG Operations while this MOU is in effect for that Party.

**4. Ongoing Collaboration on Restoration; Additional Actions.** In accordance with the USG Commitments' expectations for continuing senior leadership engagement, the USG recognizes that additional actions will be needed to advance the shared interests in restoring healthy and abundant salmon and other native fish to the Columbia River Basin, including pursuing increased funding in support of basin-wide restoration as set forth in the USG Commitments and Presidential Memorandum. The Parties therefore agree to continue collaborating over development and implementation of additional actions that may be undertaken by the Parties to meet the shared goals. The Parties do not intend for this commitment, however, to include the renegotiation of the USG Commitments and USG Operations.

#### **5. Compliance with Applicable Laws.**

5.1. The Federal agencies have requirements to prepare certain analyses under Federal law when taking actions described in the USG Commitments or this MOU. The USG Commitments and the actions identified in this MOU therefore are conditioned on,

and subject to, completion of any required environmental compliance and compliance with all applicable laws. No provision of this MOU shall be interpreted as, or constitute, a commitment or requirement that the United States, acting through its departments and agencies, act in contravention of NEPA, the National Historic Preservation Act, the ESA, the Pacific Northwest Electric Power Planning and Conservation Act, the Clean Water Act, the Administrative Procedure Act, the Federal Advisory Committee Act, the Information Quality Act, or any other law or regulation, either substantive or procedural (including applicable State and Tribal law).

5.2. The USG agrees to use all appropriate legal authorities to fund, support, and implement this MOU. This MOU shall not be interpreted as binding any Federal agency to expend in any one fiscal year any sum in excess of appropriations made by Congress and available for purposes of this MOU for that fiscal year, nor as involving the United States in any contract or other obligation for the further expenditure of money in excess of such appropriations. The Parties agree that nothing in this MOU shall be interpreted as or constitute a commitment or requirement that any Federal agency take action in contravention of the anti-lobbying act, 18 U.S.C. § 1913, or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. § 1341.

5.3. Any obligation of State Parties to make any payment or expend any funds under this MOU attributable to commitments performed under this MOU after the last day of the current biennium is contingent upon the State Parties receiving from the applicable Legislative Assembly (including but not limited to its Emergency Board) appropriations, limitations, or other expenditure authority sufficient to allow the State Parties, in the exercise of their reasonable administrative discretion, to continue the commitments contemplated by this MOU.

5.4. Nothing in this MOU shall be construed to affect or limit the Parties—Federal, State, or Tribal—from complying with their obligations under, or affect their discretion under, any applicable laws; the MOU also does not affect or limit the Parties when engaging in—or predetermine the outcome of—any environmental, cultural resource review, administrative review, regulatory, or appeal process.

**6. Communication Protocol.** Given the timeline and the adaptive nature of the CBRI and the USG Commitments, it is not possible to anticipate all contingencies or eventualities. The Parties therefore commit to continue to engage in regular, good faith discussions to address any issues or questions that may arise.

6.1. Points of Contact. Each Party will identify point(s) of contact for receiving notices and managing their respective obligations under this MOU; each Party also will identify, in writing, any changes to those point(s) of contact within one month of a change.

6.2. Monthly Status Briefings. The Parties' points of contact will convene monthly informal status calls concerning implementation of the CBRI, the USG Commitments, and any additional actions needed to advance the Parties' shared interests

in restoring healthy and abundant salmon and other native fish to the Columbia River Basin.

6.3. **Information Sharing.** Upon request, the Parties agree to timely share documents developed in furtherance of the CBRI and the USG Commitments that are not internally confidential or privileged to a Party. The Parties also agree to provide each other with as much advance notice as practical of actions or events that have the potential to affect the USG Commitments, the CBRI, the Presidential Memorandum, or this MOU.

6.4. **Annual Meetings.** In addition to the meetings outlined in section 6.2 above, the Parties—including senior leadership within the USG, States, Tribes, and NWF Plaintiffs—agree to meet annually to review the progress made in implementing the CBRI, the USG Commitments, this MOU, and any additional actions needed to advance the Parties’ shared interests in restoring healthy and abundant salmon and other native fish to the Columbia River Basin. The Parties agree to jointly develop and post online a concise annual progress report, and to jointly file an annual status report in the district court litigation. The Parties further agree that additional leadership meetings may be required from time to time, corresponding to actions or milestones in the USG Commitments, such as the finalization of any supplemental or additional environmental analysis.

**7. Dispute Resolution.** The Parties agree to use best efforts to pursue the good faith implementation and support of the USG Commitments and this MOU. The Parties understand that questions or concerns may arise regarding Party compliance with the spirit or intent of the USG Commitments and this MOU, including but not limited to the results of Party conferral on issues arising when implementing the USG Commitments and this MOU and adjustments or modifications to the USG Commitments or USG Operations (if adjusted by the Federal agencies following environmental compliance and associated decision-making processes). It is the intent of the Parties that these procedures will permit the Parties to resolve disputes outside of court, and that litigation will be used only as a last resort after good faith efforts to resolve disagreements are unsuccessful and the MOU is terminated according to the provisions below.

7.1. **Point of Disagreement.** Any Party may raise a formal “point of disagreement” to initiate the dispute resolution processes of this MOU. A Party raising a formal point of disagreement shall provide all other Parties written notice that it is raising a formal point of disagreement. That written notice shall include a summary of the disagreement, the Party’s position on the appropriate resolution(s) of the disagreement, and any documents or supporting materials that assist in describing the disagreement and/or supporting the Party’s position on an appropriate resolution. If the Party raising the point of disagreement believes that emergency circumstances exist, a complete explanation of the emergency and a request for expedited dispute resolution to resolve the emergency shall be included. All Parties shall strive to provide notice of a point of disagreement at the earliest possible time.

7.2. **Informal Dispute Resolution.** The Parties will first work to resolve the point of disagreement at the staff level. The Parties’ points of contact will endeavor to timely

facilitate consultation and resolution. If a dispute cannot be resolved through informal dispute resolution, the Party or Parties raising the dispute may leave the dispute unresolved, obtain unanimous agreement to bypass formal dispute resolutions and proceed directly to withdrawals from or termination of the MOU, or pursue formal dispute resolution.

7.3. Formal Dispute Resolution. If the Parties are unable to reach agreement through informal dispute resolution, the Parties shall elevate the point of disagreement to each Party's senior leadership for timely consultation and good faith efforts to timely resolve the point of disagreement. The Parties agree that these good faith efforts to resolve points of disagreement at the senior leadership level are the primary method of formally resolving disputes under this MOU. However, if the point of disagreement remains unresolved following good faith efforts to do so at the senior leadership level, any Party may request mediation of an unresolved dispute with a settlement judge (or, with consent of all Parties, a non-judicial mediator or mediation body, like the Federal Mediation and Conciliation Service). The Parties agree that good faith efforts to resolve any disagreements shall be exhausted prior to requesting mediation and that, absent an agreement otherwise, the requesting Party shall provide at least 7 days' notice to the Parties' counsel before requesting mediation under this provision. The Federal agencies agree that, in mediation, they will coordinate with each other prior to advancing positions during the formal dispute resolution proceedings. The Parties agree to prioritize mediation to the extent practicable. The Parties agree to use best efforts to resolve the dispute resolution process within 90 days of the initial notice of point of disagreement.

7.4. If any Party provides notice in writing to all Parties that formal dispute resolution, including mediation as set forth in Section 7.3, has been unsuccessful, or the Parties unanimously agree to bypass all or part of the formal dispute resolution procedures, any Party may withdraw from this MOU pursuant to Section 9.1 below.

**8. Effective Date.** The MOU shall become effective upon full execution by all Parties. Within 30 days of full execution, the Parties agree to move to stay the *NWF v. NMFS*, 3:01-cv-640-SI (D. Or.) litigation; and dismiss without prejudice to reinstatement, administratively close, or stay the *PCFFA v. BPA*, 20-73761 (9th Cir.) petition, in accordance with the following provisions:

8.1. The Parties agree to jointly request the stay of the district court litigation for an initial period of five years. The Parties agree to meet and confer no later than 90 days before the expiration of the five-year stay to evaluate the progress of the MOU and USG Commitments. Any Party may withdraw from this MOU following good faith conferral within the 90-day conferral period without complying with the dispute resolution or termination procedures set forth in this MOU. Unless this MOU is terminated, all remaining Parties will jointly move for an additional five-year stay to match the spirit and intent of the USG Commitments and the Presidential Memorandum.

8.2. In keeping with Ninth Circuit General Order appendix A #27, the USG and NWF Plaintiffs agree to dismiss the Ninth Circuit petition without prejudice to

reinstatement upon the occurrence of stated conditions, namely: (1) the termination of the MOU or (2) the occurrence of a dispute requiring mediation. The Parties agree they may modify the Ninth Circuit filings to jointly move for administrative closure or a stay of the petition for review.

8.3. If all or part of the district court and Ninth Circuit litigation is not stayed, administratively closed, or dismissed without prejudice to reinstatement (consistent with section 8.2 above) within a reasonable time following full execution of this MOU by the Parties, this MOU shall become null and void.

## **9. Termination and Withdrawal**

9.1. **Withdrawal by Notice.** Any Party may provide written notice to the other Parties of that Party's withdrawal from this MOU (1) after exhausting the dispute resolution provisions in section 7, (2) after conferring with the Parties during the 90-day conferral period addressed in section 8.1, or (3) in accordance with section 9.2 below. Said withdrawal is effective as of the day it is received by the Parties.

9.2. **Withdrawal Due to Litigation.** This MOU serves as the basis for a cessation of litigation in *NWF v. NMFS*, 01-cv-640-SI (D. Or.), and *PCFFA v. BPA*, 20-73761 (9th Cir.) as follows:

9.2.1. While the MOU is in effect for any non-federal Party, that Party agrees: (a) not to pursue claims in the above cases; and (b) not to initiate new litigation that arises from the same or substantially similar factual allegations or asserts the same or substantially similar claims for relief. If any Party initiates, re-initiates, joins in, or participates in litigation by supporting the same or substantially similar claims for relief, the USG may automatically withdraw from this MOU without complying with the dispute resolution procedures above.

9.2.2. If any non-Federal Party initiates, re-initiates, joins in, or participates in litigation that challenges environmental compliance for the CRS for the actions identified in the USG Commitments, any Party may withdraw from the MOU after complying with the dispute resolution procedures of this MOU.

9.2.3. For clarity, nothing in this section or the MOU shall prohibit any non-Federal party from filing claims or participating in lawsuits challenging Bonneville Power Administration's decisions made in any rates proceeding, with the exception that the non-Federal parties agree not to challenge Bonneville's recovery of the costs of the \$300 million funding commitment (or portion thereof) identified in the USG Commitments;

9.2.4. To the extent not addressed in Section 9, this Agreement does not address the rights of the Parties to assert or defend their inherent, reserved, or delegated rights.

9.3. Termination by Withdrawal. If a Party withdraws in accordance with the provisions of this MOU, the non-withdrawing Parties may concurrently provide notice of, and withdraw from, the MOU. The MOU, including any underlying commitments to implement the USG Commitments and USG Operations, is terminated upon the withdrawal of the USG, or upon the withdrawal of all non-Federal parties.

9.4. Termination by Duration. Unless terminated by withdrawal, this MOU will terminate 10 years from the effective date.

**10. Enforceability.** The Parties agree that the MOU is not to be construed as a consent decree enforceable as a court order in any litigation. The Parties further agree that the MOU shall not be used as the basis for contempt proceedings, for any lawsuit arising under the APA or related citizen suit authorities, or for any action for breach of contract, specific performance, monetary damages, or declaratory or injunctive relief. The sole and exclusive remedy for any alleged non-compliance with, or unresolved dispute under, this MOU is to withdraw from the MOU, and the MOU is not otherwise enforceable.

## **11. Miscellaneous Provisions**

11.1. Entire Agreement; Modification. The MOU, including Attachments, sets forth the entire understanding between the Parties regarding the basis for a stay of litigation of the claims and requests for relief in *NWF v. NMFS*, 01-cv-640-SI (D. Or.), and *PCFFA v. BPA*, 20-73761 (9th Cir.). All previous understandings, agreements, and communications between the Parties, whether verbal, written, express, or implied, with reference to this MOU are superseded. This MOU may be modified only by a written amendment that is expressly agreed to and signed by all Parties.

11.2. No Admissions or Concessions. The Parties agree that they will not use the MOU against any Party as evidence of wrongdoing or liability on any claim for declaratory or injunctive relief in the *NWF v. NMFS* or *PCFFA v. BPA* litigation, or in any subsequent litigation between the Parties. The Parties agree that this MOU establishes no principle or precedent with regard to any issue addressed in this MOU.

11.3. Reservation of Rights. Nothing in this MOU is intended to abrogate, modify, or affect in any way any right of the Parties, and the MOU shall not be construed to have any such effect. Nor is anything in this MOU intended to create, abrogate, modify, or affect any of the United States' Treaty or trust obligations to Columbia Basin Tribes.

11.4. Force Majeure. No Party shall be required to perform due to any cause beyond its control. This may include, but is not limited to, court order, fire, flood, terrorism, pandemics, strike or other labor disruption, act of God, or riot. The Party whose performance is affected by a force majeure will notify the other Parties as soon as practicable of its inability to perform and make all reasonable efforts to promptly resume performance once the force majeure is eliminated. If the force majeure cannot be eliminated or addressed, and the Parties cannot agree as to whether the MOU should remain in force or be modified considering the force majeure, the Party whose

performance is affected by a force majeure may withdraw from the MOU after complying with the dispute resolution procedures of this MOU.

11.5. Costs, Including Attorneys' Fees. The Parties agree that each Party to this MOU shall bear its own attorneys' fees, costs, and expenses for creation, negotiation, and administration of this MOU, and that no Party may seek reimbursement or an award of attorneys' fees, costs, and expenses for creation, negotiation, or administration of this MOU. For purposes of this section, "administration" includes filing a request to the court to stay, administratively close, or dismiss without prejudice to reinstatement the *NWF v. NMFS* and *PCFFA v. BPA* litigation. This MOU does not otherwise affect a party's claim for fees and costs, or any defenses to any claim for fees and costs, arising in the underlying *NWF v. NMFS* and *PCFFA v. BPA* litigation; however, no Party may seek reimbursement or an award of attorneys' fees, costs, and expenses related to the litigation while this MOU is in effect for that Party.

11.6. Section Titles for Convenience Only. The titles for the sections are used only for convenience of reference and organization, and will not be used to modify, explain, or interpret any provision of this MOU or the intentions of the Parties.

11.7. Signing in Counterparts. This MOU may be executed in any number of counterparts, and each executed counterpart will have the same force and effect as an original instrument as if all the signatory Parties to all of the counterparts had signed the same instrument. Any signature page of this MOU may be detached from any counterpart of this MOU without impairing the legal effect of any signatures, and may be attached to another counterpart of this MOU identical in form having attached to it one or more signature pages.

APPROVED:

For THE STATE OF OREGON



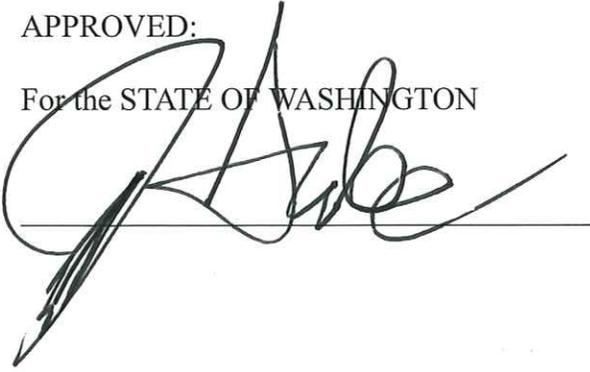
\_\_\_\_\_  
Governor Tina Kotek

12/13/23

\_\_\_\_\_  
Date

APPROVED:

For the STATE OF WASHINGTON

A large, stylized handwritten signature in black ink, written over a horizontal line. The signature is highly cursive and difficult to decipher.

12/12/23  
Date

APPROVED:

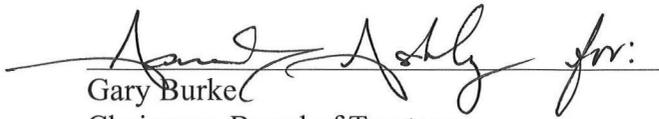
For the CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION

  
\_\_\_\_\_  
Gerald Lewis, Tribal Council Chairman  
(Or authorized designee)

12-13-2023  
Date

APPROVED:

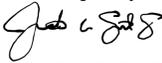
For the CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

  
Gary Burke  
Chairman, Board of Trustees

12-13-23  
Date

APPROVED:

For the CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON

DocuSigned by:  
  
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\_\_\_\_\_  
Jonathan W. Smith, Sr., Chair  
Tribal Council

12/13/2023  
\_\_\_\_\_  
Date

APPROVED:

For the NEZ PERCE TRIBE



---

Shannon F. Wheeler, Chairman

12-13-2023  
Date

APPROVED:

For the NATIONAL WILDLIFE FEDERATION et al. Plaintiffs



Senior Advisor – Conservation  
Fly Fishers International

December 13, 2023

Date



Abby Tinsley  
Vice President for Conservation Policy

December 13, 2023

Date



Miles Johnson, Legal Director

December 13, 2023

Date



Liz Hamilton, Northwest Sportfishing Industry Assn.

12/13/2023

Date



Glen H. Spain, Executive Director  
Pacific Coast Federation of Fishermen's  
Associations (PCFFA) and Institute for  
Fisheries Resources (IFR)

December 13, 2023



Nicholas Nelson  
Executive Director  
Idaho Rivers United

12.13.2023

Date



Aaron Isherwood  
Sierra Club

12/13/2023

Date



Nancy Hirsh  
Executive Director  
NW Energy Coalition

December 13, 2023



Justin Hayes  
Executive Director  
Idaho Conservation League  
PO 844,  
Boise, ID. 83702

12/13/23

Date

APPROVED:

For THE UNITED STATES



Michael L. Connor  
Assistant Secretary of the Army  
(Civil Works)

Dec. 13, 2023

Date



Laura Daniel-Davis  
Acting Deputy Secretary  
U.S. Department of the Interior

DEC 12 2023

Date



Dr. Richard W. Spinrad  
Under Secretary of Commerce  
for Oceans and Atmosphere  
and NOAA Administrator

12/11/2023

Date

JOHN HAIRSTON

Digitally signed by JOHN  
HAIRSTON  
Date: 2023.12.13 09:26:55 -08'00'

John L. Hairston,  
Administrator and Chief Executive Officer,  
Bonneville Power Administration

\_\_\_\_\_  
Date



David M. Turk, Deputy Secretary

December 14, 2023

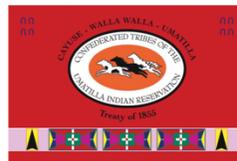
Date

U.S. Department of Energy

# **ATTACHMENT 1**

## Columbia Basin Restoration Initiative

A proposal to the Biden Administration from the “Six Sovereigns”<sup>1</sup>



**Confederated Tribes and Bands of the Yakama Nation**

**Confederated Tribes of the Umatilla Indian Reservation**

**Confederated Tribes of the Warm Springs Reservation**

**Nez Perce Tribe**

**State of Oregon**

**State of Washington**

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<sup>1</sup> This proposed Columbia Basin Restoration Initiative (the “CBRI”) is informed by decades of collective experience, and represents the collaborative effort of the Six Sovereigns to develop a comprehensive solution to our shared and complex challenges. Moving forward, all Six Sovereigns support the CBRI as the basis for continuing discussions with the federal government and other regional sovereigns and stakeholders.

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## Introduction

The past 150 years has brought enormous change to the Columbia River Basin: free-flowing, cool rivers once provided between 10-18 million salmon to the basin. Those salmon nurtured Tribal people's religion, culture, economies and physical health and the health of Columbia Basin ecosystems for thousands of years. For a time, those salmon populations provided significant economic benefits for early non-tribal settlers in the Pacific Northwest. But rapid population growth and development; prior overharvest in non-tribal fisheries; development of millions of acres of land for industrial, commercial, and agricultural uses; construction, and operation of 14 federal dams on the Columbia and Snake Rivers; and installation of hundreds of small private dams and weirs on the tributaries drastically reduced Columbia Basin salmon populations and the many benefits they once provided to the region, its inhabitants, and ecosystems.

While these transformational changes brought economic growth and new uses of the Basin's waters, these changes also brought devastating adverse impacts to the original peoples of the Northwest, the environment, and salmon. When Tribes in good faith signed treaties with the US Government that provided for settlement of millions of acres of aboriginal lands, the Tribes expected that in return their Treaty rights to fish would be honored, and that the right to fish meant there would be fish in the rivers. The settlement occurred, but honoring the Treaty right to fish is long past due. It is time to rebalance the allocation of the natural resources of the Columbia River Basin.

Plummeting wild salmon and steelhead runs resulted in the extinction/extirpation of many stocks while putting others on the brink of extinction. Critical habitats have been lost or rendered inaccessible. Today, this crisis is further exacerbated by climate change, which threatens local and regional ecological, cultural, and economic resilience. Elevated air and water temperature, increased drought, reduced snowpack and poor ocean conditions accelerate the decline of imperiled fish stocks and amplify regulatory constraints, water scarcity, fire risk, invasive species, and pathogens that impact numerous economic sectors.

Wild salmon and steelhead from the Snake River Basin are in dire straits, in spite of the fact that the Snake River Basin contains the largest accessible amount of pristine, protected habitat remaining in the Columbia Basin. As the National Oceanic and Atmospheric Administration (NOAA) has recognized, restoring these stocks to healthy, harvestable populations and reducing the currently high likelihood of further extirpation and allowing them to fully utilize high elevation, climate resilient habitat will require breaching the four Lower Snake River dams. Consistent with the Inslee-Murray recommendations, we must act now to invest in replacing the dams' benefits in order to make breaching a viable policy action. These investments can best ensure a future that includes healthy and abundant salmon and steelhead, reliable and affordable energy systems, a robust economy, and valuable ecosystem services throughout the Columbia River Basin.

To do so, we must take advantage of this unique moment in history. We must commit ourselves to restoring and upholding Tribal and Treaty rights and the sovereign interests of the States. Learning from past mistakes, we must respect the indigenous technological and ecological knowledge of the Tribes who are recognized co-managers of the fishery resource and embrace sound science and engineering to chart a sustainable path forward. Only with bold leadership can we collectively create a future for the Northwest where ecological and cultural resiliency are embraced as a key component of economic prosperity, rather than a casualty of it.

### **Advancing a Comprehensive Proposal for a Columbia Basin Restoration Initiative**

The proposed Columbia Basin Restoration Initiative (CBRI)<sup>2</sup> strives for a true win-win outcome. The CBRI helps bring forward the Tribal people and fisheries left behind in the rush of development by restoring salmon and steelhead with other native species and their habitats and investing in fisheries infrastructure. In so doing, the CBRI also protects and enhances other key service sectors by modernizing and investing in clean energy, agriculture, and transportation, helping restore vital ecosystem functions and services essential for local and regional resilience and adaptation to climate change.

The Initiative provides a framework for a durable long-term strategy that restores salmon and other native fish populations to healthy and abundant levels, ensures a clean energy future, supports local and regional economic resilience, restores ecosystem function and honors longstanding unmet commitments to Tribal Nations.

To achieve this win-win scenario, the status quo is not an option, and inaction is simply unacceptable. Much like the determined steps necessary to decarbonize our energy system, decisive action is necessary to recover Columbia Basin salmon – incremental action will not be effective and will be more costly in the long run. The rapidly changing economic, energy and climate conditions – not to mention the dire status of the fishery resources - require leaders to plan now for inevitable changes during the coming decades. We must act now with necessary federal investments across the whole of government to be successful.

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<sup>2</sup> This Initiative directly addresses fish populations originating from the interior Columbia River and its tributaries above Bonneville Dam, though actions may benefit additional fish and wildlife populations.

## Purpose

Advance "... a durable long-term strategy to restore salmon and other native fish populations to healthy and abundant levels, honoring Federal commitments to Tribal Nations, delivering affordable and reliable clean power, and meeting the many resilience needs of stakeholders across the region."<sup>3</sup>

The stay of long-running litigation (three decades) over the federal dams and salmon on the Columbia and Snake rivers and the associated mediation process provides an unprecedented opportunity to accomplish the vision offered by the proposed CBRI.

## Objectives

**Objective 1:** Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to "healthy and abundant levels" consistent with NOAA's Columbia Basin Partnership Task Force (CBP) and Rebuilding reports; and (b) complete the actions and investments necessary to secure continuity of services<sup>4</sup> associated with Lower Snake River (LSR) restoration prior to LSR dam breaching.

**Objective 2:** Ensure that all species, regardless of ESA-listing status, are considered in the comprehensive strategy in a way that improves ecosystem function in the Columbia River and its tributaries.

**Objective 3:** Ensure interim fish measures minimize additional generational decline of fish populations.

**Objective 4:** Invest in and support communities and economic sectors (e.g., energy, transportation, agriculture, and recreation) in a manner that: is consistent with meeting decarbonization goals and mandates an integration of renewables; delivers "affordable and clean power"; improves resiliency and adaptability to climate change and supports "the many resilience needs of stakeholders across the region"; and "[honors] commitments to Tribal Nations".

**Objective 5:** Secure necessary regulatory compliance, authorizations, and appropriations for implementation of the strategy proposed in Objective 1 above with an urgency reflecting the needs of the fish.

**Objective 6:** Ensure that the strategy proposed in Objective 1 and associated federal actions "honor Federal commitments to Tribal Nations" and address past and ongoing inequities related to the federal hydro system to reflect and uphold federal Treaty and trust responsibilities to Columbia Basin tribes.

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<sup>3</sup> Joint Motion for Stay of Litigation, *Nat'l Wildlife Fed'n et al. v. NMFS et al.*, Case No. 3:01-cv-00640-SI (D. Or. Aug. 4, 2022) (docketed at ECF 2423, 2423-1, 2423-2).

<sup>4</sup> Continuity of services refers to the end service provided, not necessarily the existing means of providing that service. Examples of services associated with Lower Snake River dams include commodity transport, energy (production and transmission), water supply (agriculture, municipal, domestic) and recreation.

## Recommended Approach: A Columbia Basin Restoration Initiative

A comprehensive Columbia Basin Restoration Initiative achieves the purpose and objectives described above and advances the following items:

- Ensure that federal hydropower mitigation efforts in the Columbia Basin are directed by joint recommendations of tribal and state fish management entities in coordination with federal fisheries services.
- Significantly increase funding for restoration to levels sufficient to address identified mitigation needs and obligations and support “healthy and abundant” fisheries recovery goals. Address the significant backlog of authorized and recommended, but historically underfunded, actions necessary for the safe and effective operation of critical fisheries infrastructure, assets, and programs.
- Replace the benefits of the LSR dams with due urgency to enable breaching to move forward,<sup>5</sup> and ensure interim fish measures are adequate to minimize additional generational decline of fish populations.
- Implement the Upper Columbia United Tribes’ Phase Two Implementation Plan to reintroduce and provide passage of priority anadromous species above Chief Joseph and Grand Coulee dams.
- Establish a long-term biological performance monitoring and reporting program to measure progress and support accountability towards the qualitative and quantitative recovery and abundance goals identified in the CBP Phase II Report.

Implementation of the proposed Initiative should be structured to ensure a transparent “whole of government” approach, where federal agencies coordinate to use their funds and authorities to prevent salmon extinction and restore healthy and abundant Columbia Basin fisheries.

The Administration should use all available funding tools to implement the elements of a comprehensive approach to prevent salmon extinction and restore salmon in the Columbia Basin, including but not limited to opportunities associated with the President’s budget, Congressional appropriations, a cross-cut budget approach, an expansion of funding available through the Northwest Power Act Fish and Wildlife Program by expanded use and/or adjusted authorities for use of (4)(h)(10)(c) crediting, and by better reflecting the Northwest Power Act’s goals for equitable treatment for fish and wildlife with other purposes of the hydrosystem.<sup>6</sup> Funds that are collected by BPA from ratepayers to meet fish and wildlife obligations should be fully spent on fish and wildlife actions.

Some parts of the proposed Initiative can and should be advanced by the President and federal agencies under existing authorities and appropriations. Other parts will require Congressional support through additional appropriations or legislation, or both. Time is of the essence in both cases to meet the urgent needs of Columbia Basin fisheries and communities, and the inevitable changes facing the Region.

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<sup>5</sup> NOAA Rebuilding Report, p. 21.

<sup>6</sup> Northwest Power Act Section 4(h).

## Key Elements and Actions

**Objective 1:** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin Partnership Task Force (CBP) and Rebuilding reports; and (b) complete the actions and investments necessary to secure continuity of services<sup>7</sup> associated with Lower Snake River (LSR) restoration prior to LSR dam breaching.”*

### Key Elements and Actions for Objective 1(a)

- Establish accountability for clear and measurable fisheries rebuilding goals that reflect “healthy and abundant” levels as per the overarching federal commitment.
  - Utilize NOAA Rebuilding Report to frame the starting point for “healthy and abundant” levels, consistent with the CBP mid-level abundance goals<sup>8</sup> and the NPCC F&W Program 2020 Addendum (e.g., 5 million fish and 2-6% SAR).
- Identify and advance centerpiece actions from NOAA Rebuilding Report.
  - For Snake River stocks, the centerpiece action identified by NOAA is LSR restoration via breaching the four lower Snake River dams (subsequent to replacement or mitigation of lower Snake River dams’ services as described in the Inslee-Murray recommendations). See Appendix A for additional context and details.
  - For upper Columbia River stocks, the centerpiece action identified by NOAA is reintroducing fish into blocked areas, starting with implementation of the Upper Columbia United Tribes’ Phase Two Implementation Plan.
  - For mid-Columbia River stocks, including but not limited to the mainstem and tributary habitats from Bonneville to McNary Dams, the centerpiece action identified by NOAA is improved passage through lower mainstem dams coupled with improved water quality and quantity and passage survival in focused areas of low- to mid-elevation tributary habitats.
- Identify and advance additional necessary fish actions consistent with NOAA Rebuilding Report and the habitat and predation actions identified in the NOAA 2022 5-Year Status Reviews for Columbia River stocks (see Appendix A for additional details). These actions include:
  - Estuary and tributary habitat protection and restoration, including improved water quality and quantity and fish passage.
  - Fish passage at other priority sites (e.g., Yakima River, Upper and Lower Deschutes River, Walla Walla River watershed, Dworshak Dam, Hells Canyon dams).

<sup>7</sup> Continuity of services refers to the end service provided, not necessarily the existing means of providing that service. Examples of services associated with Lower Snake River dams include commodity transport, energy (production and transmission), water supply (agriculture, municipal, domestic) and recreation.

<sup>8</sup> In addition to CBP abundance goals, Table 1 of CBP Phase II Report states: “Within 25 years reverse and prevent declines of both listed and non-listed salmon and steelhead; achieve delisting for at least some salmon ESUs and steelhead DPSs; make significant and measurable progress toward broad sense recovery of all salmon and steelhead; make significant progress toward rebuilding spatial distribution and run timing of salmon and steelhead at local and Basin wide scales, including to study, develop, and implement plans for restoring salmon and steelhead to currently inaccessible areas within their historic range; and rebuild salmon and steelhead runs that are adaptive and resilient to climate change and other environmental perturbations.”

- Predator reduction and control.
- Interim (pre LSR dam breach) and long term (post LSR dam breach) Columbia River System (CRS) operations that optimize fish passage and survival (direct/delayed) and water quality characteristics while meeting other authorized purposes.
  - Operate the CRS with ecosystem function and fish survival as core priorities.
  - Ensure interim CRS operations help minimize additional generational decline of fish populations.
  - Ensure long-term CRS operations help optimize generational growth of fish populations necessary to meet “healthy and abundant levels”.
- Focused hatchery and harvest actions, identified through existing forums, including necessary investments to remedy infrastructure maintenance backlogs and necessary investments to improve fishery forecasting and monitoring.
  - Address the significant backlog of authorized and recommended, but historically underfunded, actions necessary for the safe and effective operation of critical fisheries infrastructure, assets, and programs.
- Focused actions to better understand and forecast ocean conditions and improve or mitigate for those conditions where possible for salmon.
- Enhance the stability and economic contribution and resilience of fisheries by improving the status of weak stocks within mixed stock fisheries, in a manner that reduces constraints on harvest.

#### **Key Elements and Actions for Objective 1(b)**

*“. . . complete the actions and investments necessary to secure continuity of services associated with Lower Snake River (LSR) restoration prior to LSR dam breaching.”*

- In coordination with appropriate entities, build upon existing information to identify and advance investments and actions necessary to secure continuity of services provided by the LSR dams and reservoirs prior to breaching.
- Identify a federal lead agency or agencies to develop detailed plans to fund and implement each service.
- Address the potential loss of energy and capacity from LSR dams to inform short- and long-term power and transmission planning (see Appendix A for additional details). Invest in a clean energy portfolio that would rely primarily on solar and wind generation, energy storage, energy efficiency, and demand response.<sup>9</sup>
- In coordination with affected sovereigns, craft and implement a strategy to replace to the extent possible the other system services provided by each LSR dam or mitigate the impacts of their loss: commodity transport, water supply, and recreation (see Appendix A for additional details).

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<sup>9</sup> For this and all replacement services, it will be important to seek to develop new energy, transportation, and community infrastructure projects in a manner that respects the sovereignty and rights of all parties, including Tribal treaty rights, and seeks to afford economic opportunities to Tribal communities (see additional details under that specific objective).

**Objective 2:** *Ensure that all native species, regardless of listing status, are considered in the comprehensive strategy in a way that improves ecosystem function in the Columbia River and its tributaries.*

### Key Elements and Actions for Objective 2

As noted in the NOAA Rebuilding Report,<sup>10</sup> restoring tributary, mainstem and estuary ecosystem functions necessary to rebuild wild salmon and steelhead will benefit and help restore other native aquatic species in the Columbia Basin.

- Implementing Key Elements and Actions described for Objective 1(a) is critical for the health of other native aquatic species in the Basin.
- Restore and protect instream flows in tributary and mainstem hydrology – the volume and timing of river flows – to increase available habitat, improve habitat and water quality, and better fit river flows to native aquatic species ecology and life cycle needs.
- Rebuild salmon and steelhead runs to improve ecosystem function by restoring vital marine nutrient transport into interior habitats and provide vital prey (e.g., eggs and juvenile salmon) for other native fish (e.g., bull trout) as well as provide vital prey (e.g., adult salmon) for Southern Resident Killer Whales and other marine mammals.
- Implement Pacific Lamprey mitigation actions (Tribal Pacific Lamprey Restoration Plan; Oregon Department of Fish and Wildlife’s Conservation Plan for Lampreys) (see Appendix A for additional details).
  - Develop, fund, and implement a regional supplementation/augmentation plan containing translocation and artificial propagation protocols, while concurrently developing aquaculture facilities.
  - Modernize and fund passage structures at artificial barriers and obstructions as necessary for lamprey passage. Much of the passage at mainstem and tributary dams and diversions intended for salmon and steelhead are currently inadequate for Pacific Lamprey.
- Implement sturgeon mitigation actions (see Appendix A for additional details).
  - Fund the NPCC Regional White Sturgeon Framework recommendations.<sup>11</sup> Due to past budget cuts and funding that has not kept pace with inflation, the scope of white sturgeon work, including crucial monitoring, has been dramatically reduced.
  - Consistent with regional sturgeon framework recommendations, support the White Sturgeon Hatchery Master Plan,<sup>12</sup> which describes a sturgeon hatchery program designed to help mitigate impacts of development and operation of the Columbia River System (CRS) on sturgeon population productivity and fishery opportunities in lower mid-Columbia River and

<sup>10</sup> See NOAA Rebuilding Report response to *Question 8: If the actions identified in Question 5 are implemented comprehensively for salmon and steelhead, how would they benefit or degrade conditions for other species?*

<sup>11</sup> Beamesderfer, R., and P. Anders. "Columbia Basin White Sturgeon Planning Framework. Northwest Power and Conservation Council, Portland, OR." (2013).

<sup>12</sup> CRITFC (Columbia River Inter-Tribal Fish Commission). 2015. White Sturgeon hatchery Step I Master Plan for lower Columbia and Snake River impoundments. Portland, Oregon. Prepared for the Northwest Power and Conservation Council. Portland, Oregon.

lower Snake River reservoirs. Ensure funding for the design and construction of a white sturgeon hatchery on the Yakama Reservation.

- Address water quality issues, such as methyl mercury, that limit consumption of long-lived species like sturgeon.
- Develop, update, and invest in projects and programs to restore native resident fish and shellfish (see Appendix A for additional details).

**Objective 3:** *Ensure interim fish measures are adequate to minimize additional generational decline of fish populations.*

### Key Elements and Actions for Objective 3

*(See Appendix A for additional details.)*

- The proposed CBRI includes an expedited effort to make the investments necessary to enable breach (i.e., key elements/actions identified and set in motion for implementation to address continuity of services, engineering, permitting, authorizations, appropriations) to move forward with urgency (for example, two fish generations) to address extinction risks and facilitate recovery.
- The “Interim Period” occurs from expiration of the current stay (August 31, 2023) until the four Lower Snake River dams are breached. Interim period operations for the CRS must improve fish survival and productivity beyond the 2023 stay-based operations to “minimize additional generational decline of fish populations” and reduce extinction risk until centerpiece and other fish actions are implemented. Necessary interim and long-term CRS operations are detailed in Table 1 in Appendix A.<sup>13</sup> The following summary highlights key elements of interim CRS operations.
  - Spill: Prioritize surface passage through maximized (125% Total Dissolved Gas) spring-period spill; Moderate (Performance Standard) summer-period spill through end of August; and low (spillway weir) fall and winter-period spill (allowing suspension of fall – winter spill for maintenance, freezing conditions, and defined energy demand/reliability situations).
  - Target Minimum Operating Pool (MOP) elevations during spring and summer juvenile migration periods.
  - Minimize degraded in-river and fish passage conditions resulting from maintenance/outages.
  - Prioritize fish operations relative to other authorized purposes when making in-season adaptive management decisions.

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<sup>13</sup> These CRS operations are responsive to the urgent conservation crisis facing priority fish stocks, and the urgent need for an expedited pathway to fully implement centerpiece and other essential fish actions. If this urgency is reflected in an expedited pathway (no more than two fish generations; 8 to 10 years) to secure continuity of services that enables completion of LSR restoration via 4-dam breaching, then some interim CRS operations may be moderated accordingly.

- Advance additional off-site fish conservation measures associated with cross-cut budgeting and infusion of funds associated with Bonneville Power Administration’s Fish and Wildlife Program.
- Expedite implementation of non-Columbia River System operations actions identified in earlier objective, particularly those that can provide more immediate benefits for multiple populations across the CR Basin (e.g., additional predator control).
- Develop and fund emergency hatchery programs that may be necessary to reduce extinction risk of highly vulnerable populations if environmental conditions deteriorate (e.g., drought, reduced snowpack, poor ocean conditions) during the interim period before LSR restoration.
- Recognize that additional fish conservation measures (CRS and other) might be necessary and triggered in real-time if interim environmental conditions deteriorate (drought coupled with poor ocean, or LSR restoration is delayed beyond two fish generations).

**Objective 4:** *Invest in and support communities and economic sectors (e.g., energy, transportation, agriculture, and recreation) in a manner that is consistent with meeting decarbonization goals and mandates and integration of renewables, delivers “affordable and clean power”, improves resiliency and adaptability to climate change and supports “the many resilience needs of stakeholders across the region”, and “[honors] commitments to Tribal Nations”.*<sup>14</sup>

#### **Key Elements and Actions for Objective 4**

This approach is needed for a “win-win” comprehensive strategy: a strong and expanding regional economy integrated with salmon restored to healthy and abundant levels and watersheds resilient to climate change. A comprehensive strategy must:

- Ensure actions that benefit fish and climate-resilient watershed health, both essential for economic resilience, are coupled with investments and actions to secure other important elements of economic resilience, such as affordable and reliable decarbonized energy, efficient commodity transport and adequate water supply.
- Include investments complementary to this shifting energy landscape, as well as modernization of other economic sectors, and help reduce associated local and regional economic burdens.
- Address siting considerations to help address long-standing tribal inequities and help minimize ecological harm, investments to help restore ecosystem functions and services, and investments to help modernize economic sectors for resilience and adaptability to climate change.
- Significantly increase investments in regional energy efficiency and demand response to reduce the need for additional generation resources and increase the flexibility of the system as a whole.

**Objective 5:** *Secure necessary regulatory compliance, authorizations, and appropriations for implementation of the strategy with an urgency reflecting the needs of the fish.*

<sup>14</sup> As noted in objectives section above, the quotations here are from Joint Motion for Stay of Litigation, *Nat’l Wildlife Fed’n et al. v. NMFS et al.*, Case No. 3:01-cv-00640-SI (D. Or. Aug. 4, 2022) (docketed at ECF 2423, 2423-1, 2423-2).

### Key Elements and Actions for Objective 5

- Regulatory Compliance
  - Determine what, if any, changes or additions would be needed to existing regulatory compliance documents (e.g., NEPA, ESA) for coverage of proposed CBRI components.
  - Begin necessary steps for regulatory compliance to ensure coverage is secured prior to decisional requirements for implementation.
- Authorizations and Appropriations
  - The US Army Corps of Engineers (USACE) should update/conduct engineering analyses for four dam breach under its existing authority and with existing funding. Upon adoption of the CBRI by the federal government, any additional funding or authorization needed to implement the CBRI would be identified and secured timely as a first step for implementation the CBRI.
  - Existing appropriations (e.g., IRA, USACE appropriations) should be prioritized, consistent with grant and other procedural requirements, for actions complementary to restoration of the LSR.
  - Determine whether additional authorization and appropriations are necessary to implement the CBRI.
  - Seek and secure those additional necessary authorizations and appropriations.
- Development and implementation of the CBRI timeline
  - Complete development of schedule and timeline by August 2023, including prioritized development of a 10-year budget and additional near-term funding commitments in 2024 and 2025, to be completed as CBRI first-steps shortly after Aug 2023.
  - Secure necessary authorizations and appropriations for implementation by August 2024.
    - Complete any necessary regulatory compliance on a timeline that supports this deadline.
  - Specific to LSR restoration implementation:
    - Complete investments and infrastructure developments necessary to secure continuity of services by January 2030;
    - Consistent with timelines securing continuity of services, expedite engineering deconstruction and stabilization of landscapes and infrastructure associated with LSR restoration by 2031.
  - Specific to UCR blocked area fish reintroductions:
    - Fund and implement Upper Columbia Phase 2 Implementation Plan in coordination with appropriate and interested sovereigns consistent with the P2IP's timeline.
  - For FY25, the Administration should request full funding from Congress for authorized, regionally recommended fisheries needs, consistent with the CBRI.

**Objective 6:** *Ensure that the strategy and associated federal actions “honor Federal commitments to Tribal Nations” and address past and ongoing inequities related to Columbia Basin development to reflect and uphold federal Treaty and trust responsibilities to Columbia Basin tribes.*

#### **Key Elements and Actions for Objective 6**

- Restore “healthy and abundant” native fish populations by implementing Key Elements and Actions described for objectives 1, 2 and 3 as an essential start to addressing Objective 6.
- Carefully consider and address long-standing inequities experienced by Tribes associated with siting, development, and operation of the CRS, both for the past and future (from Six Sovereigns submittal on Economic Resilience).
- Seek to develop new energy, transportation, and community infrastructure in a manner that respects the sovereignty and rights of all parties, protects Tribal treaty rights to fish, hunt, and gather, and seeks to afford economic opportunities to Tribal communities. Doing so will complement and enhance the benefits realized by non-tribal communities and the region as a whole (from Six Sovereigns submittal on Economic Resilience).
- Wherever possible, establish non-competitive Tribal allocations of Columbia Basin restoration-related funds (e.g. funds authorized under Section 40001 of the IRA).<sup>15</sup>
- Remove USG administrative barriers and maximize Tribal co-management opportunities and actions.
- Ensure that Tribes have the resources to rebuild a fishing economy throughout usual and accustomed fishing areas in an environment altered by reservoirs and hatchery locations.
- Develop effective internal federal coordination approaches and funding strategies to support appropriate Nation-to-Nation relationships.

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<sup>15</sup> The federal government has a trust responsibility to the Tribes to ensure that treaty-reserved rights and resources are protected and restored. Direct Tribal allocations are consistent with a Nation-to-Nation relationship, and will allow the tribes to protect these resources in the face of climate change and provide needed flexibility. Tribes are often forced to compete for funds despite having only limited capacity to apply for and manage numerous awards. The tribes have identified and designed millions of dollars in on-the-ground projects that can immediately contribute to salmon recovery if the funding is available.

## Appendix A: Additional context and details for proposed Comprehensive Columbia Basin Restoration Initiative

Important Context for the CBRI fish actions is provided in the NOAA Rebuilding Report:

“To make progress towards healthy and harvestable stocks it is essential that the comprehensive suite of management actions includes:

- Significant reductions in direct and indirect mortality from mainstem dams, including restoration of the lower Snake River through dam breaching.
- Management of predator and competitor numbers and feeding opportunities.
- Focused tributary and estuarine habitat and water quality restoration and protection.
- Passage and reintroduction into priority blocked areas, including the upper Columbia River (and, potentially, the Middle Snake River and Yakima River).
- Focused hatchery and harvest reform.

It will be essential that we implement all these actions, and that we do so at a large scale. While efforts in all these areas have been underway, there is a need in most cases to substantially enhance and focus implementation, and to incorporate new and emerging knowledge about effective implementation. These actions are needed to provide the highest likelihood of reversing near-term productivity declines and rebuilding towards healthy and harvestable runs in the face of climate change.”

### Additional details for CBRI regarding NOAA centerpiece fish actions:

#### *Snake River stocks: breaching the four LSR dams to restore the LSR*

- Secure continuity of key services currently provided by the dams, including provisions to ensure that these services are in place prior to breaching (see additional details under the continuity of services objective) in order to allow lower Snake River dam breaching to move forward with urgency (for example, within 8-10 years, or two generations of chinook salmon) to avoid additional generational decline.
- The NOAA Rebuilding Report concludes that achieving the “highest and only reasonable certainty”<sup>16</sup> of restoring Snake River salmon and steelhead to healthy and abundant levels would require restoration of the Lower Snake River and its migration corridor by breaching the four Lower Snake River dams as part of a comprehensive suite of actions for the Basin. The Rebuilding Report found that breaching is an essential “centerpiece” action for Snake River stocks. Current and projected fish status (as described in the NOAA Rebuilding Report) clarifies that implementation of this centerpiece action is urgent, but implementation can be sequenced appropriately to secure continuity of services provided by the dams if necessary investments are expedited.

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<sup>16</sup> “We are also confident that the comprehensive suite of actions identified in Question 5 provides the highest and only reasonable certainty of achieving survival, productivity, and capacity improvements necessary to realize the CBP’s long-term mid-range abundance goals.” NOAA Rebuilding Report (NOAA 2022).

- Other actions can and must complement breaching, but the NOAA Rebuilding Report concluded that breaching the four dams is a necessary component of any basin-wide plan to restore healthy and abundant salmon and steelhead. Examples of complementary actions for helping restore the LSR include rehabilitation of lower reaches of currently impounded tributaries, stabilization and reseeded of exposed terrain, sediment management, and invasive species management.
- Necessary LSR dams breach planning steps will include the following high-level elements worked on in concert, but not necessarily all completed during development of an implementation strategy for the proposed CBRI. Several of these are next-step implementation components of a comprehensive strategy (recognizing that policy positions can be reserved until details are adequately fleshed out during the remainder of the stay):
  - The USACE should begin advancing an engineering analysis for four dam breach under its existing authority and with existing funding in order to be prepared to move ahead with a plan of action in tandem with USG regulatory compliance.
  - If USACE or other agencies conclude that they need additional authority from Congress to proceed with actions necessary to restore the Lower Snake River corridor, they should specifically identify the need for, scope, and timing for such authority. If additional appropriations are necessary for corridor restoration, the agencies should identify and seek these appropriations.

***Upper CR stocks: provide passage and reintroduction into blocked areas***

- Reintroduce and provide passage of priority anadromous species in the Upper Columbia above Chief Joseph and Grand Coulee dams through implementation of the Upper Columbia United Tribes' Phase Two Implementation Plan.
- Finalize strategy and fully articulate federal support for the Upper Columbia United Tribes' Phase Two Implementation Plan for reintroduction in the Upper Columbia blocked areas. Details of this commitment are being worked out through the U.S.G.'s ongoing mediation process in close consultation with UCUT Tribes and the State of Washington.

***Extant mid- and upper- CR stocks below the blocked area: improve passage and water quality and quantity***

- Maximizing functional tributary habitats (primarily instream flows, water quality, and fish passage improvements) and improving passage in the lower mainstem Columbia River is necessary to provide the highest likelihood for achieving mid-range CBP goals. For example, for high-risk Yakima basin stocks, smolt survival through the Yakima River should be significantly increased by increasing spring flows, implementing structural and operations improvements at federal diversion dams, and targeting specific habitat improvements. These actions address habitat threats in tributaries and help reduce direct and indirect effects of the hydrosystem threat in the mainstem (NOAA Rebuilding Report). These same concerns apply to the other tributaries on the Oregon and Washington side of the Columbia River.
- Mid-Columbia Habitat Conservation Plans (HCPs) contain adaptive management language to ensure course corrections, as necessary, during the term of those agreements. Signatories to those agreements should consider whether there is room for improvements in operations at those facilities, or what additional mitigation actions can contribute towards achieving CBP goals within current funding, and with additional federal funding. Implement actions to support key

fish habitat in cold water areas including dredging tributary river mouths and reconfiguring habitat in these areas to support native vegetation, safer resting areas, and improved connectivity between cold water areas and the main river.

**Additional details for other fish actions:**

Ensure “whole of government” approach by using all funding tools available (e.g., President’s budget, Congressional appropriations, cross-cut budget, adjustments to, or more liberal interpretation of, existing 4(h)(10)(c) crediting under the NPA).

***Tributary Habitat Protection and Restoration***

- Increase mitigation and restoration funding to levels sufficient to address identified needs and obligations and support “healthy and abundant” fisheries recovery goals.
  - Requires approximately 2-3 times the current level of funding;
  - Should be implemented through a federal cross-cut budget.
- Ensure mitigation efforts are directed by State and Tribal fish management entities in coordination with federal fisheries services. Transition implementation of NPCC’s Fish and Wildlife Program from BPA to state and tribal fisheries co-managers.
- Funds that are collected to meet fish and wildlife obligations should be fully spent on fish and wildlife actions. In their latest project review process, the Northwest Power and Conservation Council recommended “that Bonneville develop flexibility in its budget management protocols to allow the budget available for fish and wildlife mitigation be fully expended on fish and wildlife mitigation within the biennial rate case and report progress to the Council.”
- Federal programs should consider flexibility in funding requirements to support large-scale, multi-year projects to achieve the level of landscape scale change that is required to restore salmon and steelhead in habitat limited watersheds.
- Establish long-term biological performance monitoring and reporting to measure progress over time.
- Continue and expand tributary habitat protection and restoration efforts and funding throughout the basin, including for mid and upper Columbia ESUs, for listed priority species and non-listed species (including but not limited to lamprey, sturgeon and mussels) important to Treaty Tribes.
- Fully fund and implement regional recovery plans on an aggressive timeline and recognize that the recommendations in the recovery plans are consistent with the proposed CBRI.
- As part of this effort, fund and implement deferred operations and maintenance and infrastructure actions identified in the Treaty Tribes’ “Billion Dollar Backlog”.<sup>17</sup>

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<sup>17</sup> Columbia River Inter-Tribal Fish Commission, *Overview of Columbia River USACE Fish Budget Needs (2022)*, available at [https://critfc.org/wp-content/uploads/2022/09/CRITFC-USACE-Fish-Budget\\_2022.pdf](https://critfc.org/wp-content/uploads/2022/09/CRITFC-USACE-Fish-Budget_2022.pdf). Summary of Columbia Basin Federal Hatcheries Infrastructure Needs – Deferred Maintenance and Capital Fixes (2021) (originally prepared by the *US v. Oregon* Production Advisory Committee, and subsequently advanced by the NPCC to various congressional members in 2021 – see e.g. July 13, 2021 Letter from NPCC to Sen. Mike Crapo).

### ***Estuary Habitat Protection and Restoration***

The following overarching estuary habitat protection and restoration needs have been highlighted in a variety of regional plans and assessments, and can help guide estuary habitat protection and restoration actions:

- Increase funding for Columbia River estuary restoration. Estuary restoration improves salmon prey availability and reduces predation by providing alternative food sources (increased abundance of other prey such as anchovy).
- Identify and implement actions to improve the effectiveness of existing and new estuary habitat protection and restoration efforts, including best methods for identifying restoration locations, potential projects, funding sources, and implementation.
- Determine where specific new or different programs or management approaches would be necessary or beneficial.

The BPA Columbia River Estuary Ecosystem Restoration Program Final Environmental Assessment (July 2016) (EA), stated that, “Under the Proposed Action, the agencies would use this EA to help evaluate the potential environmental impacts and support NEPA responsibilities for their decisions on proposed estuary restoration actions and projects.” Table 1 in the EA identifies Actions and Project Categories for Estuary Restoration Projects.

The CRITFC Wy-Kan-Ush-Mi- Wa-Kish-Wit, Spirit of the Salmon Plan (2014) uses a larger, more comprehensive ecosystem approach to salmon recovery with incorporation of new scientific tools and findings and climate change considerations. A few key actions highlighted in this plan are:

- Increase in land acquisition to achieve the goal of habitat restoration.
- Implementation of moratoriums on floodplain development.
- Taking actions that create and support diversity and longer periods of use by salmon.
- Addressing the connectivity and cumulative effects of upriver activities, e.g., hydropower operations and estuary conditions.

The Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead (NMFS 2011) identifies in Chapter 5 “23 management actions that, together, address the range of threats salmonids in the estuary face, from altered habitat-forming processes to physical structures in the estuary, changes in the food web, and poor water quality. If implemented, the actions presented in this chapter would reduce the impacts of threats to salmonids during their migration and residency in the estuary and plume.”

In addition, partnering with some longstanding estuary-focused organizations could prove beneficial for evaluation of future estuary habitat protection and restoration actions. The Center for Coastal Margin Observation and Prediction (CMOP) is an ocean and estuary research program dedicated to further understanding the linkage between the Columbia River and the Pacific Ocean. CMOP uses remote sensors, models, and open data access in ways that help stakeholders manage ecosystems, facilitate sustainable development, and protect lives and livelihoods in our changing environment. The CMOP observation network consists of buoys and dock-based fixed stations in the estuary and plume. Physical parameters such as salinity, temperature, water levels, and currents have been measured and recorded since 1996 and biogeochemical parameters such as chlorophyll, turbidity, nitrate, and dissolved oxygen since 2008. These measurements provide a record of variability and change in this important ecosystem. CMOP stations can be used for deploying new monitoring equipment and for collecting water samples for lab analysis.

The Lower Columbia River Estuary Partnership has a mission “to restore and care for the waters and ecosystems of the lower Columbia River, for current and future generations of fish, wildlife, and people.” The Columbia River Estuary Study Taskforce (CREST) has a mission - to provide locally-based, high quality environmental planning, habitat restoration and research services to the Columbia-Pacific Region. Both of these organizations could prove to be valuable partners.

### ***Water Quality/Quantity***

EPA is responsible for determining the Total Maximum Daily Load (TMDL) for temperature in the Columbia and Snake rivers. The most recent TMDL shows that state water quality criteria that protect migration and spawning are frequently exceeded, and the EPA cited climate change and dam impacts as the dominant sources of impairment. Although the EPA stated that tributary restoration could only lead to modest improvements in mainstem, the TMDL identifies 23 tributaries that provide cold water refuge from high mainstem temperatures for migrating adult salmon and steelhead. The TMDL sets temperature, flow, and cold-water volume targets for 13 of these tributaries to maintain and increase cold water refuge in the lower Columbia River.

On September 2021, EPA issued NPDES permits for the four Lower Snake River dams and will issue permits effective July 1, 2023, for the Lower Columbia River dams that are operated by the U.S. Corps of Engineers (USACE). The NPDES permits include a requirement to meet heat load effluent limits as mandated by the Washington and Oregon’s 401 certification conditions. Water Quality Attainment Plans will be developed within the next year, which are expected to include detailed temperature control strategies to meet state water quality standards. Actions needed to ensure the TMDL is not exceeded include:

- Support for the states of Oregon and Washington for developing plans for the TMDL, including the tributaries identified as cold-water refuge.
- Support for Tribal leadership in collaboration with the States of OR and WA on implementation of the temperature TMDL.
- Funding the water quality Restoration Plans that land managers have to develop as a result of having water bodies on the 303(d) list and for tributary TMDLs.

Water quality in the Columbia Basin is also significantly impacted by the presence of toxic substances in the Columbia River and its tributaries. Current priorities to address toxics concerns should be supported via funding and collaborative participation, and include:

- Fund and implement a Columbia River Long-Term Monitoring Program to assess toxin levels in fish tissue and water quality in the mainstem Columbia and Snake rivers. Yakama Nation is partnering with CRITFC, USGS, Oregon DEQ, and Washington Department of Ecology on this work. The purpose is to monitor toxic substances, including contaminants behind dams and throughout the pools, in perpetuity to establish trends and guide ecosystem recovery resulting in clean, healthy fish that are safe to eat.
- Fund and implement a Columbia Basin Toxics Reduction Program, which includes clean-up efforts targeted at Superfund Sites.
- Explore hydro system operations that maximize use of Dworshak water for cooling lower Snake River in August.

- Address water quality issues, such as methyl mercury, that render long-lived species like sturgeon unconsumable.
- Finally, EPA should collaborate with the Washington Department of Ecology and Oregon Department of Environmental Quality to ensure that rules on total dissolved gas management associated with spill at the lower Snake and Columbia River dams provide sufficient flexibility to permit spill (both interim and long-term at lower Columbia projects) consistent with preventing further generational declines of salmon and steelhead populations.

***Reintroductions and Passage into Blocked Areas (in addition to upper Columbia blocked area discussed above)***

- Develop plan, or expedite/improve funding for existing plans, for passage and reintroduction of priority species into other historically important fish production areas of the basin currently blocked by dams lacking ladders and/or juvenile bypass facilities, with priority focus on the Yakima River, North Fork Clearwater River, Walla Walla River and tributaries and middle Snake River.
- Consider timelines and sequencing consistent with binding agreements (e.g., IPC settlement agreement with OR regarding Hells Canyon complex of dams).
- Determine the extent to which the plan can be implemented using existing authorities and where specific new or different authorities would be necessary or beneficial.
- Determine requirements for compliance with State statutes governing reintroduction of listed species and take necessary actions to resolve.

***Predator & Invasive Species Reduction and Control***

- Develop and implement specific strategies to fund predation control priorities and projects and identify continuing funding sources. Fully fund existing actions in priority areas, such as below Bonneville Dam, Blalock islands, East Sand Island.
- Establish and fund a Predator & Invasive Species Management Task Force comprised of the Columbia Basin tribal and state fisheries comanagers and the federal fisheries agencies, and other appropriate tribal and local entities and organizations as appropriate, to determine where specific new or different authorities, programs, or management approaches are necessary or beneficial, particularly for new and emerging threats.
- Increase USACE funding for predator management and coordinate their predator management programs through a central forum to ensure that funding is targeting the worst offenders and benefits to life-cycle survival are used as the metric of success so that we are not merely switching the consumers rather than reducing the consumption of juvenile migrating fish.
  - Fund the CRITFC identified for predator management and deterrence structures in its USACE Fish Budget Needs report.
  - Ensure strong coordination between the USACE predator management programs and those funded through BPA and the mid-Columbia PUDs.
- For pinniped predation, provide sufficient annual funding to fully implement the program specified under the new permit (i.e., funding to fully implement existing authority of MMPA Section 120(f)). Consider future permit amendments to address emerging needs, as necessary.

- For avian predators, finalize, fund and implement a sustained management effort<sup>18</sup> to reduce impacts to life-cycle survival in areas of high predation with appropriate monitoring of action effectiveness. Address any jurisdictional and permitting issues through enhanced collaboration across jurisdictions from a whole-of-government approach, including funding new research to support policy recommendations to improve management of bird colonies and reduce predation.
- American white pelicans have been increasing in numbers in Columbia River tributaries during the peak of the out-migration of juvenile salmon. While this is surely impacting ESA-listed salmon and steelhead the exact magnitude of that impact is not fully understood and should be further investigated.
- For piscine predation, implement a coordinated, large-scale program to investigate and quantify the overall predatory impact of multiple piscine predators (e.g., Northern Pike, Smallmouth Bass, Walleye) to juvenile salmonid stocks in the lower and mid-Columbia River Basin.
  - Develop and fund a robust Columbia River Northern Pike and invasive non-native fishes monitoring project that leverages current suppression, monitoring, and research activities with new projects to fill data gaps and ensure enhanced effectiveness.
  - Implement aggressive actions to control non-native fish populations that are preying on juvenile salmon and steelhead.

### **Hatchery**

Hatchery programs are vital for effectuating treaty-reserved rights of tribes, as well as non-treaty recreational and commercial fisheries both within the Columbia River and along the West Coast. Columbia River Hatchery programs also play a critical role economically by contributing to U.S. fisheries in Alaska, Washington, and Oregon that provide 26,700 full time equivalent jobs and \$3.4 billion in economic value annually.

The aging federal hatchery facilities in the Columbia River Basin need funding to maintain infrastructure and continue operations. For several decades, agency budgets and congressional appropriations have not provided sufficient funds to maintain and repair critical infrastructure such as pipelines, generators, pumps, filters, chillers, and rearing units that are in danger of failing – or in some cases have already failed – putting both fish, fisheries, and conservation efforts they support at risk. Emergency situations cannot be addressed in real-time, and critical capital projects cannot be pursued.

- Ensure that current hatchery O&M budgets are adequate to maintain mitigation goals and objectives.
- Fund and fully implement deferred repairs and operation and maintenance actions identified in the Treaty Tribes’ “Billion Dollar Backlog”.<sup>19</sup>

<sup>18</sup> CRITFC maintains a comprehensive list of existing and new actions titled “Avian Management Current Conditions/Future Potential Actions” for avian species of concern. This spreadsheet is readily available.

<sup>19</sup> Columbia River Inter-Tribal Fish Commission, *Overview of Columbia River USACE Fish Budget Needs (2022)*, available at [https://critfc.org/wp-content/uploads/2022/09/CRITFC-USACE-Fish-Budget\\_2022.pdf](https://critfc.org/wp-content/uploads/2022/09/CRITFC-USACE-Fish-Budget_2022.pdf). Summary of Columbia Basin Federal Hatcheries Infrastructure Needs – Deferred Maintenance and Capital Fixes (2021) (originally prepared by the *US v. Oregon* Production Advisory Committee, and subsequently advanced by the NPCC to various congressional members in 2021 – see e.g. July 13, 2021 Letter from NPCC to Sen. Mike Crapo).

- Empower and fund the tribal and state fisheries co-managers to work with appropriate federal agencies to finalize and implement a strategy to continually fund hatchery maintenance and operation and modernization needs into the future. One potential concept that utilizes a more transparent process is to create a Capital Assets Replacement Fund (CARF). An annual fixed amount of funds would go into the CARF, providing some funding stability. The amounts could be reviewed on a periodic basis, and the operating agencies would decide how to spend the CARF potentially via the *U.S. v. Oregon* Management Agreement's Production Advisory Committee or an analogous group making recommendations to policy makers. To support long-term climate resilience, develop and fund emergency hatchery programs that may be necessary to reduce extinction risk of highly vulnerable populations if environmental conditions deteriorate (e.g., drought, reduced snowpack, poor ocean conditions).

### **Harvest**

Harvest is at severely depressed levels relative to Treaty rights and healthy and abundant fisheries and reflects significant reductions in tribal and non-tribal fisheries compared to pre-CRS development. Harvest management has embraced responsiveness to the needs of the fish (e.g., through an abundance-based management approach) in contrast to other sources of mortality. As such, harvest is the only impact sector that is inherently responsive to the real-time conservation needs of the fish.

- Support Existing Harvest Forums: The *US v. Oregon* Management Agreement adopted by the Parties to *United States v. Oregon*, Civil No. 68-513-MO (D. Or.) provides an effective framework for managing treaty Indian and non-treaty fisheries, harvest, and hatchery production consistent with federal ESA requirements and the Parties exercising their sovereign powers in a coordinated and systematic manner to protect, rebuild, and enhance interior Columbia River Basin fish runs.
- Sampling Infrastructure Improvements: The Bonneville Dam Adult Fish Facility (AFF) is used for stock monitoring and research. Data collected there is used for several stock forecasts and some data, especially for steelhead are directly used in harvest management. Like much of the Columbia River hydro- and hatchery systems, the AFF is sorely in need of deferred maintenance and modernization without which ensuring robust, random sample rates is becoming increasingly challenging. Modernizing the sampling facility on the Washington shore fish ladder and adding a new facility on the Oregon shore fish ladder would improve sampling and produce better quality data.
- Expand Funding for Technical Collaboration in Co-Management Forums: The tribes and states participate in the technical and production advisory committees established in the *U.S. v Oregon* Management Agreement. These committees are regularly tasked with complex analyses of issues affecting these parties' efforts to co-manage fisheries and hatchery production in ways to support salmon recovery efforts, and to ensure fisheries comply with ESA and other management limits. Completion of these tasks is often hampered by lack of funding for staff time, and additional capacity would help execute the analyses. Increased funding to support these efforts would provide important benefits to all these entities, their co-management agreements, and their commitments in the *U.S. v. Oregon* Management Agreement.

### ***Ocean Conditions and Climate Change***

The impacts of ocean conditions and climate change on Columbia Basin fisheries exacerbate, but do not excuse or obviate (and in fact accentuate) federal obligations to address, the historic and continuing impacts of the hydrosystem on salmon, steelhead, and other native fish.

Fisheries restoration, including associated habitat actions, is deeply interconnected with enhanced Columbia Basin climate resilience. Regional clean energy, decarbonization, and climate resilient infrastructure needs can and should be met in ways that support the health of Columbia Basin fisheries and the tribal and non-tribal communities that depend upon them.

- Develop stock specific ocean indicators (red light/green light charts) for forecasting salmon and steelhead returns using a mechanistic ecosystem approach. Use multiple perspectives to identify the most important ecological drivers of salmon survival in climate change scenarios in order to direct actions for the greatest benefit.
- Reduce carryover effects for salmon entering the ocean. Increase tributary and mainstem riparian and floodplain restoration actions to improve smolt body size and run timing which reduces carryover effects going into the ocean. Increased spill at mainstem dams and restoring migration corridors reduce carryover effects and provides higher survival in the ocean environment.
- Increase funding for Columbia River estuary restoration. Estuary restoration improves salmon prey availability and reduces predation by providing alternative food sources (increased abundance of other prey such as anchovy).
- Fund and implement Fishery Management Plans for coastal pelagic species. Increasing forage fish can provide an alternate prey for salmon predators which increases salmon survival.
- Focus management on improving overall food webs.

### ***Other Native Fish Species***

The proposed CBRI should fund and implement recovery programs for culturally and ecologically important native species regardless of ESA listing status, including:

Considering the significant and dramatic reduction in adult lamprey numbers in the interior Columbia River Basin watersheds, and the existing passage problems and other threats that may take decades to resolve, natural recolonization and restoration will not be enough to halt the decline of Pacific lamprey in the interior basin. The likely relationship of adult lamprey attraction to larval lamprey pheromones supports the use of multiple management strategies including translocation, propagation, reintroduction, and supplementation/augmentation for short and long-term preservation of this species in the Columbia basin.

White sturgeon occur throughout most of their historical range in the Columbia and Snake Rivers, but current production is far below the historical level in part due to the hydropower system. Low numbers severely limit sturgeon harvest opportunities throughout the basin, particularly for impounded populations upstream from Bonneville Dam. Due to past budget cuts and funding that has not kept pace with inflation, the scope of the work being done and our ability to monitor these populations has been dramatically reduced. For example, translocation mitigation efforts, and research monitoring and evaluation efforts aimed at better understanding maturation rates, spawning periodicity and the sex

composition of the adult population are no longer conducted (nor are any stock assessments or reproduction checks upstream of McNary Dam and in the Snake River downstream of Hells Canyon Dam).

Construction and operation of the hydropower system, dams and diversions in the tributary habitats, and out-of-stream diversions in tributaries has fragmented endangered bull trout habitat, impacting adfluvial life histories (from lakes and/or tributaries to Columbia River mainstem and back), diminishing and isolating populations and preventing genetic exchange and diversity.

For freshwater mussels, the hydropower system, dams and diversions in tributary habitats, out-of-stream diversions in tributaries, decreases in tributary water quality (temperature, contaminants), loss of floodplain/riverine habitats, and reductions in native host fish populations, have resulted in greatly diminished and isolated populations of freshwater mussels and threatens their genetic diversity and viability. The Confederated Tribes of the Umatilla Indian Reservation have developed the “Master Plan: Freshwater Mussel Conservation, Supplementation, Aquaculture, Restoration, and Research (2021)” which contains four phases, related to artificial propagation research, population supplementation and biological research, restoration strategy development, and implementation.

Construction and operation of the hydropower system, dams and diversions in tributary habitats, out-of-stream diversions in tributaries, loss of floodplain and riverine habitats, consequent decreases in tributary water quality, and expansions of non-native, competing fish species, have reduced habitat quality and availability for a wide variety of resident fish species including, rainbow and redband trout, mountain whitefish, and suckers, leading to reduced abundance. Resident fish are an important dietary and cultural component for Tribal communities and provide important value when anadromous fish returns are absent or diminished, as is commonly the case with reduced salmon populations and climate-driven marine conditions that can dramatically reduce anadromous fish productivity.

### ***Adaptive Management***

- Develop a science-based decision support structure as the region moves forward with planning and implementation, ensuring climate resiliency, along with the objectives stated earlier, is considered throughout.
- Leverage relationships with PNW Universities and co-managers to develop and answer relevant research questions, advance our understanding of PNW fisheries ecology and responsive restoration actions.
- Leverage relationships with PNW Universities and co-managers to develop the next generation of scientists, managers, and engineers to continue our long-term efforts in the restoration of the fisheries, freshwater habitats, the marine environment, climate adaptation, and energy and transportation modernizations.
- Establish a long-term biological performance monitoring and reporting program based on goals and objectives identified above to measure progress and improvements towards the long-term goals identified in the CRB Task Force Phase II Report.

### **Additional Details for CRS Operations:**

Although CRS operations alone cannot reverse declines nor rebuild imperiled Columbia Basin salmon and steelhead stocks, they are essential elements of a comprehensive strategy to help address the

urgent conservation necessity in the near term and to complement rebuilding efforts in the long term. As such, CRS operations are a key component of the proposed CBRI.

As stated in the USG commitments (*NWF v NMFS*; Dkt. 2423-2), “The Administration commits to examining all current funding opportunities in 2023 and seeking additional funding for new power and transmission resources to offset future changes to the CRS as well as other emerging energy needs. **The Administration understands that ‘future changes to the CRS’ contemplates a broad set of future changes related to spills and other operational changes in addition to potentially breaching the four lower Snake River dams.**” And, “**The Administration further commits to exploring with the Plaintiffs and other sovereigns post 2023 operations as part of a long-term comprehensive solution.**” (Emphasis added).

As stated above, CRS operations can help minimize additional generational decline of fish populations and reduce extinction risk, and help complement achievement of healthy and abundant salmon and steelhead returns<sup>20</sup> throughout the Columbia River Basin. Generally, this will require sustained freshwater productivity of at least 100 smolts per female and smolt-to-adult return rates (SARs) of 2-6%, averaging 4%. As the United States’ Commitments acknowledge, “In the face of climate change, urgent action is needed to restore salmon and other native fish populations to healthy and abundant levels; achievement of these goals must be timely and done in a way that benefits ecosystem function for all native anadromous and resident fish species.” National Oceanic and Atmospheric Administration (NOAA) described<sup>21</sup> a suite of actions, including breaching of the four Lower Snake River dams and reintroduction into blocked areas, that are necessary to achieve these productivity and survival rates. CRS operations can help improve SARs by minimizing both powerhouse encounter rates (PITPH) and fish travel times to help minimize additional generational decline of fish populations and reduce extinction risk in the interim, which will also complement broader rebuilding efforts in the long term, including implementation of NOAA’s centerpiece actions.

As such, CRS operations are best identified in the context of pre- and post-LSR restoration via dam breaching. Table 1 provides specific details for CRS operations in that context. Operations consist of four categories of actions: spill, reservoir elevations, system operations requests, and other categories (maintenance and infrastructure). The spill and reservoir operations are identified in the Columbia River Inter-Tribal Fish Commission (CRITFC) Energy Vision for the Columbia Basin;<sup>22</sup> the information below provides details as to the implementation of these operations.<sup>23</sup> System Operations Requests are derived from technical team requests, 2023 operations requests,<sup>24</sup> or lessons learned in the

<sup>20</sup> NMFS (National Marine Fisheries Service). 2020. A vision for salmon and steelhead: goals to restore thriving salmon and steelhead to the Columbia River basin. Phase 2 report of the Columbia River Partnership Task Force of the Marine Fisheries Advisory Committee. Portland, OR. [https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC\\_CRB\\_Phase2ReportFinal\\_508.pdf?null](https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null).

<sup>21</sup> NOAA (National Oceanic and Atmospheric Administration). 2022. Rebuilding Interior Columbia Basin Salmon and Steelhead. [https://repository.library.noaa.gov/view/noaa/46461/noaa\\_46461\\_DS1.pdf](https://repository.library.noaa.gov/view/noaa/46461/noaa_46461_DS1.pdf).

<sup>22</sup> Columbia River Inter-Tribal Fish Commission. 2022. Energy Vision for the Columbia River Basin, at 142-146. <https://critfc.org/wp-content/uploads/2022/09/CRITFC-Energy-Vision-Full-Report.pdf>

<sup>23</sup> These operations should not be understood to describe nor limit any relief the PI Plaintiffs or any party may seek through litigation.

<sup>24</sup> PI Plaintiff Recommendations for CRS Operational Adjustments for Spring and Summer 2023 (April 3 – August 31).

hydrosystem forums. Maintenance needs are identified in the CRITFC/Corps Infrastructure Needs document and in the 2023 operations requests.

See Table 1, below, for interim and long-term operational strategies for the four lower Columbia and four lower Snake River dams to help minimize additional generational declines and complement timely achievement of healthy and abundant fish returns.

**Table 1 – Interim & Long-Term Operational Strategies**

| Operation Category        | Interim Operations<br><i>(italics indicates change from 2023 stay-based operation)</i>  | Long-term Operations (Upon implementation of LSR restoration via 4-dam breach) <i>(italics indicates change from interim operation)</i>                                |
|---------------------------|---|--|
| <b>Spill<sup>25</sup></b> | <p><b>Spring Spill:</b></p> <p><b>LGR:</b> <i>125% Gas Cap 24/7 (i.e. No PS flex operation). Adaptive management operation(s) (e.g. 40% flex spill, etc.) if adult delays observed.</i></p> <p><b>LGO:</b> <i>125% Gas Cap 24/7, until adult salmonid abundance criteria are satisfied, then 125% TDG and 30% Performance Standard flex. Explore alternatives (with emphasis on reasonable structural modifications over spill reductions) to address adult passage delays.</i></p> <p><b>LOMO:</b> <i>125% Gas Cap 24/7 (i.e. No PS flex operation). Adaptive management operation(s) (e.g. 40% flex spill, etc.) if adult delays observed.</i></p> <p><b>ICH:</b> No change (125% Gas Cap 24/7), with potential to revise adaptive management operations.</p> <p><b>MCN:</b> No change (125% Gas Cap 24/7). <i>Conduct ERDC modeling of alternative spill patterns<sup>26</sup> Secure some LSR replacement generation by increasing Minimum Generation volume to 60kcfs (currently at 55kcfs)<sup>27</sup>.</i></p> <p><b>JDA:</b> <i>125% Gas Cap 24/7. No PS flex operation. Secure some LSR replacement by increasing Minimum Generation volume to 65kcfs</i></p> | <p><b>Spring Spill:</b></p> <p><b>LGR:</b> NA</p> <p><b>LGO:</b> NA</p> <p><b>LOMO:</b> NA</p> <p><b>ICH:</b> NA</p> <p><b>MCN:</b> No change (125% Gas Cap 24/7).</p> |

<sup>25</sup> EPA/Ecology/DEQ will collaborate to clarify TDG and GBT monitoring requirements and responses, particularly with respect to non-salmonids.

<sup>26</sup> April 28, 2023 Joint State, Federal and Tribal Fishery Agencies Technical Memorandum to USCOE regarding McNary Spillway Hoists and Modified Spill Patterns [https://www.fpc.org/documents/joint\\_technical/JTSM\\_01\\_2023.pdf](https://www.fpc.org/documents/joint_technical/JTSM_01_2023.pdf).

<sup>27</sup> Provide for increased generation to achieve replacement of LSR min gen (~320MW); adjust the midpoint for minimum generation flow target (2023 FOP).

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|--|--|
| <p><i>(currently at 55kcfs). Highlight/formalize ability for short term/duration spill reductions to maintain reliability. Consider ways to improve INC/DEC coverage to maintain reliability, without impacting fish-based operations.</i></p> <p><b>TDA:</b> No change (40% with allowance to meet without exceeding 125%). <i>Secure some LSR replacement by increasing Minimum Generation volume to 75kcfs (currently at 55kcfs). Consider ways to improve INC/DEC coverage to maintain reliability, without impacting fish-based operations.</i></p> <p><b>BON:</b> No change (150kcfs spill at BON for stilling basin erosion precaution). <i>Secure some LSR replacement by increasing Minimum Generation volume to 55kcfs (currently at 35kcfs). Eliminate rock entrainment and associated erosion risk to allow restoration of 125% gas cap spill.</i></p> <p><b>Summer Spill (June 21/16 – August 14):</b></p> <p><b>LGR:</b> No change (18kcfs spill).</p> <p><b>LGO:</b> No change (30% spill).</p> <p><b>LOMO:</b> No change (17kcfs).</p> <p><b>ICH:</b> No change (30% spill).</p> <p><b>MCN:</b> No change (57% spill).</p> <p><b>JDA:</b> No change (35% spill).</p> <p><b>TDA:</b> No change (40% spill).</p> | <p><b>JDA:</b> No change from Interim (125% Gas Cap 24/7, with Adaptive management operation to keep TDA TDG from exceeding 125%). Highlight/formalize ability for short term/duration spill reductions to maintain reliability. <i>Consider skeleton bay use<sup>29</sup>.</i></p> <p><b>TDA:</b> No change (40% with allowance to meet without exceeding 125%).</p> <p><b>BON:</b> 24/7 125% gas cap spill.</p> <p><b>Summer Spill (June 21/16 – August 14):</b></p> <p><b>LGR:</b> NA</p> <p><b>LGO:</b> NA</p> <p><b>LOMO:</b> NA</p> <p><b>ICH:</b> NA</p> <p><b>MCN:</b> No change (57% spill). No change from interim. Maintain uniform spill pattern and do not implement rotating spill bay operation after spill bay maintenance is completed.</p> |
|--|--|

<sup>29</sup> This is the only LCR dam that left the powerhouse vacant of generator units (4 empty or ‘skeleton’ bays). Currently the use of spill is countered by tail water eddy formation where no flow is available (transition between powerhouse and spillway). This potentially could be used to emphasize replacement/innovation potential creating a better adaptive turbine design that functions using less water delivered at the surface that can also serve as surface passage in hopes of eliminating fish interaction with the powerhouse route. It could also establish RM&E improvement that will likely be needed when the four Lower Snake River dams are breached.

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| <p><b>BON:</b> No change (95kcfs spill).</p> <p><b><u>Summer Spill (August 15 -31):</u></b></p> <p><b>LGR:</b> <i>Maintain 18kcfs spill through August 31.</i></p> <p><b>LGO:</b> <i>Maintain 30% spill through August 31.</i></p> <p><b>LOMO:</b> <i>Maintain 17kcfs spill through August 31.</i></p> <p><b>ICH:</b> <i>Maintain 30% spill through August 31.</i></p> <p><b>MCN:</b> Maintain 57% spill through August 31.</p> <p><b>JDA:</b> Maintain 35% spill through August 31.</p> <p><b>TDA:</b> No change from previous BiOps and Flex Spill Agreement (40% spill).</p> <p><b>BON:</b> No change from Flex Spill Agreement (95kcfs spill).</p> <p><b><u>Fall-winter spill:</u></b></p> <p><b>LGR:</b> <i>September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: RSW spill 24/7.</i></p> <p><b>LGO:</b> <i>September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: ASW spill 24/7.</i></p> <p><b>LOMO:</b> <i>September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: TSW spill 24/7.</i></p> <p><b>ICH:</b> <i>September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: TSW spill 24/7.</i></p> | <p><b>JDA:</b> No change (35% spill).</p> <p><b>TDA:</b> No change (40% spill).</p> <p><b>BON:</b> No change (95kcfs spill).</p> <p><b><u>Summer Spill (August 15 -31):</u></b></p> <p><b>LGR:</b> NA</p> <p><b>LGO:</b> NA</p> <p><b>LOMO:</b> NA</p> <p><b>ICH:</b> NA</p> <p><b>MCN:</b> No change from Flex Spill Agreement (2 RSWs ~20kcfs spill).</p> <p><b>JDA:</b> No change from Flex Spill Agreement (2 RSWs ~20 kcfs spill).</p> <p><b>TDA:</b> No change from Flex Spill Agreement (30% spill).</p> <p><b>BON:</b> No change from Flex Spill Agreement (55kcfs spill, including 5k corner collector).</p> <p><b><u>Fall-winter spill:</u></b></p> <p><b>LGR:</b> NA</p> <p><b>LGO:</b> NA</p> <p><b>LOMO:</b> NA</p> <p><b>ICH:</b> NA</p> |
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|                                    | <p><b>MCN:</b> <i>September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill<sup>28</sup>.</i></p> <p><b>JDA:</b> <i>September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill. Maintain adult ladder attraction spill.</i></p> <p><b>TDA:</b> <i>Ice and trash sluiceway (~5 kcfs 24/7); full year operation. Maintain adult ladder attraction spill.</i></p> <p><b>BON:</b> <i>Corner collector operation full year, regular operation. Maintain adult ladder attraction spill.</i></p>  | <p><b>MCN:</b> No Change from Interim, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill.)</p> <p><b>JDA:</b> No Change from Interim, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill, with maintained adult ladder attraction spill).</p> <p><b>TDA:</b> No change from Interim (Ice and trash sluiceway ~5 kcfs 24/7; full year operation, with maintained adult ladder attraction spill).</p> <p><b>BON:</b> No Change from Interim (Corner Collector operation full year, regular operation, with maintained adult ladder attraction spill).</p> |
| <p><b>Reservoir Elevations</b></p> | <p><b>Lower Snake Projects:</b> <i>Manage for MOP<sup>30</sup> operations March through September with 1.0 foot hard operating range and target 0.5 foot soft constraint.</i></p> <p><b>LGR:</b> <i>Maintain LGR MOP operations through end of Dworshak Dam Snake River Basin Adjudication (SRBA) Agreement flow augmentation (mid to late September).</i></p> <p>Dredging: <i>Implement Programmatic Sediment Management Plan. Dredge LSR in 2022/23, with no additional dredging until at least 2028 (5 years). Preemptively dredge to remove/reduce sediment load subject to erosion when dams are breached.</i></p> <p><b>Lower Columbia Projects:</b> <i>Manage for MOP operations March through September with a 1.5 foot hard, and 1.0 foot soft operating range<sup>31</sup>.</i></p> | <p><b>Lower Snake Projects:</b> <i>NA</i></p> <p><b>Lower Columbia Projects:</b> No change from 2024 (Manage for MOP operations March through September with a 1.5 foot hard, and 1.0 foot soft operating range).</p>  |

<sup>28</sup> Establish variable flow table for lower Columbia surface passage routes linked to 0.5 foot pool elevation intervals (see Snake table).

<sup>30</sup> Minimum pool elevation; LWG 733 ft; LGS 633 ft.; LMN 537 ft.; IHR 437 ft.

<sup>31</sup> Secure USFWS authority to actively manage avian nesting in John Day pool.

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|  | <p><b>JDA:</b> <i>Prior to initiating MOP at the JDA project, conduct JDA minimum pool study to explore alternatives that minimize water storage and pool elevation requirements when establishing regional power reliability constraints/demands, navigation, and municipal and irrigation water supplies (e.g., eliminate maximum short duration as reliability standard, target, or baseline operation). Ensure continuity of services for water supply and irrigation (e.g.; Extension of irrigation intakes).</i></p>  |   |
| <p><b>System Operations Requests</b></p> | <p><b>Regional Forum:</b> <i>Base regional forum deliberations on achievement of CBP mid-range goals by 2050; prioritize fish operations relative to other authorized purposes when making in-season adaptive management decisions; and require timely response with memo.</i></p> <p><b>Dworshak Ramp Rates:</b> No change from 2021 Stay.</p> <p><b>Zero Generation at LSR:</b> <i>Prohibit zero flow (generation) operations at LSR projects during January and February (zero generation during other months an alternative when 24/7 spill is occurring that maintains flow).</i></p> <p><b>Juvenile transportation program:</b> Maintain ability to adaptively adjust transportation for best benefits, under extreme environmental conditions, and/or conservation programs (i.e. Tucannon spring Chinook), <i>embracing general premise of optimizing in-river conditions via spill and other measures and not eroding in-river conditions in order to collect juveniles.</i></p> | <p><b>Regional Forum:</b> No change from 2023 (Base regional forum deliberations on achievement of CBP mid-range goals by 2050; prioritize fish operations relative to other authorized purposes when making in-season adaptive management decisions; and require timely response with memo).</p> <p><b>Dworshak Ramp Rates:</b> <i>Enable short-term increases in generation to maintain reliability and meet LSR replacement, in addition to exploring development of other low-carbon LSR replacement power production.</i></p> <p><b>Zero Generation at LSR:</b> NA</p> |
| <p><b>Other Categories</b></p>           | <p><b>Maintenance:</b> <i>Fund MCN adult ladder repair and maintenance. Fund MCN juvenile bypass system and brush repair and maintenance.</i></p>   |   |

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|  | <p><i>Establish urgency and timeline, with secured funding, for modifying BON, TDA, JDA, and MCN projects for functional adult lamprey passage.</i></p> <p><i>Fund spillway repair and maintenance at LOMO, ICH, MCN, JDA, TDA.</i></p> <p><i>Repair spillway cranes and spill gates to full functionality at all projects.</i></p> <p><i>Evaluate necessity of powerhouse rehab/replacement at lower Snake projects given pending breach action.</i></p> <p><i>Minimize degraded fish operations resulting from scheduled and unscheduled maintenance/outages.</i></p> <p><i>Secure full funding for CRITFC infrastructure package. Emphasis on long-term functionality of mainstem projects and interim period functionality at Snake River projects.</i></p> <p><b>Monitoring Infrastructure Adjustments:</b> <i>Design new PIT monitoring infrastructure for operation in breached Lower Snake River and expand PIT monitoring infrastructure (e.g. estuary trawl, BON surface detection, and MCN spillway detector).</i></p> <p><b>LOMO, ICH, MCN:</b> <i>Conduct ERDC modeling of alternative spill patterns to address adult delay under extreme (low or high) flow conditions.</i></p> |  |
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**Additional Details for Securing Continuity of Services Prior to LSR Dam Breaching:**

Breaching the four Lower Snake River dams will require replacement for the services of the dams, or mitigation of those that cannot be replaced, before they are breached. Key areas identified in the Lower Snake River Dams (LSRD): Benefit Replacement Report (Replacement Report) prepared for the Inslee-Murray “Joint Federal State Process” that must be addressed include energy, navigation/transportation, irrigation, and recreation. The Replacement Report found that “the services provided by the LSRD could be replaced, or even improved upon, and where they cannot be replaced or improved, mitigation and compensation could be provided.” The Replacement Report examined the full literature available on the cost of replacing the services of the LSRD and provides a range for the likely cost of those investments. In its 2023 legislative session, Washington enacted legislation that will expand on past work on replacing the energy, transportation, and irrigation services provided by the LSRD, and the work recommended below should be done in close coordination with Washington and other sovereigns.

- **Energy replacement:** Investment in a clean energy portfolio that would rely primarily on solar and wind generation, energy storage, energy efficiency, and demand response. Will require developing and refining a plan outlining specific steps necessary to replace the dams’ average energy output as well as peaking capacity, protect grid resiliency and transmission services, and protect ratepayers by maintaining affordable rates. Will require identifying a lead agency to determine the replacement energy portfolio in light of advancing technology and conduct the regulatory and funding actions necessary to deploy it.
- **Navigation and Transportation:** Navigation and transportation actions identified by the Replacement Report include upgrading rail infrastructure, upgrading grain storage and loading facilities, improving state and local roadways, ensuring shipping costs remain competitive, compensating for economic losses, and addressing/minimizing transportation emissions. As with energy replacement, identifying a lead agency or agencies to develop a detailed plan to fund and implement will be necessary.
- **Irrigated Agriculture:** Approximately 50,000 acres of farmland are irrigated by the reservoir and water table created by Ice Harbor Dam. Actions identified by the Replacement Report include deepening wells, modifications to pumping infrastructure, and surface water withdrawal modification. As with the other replacement services, a lead agency would need to be identified to work with irrigation agriculture entities (including municipal water and wastewater services) to conduct detailed analysis, funding, and implementation of a plan to ensure continuity of access to water supplies.
- **Recreation:** Breaching the Lower Snake River dams would alter recreation on the Lower Snake River from flat-water reservoir recreation to free-flowing river recreation. To assist with this transition, the Simpson Initiative suggested providing federal funding for recreation management, tourism promotion, a sportfishing contingency fund during the restoration process, relocation and/or compensation for existing marinas, and compensation for owners of motorboats designed for use on lakes and reservoirs. An agency or agencies should also be assigned to lead refinement, funding, and implementation of a recreation-management and mitigation plan.
- **Economic Development:** The Simpson Initiative suggests investing in Lewiston-Clarkston waterfront restoration as part of the breaching process, as well as general economic development funds for the Lewiston-Clarkston and Tri-Cities areas. This is another area that

would benefit from a lead role by an agency or agencies to consult with local communities and create a plan to be funded and implemented.

## **ATTACHMENT 2**

## U.S. Government Commitments in Support of the “Columbia Basin Restoration Initiative” and in Partnership with the Six Sovereigns

### Preface

In 2021, the Biden-Harris Administration began a process to work with regional sovereigns<sup>1</sup> and stakeholders to develop and implement plans to comprehensively restore Columbia River Basin salmon and other native fish populations to healthy and abundant levels, honor Federal commitments to Tribal Nations, deliver affordable and reliable clean power, and meet the many resilience needs of stakeholders across the region. The work was made possible by a pause in long-standing litigation, which has been extended since.

This document is the product of intense engagement with several of those parties—the Nez Perce Tribe, Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, the State of Oregon, and the State of Washington (the “Six Sovereigns”)—who are collectively advancing a Columbia Basin Restoration Initiative (CBRI). This document is intended to describe commitments developed in partnership with these sovereigns. The document also is consistent with the goals set forth in a recent Presidential Memorandum.

On September 27, 2023, President Biden issued a Presidential Memorandum declaring that “[i]t is time for a sustained national effort to restore healthy and abundant native fish populations in the [Columbia River] Basin,” and that “it is the policy of [the] Administration to work with the Congress and with Tribal Nations, States, local governments, and stakeholders to pursue effective, creative, and durable solutions, informed by Indigenous Knowledge, to restore healthy and abundant salmon, steelhead, and other native fish populations in the Basin; to secure a clean and resilient energy future for the region; to support local agriculture and its role in food security domestically and globally; and to invest in the communities that depend on the services provided by the Basin’s Federal dams to enhance resilience to changes to the operation of the CRS, including those necessary to address changing hydrological conditions due to climate change.”<sup>2</sup> Some actions are already underway to meet the goals in the Presidential Memorandum and other commitments made by the United States. This includes efforts such as testing the feasibility of reintroducing anadromous salmonids in blocked area habitats in the Upper Columbia River Basin above Chief Joseph Dam under a historic agreement between the United States government and the Confederated Tribes of the Colville Reservation, the Coeur d’Alene Tribe, and the Spokane Tribe of Indians to support and fund Tribally-led efforts to implement the Phase 2

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<sup>1</sup> Regional sovereigns may include, as appropriate, the States of Oregon, Washington, Montana, and Idaho, as well as the Confederated Tribes of the Umatilla Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Nez Perce Tribe, Confederated Tribes and Bands of the Yakama Nation, Spokane Tribe of Indians, Coeur d’Alene Tribe, Confederated Tribes of the Colville Reservation, Kootenai Tribe of Idaho, Confederated Salish and Kootenai Tribe, Confederated Tribes of Siletz Indians, Shoshone-Bannock, Burns Paiute Tribe, Confederated Tribes of the Grand Ronde, Cowlitz Indian Tribe, Fort McDermitt Paiute and Shoshone Tribe, Kalispel Tribe of Indians, Shoshone-Paiute Tribes.

<sup>2</sup> Presidential Memorandum of Restoring Healthy and Abundant Salmon, Steelhead, and Other Native Fish Populations in the Columbia River Basin (Sept. 27, 2023), <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/09/27/memorandum-on-restoring-healthy-and-abundant-salmon-steelhead-and-other-native-fish-populations-in-the-columbia-river-basin/>.

## Implementation Plan.

Sustained national effort requires durable partnership over time with all regional sovereigns and stakeholders. Though this document responds to the work of several regional sovereigns, these are not the only sovereigns in the Basin, and these commitments do not represent the exhaustive suite of actions that will be developed and carried out under the Presidential Memorandum. The effort described in this document is not intended to create a new forum that addresses or replaces existing regional forums and processes. The commitments described here do not undermine commitments the United States Government (USG) has made to other sovereigns in the region under existing agreements. The effort is intended to foster partnership on matters of shared interest among the USG and the Six Sovereigns, with the expectation that these efforts will grow, expand, and include other sovereigns and stakeholders. Accordingly, the USG is committed to continue pursuing partnership on matters of shared interests with other sovereigns in the region, whether those matters are included below or not. Moreover, when implementing the commitments below, the USG and Six Sovereigns are committed to including others and working in partnership.

## **Introduction**

The Columbia River and its tributaries are the lifeblood of the Pacific Northwest, providing the region with an abundance of natural resources, water, power, recreation, and opportunity which have sustained cultures, livelihoods, commerce, and economic growth. An estimated 7.5 to 16 million adult salmon and steelhead once returned to the Columbia River Basin each year. In 1855, the United States entered treaties with the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe, in which these Tribes reserved, among other rights, the right to harvest fish at all usual and accustomed places. Salmon, steelhead, and other native fish are essential to the culture, economy, and ways of life of these Tribes, as they are for other Tribal Nations in the region and First Nations and other Indigenous Peoples in Canada.

Since the late 1800s, the Columbia River Basin ecosystem has changed at the expense of salmon, other native fish, and ecosystem function. Historically, sixteen different stocks of salmon and steelhead spawned above Bonneville Dam, as well as broadly distributed populations of bull trout, lamprey, sturgeon, and other aquatic species. Of the sixteen historic salmon and steelhead stocks, four are now extinct, and seven are listed under the Federal Endangered Species Act—including one reliant on a captive breeding program. Of the remaining five, only one approaches its historical numbers. Bull trout are also listed under the ESA and historic anadromous populations in the Columbia River are no longer present. The Kootenai River population of white sturgeon experienced significant decline with construction of Libby Dam and has been listed as endangered under the ESA since 1994. Pacific lamprey have also experienced a precipitous decline across the basin.

The Biden Administration recognizes the indisputable value and importance of salmon – and other native fish – to Columbia River Basin Tribes, as well as to the economy and overall ecological health of the region, throughout the Basin and from the Oregon coast to the Gulf of Alaska. In the face of climate change, urgent action is needed to restore their populations to healthy and abundant levels.

According to the 2022 report by the National Oceanic and Atmospheric Administration (NOAA), “Rebuilding Interior Columbia Basin Salmon and Steelhead,” the hydrosystem is a primary limiting factor in the recovery of ten of the sixteen salmon and steelhead stocks in the interior Columbia River Basin. For three others, the limiting factor is blocked historic habitat due to large dams that lack fish passage.

Tributary habitat is another important limiting factor for salmon and steelhead in much of the Basin, particularly for middle Columbia River stocks. NOAA found the risk of extinction for all NOAA ESA-listed stocks in the interior Basin to be moderate-to-high, and, considering the status of all limiting factors for the species, NOAA does not expect the current risk status of these listed stocks to improve in the short term without immediate attention.

To address the critical status of these fish – especially listed salmon and steelhead in the Snake River Basin – Senator Patty Murray and Governor Jay Inslee released [recommendations](#) on Columbia River salmon recovery in August 2022, after a year-long process compiling existing information and soliciting input from communities, Tribes, and stakeholders across the Northwest. With respect to the Lower Snake River (LSR) dams, they recommended that the dams’ services would need to be replaced or mitigated before any breach should occur. They further recommended that the Federal and state governments initiate a program to replace the services of the dams and develop additional information on the dams and the services they provide to enable Congress to consider dam breaching in the future. They also recommended immediate action to deploy the scale of clean energy infrastructure necessary to confront the climate crisis regardless of whether Congress authorizes the breaching of the Lower Snake River dams. They recognized, as does the Administration, that significant Federal investment is necessary to support this transition, which will require substantial Federal budget support.

We agree that business as usual – and the consequential disappearance of salmon and other native fish populations in the Columbia River Basin – is unacceptable. And while there is still time to save these fish, there is no time to waste. The NOAA report clarified the urgency of the situation, stating that, given the current status of salmon populations, “[t]he science robustly supports riverscape-scale process-based stream habitat restoration, dam removal (breaching), and ecosystem-based management, [and] overwhelmingly supports acting and acting now.”<sup>3</sup>

The science is clear, and now so too must be our path forward.

The USG also recognizes the urgency of recovering other native listed and non-listed aquatic species across the Columbia River Basin. While this Commitment document focuses on the needs of Pacific salmon and steelhead, the USG also plans to work with sovereigns and stakeholders under the direction of the Presidential Memorandum to increase restoration and recovery actions for other native species.

As stated in Exhibit 2 of the August 2022 litigation stay agreement, the Biden Administration is “committed to supporting development of a durable long-term strategy to restore salmon and other native fish populations to healthy and abundant levels, honoring Federal commitments to Tribal Nations, delivering affordable and reliable clean power, and meeting the many resilience needs of stakeholders across the region.” In carrying out this commitment, the Administration understands that no single action is a “silver bullet,” and progress will necessitate a comprehensive suite of management actions to make progress towards our goal of healthy and abundant fish populations in the Basin.

The NOAA Rebuilding Report, for example, sets out a suite of centerpiece actions “needed to provide the highest likelihood of reversing near-term productivity declines and rebuilding towards healthy and harvestable runs [of Columbia River Basin salmon and steelhead] in the face of climate change.”

Although the science is clear and the urgency real, there remain important social and economic factors to consider and address before the full suite of actions laid out by the NOAA report could move forward.

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<sup>3</sup> See NOAA, Rebuilding [Interior Columbia Basin Salmon and Steelhead Report](#), p. 24 (2022).

As highlighted throughout the Murray/Inslee recommendations, these social and economic considerations must be expedited and addressed on a timeline that meets this urgency, while also recognizing where congressional authorization is needed. In the meantime, interim actions can help minimize the potential for productivity declines and help achieve some population growth during periods of favorable environmental conditions.

It is apparent from the Columbia Basin Restoration Initiative (CBRI) that the Six Sovereigns share the Administration's understanding that a comprehensive and urgent approach is necessary to achieving our shared objectives, and the Administration thanks them for their work in developing this framework, consistent with the science undergirding the NOAA Rebuilding Report, to drive coordinated action. While this USG response does not constitute a decision by the USG to support legislation to authorize dam breaching, the USG continues to be committed to exploring restoration of the Lower Snake River, including dam breach, and views Governor Inslee and Senator Murray's recommendations as providing important guidance. To that end, the USG is prepared to deliver the commitments below, in partnership with the Six Sovereigns and other stakeholders in the region, to make headway on the objectives in the CBRI. As noted at the outset, the commitments here are not to the exclusion of other efforts needed to meet the President's direction to work to restore salmon and other native fish populations, including bull trout, lamprey, and sturgeon species, to healthy and abundant levels, to secure an affordable and reliable clean energy future for the region; to support local agriculture and its role in food security domestically and globally; and to invest in the communities that depend on the services provided by the Basin's Federal dams to enhance resilience to changes to the operation of the CRS, including those necessary to address changing hydrological conditions due to climate change. The USG is committed to working with all regional sovereigns and with stakeholders to implement the Presidential Memorandum and achieve these important goals.

## Lower Snake River Restoration

### **Responsive to CBRI Objectives 1(a), 1(b), 4, 5, & 6**

- **Objective 1(a) and (b):** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin Partnership Task Force (CBP) and Rebuilding reports; and (b) complete the actions and investments necessary to secure continuity of services associated with Lower Snake River (LSR) restoration prior to LSR dam breaching.”*
- **Objective 4:** *Invest in and support communities and economic sectors (e.g., energy, transportation, agriculture, and recreation) in a manner that is consistent with meeting decarbonization goals and mandates and integration of renewables, delivers “affordable and clean power”, improves resiliency and adaptability to climate change and supports “the many resilience needs of stakeholders across the region”, and “[honors] commitments to Tribal Nations”*
- **Objective 5:** *Secure necessary regulatory compliance, authorizations, and appropriations for implementation of the strategy with an urgency reflecting the needs of the fish.*
- **Objective 6:** *Ensure that the strategy proposed in Objective 1 and associated Federal actions “honor Federal Commitments to Tribal Nations” and address past and ongoing inequities related to the Federal hydrosystem to reflect and uphold Federal Treaty and trust responsibilities to Columbia Basin Tribes.*

## USG Commitments

- **Tribal Energy Sovereignty – Pacific Northwest Tribal Energy Program.** The Department of Energy (DOE) and U.S. Department of Agriculture (USDA) will provide targeted technical assistance, planning, and funding to the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe (together, the “LRTT’s”), to develop and deploy clean, renewable, socially-just energy resources (to include distributed energy resources (including efficiency and demand response, other generation, storage, and transmission resources)) in the region. DOE will work with LRTTs individually and collectively to support quantified goals for energy project development, presumed to be at least 1,000- 3,000 MW of clean energy resources, and to determine the role LRTTs want to take with regard to various projects (e.g., individual or collective ownership, leasing, power procurement, etc.). DOE will work with LRTTs to develop a written agreement documenting and guiding this process. This new, clean Tribally-sponsored energy will be planned as “replacement” power for the lower Snake River dams if Congress authorizes the breach of those dams. This Pacific Northwest (PNW) Tribal Energy Program will run in parallel with ongoing DOE assistance and resources related to tribally supported projects that are under development outside of the PNW Tribal Energy Program and nothing in this USG commitment is intended to be exclusive to PNW Tribal Energy Program projects or limit the allocation of resources to tribally-supported projects that are not identified by a Tribe as part of the PNW Tribal Energy Program. See *Appendix A for more information on this proposal and respective DOE and USDA contributions.*
- **Tribal Engagement & Implementation Support.** The USG is committed to supporting Columbia Basin Tribes in regional energy planning and energy project review processes in the Pacific Northwest, and to advance the development of a renewable, clean, and socially just energy portfolio in the region. By February 1, 2024, DOE, USDA, and the Department of the Interior (DOI) will identify additional Federal resources (e.g., from the DOE LEAP program)<sup>4</sup> that could support the LRTT’s and other Columbia Basin Tribes’ capacity regarding clean energy resource development, energy project management, and ability to engage in regional energy planning and energy project review processes, including without limitation the capacity of the Tribes’ natural and cultural resource staff to engage in such planning.
- **Accounting for “replacement” power.** In coordination with the Six Sovereigns, the USG and DOE will develop a means of “accounting” for the region’s development of resources available to serve as “replacement” energy services for the lower Snake River dams, based on the particular services needed in the event Congress authorizes dam breach.<sup>5</sup> This accounting mechanism will be developed no later than February 1, 2024. This accounting mechanism will track and count all regional resources that can contribute to replacement of the dams’ energy services developed or under development as of the date of these commitments and beyond.<sup>6</sup>

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<sup>4</sup> Noting that various programs, including C-LEAP, are subject to competitive funding procedures and nothing in this agreement over-rides those standards and procedures.

<sup>5</sup> In the event that Bonneville considers acquisition of these or any other resources, such acquisition of resources will be governed by applicable statutory requirements. See *e.g.*, 16 U.S.C. § 839d *et seq.*

<sup>6</sup> In the event that Bonneville considers acquisition of these or any other resources, such acquisition of resources will be governed by applicable statutory requirements. See *e.g.*, 16 U.S.C. § 839d *et seq.*

The Regional Energy Needs Planning Process described in Appendix A, specifically its scenarios for regional clean energy development that include replacement power in the event Congress authorizes breach of the LSR dams, will identify portfolios of potential replacement resources (as well as new energy resource options, e.g., storage, efficiency, or transmission, that could enable greater grid management flexibility to manage the hydropower system for greater fish benefit, as well as reliability, affordability, decarbonization and other regional goals during the interim period before breach is authorized). The “accounting” approach would provide the public regular updates on the region’s development of clean energy resources, including the type of resources needed to replace the specific energy services of the LSR dams, as compared to the portfolios identified in the energy analysis.

- **Assistance to Support Tribally-Owned Clean Energy Projects through USDA’s energy programs, such as the Powering Affordable Clean Energy (PACE) Program and at Least 10 Tribal Projects through USDA’s Rural Energy for America Program (REAP).** Yakama has applied for USDA’s PACE partially forgivable loan program for utility scale clean energy generation, and the USDA Rural Utilities Service (RUS) will continue to work with them through the process. USDA will also work with tribes to access funding for clean energy development through the RUS core program. Additionally, USDA will work to provide technical assistance to tribes to apply to the REAP program and will work with Columbia River Basin tribes to identify, develop and fund at least 10 REAP clean energy projects. REAP offers grants and guaranteed loans to agricultural producers and small businesses, including Tribes and Tribal businesses, in rural areas. REAP funds can be used for Tribally-owned renewable energy systems or energy-efficient infrastructure upgrades and provide grants for up to 50 percent of the total project costs for Tribes. Grants for clean energy and energy efficiency projects can be anywhere from \$1,500 to \$1 million in size.
- **Energy Analysis.** DOE will provide the necessary funding to the Pacific Northwest National Laboratory (PNNL) and potentially other DOE Labs to complete the Regional Energy Needs Planning Process, as outlined in Appendix A. This analysis will identify the best ways to meet the region’s resource adequacy needs and decarbonization goals, and support meeting Washington and Oregon’s power sector statutory requirements as well as state and LRTT energy strategies, while also accounting for any long-term actions necessary to ensure abundant and healthy salmon populations throughout the Basin, including breach of the Lower Snake River dams.
- **Transportation Upgrades.** The Department of Transportation (DOT) will prioritize work with sovereigns in the region to address rail, road, and culvert upgrades necessary for improving transportation infrastructure while also protecting and rebuilding salmon and steelhead populations. DOT Assistant Secretary for Tribal Affairs, Arlando Teller and the White House will hold an initial summit with regional sovereigns (including the Six Sovereigns) in early 2024 to scope, plan, and design projects that would meet DOT program requirements. This will include DOT providing information about opportunities for Federal funding, including grant and loan requirements for transportation and culvert removal projects. DOT will provide ongoing guidance and specific technical assistance to help identify the right grant and loan programs to fund these projects. For example, the new DOT [Rural and Tribal Assistance Pilot Program](#) will provide grants – up to \$360,000 each – for early project development-phase activities such as hiring staff, feasibility studies, or environmental review; the \$3.4 million funding opportunity began to accept [applications](#) on a first-come, first-served basis beginning on August 14, 2023.

- **Transportation Analysis.** The U.S. Army Corps of Engineers (the Corps), using its authority through the Planning Assistance to States and Tribes Program, will provide up to \$750,000 to partner with a non-Federal cost-share sponsor (potentially the State of Washington) to analyze what other transportation infrastructure, including rail, could provide regional benefits and also replace services should Congress authorize dam breach. This funding will further existing work at the State of Washington and will include stakeholder engagement from DOT and other relevant agencies as well as the Six Sovereigns' input.
- **Recreation and Public Access Analysis.** The Corps will allocate through its Planning Assistance to States and Tribes authority up to \$2 million<sup>5</sup> to develop a blueprint for investments in replacement and enhancement of recreation along the LSR that would offset the loss of recreation opportunities associated with the drawdown of reservoirs if Congress were to authorize LSR dam breach. The Corps will work with the State of Washington and other entities as appropriate as cost-share sponsors. The blueprint will be informed by the DOI Tribal Circumstances analysis, and by consultation with the LRTTs, to ensure protection of cultural resources.
- **Water Supply Analysis.** BOR working with USDA will provide \$4.2 million to fund a water supply replacement study, in coordination with ongoing analyses by the State of Washington. This study will address the irrigation, municipal, and industrial withdrawals associated with the potential breach of the four LSR dams, if authorized by Congress.
- **Tribal Circumstances Analysis.** DOI will, in consultation and cooperation with Columbia River Basin Tribes, review the 1999 Tribal Circumstances Report (as amended in 2019) and the Tribal Perspective Reports submitted in 2019, together with information acquired in consultation with the Columbia River Basin Tribes in March 2022, to compile and complete an analysis of the historic, cumulative, and ongoing impacts the Federal dams on the Columbia River, including the lower Snake River dams, have on Columbia River Basin Tribes. This analysis will also inform any environmental compliance documents discussed below.
- **Study Timelines and Results.** The U.S. Government (USG) will complete the aforementioned outreach and analyses by late-2024, in cooperation with the Six Sovereigns and non-Federal sponsors, except that the Tribal Circumstances Analysis will be completed by DOI by June 1, 2024 and both the Transportation Analysis and the Recreation and Public Access Analysis timeline will be coordinated with the cost-share sponsor, with the goal of completing as much of the analysis as possible within 12 months of execution of a cost-share agreement. The USG, in cooperation with the Six Sovereigns, will provide the information obtained from the analyses above, and any recommendations that may result from those analyses, to Congress to inform budget and non-reimbursable appropriations requests. The information obtained from the analyses above will also inform environmental compliance documents and the Corps will use this information where relevant as well as other pre-existing analyses to expedite any Feasibility Study.<sup>7</sup>

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<sup>7</sup> The USG commits to reviewing time and cost-efficient opportunities to use information and analysis from prior LSR reports, including but not limited to the 2002 (Corps) Final Lower Snake River Juvenile Salmon Migration Feasibility Report / Environmental Impact Statement.

## Reintroduction of Salmon in the Upper Columbia River Basin

### **Responsive to CBRI Objective 1(a)**

- **Objective 1(a):** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin Partnership Task Force (CBP) and Rebuilding reports.*

### **USG Commitments**

- **Phase 2 Implementation Plan (P2IP).** On September 21, the USG entered into an agreement with the proponent sovereigns to support the implementation of the P2IP. This agreement included \$200 million from BPA over 20 years and a commitment from the rest of the USG to work with the Upper Basin Tribes as necessary and appropriate to ensure full funding – currently estimated at \$300 million – of the P2IP if additional investment is needed.
- **Enloe Dam Removal.** NOAA provided \$2.3 million in FY 2023 for Enloe Dam removal analysis. NOAA will continue to seek opportunities to align its competitive grant programs with Columbia Basin fish recovery needs providing fish passage into the Upper Columbia River Basin. This project continues to be a priority. The USG will work with the Confederated Tribes of the Colville Reservation as the lead for the removal and other regional sovereigns as appropriate to find resources to ensure the completion of the alternative analysis and the accompanying sediment management plan, both within ongoing non-Federal feasibility analysis.

## Mid-Columbia River Salmon and Steelhead Improvements

### **Responsive to CBRI Objective 1(a)**

- **Objective 1(a):** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin Partnership Task Force (CBP) and Rebuilding reports.*

### **USG Commitments**

- **Mid-Columbia Restoration Plan.** The Six Sovereigns and the USG will work together (with other sovereigns as appropriate) to develop recommended actions to rebuild mid-Columbia salmon and steelhead stocks as described in the Rebuilding Interior Columbia Salmon and Steelhead report, including, but not limited to, appropriately managing predation and protecting and restoring instream flows, water quality, and fish passage and habitat improvements in Oregon and Washington in low- to mid-elevation tributary and mainstem habitats.<sup>8</sup> NOAA will coordinate with the appropriate USG agencies/departments and the relevant regional sovereigns (including the Six Sovereigns) to develop, by June 30, 2024, an agreed upon 10-year suite of mid- Columbia actions in Oregon and Washington for implementation beginning FY 2026, understanding that these actions will likely require at least doubling current levels of

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<sup>8</sup> This reflects the habitat components of the NOAA Rebuilding Report’s Mid-C centerpiece action recommendations, but does encompass the universe of actions necessary for rebuilding.

mitigation and restoration funding.<sup>9</sup> To support this agreed upon suite of actions, the USG will identify available funding across agencies and departments, as well as other sources; and consistent with the September 27, 2023 Presidential Memo will evaluate new appropriations needs, and, as appropriate, potential future Congressional legislation necessary for implementation. BPA's obligation to fund any Fish and Wildlife projects identified in this Mid-Columbia Restoration Plan will be subject to the limitations outlined in the "BPA Fish and Wildlife General Funding" and "Increased Funding in Support of Basin-Wide Restoration" commitment sections, below.

- **Mid-C Subset of Near-Term Priority Actions.** The Six Sovereigns have identified and provided to the USG a short-list of high-priority mid-Columbia habitat actions, implementable in the near term. The USG, using a whole-of-government approach, will identify opportunities to provide funding to implement these projects beginning in FY 2024-2025.
- **Cold Water Refuge Projects.** The Environmental Protection Agency (EPA) and the Corps will work with the Six Sovereigns to identify and seek funding, as appropriate, to study and complete 3 to 5 projects to enhance or protect existing cold water refuge or provide additional cold water refuge in the Columbia Basin in Oregon and Washington. At least two of the five projects will be accomplished in Oregon. Special emphasis will be made toward reducing both warm waters and predation in tributary mouths. At least 2 of 5 projects will be focused on Mid-Columbia (Zone 6 and its tributaries) salmon and steelhead populations. Projects will be identified by June 30, 2024 for implementation beginning in FY 2024-2025.

## Other Native Fish

### **Responsive to CBRI Objective 1(a) and 2**

- **Objective 2:** *Ensure that all native species, regardless of listing status, are considered in the comprehensive strategy in a way that improves ecosystem function in the Columbia River and its tributaries.*

### **USG Commitments**

- **Pacific Lamprey Mitigation.** The Corps has expressed a capability of an additional \$5 million in non-reimbursable funding for FY 2025 to support Pacific lamprey, and will continue to work with state and tribal fish managers to identify and seek appropriations, as appropriate, for funding needs moving beyond FY 2025, including needs expressed by the fish managers for a regional supplementation/augmentation plan, and for modernizing and funding passage structures at artificial barriers and obstructions, as associated with Corps facilities. The Corps received \$20 million in FY 2020 to make Pacific lamprey passage improvements consistent with commitments described within the 2018 Columbia Basin Fish Accords extension. The Corps has been working closely with the Tribes to ensure funding is allocated to the highest priority Pacific lamprey projects and expect the available funds to be expended by the end of FY 2024.

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<sup>9</sup> The Six Sovereigns have provided the USG with documentation that indicates that a 10-year suite of mid-Columbia mitigation actions would likely cost upwards of \$200M/year in additional funding over the next ten years.

BPA will continue the current level of funding to support passage for Pacific lamprey FWS will provide \$785,000 in FY 2024 to support Pacific lamprey conservation. FWS funding will be used for projects including passage implementation in the Yakima Basin and Upper Columbia Basin, monitoring of translocation efforts, and assessment of Pacific lamprey distribution in the Snake River Basin.

- **White Sturgeon Mitigation.** BPA will continue the current level of funding to support white sturgeon recovery efforts through FY 25 to implement NPCC Regional White Sturgeon Framework recommendations and the White Sturgeon Hatchery Master Plan, and provide support for monitoring and evaluation needs.
- **Bull Trout.** The FWS commits to providing \$700,000 in FY 2024 in support of bull trout recovery in the Columbia River Basin. Funding will be used for projects including population monitoring and assessment, genetic analysis of native salmonids in Idaho and western Montana, and technical assistance to Tribes and other partners on bull trout recovery. The Corps will provide \$87 million in funding for a design build contract for the Albeni Falls fish passage project to benefit bull trout and westslope cutthroat trout. The Corps will seek additional funding for implementation through the budget process.
- **Native Resident Fish & Shellfish.** The USG recognizes that the key elements of the CBRI, consistent with the Rebuilding Report, are important to restore native fish and the ecosystems supporting them. The FWS commits to working with USGS, regional sovereigns, and other partners to develop monitoring plans and restoration actions that would allow for better understanding of native resident fish (e.g., sculpin) and other native species' distribution and recovery needs, including the Western Ridged Mussel, which is currently petitioned for listing under the ESA. For example, in the Mid-Columbia, FWS is working with sovereigns to fund, design, and implement the Wallula Floodplain Restoration Project for the lower Walla Walla River benefitting both resident and anadromous species. The USG will work with the Six Sovereigns, Idaho and other regional sovereigns and stakeholders as appropriate to update plans, funding needs, and priorities necessary to restore native resident fish and shellfish in concert with the efforts to rebuild salmon runs. Funding will be identified for native resident fish and shellfish in the development of appropriations requests and budgets that support implementing the CBRI.

## Improved Ecosystem Function

### **Responsive to CBRI Objective 1(a)**

- **Objective 1(a):** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin Partnership Task Force (CBP) and Rebuilding reports.*

### **USG Commitments**

- **Improved Ecosystem Function Commitments.** The USG commits to rebuild salmon and steelhead runs to improve ecosystem function by restoring marine nutrient transport into interior habitats and providing prey for other native fish and for marine mammals, and by restoring watershed functions that provide essential ecosystem services enhancing resilience to climate change and associated heat, drought, fire, water scarcity and invasive species. River

restoration work in the Basin will help deliver this ecosystem function improvement. Examples include, but are not limited to:

- **Enloe Dam Removal.** See NOAA commitment above for “Enloe Dam Removal.”
- **Culvert Design or Replacement on Federal Lands in Oregon and Washington.** The Bureau of Land Management (BLM) provided \$1.2 million in FY 2022 and FY 2023 for the design or replacement of 17 culverts and other projects to restore and protect stream habitat in Washington and Oregon.
- **Culvert Removals in WA.** DOT has the ability to offer opportunities for competitive discretionary grants that recognize fish passage as an important component of the grant. These include FHWA’s Culvert Aquatic Organism Passage Program, Bridge Investment Program, Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program, and Wildlife Crossings Pilot Program.
- **Fish passage improvements.** For FY 2024, FWS plans to adjust criteria in the Notice of Funding Opportunity (NOFO) to give additional weight to project proposals that leverage other BIL investments and significantly contribute to watershed-scale restoration efforts. In addition, FWS will add selection factors in the NOFO that will facilitate FWS directing funding towards projects in priority geographic areas identified by DOI (e.g., Columbia River Basin; Klamath; Appalachia; Yukon, Kuskokwim, and Norton Sound region).
- **Cold Water Refuge.** EPA’s 2021 Cold Water Refuge Plan identifies various actions to protect cool tributaries and reduce temperatures in specific tributaries to enhance their function as a cold-water refuge. For example, a priority action in in many watersheds is to restore stream riparian areas and geomorphology to cool streams and improve salmon habitat, especially on agricultural lands. These stream restoration projects can be implemented through grant funding and Federal, state, Tribal, and local partnerships. Costs could run to as much as \$50 million over 10 years. FWS recognized the need for additional cold water refuge assessments within the Columbia and Snake River basins in the 2020 FWS Biological Opinion and will work with sovereigns and other Federal agencies to identify methods and funding mechanisms to develop the assessments and implementation plans. The USG will work with states and Tribes to agree on a timeline and further refine cost estimates for these projects. In addition to funding from the USG, EPA will partner with the states to assist them in understanding how to leverage EPA Clean Water Act (e.g., State Revolving Fund and Section 319) funding for these same projects. EPA will work to identify thermal pollution, both point source and non- point source, and larger sources of warm water will be investigated and remedied to protect cold water sources and cold water habitat in the mainstem and tributaries to the Columbia River in Oregon and Washington.
- **Ecosystem Restoration Projects.** The Corps has expressed a capability of over \$20 million in non-reimbursable funding over the next 2 years for several new ecosystem projects throughout the Basin.<sup>10</sup> The Corps will engage and work with regional sovereigns (including

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<sup>10</sup> Some of these projects will be in partnership with Tribes, and others are still being scoped. Projects include, but are not limited to: Columbia River Zone 6 Delta Assessment; Owyhee River Restoration;

the Six Sovereigns) to identify and prioritize these projects.

- **Ocean and Estuary Actions.** Columbia River basin salmon and steelhead spend a significant portion of their life-cycle in the ocean, and as such the ocean is a critically important habitat influencing their abundance and productivity. The increasing role of deteriorating ocean or freshwater conditions from climate change on the health of salmon and steelhead stocks does not diminish the importance or necessity of taking meaningful actions in areas society has more direct influence over. In fact, the importance and necessity of meaningful actions is heightened, not diminished because of the impacts of climate change.

While ongoing ocean research and monitoring is critically important to address the underlying uncertainties and knowledge gaps that currently exist in salmon ocean and estuarine ecology and should continue or be expanded, immediate improvements to the freshwater environment are imperative to avoid further declines, improve climate resilience, and begin salmon and steelhead rebuilding immediately.

NOAA will continue to prioritize ongoing work to develop decision support tools to track ocean productivity in a stock specific manner and to develop indicators that provide valuation for nearshore, estuary, and tributary habitat that can be used for restoration planning and prioritization.

NOAA also commits to collaborate with existing sovereign fish managers and regional entities conducting fisheries research in marine environments and by September 30, 2024:

- Identify specific actions that can be taken in freshwater, estuarine, and marine habitats to improve fish condition and marine survival or otherwise mitigate marine habitat impacts; e.g., controlling predation and enhancing prey availability.
- Identify mechanisms and tools for life-cycle modeling, monitoring, and adaptive management efforts to better integrate new information on ocean conditions and marine fish survival as it becomes available through ongoing or expanded ocean research efforts to help inform adaptive management of ongoing implementation of these USG Commitments in response to the CBRI.

Ocean monitoring and research to address uncertainties in the marine phase of the salmon life cycle are important and should continue concurrently with urgently needed improvements in the freshwater environment to arrest further declines and commence salmon and steelhead rebuilding immediately.

## Interim Fish Operations

### **Responsive to CBRI Objectives 1(a) & 3**

- **Objective 1(a):** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin*

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Hangman Creek Channel / Floodplain Restoration; Sweetwater Creek Restoration; Meadow Creek, Idaho Restoration Study; Barber Pool, Idaho Restoration Study; Nursery Reach, Washington Study; Hood River Confluence Ecosystem Restoration Study; Deer Gulch, Idaho Restoration Study.

*Partnership Task Force (CBP) and Rebuilding reports.*

- **Objective 3:** *Ensure interim fish measures are adequate to minimize additional generational decline of fish populations.*

### **USG Commitments**

- **Commitment to Resolve Fish Operations.** The USG has engaged collaboratively with the Six Sovereigns regarding the Interim Fish Operations, using the Interim Fish Operations identified in the CBRI as the basis for discussions, to develop agreed-upon interim hydro system operations commitments.
  - The USG and the Six Sovereigns developed an action plan (see Appendix B for details) for implementing interim fish operations beginning in 2024 and beyond.<sup>11</sup>
  - It is intended that these agreed-upon, durable operations will commence upon finalization of a long-term resolution of interim operations and would remain in place for a period of 10 years or until decisions are made and implemented regarding whether to breach the LSR dams in a timeline that meets the needs of the fish. If this decision is deferred beyond a reasonable timeline, then additional CRS operations for the fish will likely be needed.
- **Implementation of Durable Operations, as well as Monitoring and Adaptive Management.** The USG is committed to developing and using a Sovereign-driven process to focus on maintaining and adaptively implementing (managing) the durable set of operations agreed to that govern at the lower Snake River and lower Columbia River dams prior to potential breach of the lower Snake River dams. The USG is committed to refine the Regional Forum processes (e.g., Technical Management Team Regional Implementation Oversight Group, etc.) by September 30, 2024 to ensure that the implementation of the agreed-to operations and any adaptive management adjustments:
  - Minimize degraded fish operations resulting from scheduled and unscheduled maintenance/outages;
  - Equally consider fish operations relative to other authorized project purposes when making in-season adaptive management decisions; and
  - Follow a fish and wildlife manager developed framework for mainstem research, monitoring, and evaluation; addressing both reach-specific and life-cycle metrics for anadromous and resident aquatic species.
- **Backlog in Salmon Projects.** The Corps will provide at least \$50 million in funding to the Columbia River Fish O&M and construction funding in FY 2024 to begin addressing and prioritize the [backlog of projects identified](#) by the Columbia River Inter-Tribal Fish Commission (CRITFC) at Columbia and Snake River facilities for fish passage and survival.<sup>12</sup> These funds will be used, in consultation with the Six Sovereigns and Idaho to address backlog projects both at

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<sup>11</sup> Changes to operations were only made for the lower Columbia River and lower Snake River projects in this agreement; other CRS project operations are not modified by this agreement.

<sup>12</sup> <https://critfc.org/documents/critfc-overview-of-columbia-river-usace-fish-budget-needs>

LSR dams and in the mainstem Columbia River. The USG and the Six Sovereigns agree to work collaboratively on identifying high priority needs and potential funding sources for the Corps' O&M and CRFM budgets for FY 2025 and beyond to address the backlog of infrastructure needs that constrain fish operations. Examples of high priority projects that are currently and/or likely to soon be impacting fish passage operations include: McNary adult fish ladder repair and maintenance, McNary spillway crane and hoist replacement, and spillway repair and maintenance at Lower Monumental, John Day, The Dalles, and Bonneville dams.

## Modernization of Energy & Other Economic Sectors for Resiliency

### **Responsive to CBRI Objective 4**

- **Objective 4:** *Invest in and support communities and economic sectors (e.g., energy, transportation, agriculture, and recreation) in a manner that is consistent with meeting decarbonization goals and mandates and integration of renewables, delivers “affordable and clean power”, improves resiliency and adaptability to climate change and supports “the many resilience needs of stakeholders across the region”, and “[honors] commitments to Tribal Nations.”*

### **USG Commitments**

- **Fish and Economic Sector investments.** The USG will ensure actions that benefit fish and watershed health are coupled with investments to secure affordable and reliable decarbonized energy, efficient commodity transport and adequate water supply. Please see items identified in “*Lower Snake River Restoration*” section for specifics.
- **Reduce Local and Regional Burdens.** The USG will include investments complementary to this shifting energy landscape, as well as modernization of other economic sectors, and help reduce associated local and regional economic burdens. Please see items identified in “*Lower Snake River Restoration*” section for specifics.
- **Siting Consultations with Tribal Nations.** The USG will address siting considerations to help address long-standing Tribal inequities and help minimize ecological harm.
  - **Siting for Clean Energy Resources.** DOE, DOI, and USDA are committed to meaningfully engaging with Tribes on clean energy planning and siting to support the sustainable build out of transmission and clean energy resources in the region, including the projects that stand to be developed through the PNW Tribal Energy Program Proposal (*see Appendix A*).
- **CWA Permit Implementation.** Federal agencies (e.g., Corps and BOR, as permittees), where possible, will collaborate with the relevant states, Tribes, and EPA to assess/develop required temperature-focused water quality attainment plans per the state and Tribe’s Clean Water Act Section 401 certifications reflected in EPA’s National Pollutant Discharge Elimination System (NPDES) permits for Federal dams. This will facilitate more effective and efficient review of these water quality attainment plans. For example, a potential near-term action under evaluation to improve conditions for migrating salmon is installing systems to cool the fish ladders at the Federal dams. Other potential actions that the agencies can evaluate include CRS operational changes to reduce warm summer temperatures, especially during times of predicted excessively warm temperatures.

- **CWA Modeling for 401 Certifications.** The Corps will use its modeling, as needed, to simulate certain potential water quality impacts in order to provide that information to the relevant states and Tribes, and to EPA as it complies with its existing 401 water quality certifications.

## Authorizations, Studies, & Timelines

### **Responsive to CBRI Objectives 5 & 6**

- **Objective 5:** *Secure necessary regulatory compliance, authorizations, and appropriations for implementation of the strategy with an urgency reflecting the needs of the fish.*
- **Objective 6:** *Ensure that the strategy proposed in Objective 1 and associated Federal actions “honor Federal Commitments to Tribal Nations” and address past and ongoing inequities related to the Federal hydrosystem to reflect and uphold Federal treaty and trust responsibilities to Columbia Basin Tribes.*

### **USG Commitments**

- **P2IP Regulatory Compliance.** The USG has begun required environmental compliance work and hired a contractor to support reintroduction of salmon in the Upper Columbia.
- **Authorizations and Appropriations.** Information produced through the USG analyses and the recently released Presidential Memorandum will inform budget and appropriations requests, as well as inform any required authorizations.
- **Feasibility Analysis.** See p.8, above.
- **Environmental Analysis Compliance.** The USG commits to working with the Six Sovereigns on potential changes in response to the CBRI such as interim project operations identified in Appendix B, more aggressive advancement of mid- Columbia River habitat restoration, and fish passage. The USG anticipates that supplemental or additional environmental compliance will be required to evaluate and implement some or all of these changes. If so, review and revisions to the current biological opinion and/or additional ESA consultations will likely be required. These supplemental environmental review processes will inform and be informed by the analyses identified above related to the consideration of LSR dam breach. The Federal Government will review existing environmental compliance documents and any additional information provided by the States, Tribes, and other stakeholders and initiate any additional environmental compliance its review determines to be necessary during the fall of 2024. The USG commits to use the 1999 Tribal Circumstances Report (as amended in 2019) and the other Tribal Perspective reports submitted in 2019 and the NOAA Rebuilding Report to inform the need for and content of any supplemental or additional environmental analysis. To the extent feasible, the Federal Government will complete any environmental compliance documents that it determines are necessary within 18 months of initiating them. Nothing in this paragraph alters the USG’s discretion or obligation to engage with other Tribal Nations and regional sovereigns as appropriate.

## Additional Basin-Wide Funding Commitments

### **Responsive to CBRI Objective 1(a)**

- **Objective 1(a):** *“Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to “healthy and abundant levels” consistent with NOAA’s Columbia Basin Partnership Task Force (CBP) and Rebuilding reports.*

### **USG Commitments:**

- **Backlog in Salmon Hatchery Infrastructure Projects.** Treaty and non-treaty, commercial, subsistence and recreational fish harvest for most stocks in the Columbia Basin is fueled primarily by Federal hatcheries - as mitigation for actions in the basin affecting fish, including development of the dams on the Columbia River Hatchery function and maintenance are thus an essential component and responsibility of the USG in operation of the dams. Currently, the CRS has a billion dollar+ backlog in deferred hatchery maintenance (see FN 19 in CBRI). To partially address this backlog, NOAA, as [previously announced](#), will commit \$60 million for high priority Mitchell Act facility needs identified by Tribes and states in the Basin. NOAA is currently engaged in tribal consultations to determine how to also allocate an additional \$240M in IRA hatchery funding to tribes with Federally reserved or adjudicated fishing rights for Pacific Salmon and steelhead. NOAA will allocate this additional funding keeping in mind the fisheries those hatcheries serve.
- **Columbia River Basin Restoration Act Program.** EPA will provide, through 2026, approximately \$85 million toward grants for projects to assess and reduce toxics across the Basin. This includes the recent awards of eight multi-year grants with tribes for nearly \$17 million. These resources will support science and monitoring as well as longer term state, Tribal, and NGO program development. Though the focus of the project is to reduce toxics, EPA expects and regularly sees co-benefits to healthier and more climate resilient habitat.
- **BPA Fish and Wildlife General Funding.** BPA has already planned, through its Fish and Wildlife program, to add at least an additional \$20 million in combined Capital and Expense funding in FY 2024 and FY 2025 for fish and wildlife efforts throughout the Basin on top of commitments laid out above. In addition:
  - \$200M over 10 years in additional capital funding will be made available by Bonneville to the U.S. Fish and Wildlife Service (FWS) for Lower Snake River Compensation Plan (LSRCP) hatchery modernization, upgrades, and maintenance, as guided by the priorities of other fishery managers including the Six Sovereigns.
  - An additional \$100M in funding under the Bonneville Administrator’s authority under 16 U.S.C. § 832a(f) over 10 years for projects that contribute to the restoration of salmon and other native fish populations. To implement this commitment, Bonneville will provide an annual \$10M payment to the Six Sovereigns in a manner to be agreed upon, to distribute to specific projects, as prioritized by the Six Sovereigns. The Six Sovereigns will coordinate with relevant regional sovereigns as appropriate on projects.
  - Nothing in these USG commitments or any implementing agreement is intended to affect BPA’s reimbursement obligations regarding the Columbia River Fish Mitigation and O&M

costs associated with the CRS project funds provided by the Corps or Reclamation. The USG and agencies, however, intend that all other funds committed by the agencies in support of the USG Commitments are non-reimbursable funds by BPA, whether or not expressly stated. The Federal agencies agree to coordinate before incurring any new reimbursable expenditure in support of the USG Commitments.

In the event that Congress appropriates funds that require reimbursement by Bonneville for one of the specific USG Commitments identified in this document, and that type of reimbursement does not arise from BPA's current reimbursement obligations, then that reimbursed amount will count toward Bonneville's total \$300M funding commitment.

- For the specific Bonneville funding commitments in this agreement, Bonneville will use the following approach to address inflation:
  - The \$100M for fish restoration actions will be indexed for inflation based on the GDP Deflator ~~published~~ by the U.S. Bureau of Economic Analysis and will be further described in the associated funding agreement with Six Sovereigns.
  - Inflationary pressures on the \$200M for LSRCF will be addressed on a project specific basis reflecting FWS' annual projected needs and will be further described in the associated funding agreement with FWS.
- **OMB Crosscut Budget.** OMB commits to developing a crosscut, all-of-government, budget that illustrates the Federal funding historically targeted toward Columbia River Basin salmon and steelhead protection and restoration efforts. This crosscut budget will be completed and shared with the regional sovereigns and other Regional Stakeholders, including the Six Sovereigns, by January 2024. This crosscut budget analysis will then help inform prospective annual budgeting and appropriations.
- **Increased Funding in Support of Basin-Wide Restoration.** In addition to the specific additional USG funding commitments herein, which will support centerpiece actions necessary for this basin-wide effort, and continuing Reclamation, Corps, and BPA funding for fish and wildlife accords, BPA intends to continue current funding for its Fish and Wildlife Program, subject to changed circumstances and/or legal requirements. The USG commits to thoroughly evaluate the potential options for increasing non-rate-payer fish restoration funding<sup>13</sup> in the Basin, taking into account the CBRI's recognition that at least a doubling of basin-wide funding is needed to make meaningful progress towards "healthy and abundant" salmon, steelhead, and other native fish rebuilding goals. This evaluation will include a thorough assessment of all available mechanisms without additional rate impacts, through a whole of government approach, including direct congressional requests; increased requests in future Presidential budgets; and other avenues as they may present themselves. This funding will support those actions that the USG and regional sovereigns (including the Six Sovereigns) agree are important, on top of the commitments already outlined in this document, for advancing the recovery of "healthy and abundant" Columbia Basin fisheries consistent with the Sept. 27, 2023 Presidential Memorandum, the NOAA Rebuilding Report, and the CBRI. The Six Sovereigns and

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<sup>13</sup> For clarity, "fish restoration funding" is understood broadly to include funding for any and all actions that would support the restoration of healthy and abundant native fish and shellfish consistent with the Sept. 27, 2023 Presidential Memorandum, the NOAA Rebuilding Report, and the CBRI.

the USG will work together (and with other sovereigns as appropriate) to develop by June 30, 2024 a 10-year basin-wide suite of actions to meet this goal. Project proponents will coordinate actions taken under this commitment with relevant regional sovereigns as appropriate.

- **Budget Workshop.** As part of this work together, OMB will provide Federal budget information to the regional sovereigns, including the Six Sovereigns, to ensure that the regional sovereigns and the USG have a common understanding of applicable Federal processes, and are aligned on how the Administration’s budgeting process works and on potential mechanisms available for potential future additional funding related to the goals of commitments already outlined in this document, for advancing the recovery of “healthy and abundant” Columbia Basin fisheries consistent with the Sept. 27, 2023 Presidential Memorandum, the NOAA Rebuilding Report, and the CBRI; delivering affordable and reliable clean power; and meeting the many resilience needs of stakeholders across the region.

### Fisheries Management & Other Partnership Commitments

- **Fish & Wildlife Mitigation Management Reforms.** NOAA and FWS will work with the Six Sovereigns and all other relevant regional sovereigns, and seek collaboration with the NPCC, to consider management reforms to Columbia Basin fish and wildlife mitigation programs. The conversation will identify options for increased tribal and state co-management within the scope of existing legal authorities and coordination with Federal fisheries services, as well as any impediments and opportunities to maximize the beneficial impacts of available fish and wildlife funding. The conversation will be initiated no later than January 2024, and recommendations will be developed no later than September 2024.
- **Fish & Wildlife Contracting Reforms:**
  - The USG will work with the Six Sovereigns, and other regional fish and wildlife mitigation project implementers, and regional stakeholders as appropriate, to identify and implement fish and wildlife mitigation contract efficiencies and flexibilities in a manner that respects state and tribal fish and wildlife expertise regarding mitigation and restoration project implementation, subject to applicable Federal law. In support of this objective, Bonneville commits to near-term changes in support of the Six Sovereigns’ autonomy over fish and wildlife actions by:
    - Bonneville agrees that the Six Sovereigns shall collectively and autonomously determine their priorities for the \$100M over 10 years described above. Annual \$10M payments of these funds will be made directly as described above, vs. through the traditional Bonneville procurement process.
    - In addition, Bonneville will initiate a pilot with the Six Sovereigns to expand the use of grant and multi-year agreements within the Six Sovereigns’ portfolio of projects in Bonneville’s Columbia Basin Fish and Wildlife Program as appropriate, based on the type of planned work. Implementation of the pilot will begin in FY25 and would replace eligible, current agreements as they expire. Bonneville estimates that roughly a third of the current Six Sovereign portfolio could be applicable for the pilot.
  - DOI (and other Federal agencies, as appropriate) will work with the tribal parties to explore opportunities for federal contracting reforms to support more appropriate Federal-Tribal

funding instruments and policies to better reflect the unique relationship that occurs when the Federal government provides funds to tribes working to mitigate historic impacts to their Treaty and trust resources.

- ***Continued Administration Engagement.*** The USG will continue to engage with the Six Sovereigns, and other regional sovereigns and stakeholders as appropriate, regarding the CBRI's recommendations, and will ensure that EOP staff and senior Administration officials are available to coordinate and lead these discussions on behalf of the USG. As the USG advances its commitments in response to the CBRI in partnership with the Six Sovereigns, EOP staff and senior Administration officials will act as the coordinating center for advancing the Administration's comprehensive strategy for the Columbia Basin.

## Appendix A

### DOE Energy Program Proposal: Advancing Tribal Energy Sovereignty in the Pacific Northwest

The Department of Energy (DOE) is committed to Tribal Energy Sovereignty in the Pacific Northwest (PNW). Policy decisions that assist in meeting regional and national climate change goals<sup>14</sup> are also important to recovery of ESA listed species., as the 2022 report by the National Oceanic and Atmospheric Administration (NOAA), “Rebuilding Interior Columbia Basin Salmon and Steelhead,” notes, “The growing frequency and magnitude of climate change related environmental downturns will increasingly imperil many ESA-listed stocks in the Columbia River basin and amplify their extinction risk (Crozier et al. 2019, 2020, 2021).”

To this end, DOE proposes funding and supporting a “PNW Tribal Energy Program” to provide technical assistance, planning, and funding (subject to appropriate DOE funding procedures) to the four Lower Columbia River Tribes<sup>15</sup> (the “LRTT’s”) to plan and develop clean, renewable, socially-just energy resources (to include distributed energy resources (including efficiency and demand response), other generation, storage, and transmission resources) in the region. DOE will work with LRTTs individually and collectively to support quantified goals for energy project development, presumed to be at least 1,000-3,000 MW of clean energy resources, and to determine the role LRTTs want to take with regard to various projects (e.g., individual or collective ownership, leasing, power procurement, etc.). This Pacific Northwest (PNW) Tribal Energy Program will run in parallel with ongoing DOE assistance and resources related to tribally supported projects that are under development outside of the PNW Tribal Energy Program and nothing in this USG commitment is intended to be exclusive to PNW Tribal Energy Program protects or limit resources to Tribally-supported projects that are not identified by a Tribe as part of the PNW Tribal Energy Program. As conceptualized, this PNW Tribal Energy Program will work in parallel with the regional energy planning process described below, to which DOE will also contribute funding and support, to help achieve the energy goals of the Pacific Northwest and facilitate Tribally-owned clean energy resources in the region.

DOE will draw on its ability to support this proposal and regional clean energy efforts by having a dedicated Project Manager that will coordinate with the LRTT’s Tribal managers, DOE labs, and state energy managers. Additionally, DOE is uniquely situated to support Tribal and regional clean energy goals through the expertise and technical assistance programs available in its Grid Deployment (GDO), Energy Efficiency and Renewable Energy (EERE), Indian Energy Policies and Programs (IE), and Loan Programs (LPO) Offices, as well as the Pacific Northwest National Laboratory (PNNL), the National Renewable Energy Laboratory (NREL), and potentially other labs.

The specific scope and nature of the PNW Tribal Energy Program —for example, whether Tribal Nations prefer to work more collectively or individually, or where on the spectrum of long-term

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<sup>14</sup> See Fifth National Climate Assessment, available at <https://nca2023.globalchange.gov/>.

<sup>15</sup> The Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation and the Nez Perce Tribe.

planning to specific project development they want to focus—will determine the best options for how DOE can support and structure it. This will also factor in to the timing of the Program’s implementation. DOE will design the program of work in full partnership with the Tribes, which will be memorialized in writing and co-signed by Tribal and Department Leadership by the end of March 2024. After an agreed upon scope, a senior DOE official will be designated by Department Leadership to manage these efforts and work with Tribal energy counterparts to ensure the actualization of projects through the PNW Tribal Energy Program.

One form that this PNW Tribal Energy Program could take is described below, with two discrete but interrelated parts:

### 1. Tribal Energy Sovereignty Resource Planning Process

This process would be designed to meet the Tribes where they are and help them reach where they want to go. It would start with working with the Tribes to develop appropriate goals for the quantity and type of energy resources the Tribes choose to prioritize. This includes supporting long-term energy sovereignty visions that are already in development, as well as helping develop new plans for Tribal Nations that either do not have them or would like technical assistance in updating or advancing existing plans for clean energy, storage, energy efficiency, and transmission or grid reliability projects (e.g., microgrids).

This planning process and the regional energy needs planning process (below) would be funded by GDO and potentially EERE, IE, or the Office of Clean Energy Demonstrations. It would be executed by PNNL and NREL in collaboration with other regional experts.

Transmission, generation, and storage work – for both this Tribal Energy Sovereignty Resource Planning Process and the Supplemental Regional Energy Needs Planning Process (below) could be modeled in part on the PR100 and LA100 studies, in which the DOE leveraged its network of National Laboratories with advanced planning and modeling capabilities to serve as trusted unbiased conveners and coordinators among major energy stakeholders. With these studies, they performed engineering and economic analysis for Puerto Rico and for Los Angeles Department of Water and Power (LADWP) to identify multiple paths to achieve a 100 percent renewable and carbon-free grid. This work was led by NREL and involved PNNL and several other Labs. Another potential model for this approach is the EERE’s [Clean Energy to Communities](#) program. DOE is committed to customizing a similar process for Tribal energy projects in the region.

The DOE will work with the Tribes to design a mechanism that permits them to create a portfolio of energy projects. This portfolio should be eligible for funding both by the TELGP (Tribal Energy Loan Guarantee Program) and additional funding sources, allowing tribes to route these finances through their established energy funds dedicated to supporting the portfolio.

Any (non-Tribal) projects funded by DOE will be required to develop Community Benefits Plans that include, among other elements, meaningful engagement with communities, including Tribes (and including Tribal consultation, consistent with [Presidential Memorandum](#) of November 30, 2022), and documented benefits for energy justice communities, including Tribes.

## 2. Tribal Energy Sovereignty Project Development

In addition to the collaborative development of a LRTT's goals for energy sovereignty and plans for meeting their goals, DOE proposes to work with the Tribes to advance energy projects (including, but not limited to, those resulting from planning processes). Development of these projects would be "parallel tracked" in that it would not wait for the regional energy planning process (other than perhaps for particular types of projects, e.g., where nature or location of projects is specific to the services provided by the LSR dams).

This would consist of:

**Targeted technical assistance by DOE, its National Labs (specifically PNNL and NREL), and third-party experts to help advance project concepts through the development process.** DOE would focus on how best the Tribes can take into account new project economics made possible by the tax credits in the IRA. This includes new direct-pay tax provisions, bonus investment and production tax credit incentives, and related policies, such as Federal preference for power from Tribal projects.

**Accounting for Tribal energy projects as "replacement" power.** In coordination with the Six Sovereigns, the USG and DOE will develop a means of "accounting" for the region's development of resources available to serve as "replacement"<sup>16</sup> energy services for the lower Snake River dams, based on the particular services needed in the event Congress authorizes dam breach. This accounting mechanism will be developed no later than February 1, 2024, to be coordinated with the regional energy needs planning process. This accounting mechanism will track the availability, as of the date of these commitments and beyond, of regional resources that can contribute to replacement of the dams' energy services. The Regional Energy Needs Planning Process described below, specifically its scenarios for regional clean energy development that include replacement power in the event Congress authorizes breach of the LSR dams, will identify portfolios of potential replacement resources (as well as energy resource options, e.g., storage, efficiency or transmission, that could enable greater grid management flexibility to manage the hydropower system for greater fish benefit, as well as reliability, affordability, decarbonization and other regional goals during the interim period before breach is authorized). The "accounting" approach would provide regular updates on the region's development of clean energy resources, including the type of resources needed to replace the specific energy services of the LSR dams, as compared to the portfolios identified in the energy analysis. The "accounting" approach will document the totality of clean energy development in the region, presumably including resources in development prior to and/or as of the time of signing of any agreement among the US Government and the Six Sovereigns.

DOE would also work with Tribes, if requested, to identify project structures, contracting, funding and transmission arrangements that could facilitate commercial development of energy services, such as generation, storage, demand response and transmission, that could contribute to replacement of energy services in the event Congress authorizes breach of the LSR dams. Of particular note may be the need for structuring near-term sale of power—to ensure near-term revenues and to improve the credit-worthiness of the projects and other economic benefits to

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<sup>16</sup> Note that under BPA statutes, the term "replacement" has a specific statutory meaning (see, 16 USC 839a(10)(C)); throughout this document, the terms "replacement" and "replacement power" are not intended to reference the statutory term.

LRTTs—while allowing for future sale of power to replace the energy services of the LSR dams. DOE would additionally work with the Tribes to explore options for speeding interconnection of projects to the transmission grid and making such connections cost-competitive, recognizing the interconnection is under the purview of grid operators and BPA’s reforms to interconnection processes are addressed below. DOE would additionally work with the Tribes to fully explore legal and regulatory options for speeding interconnection of projects to the transmission grid.<sup>17</sup>

**Targeted technical assistance to identify and develop funding strategies for projects.** DOE would work with the Tribes to map specific projects on to all the present and future funding opportunities available to them within DOE and other Federal agencies (e.g., USDA and EPA programs), including those made possible by the Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law (BIL). Potential funding opportunities at DOE include but are not limited to—

- Grid resilience grant funding through the GDO provides \$2.3 million in grants to modernize the electric grid, thereby reducing the consequences of disruptive events. Through this program, DOE will provide up to \$459 million annually over five years to states and Tribes to help fund projects that modernize transmission systems and strengthen them against extreme weather and other hazards such as wildfires.
- Energy Efficiency and Conservation Block Grants from the Office of State and Community Energy Programs provides \$5.5 million of formula and competitive grants that can assist Tribes in implementing strategies to reduce energy use and fossil fuel emissions and to improve energy efficiency.
- Electric Appliance Rebates from the Office of State and Community Energy Programs provides \$225 million in formula grants to Tribes to administer rebates for installing efficient electric technology into low- and medium-income single- and multi-family homes.
- The Energy Improvement in Rural and Remote Areas program in the Office of Clean Energy Development provides \$1 billion to support improving the resilience, reliability, and affordability of energy systems in rural and remote areas.
- The Loan Programs Office has \$20 billion to lend to Tribes for energy investments (see below for more information).

**Partnering with DOE’s Loan Programs Office (LPO) to specifically scope, develop, and fund projects or package of projects that will benefit from the \$20 billion available through the [Tribal Energy Loan Guarantee Program](#).** This is one of the only non-competitive programs at DOE that can invest in or fund project development, and DOE has recently gotten Congress to make several key changes to the program that make it far more accessible to Tribal Nations than in prior years. This low-cost capital, combined with the direct-pay tax credit option, makes ownership of energy infrastructure easier for a greater number of Tribes. Direct pay functionally reduces the overall cost of the energy project by allowing Tribal governments and other entities exempt from income tax to receive a direct payment from the IRS in lieu of a clean energy tax credit. While not a grant, the combination of a loan with direct pay functions similar to a grant.

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<sup>17</sup> BPA must follow its Open Access transmission tariff which imposes non-discriminatory terms and conditions

Tribes are able to use a loan from the Tribal Energy Loan Guarantee Program for a broad range of technologies and uses, including solar and wind generation, energy storage, and hydrogen conversion for community and commercial use. Tribes can apply independently or in co-ownership arrangements to develop projects on and off Tribal lands. LPO, in conjunction with other DOE Offices, would offer support to help plan, scope, and develop larger-scale clean energy, storage, and/or transmission projects that could be jointly owned by multiple tribes for this program, which specifically looks to cultivate projects or packages of projects that are eligible.

#### **Additional Implementation Details for the PNW Tribal Energy Program Proposal**

**Funding.** The Tribal Energy Sovereignty Resource Planning Process and the Regional Energy Needs Planning Process would be funded by GDO and potentially EERE, IE, or the Office of Clean Energy Demonstrations. The exact funding amount would be determined in further discussion and scoping with the Tribes and states.

**DOE Program Leads.** As stated above, DOE would designate a Project Manager to oversee this proposal. The Tribal Energy Sovereignty Resource Planning Process and the Regional Energy Needs Planning Process would be executed by PNNL and NREL in collaboration with other regional experts. Transmission assessment and planning work would be led by GDO and be based on the [National Transmission Needs Study](#), the National Transmission Planning Study, and the West Coast Offshore Wind Transmission Study.

If the Tribes choose to pursue the Tribal Energy Sovereignty long-term planning process along the lines of the work done under an MOU between the Secretary of Energy and the Navajo and Hopi Nations (see below), the Office of Indian Energy Policies and Programs would likely guide that process.

**Memorandum of Understanding.** DOE proposes defining and further guiding the direction of this PNW Tribal Energy Program Proposal through the co-development of an MOU. This MOU could be modeled on the MOU signed by Secretary of Energy Jennifer Granholm and Navajo Nation President in December 2022. The Navajo Nation MOU provides a framework for collaboration among the Navajo Nation, DOE, and other Federal agencies to define and energy vision and plan, including scoping specific energy transition and economic diversification projects that can take advantage of the BIL and IRA competitive funding and other opportunities. To date, the work has resulted in over 30 identified projects to pursue and included interagency participation from USDA, DOT, EPA, DOI and others. The program reports that under this project, Tribal government leadership, Tribal staff, Tribal enterprises, Tribal colleges, non- profits and community members have worked together towards goals of Nation and communicated in the same room.

### Sub-Appendix: Relevant Programs in Other Federal Agencies

Through the PNW Tribal Energy Program, DOE would work with other Federal agencies to identify prospective funding opportunities that would help fund Tribal projects. Examples of these other Federal programs are below.

#### U.S. Department of Agriculture (USDA)

As stated in the USG commitments above, the USDA is dedicated to supporting Tribally-owned clean energy projects through the Powering Affordable Clean Energy (PACE) Program and Rural Energy for America Program (REAP).

[The Rural Energy for America Program \(REAP\)](#) offers grants and guaranteed loans to agricultural producers and small businesses, including Tribes and Tribal businesses, in rural areas. REAP funds can be used for Tribally-owned renewable energy systems or energy-efficient infrastructure upgrades and provide grants for up to 50 percent of the total project costs for Tribes. Grants for clean energy and energy efficiency projects can be anywhere from \$1,500 to \$1 million in size. USDA is prepared to provide technical assistance support to the Columbia River Basin Tribes with the goal of identifying and putting together applications for at least 10 REAP projects in the region. This assistance could be provided through the new FY 2023 competitive REAP Technical Assistance Grant (TAG) program. TAG grants can cover 100 percent of the costs of conducting energy assessments and audits and planning, building, and developing those projects. Alternatively, the Tribes could choose an entity to provide them with this technical support, and USDA can enter a cooperative agreement with that organization to complete their REAP projects.

#### Environmental Protection Agency (EPA)

[The Solar for All grant competition](#) makes available \$7 billion to expand the number of low-income and disadvantaged communities primed for residential solar investment. It will award up to 60 grants to states, territories, Tribal governments, municipalities, and eligible non-profits to create and expand low-income solar programs. These programs will provide financing and technical assistance to enable low-income and disadvantaged communities to deploy and benefit from residential solar. Tribes and Intertribal Consortia will need to submit a Notice of Intent (NOI) by August 28, 2023 to eligible to apply.

[The National Clean Investment Fund](#) has \$14 billion to provide grants to 2–3 national non-profit clean financing institutions or green banks capable of partnering with the private sector to provide accessible, affordable financing for tens of thousands of clean technology projects across the country. Grantees will be required to use at least 40 percent of grant funds for the purposes of providing financial assistance in low-income and disadvantaged communities, including geographic areas within Tribal lands. While Tribes will not be direct recipients of these grants, they will be able to access this low-cost financing system to support the buildout of clean energy.

[The Clean Communities Investment Accelerator](#) competition will provide grants to 2–7 hub non-profits that will, in turn, deliver funding and technical assistance to build the clean financing capacity of local community lenders working in low-income and disadvantaged communities—so that underinvested communities have the capital they need to deploy clean technology projects. These community lenders could include community development financial institutions (including Certified Native CDFIs), credit unions, green banks, housing finance agencies, minority depository institutions, and other types of lenders. This competition will require each grantee to expend 100

percent of funds for the purposes of providing financial and technical assistance in low-income and disadvantaged communities, including geographic areas within Tribal lands. While Tribes will not be direct recipients of these grants, they will be able to access this low-cost financing system to support the build out of clean energy.

### **Department of Interior (DOI)**

[The Tribal Electrification Program](#) received \$145 million in the IRA. This is a new program focused on electrifying Tribal homes and may include funding for the deployment of microgrids on Tribal lands.

### [DOE Energy Program Proposal: Regional Energy Needs Planning Process](#)

DOE will jointly fund with Washington, and co-convene with LRTTs and states, a regional analysis- and stakeholder engagement-based planning process designed to advance the resource development and infrastructure investment (in generation, transmission, storage, efficiency, and demand response resources, including distributed resources) that will be required to meet the region's economy-wide decarbonization and resource adequacy requirements and goals. The process will develop one or more scenarios for potential combinations of specific resources capable of replacing the energy services of the LSR dams in the context of meeting the region's decarbonization goals in the event Congress authorizes power replacement and breach of the dams. This regional planning process is a key component to accelerating the regional infrastructure investment and buildout necessary to both meet regional decarbonization goals and to identify the combination of projects that would meet regional energy needs if Congress authorizes dam breach.

This regional analysis will be a collaboration among the U.S. Government, Tribes, States, and other key regional stakeholders (e.g., significant transmission owners and operators, utilities, clean energy developers, and NGOs). The process will be co-convened by Washington and Oregon, Tribes, and DOE. PNNL and potentially other DOE National Labs will lead the technical analysis and will partner with BPA, the Northwest Power and Conservation Council, States, and Tribes, and engage with key stakeholder.<sup>18</sup> **DOE will seek to support adding Tribal capacity for expert engagement in this process, and will explore pathways to doing so.**

The process would focus in particular on identifying medium- and long-term transmission and grid infrastructure needs and will also develop a more granular assessment of which resources in which locations, including distributed energy resources, can best meet the region's goals, while taking account of, and assessing where appropriate, other regional energy issues such as regional market formation. It would identify candidates for clean, non-emitting firm (flexible, dispatchable) resources (e.g., geothermal, long-duration storage).

Additionally, DOE will develop a detailed plan to provide targeted technical assistance, if requested, for planning and financing options for BPA customer utilities to develop new, clean energy resources and transmission.

**Accounting for "replacement" power.** In coordination with the Six Sovereigns, the USG and DOE will develop a means of "accounting" for the region's development of resources available to serve as

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<sup>18</sup> This may include engagement with utilities, transmission owners and operators, clean energy developers, and/or nongovernmental organizations.

“replacement” energy services for the lower Snake River dams, based on the particular services needed in the event Congress authorizes dam breach. This accounting mechanism will be developed no later than February 1, 2024, to be coordinated with the regional energy needs planning process. This accounting mechanism will track the availability, as of the date of these commitments and beyond, of regional resources that can contribute to replacement of the dams’ energy services. The Regional Energy Needs Planning Process, specifically its scenarios for regional clean energy development that include replacement power in the event Congress authorizes breach of the LSR dams, will identify portfolios of potential replacement resources (as well as new energy resource options, e.g., storage, efficiency, or transmission, that could enable greater grid management flexibility to manage the hydropower system for greater fish benefit, as well as reliability, affordability, decarbonization and other regional goals during the interim period before breach is authorized). The “accounting” approach would provide regular updates on the region’s development of clean energy resources, including the type of resources needed to replace the specific energy services of the LSR dams, as compared to the portfolios identified in the energy analysis.

### 1. Bonneville Power Administration Work to Accelerate Clean Energy Build-Out

***In accordance with the Presidential Memorandum dated September 27, 2023 entitled Restoring Healthy and Abundant Salmon, Steelhead, and Other Native Fish Populations in the Columbia River Basin, the following commitments describe initial steps the Bonneville Power Administration and the Department of Energy will take to contribute to the goals of this agreement and the Memorandum.*** DOE would continue to support the Bonneville Power Administration (BPA)’s ongoing efforts to update and modernize policies and practices to enable its customers and the region to access the benefits of affordable, reliable clean energy. BPA’s actions, including but not limited to the provider of choice contract policy and contracts and BPA’s resource acquisition planning processes and decisions, including decisions around augmenting the amount of power sold at Tier 1 rates, will account for changes in load, new clean energy generation and transmission needs, and changing hydropower system conditions, consistent with the Presidential Memorandum as well as the Northwest Power Act and other law. This would include, but is not limited to:

- Prioritizing the acquisition of cost-effective energy efficiency and considering demand response resources, consistent with the Northwest Power Act and, as appropriate, the Northwest Power and Conservation Council’s Power Plan and updates to it, and to explore, along with the Council via the regional energy planning process, ways to better take advantage of demand-side resource potential;
- Continuing BPA’s recently announced transmission buildout<sup>19</sup> using its recently increased borrowing authority and continuing to explore additional near-term transmission projects for potential use of its borrowing authority as appropriate, and looking to the regional planning process described above and to the Western Power Pool Process described below to consider and pursue where appropriate additional medium- and long-term transmission development to help the region meet transmission needs, consistent with its legal authority. BPA has led the initiation of a regional process, and will continue to participate in the process led by the Western Power Pool, to build consensus among transmission stakeholders on infrastructure priorities as well as on timelines and responsibilities for development.

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<sup>19</sup> Subject to NEPA and other applicable laws.

- Continuing to advance reforms to BPA’s interconnection processes to more efficiently enable new clean energy generation to gain access to the transmission system, aiming to significantly speed the interconnection process and identifying tools and means for more efficient use of existing transmission;
- Consistent with its statutory and other legal requirements and authorities: (1) as part of energy needs assessment planning processes (including considering the regional energy needs planning process) and subsequent necessary resource acquisition, BPA will consider acquisition of new clean energy resources in the region as well as new clean energy resources developed by BPA customer utilities; and (2) BPA will seek to support customer utilities meeting load growth and new and emerging needs. DOE will provide technical assistance to help address barriers to development and acquisition of clean energy resources to help meet state policy goals.
- Nothing in BPA’s contract for sales of power shall limit the Administrator’s authority to acquire power consistent with the NWPA, including “replacement power” as defined in this document, in the event any Federal resources become unavailable.
- When considering resource acquisitions necessary to meet the Administration’s obligations, BPA shall consider purchases of power generated by Tribally-owned or -sponsored power resources, as appropriate, consistent with the Tribal Preference Authority, which allows Federal agencies to prioritize purchasing Tribally-owned energy.

## Appendix B

### COLUMBIA RIVER SYSTEM OPERATIONS: 2024-2033

#### SPRING SPILL OPERATIONS

|                        | Operation (2024–2033)  | Implementation Comments   |
|------------------------|--|---|
| <b>Season</b>          | <b>4/3 to 6/20</b>   |   |
| Lower Granite (LWG)    | 125% TDG Gas Cap (or 40% when adult passage delays are detected) <sup>20</sup>   | See adult delay protocol below.   |
| Little Goose (LGS)     | 125% TDG gas cap spill for 24 hours (to adult criteria), no flexible spill, <sup>21</sup><br>125% TDG gas cap spill for 16 hours,<br>30% for 8 hours   | Maintain similar implementation language from 2023 FOP with operational flexibility of target timeframes to reduce spill for adult passage during lack of load conditions.<br><br>LGS operations at 30% for 8 hours during daytime hours will be prioritized if adult delays occur at LWG or LMN and lack of load conditions exist (like 2023 FOP).   |
| Lower Monumental (LMN) | 125% TDG Gas Cap (or 40% when adult passage delays are detected)   | See adult delay protocol below.   |
| Ice Harbor (IHR)       | 125% TDG gas cap spill for 24 hours  | Like operations implemented in 2023.  |
| <b>Season</b>          | <b>4/10 to 6/15</b>  |   |
| McNary (MCN)           | 125% TDG gas cap spill for 24 hours<br><br>Maintain current minimum generation range of 50-60 kcfs for transmission services; powerhouse outflows may increase up to 80 kcfs for reserves (without a spill variance) | Increased powerhouse generation allowances will allow for additional generation to be brought on-line for the purpose of providing real-time operators greater access to reserve capacity prior to requiring variance tracking or declarations of power system emergency. As needed, these ranges will be utilized under low flow conditions (e.g., minimum generation and spill the rest) and when flexibility elsewhere has been maximized. |

<sup>20</sup> The agencies will use the current Columbia River DART’s Reach Distribution and Delay for PIT Tag Adult Returns tool (“DART tool”) to identify adult delays and passage issues.

<sup>21</sup> LGS Adult Criteria: Within 1 business day of when the earliest of the following conditions occurs: (1) a cumulative total of 25 adult spring Chinook salmon (not including jacks) pass Lower Monumental Dam; or (2) a cumulative total of 50 adult spring Chinook salmon (not including jacks) pass Ice Harbor Dam; or (3) April 24, 2024. See 2023 FOP.

|                             |  |  |
|-----------------------------|--|--|
| <p>John Day<br/>(JDA)</p>   | <p>Spill during daytime hours 40% and increased spill up to 125% TDG gas cap spill during nighttime hours (following 2023 FPP JDA-5 table where nighttime hours defined and generally between 2200 and 0600)</p>   | <p>Increased powerhouse generation allowances will allow for additional generation to be brought on-line for the purpose of providing real-time operators greater access to reserve capacity prior to requiring variance tracking or declarations of power system emergency. As needed, these ranges will be utilized under low flow conditions (e.g., minimum generation and spill the rest) and when flexibility elsewhere has been maximized.</p> |
|                             | <p>Daytime hourly spill target of 40% river flows with <math>\pm 5\%</math> variance of river flows for balancing reserves, consistent with current spill variance tolerance calculations</p> <p>The Corps sets JDA spill caps to maximize spill, up to 125% TDG in the tailwater of JDA and TDA and to maintain TDA spill at 40%</p> <p>Maintain current minimum generation range of 50-60 kcfs for transmission services; powerhouse outflows may increase up to 80 kcfs for reserves (without a spill variance)</p> |  |
| <p>The Dalles<br/>(TDA)</p> | <p>40% for 24 hours</p> <p>Allocation of reserves may result in spill above 40% of river flows; maintain current minimum generation range of 50-60 kcfs for Transmission services</p>  | <p>Like operations implemented in 2023.</p>  |
| <p>Bonneville<br/>(BON)</p> | <p>125% TDG gas cap spill for 24 hours (150 kcfs cap)</p> <p>Maintain current minimum generation range of 30-40 kcfs for Transmission services; powerhouse outflows may increase up to 60 kcfs for reserves (without a spill variance)</p>   | <p>Increased powerhouse generation allowances will allow for additional generation to be brought on-line for the purpose of providing real-time operators greater access to reserve capacity prior to requiring variance tracking or declarations of power system emergency. As needed, these ranges will be utilized under low flow conditions (e.g., minimum generation and spill the rest) and when flexibility elsewhere has been maximized.</p> |

**Reserves:** Spill reductions to maintain reliability will continue to be implemented as described in the Fish Passage Plan and when powerhouse flows exceed the ranges proposed above by the USG at each of the lower Columbia River projects, spill variances will be reported.

**SUMMER SPILL OPERATIONS**

|                        | <b>Operation (2024–2033)</b>   | <b>Implementation Comments</b>  |
|------------------------|--|---|
| <b>Season</b>          | <b>6/21 to 7/31</b><br><b>8/1 to 8/31</b>  |   |
| Lower Granite (LWG)    | 18 kcfs<br>SW flow (as river flow allows)  | Reducing summer spill flows on August 1 from 18 kcfs to SW flow (as river flow allows)  |
| Little Goose (LGS)     | 30%<br>SW flow or 7 kcfs spill   | Reducing summer spill flows on August 1 from 30% to SW flow (or 7 kcfs spill)   |
| Lower Monumental (LMN) | 17 kcfs<br>SW flow or 8 kcfs spill   | Reducing summer spill flows on August 1 from 17 kcfs to SW flow (or 8 kcfs spill)   |
| Ice Harbor (IHR)       | 30%<br>SW flow or 9 kcfs spill   | Reducing summer spill flows on August 1 from 30% to SW flow (or 9 kcfs spill)   |
| <b>Season</b>          | <b>6/16 to 7/31</b><br><b>8/1 to 8/31</b>  |   |
| McNary (MCN)           | 57%<br>20 kcfs   | Reducing summer spill flows on 8/1 57% to 20 kcfs<br><br>Like spring operations, increased powerhouse generation allowances will allow for additional generation to be brought on-line for the purpose of providing real-time operators greater access to reserve capacity prior to requiring variance tracking or declarations of power system emergency. As needed, these ranges will be utilized under low flow conditions (e.g., minimum generation and spill the rest) and when flexibility elsewhere has been maximized.<br><br>USG will release 57% of river flows based on previous days average flow to minimize gate changes until spill gate/crane repairs are complete. |
| John Day (JDA)         | Daytime spill hourly target average of 35% river flows with $\pm 5\%$ variance of river flows for balancing reserves, consistent with current spill variance tolerance calculations<br><br>20 kcfs | Reducing summer spill flows on 8/1 35% to 20 kcfs.<br><br>Hourly spill of 35% with range of $\pm 5\%$ for reserves (without spill variance).  |

|                     |                    |  |
|---------------------|--------------------|--|
| The Dalles<br>(TDA) | 40%<br>30%         | Reducing summer spill flows on August 1 40% to 30%.<br>Provide a target spill of 40% (or 30% in late summer) with range of $\pm 5\%$ for reserves. |
| Bonneville<br>(BON) | 95 kcfs<br>50 kcfs | Reducing summer spill flows on August 1 from 95 kcfs to 50 kcfs.   |

**FALL/WINTER SPILL OPERATIONS**

|                        | <b>Operation (2024–2033)</b>  | <b>Implementation Comments</b>  |
|------------------------|---|---|
| <b>Season</b>          | <b>9/1 to 11/15, 3/1 to 3/20</b><br><b>3/21 to 4/2</b>  |   |
| Lower Granite (LWG)    | Surface weir (SW) spill 7 days per week, for 4 hours (9/1 to 11/15, 3/1 to 3/20)<br>SW spill 24 hours (3/21 to 4/2) |   |
| Little Goose (LGS)     | SW spill 7 days per week, for 4 hours (9/1 to 11/15, 3/1 to 3/20)<br>SW spill 24 hours (3/21 to 4/2)                |   |
| Lower Monumental (LMN) | SW spill 7 days per week, for 4 hours (9/1 to 11/15, 3/1 to 3/20)<br>SW spill 24 hours (3/21 to 4/2)                |   |
| Ice Harbor (IHR)       | SW spill 7 days per week, for 4 hours (9/1 to 11/15, 3/1 to 3/20)<br>SW spill 24 hours (3/21 to 4/2)                |   |
| <b>Season</b>          | <b>9/1 to 11/15, 3/1 to 3/20</b><br><b>3/21 to 4/9</b>  |   |
| McNary (MCN)           | 1 SW spill 7 days per week, for 4 hours (9/1 to 11/15, 3/1 to 3/20)<br>1 SW spill 24 hours (3/21 to 4/9)            |   |
| John Day (JDA)         | No surface spill in fall-winter, except for 1 SW spill 24 hours (3/21 to 4/9 <i>only</i> )                          | Overshoot monitoring at JDA should continue to inform potential adaptive management.<br>Not implementable to open and close SW daily. |

|                  |  |  |
|------------------|--|--|
| The Dalles (TDA) | ITS 24/7 spill of ~3-5 kcfs spill from 3/1 to 12/15; continue adult ladder spill |  |
| Bonneville (BON) | B2CC (like 2023 coordinated spring operation); ITS full year for 24 hours        | Codify recent changes to BON made through regional processes; addressing surface passage 24/7 for 365, including work with regional sovereigns to address issues and concerns on B2CC. |

**Additional Information/Explanation** — No change to fall-winter operations at JDA, TDA or BON.

### RESERVOIR ELEVATIONS

|                        | Operation (2024–2033)  | Implementation Comments   |
|------------------------|--|---|
| <b>Season</b>          | <b>4/3 to 8/14 (LGS, LMN, IHR)</b><br><b>4/3 to 8/31 (LWG)</b> | <b>No change to operations at LGS, LMN, and IHR</b>   |
| Lower Granite (LWG)    | 733-734.5'   | Will operate at MOP with a 1.5 foot forebay operating range and a 1.0 foot range to the extent possible (referred to operationally as a “soft constraint”). |
| Little Goose (LGS)     | 633-634.5'   | See LWG explanation   |
| Lower Monumental (LMN) | 537-538.5'   | See LWG explanation   |
| Ice Harbor (IHR)       | 437-438.5'   | See LWG explanation   |
| <b>Season</b>          | <b>4/3 to 8/14</b>   | <b>No change to operations at MCN, JDA, TDA and BON.</b>  |
| McNary (MCN)           | 337-340'   |   |

|                     |   |  |
|---------------------|---|--|
| John Day<br>(JDA)   | 262-266.5 (3/1-3/14)<br>262.5-266.5 (3/15-4/9)<br>264.5-266.5 (4/10-6/1)<br>262.5-266.5 (6/2-6/14)<br>262.5-264.5 (6/15-8/31) |  |
| The Dalles<br>(TDA) | 157-160'  |  |
| Bonneville<br>(BON) | 71.5-76.5'  |  |

**MISCELLANEOUS**

| Miscellaneous    | USG Operation<br>(2024–2033) |
|------------------|------------------------------|
| Zero Generation. | Continue 2023<br>Operations  |

**Adult Migration Delay Protocol for Spring Spill Operations at Lower Granite and Lower Monumental projects**

Lower Granite and/or Lower Monumental daytime spill levels will be decreased to 40% for 8 hours per day when adult delay or passage issues are observed at both/either of these projects. An adult delay or passage issue occurs when the following three criteria are met: (1) *fewer than* 50% of the daily cohort of PIT tagged adult spring/summer Snake River Chinook detected at the downstream project (i.e., Ice Harbor or Little Goose dams) arrive at the upstream project (i.e., Lower Monumental or Lower Granite dams) within 3 days and this pattern persists for 3 consecutive days,<sup>22</sup> (2) a running 3-day minimum of 7 PIT tagged adult spring/summer Snake River Chinook salmon are detected at the downstream projects,<sup>23</sup> and (3) if the upstream dam’s average outflow was below 160 kcfs each day of the delay.

If all three criteria are met, the Corps will implement a 40% daytime spill operation (adult daytime spill operation) and continue for 3 consecutive days. Information on the three criteria

<sup>22</sup> The return to 125% TDG spill 24/7 will be triggered if 50 percent or more of the running 3-day cohort for the most recent day (e.g., day 3 of adult daytime spill) is detected at the upstream dam. The agencies will use Columbia River DART’s Reach Distribution and Delay for PIT Tag Adult Returns tool for this purpose.

<sup>23</sup>The agencies will use the current Columbia River DART’s Reach Distribution and Delay for PIT Tag Adult Returns tool (“Running 3-day DART tool”) to determine if criteria one and two have been met. See top panel, in- season graphics of Cumulative Arrival Percent by Days in Route to Lower Granite or Lower Monumental dams. [https://www.cbr.washington.edu/dart/query/pitadult\\_reachdist](https://www.cbr.washington.edu/dart/query/pitadult_reachdist)

would be available on day 4 and the adult daytime spill operation would begin the following business day (day 5) with a targeted start time between 0400-0800 if feasible.

Assuming *greater than* 50% of the daily cohort of PIT tagged adults arrive at the upstream project by day 3 (information available on day 4),<sup>19</sup> then standard operations (125% TDG spill 24/7) would be reinstated the following business day (day 5). If greater than 50% of the daily cohort does NOT arrive at the upstream project by day 3 and project average flow was below 160 kcfs, adult daytime spill operations would continue an additional day, and would be evaluated again the following day as previously described. This would continue until the adult delay or passage issue has been resolved and the standard operations can be reinstated as described.

The Technical Management Team may consider in-season deviations from these criteria if unforeseen factors are reasonably expected to cause substantial delay (e.g., lack of load conditions, priority turbine unit outages, etc) and the Fish Passage Operations and Maintenance Committee may consider refinements to these triggers following each spring spill season.

**Additional Information and Studies**—Operations are supplemented with the following studies, which helps inform the risks inherent in modifying operations in ways that have not previously occurred (or been studied):

- Develop, fund, and implement adult active tag study(ies) no later than 2025 to evaluate the causal mechanism and inform adaptive management of adult passage delays under changing spill and flow conditions (e.g., passage delays, depths at fishway entrances, etc.). Study designs will be collaboratively developed in the Studies Review Work Group (SRWG) regional forum.
- Develop, fund, and implement active tag study(ies), no later than 2025, to evaluate juvenile migration through different passage routes under changing spill and flow conditions. Study designs will be collaboratively developed in the Studies Review Work Group (SRWG) regional forum.
- Develop, fund, and implement studies to improve PIT tag detection capabilities to evaluate long-term efficiency of operations at the LSR and LCR projects. These studies and proposals will focus on (1) designing and installing a spillway detector in one of the surface passage route spillbays at McNary Dam; (2) designing and installing a system to detect fish passing via the spillway at Bonneville Dam; and (3) designing and implementing efforts to improve PIT tag detections in the estuary. Study designs will be collaboratively developed in the Studies Review Work Group (SRWG) regional forum.
- Develop, fund, and implement, no later than 2025, collaboratively developed studies to evaluate depth and downstream profile of TDG/GBT impacts, including estimating population-level impacts for non-salmonid resident species (sculpin, lamprey ammocoetes, native mussels).

- Conduct ERDC modeling of alternative/modified McNary spill patterns prior to start of spring spill operations of 2025.
  - Washington and Oregon water quality agencies, under their existing delegated authority from EPA and consistent with Clean Water Act monitoring requirements, will continue to regulate total dissolved gas levels in the lower Snake and Columbia rivers. If the USG identifies additional concerns with TDG impacts to native aquatic species, the USG will continue to notify and coordinate with the Six Sovereigns, F&W managers, and the state water quality agencies to identify actions, including monitoring methodologies, sampling locations, and triggers for changes to lower Columbia and LSR dam operations, necessary to protect these aquatic species.
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# Rebuilding Interior Columbia Basin Salmon and Steelhead

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National Oceanographic and Atmospheric Administration

National Marine Fisheries Service

September 30, 2022

## Introduction

The Biden–Harris Administration is leading an effort to support development of a long-term, durable strategy to restore Columbia River basin salmon, steelhead, bull trout, and other listed and vulnerable species; honor long-standing commitments to tribal nations and address tribal cultural, ceremonial, and subsistence needs; balance the priorities of fishing communities; ensure a reliable, affordable, and carbon-free energy supply; and account for the other varied uses of the Columbia River, including flood risk management, water supply, navigation, and recreation. NOAA Fisheries developed this report, “Rebuilding Interior Columbia Basin Salmon and Steelhead,” by drawing on existing science, our own experience and expertise with salmon and steelhead conservation, and the work of the Columbia Basin Partnership (CBP), as well as input from the United States Fish and Wildlife Service and state and tribal fisheries co-managers in the region.<sup>1</sup>

The CBP was a Task Force chartered by NOAA’s Marine Fisheries Advisory Committee in 2017 to develop a common vision and goals for the Columbia River basin’s salmon and steelhead. CBP members represented many interests, including tribes, states, watershed groups, ports, electric utilities, irrigators, agriculture, sport fishing interests, the fishing industry, and more. The CBP examined the science and history of salmon in the region and developed goals that went beyond achieving Endangered Species Act (ESA) delisting levels to rebuild healthy and harvestable runs of salmon and steelhead that would restore the economic, ecological, and cultural benefits the region wants from its fish populations. CBP members noted a strong sense of urgency for bold and immediate action.<sup>2</sup> The CBP also concluded that to achieve their regional vision and goals for salmon and steelhead, many aggressive actions would be needed to address the full range of threats that the species face. Furthermore, they noted that these actions would require consistent and strategic funding.

This report, “Rebuilding Interior Columbia Basin Salmon and Steelhead,” outlines the actions NOAA Fisheries believes will be necessary to achieve the CBP’s mid-range goals for adult salmon and steelhead abundance by 2050. These mid-range goals look beyond recovering species from the brink of extinction. They seek, for example, to return unlisted stocks to areas from which they were previously extirpated. Columbia River salmon and steelhead abundance remains far below historical levels. This report addresses the 16 interior Columbia River basin salmon and steelhead stocks that spawn above Bonneville Dam.

The report is intended to provide climate-smart, science-based information that can inform development of actions that could rebuild listed and unlisted interior Columbia River basin salmon and steelhead stocks towards healthy and harvestable levels as defined in the CBP Task Force [Phase 2 Report](#) (NMFS 2020a). This report does not constitute a regulatory or policy requirement and does not supersede or modify existing analyses in ESA recovery plans, viability assessments, 5-year reviews, or ESA consultation

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<sup>1</sup>NOAA Fisheries received comments from the following tribal and state entities: 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.

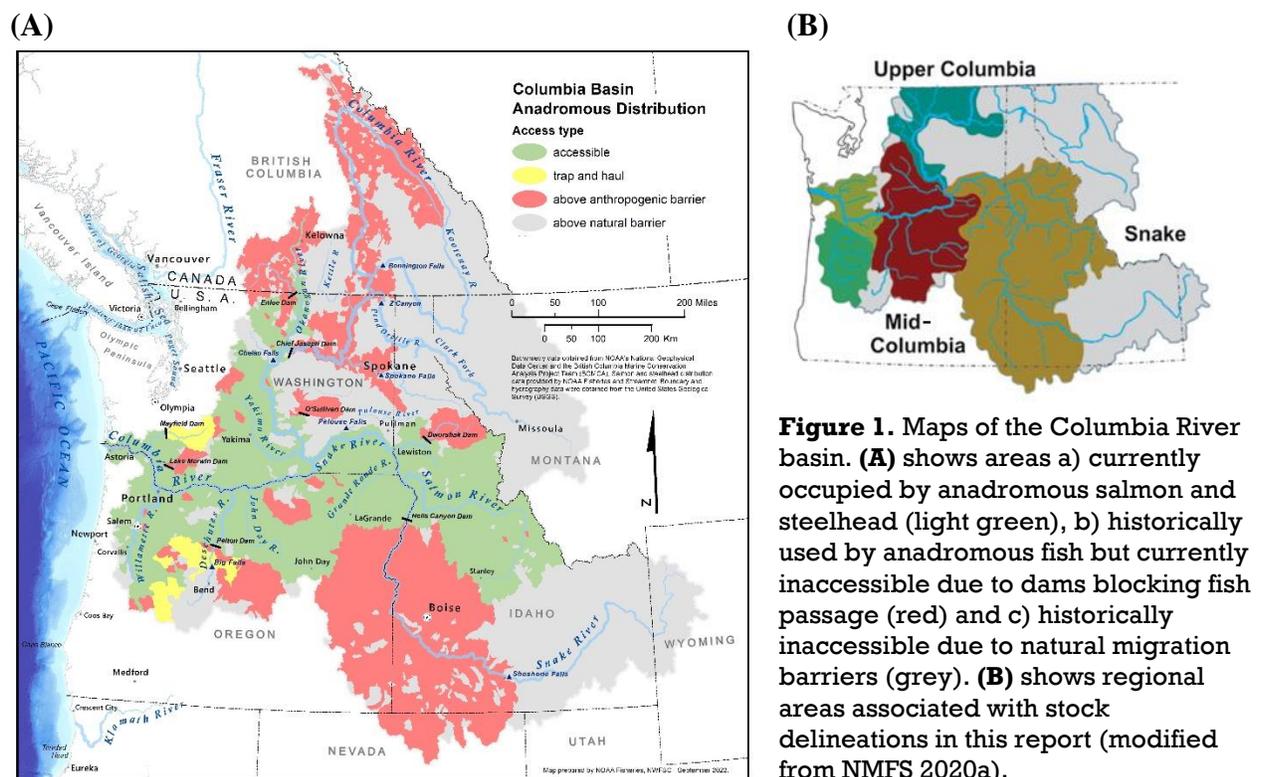
<sup>2</sup>For example, in October 2020, the states of Oregon, Washington, Idaho, and Montana signed an agreement to work together to rebuild Columbia River salmon and steelhead stocks and to advance the goals of the Columbia Basin Partnership Task Force in a collaborative, public process to include the region’s tribes, federal agencies, and stakeholders (CBC 2020).

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.

This report recognizes that a comprehensive suite of actions that address threats to salmon and steelhead across the basin, including the identified “centerpiece actions,” will provide the greatest potential to make considerable progress towards healthy and harvestable abundances. This report complements the countless ongoing actions and activities being undertaken by sovereign governments and stakeholders across the basin.

Rebuilding salmon and steelhead stocks in the Columbia River basin to levels that are healthy and harvestable requires careful consideration of the science that informs rebuilding strategies and actions. This report provides a high-level response to ten common questions about the science<sup>3</sup> surrounding Columbia River basin salmon and steelhead rebuilding efforts. The questions and responses are meant to inform the broader discussion around the socio-economic factors and resources necessary to help these species rebuild.

The scope of this analysis includes the clusters of populations, or stocks, of natural-origin Pacific salmon and steelhead originating above Bonneville Dam (i.e., in the interior Columbia River basin), as well as their life-cycle needs associated with freshwater, estuary, and marine habitats (**Figure 1**).



<sup>3</sup> The report considers questions related to the biological effects of limiting factors and threats on the biological status of fish stocks, as well as the expected effects of actions to address those limiting factors and threats. It does not consider questions related to socio-political science evaluations of salmon and steelhead stock rebuilding strategies.

These stocks are critically important to Columbia River basin tribes, as well as to the economy and overall ecological health of the region. Despite their undisputed value, they have been negatively affected by extensive anthropogenic activity—in particular, the dams and reservoirs that form the Columbia River System<sup>4</sup> (CRS; NAS 1996). The CRS has been the subject of decades of litigation regarding the effects on salmon and steelhead and modifications to their stream, river, floodplain, and estuary habitats. In addition, as identified in ESA Recovery Plans (NMFS 2009, 2015, 2017a, 2017b; UCSRB & NMFS 2007), historical and ongoing degradation of stream, river, floodplain, and estuary habitats and water quality also limit the biological potential of all interior Columbia River basin stocks, as do the effects of harvest and hatchery management, predation, and ocean conditions.

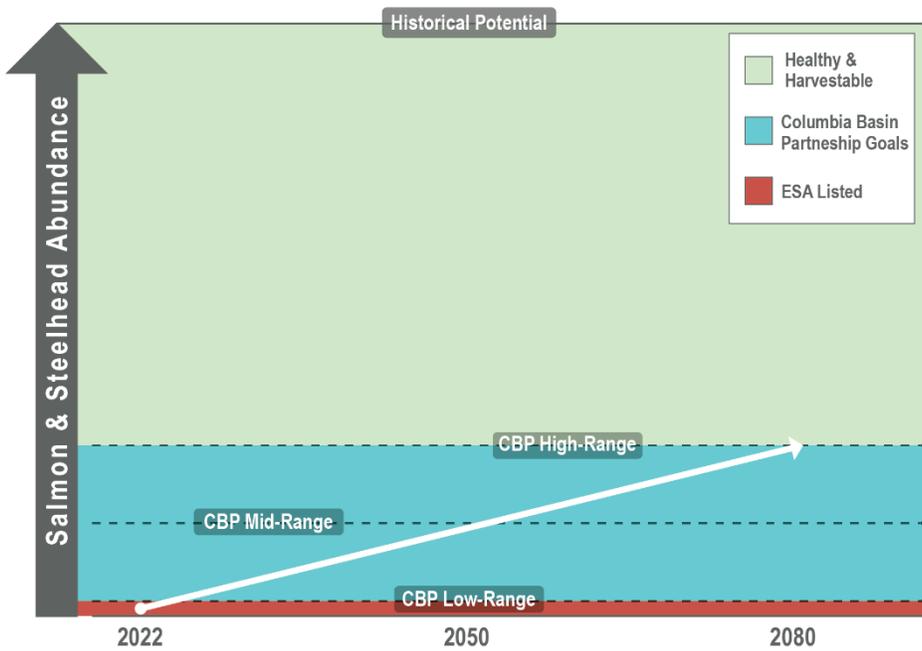
The goal of this evaluation is to inform the region how to achieve the CBP's mid-range goals for naturally produced adult salmon and steelhead abundance by 2050, which would also mean making progress towards the Northwest Power and Conservation Council's (NPCC 2020) [productivity goals](#), as measured by smolt-to-adult return rates (SAR).<sup>5</sup> These goals are commonly understood and referenced by fish managers and the public because of the transparent public processes used to establish them; they are reasonable quantitative targets that we embrace for the purposes of this evaluation. The CBP identified low-, mid-, and high-range natural-origin abundance goals. The low-range abundance goals are generally consistent with ESA recovery thresholds for abundance, while the high-range goals represent abundances consistent with healthy and harvestable stocks. The mid-range abundance goals exceed ESA recovery thresholds for abundance, and represent considerable progress toward healthy and harvestable status of these stocks (NMFS 2020a). Rebuilding healthy and harvestable stocks is a substantially more ambitious goal than meeting ESA recovery standards, which are intended to achieve delisting, or the mandates of ESA Section 7(a)(2), which are meant to avoid jeopardizing the continued existence of ESA-listed species.

Achieving these fish-related goals would also provide the highest certainty for meeting multiple objectives, including addressing tribal inequities, securing a pathway to harvestable abundance levels, and rebuilding salmon and steelhead in the face of climate change (**Figure 2**).

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<sup>4</sup> Fourteen federally owned and operated hydroelectric dams (projects) on the Columbia and Snake rivers, including: Libby, Hungry Horse, Albeni Falls, Grand Coulee, Chief Joseph, Dworshak, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles, and Bonneville.

<sup>5</sup> The NPCC productivity goals were not developed as part of the CBP process and do not reflect the same degree of stock specificity; nonetheless, in order to achieve marked increases in stock abundance as called for by the CBP mid-range goals, strong population growth rate increases in both the marine environment (typically indexed by SAR) and the freshwater/estuary environment (typically indexed by smolts/female) and overall habitat capacity improvements (relaxed density dependent effects at recent stock levels) would be necessary.



**Figure 2.** Conceptual abundance continuum of salmon and steelhead, aggregated across the 16 stocks (ESA listed and non listed) upstream of Bonneville dam, relative to management thresholds and goals. Mid-range goals exceed ESA recovery abundance thresholds and represent considerable progress toward high-range goals associated with healthy and harvestable status (NMFS 2020a).

## Question 1: What is the relative priority of stocks for protection and rebuilding given the scope and criteria above?

The CBP *Phase 2 Report* describes 27 stocks of Columbia River basin salmon and steelhead, with a subset of 16 stocks<sup>6</sup> having populations distributed entirely upstream of Bonneville Dam (hereafter, “interior Columbia stocks;” **Table 1**). The distribution of interior Columbia stocks is further subdivided geographically into three areas: Snake, upper Columbia, and mid-Columbia (**Figure 1**). This report uses the same stock descriptions and population structure that were relied upon in the CBP *Phase 2 Report*.<sup>7</sup>

Overall, priority is highest for Snake River spring/summer Chinook salmon, Snake River steelhead, upper Columbia River fall Chinook, upper Columbia River spring Chinook, upper Columbia River summer Chinook, and upper Columbia steelhead (**Table 1**). With the exception of upper Columbia fall Chinook and upper Columbia summer Chinook, this approach prioritizes stocks that are at high risk of extinction. The prioritized spring Chinook stocks exhibit early return timing to the Columbia River. As such, they support important recreational fisheries in the lower Columbia River, as well as harvest for tribal ceremonial and subsistence purposes.

The upper Columbia fall Chinook and upper Columbia summer Chinook stocks are also critical to the upper river tribes, due to their importance in ceremonial and subsistence harvest needs. In the case of summer Chinook, this stock is being used in reintroduction efforts in the blocked area above Chief Joseph and Grand Coulee dams. These stocks also ensure that both lower and upper river tribes have a consistent harvest opportunity on non-ESA listed Chinook salmon, and they also support commercial and recreational fishing opportunities<sup>8</sup>. These stocks require protection and rebuilding efforts to maintain these purposes and to reach CBP mid-range goals. Rebuilding steelhead stocks is also important because by being intercepted as bycatch they can limit the remaining fall Chinook fishery. Steelhead also provide an important late-winter subsistence fishery for tribal members in the tributaries.

Prioritizing certain stocks for protection and rebuilding in no way indicates low priority or diminished importance for any other stocks<sup>9</sup>; the CBP set healthy and harvestable abundance goals for all Columbia basin stocks. However, for this evaluation, which focuses on interior Columbia basin stocks, we applied five criteria as a general context to inform the sequencing of restoration actions. The criteria for species

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<sup>6</sup> Nine stocks spawn primarily in the lower Columbia River, downstream of Bonneville Dam (a small number of lower Columbia River populations spawn and rear in streams just above Bonneville Dam, primarily in the White Salmon, Hood, and Wind River sub-basins). In addition, two stocks spawn and rear entirely in the Willamette River basin. Lower Columbia and Willamette River stocks are not included in this summary.

<sup>7</sup> Groups of similar salmon and steelhead populations are typically grouped into “stocks” for status assessment and management purposes. The CBP defined stocks based on species, region of origin, and run timing. The CBP stocks are generally the same as the ESUs or DPSs that NOAA Fisheries defines for ESA listing purposes. One exception is in cases where an ESU or DPS contained multiple run-timings. In these cases, the ESUs were split by run type into separate stocks so that abundance numbers could be more easily aggregated by run type (i.e., by stock) in a basinwide accounting and aligned more closely to fishery management units. For instance, the Upper Columbia River summer/fall Chinook ESU was separated into two stocks (UCR summer Chinook and UCR fall Chinook). Each stock (and each ESU or DPS) contains a number of independent populations. For more information on CBP stock and population structure, see Appendix A of the CBP [Phase 2 Report](#).

<sup>8</sup> Other interior basin stocks, for example Snake River fall Chinook, also contribute to commercial fisheries.

<sup>9</sup> Many regional tribes have emphasized their view that restoring all populations should have the highest priority.

and area priorities are: level of extinction risk, current spatial structure and diversity, importance to tribal communities, habitats available for essential life-cycle needs, and resilience of habitat to climate change. Although they in no way reduce the importance of all extant and extirpated Columbia River basin native salmon and steelhead, the criteria provide a context for sequencing and prioritizing multifaceted, long-term, and complex rebuilding actions.

Balancing the five criteria resulted in a qualitative approach that considered the risk of extinction<sup>10</sup> with the potential for rebuilding in the face of climate change, and ultimately, the importance now and through rebuilding, to tribal communities. Given basinwide concerns of stock status currently, the priorities are high overall, but must be focused on a small number of stocks as a place to start. As such, all stocks were given high-, higher-, or highest-priority designations. The latter applies to Snake River spring/summer Chinook and steelhead and upper Columbia River fall Chinook, spring Chinook, summer Chinook, and steelhead. Continued development of an overall basin rebuilding strategy, as well as monitoring and analyses through rebuilding, will allow the co-manager community to reassess these designations as conditions change (Williams et al. 2009).

**Table 1.** Columbia River basin salmon and steelhead stocks' rebuilding priority.

| Stock                                  | Priority |
|--|----------|
| Snake River Spring/Summer Chinook      | Highest  |
| Snake River Steelhead                  | Highest  |
| Upper Columbia River Fall Chinook      | Highest  |
| Upper Columbia River Spring Chinook    | Highest  |
| Upper Columbia River Steelhead         | Highest  |
| Upper Columbia River Summer Chinook    | Highest  |
| Mid-Columbia River Spring Chinook      | Higher   |
| Mid-Columbia River Steelhead           | Higher   |
| Upper Columbia River Sockeye           | Higher   |
| Snake River Fall Chinook               | Higher   |
| Snake River Sockeye                    | Higher   |
| Mid-Columbia River Summer/Fall Chinook | High     |
| Mid-Columbia River Coho                | High     |
| Mid-Columbia River Sockeye             | High     |
| Upper Columbia River Coho              | High     |
| Snake River Coho                       | High     |

<sup>10</sup> Seven of the 16 interior stocks are listed under the ESA as threatened or endangered. Avoiding jeopardy pursuant to ESA Section 7(a)(2) and implementing existing recovery plans remains a high priority for NOAA Fisheries and is not diminished by stock priorities described in this report.

## Question 2: What is the status and outlook for each stock?

The current abundance and productivity (viable salmonid population [VSP] parameters; McElhany et al. 2000) of naturally reproducing interior Columbia salmon and steelhead stocks are at dramatically reduced levels from our understanding of historical abundances, and harvest records show current landing levels are a fraction of the fishery size in the early 20th century.<sup>11</sup> Sixteen stocks historically spawned above Bonneville Dam. Of those, four are now extinct, and seven are listed under the federal ESA—including one reliant on a captive breeding program. Of the remaining five, only one approaches its historical numbers (**Table 2**).

Recent abundance trends (where data are available) are negative and productivity values are below replacement (Ford 2022). The risk of extinction from demographic collapse is moderate-to-high for all ESA-listed stocks, as is the risk of reduced adaptive capacity (Ford 2022), all resulting from small population size. For example, while there have been improvements in abundance and productivity in several populations relative to the time of listing, the majority of interior Columbia River basin populations experienced sharp declines in abundance in the recent 5-year period. Dramatic variation in productivity and run-year strength is a hallmark of salmon population biology and alone is not a reason for concern, but, in combination with low population size, can result in strong demographic risk.

Despite these concerns for the short-term survival of interior basin stocks, most are demonstrating some inherent resiliency. We have seen this in the increased survival of downstream migrants and the numbers of returning adults when environmental conditions align favorably. At the same time, the region's stream and estuary rehabilitation programs are becoming more effective at restoring the physical and biological processes necessary for salmon and steelhead to express life history diversity, as well as improving habitat for resident native fish species. Large-scale habitat access projects, such as dam removal on Washington's Elwha River, have demonstrated that they can promote dramatic abundance and productivity gains, and artificial production and reintroduction tools have proven the potential to reestablish some extirpated stocks.

However, any optimism about future stock status must be tempered by continued pressures from a changing climate and the effects of the ever-expanding human footprint. Rapid, concerted, system-wide actions that expand from existing strongholds are therefore most likely to result in durable biological benefits to interior Columbia stocks. As with all region-scale natural resource management strategies, these actions should be implemented within a framework of ongoing scientific monitoring and evaluation (see Question 10). A thoughtful, full life-cycle, quantitative decision support tool driven by an adaptive management program will allow us to detect their effects against a background of environmental conditions that are changing in an increasingly unpredictable manner (Kocik et al. 2022).

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<sup>11</sup> Anthropogenic passage barriers prevent Interior Columbia stocks from accessing historically productive habitat in many Interior Columbia River sub-basins (e.g., Upper Columbia River, Middle Snake River, Similkameen River, Yakima River, North Fork Clearwater River, Deschutes River) (see **Figure 1a**). These barriers, that were constructed as early as 1901 and as late as the 1960s, include a substantial number of federal and privately owned hydroelectric and water storage projects in both the mainstem river reaches and in major tributaries.

**Table 2.** Current abundance (through return year 2019) of ESA-listed stocks from Ford (2022) and current abundance (2008-2017) of six additional stocks that are not listed under the ESA from NMFS (2020a). Table also shows current abundance as percent of CBP mid-range goal.

| Stock                                  | Number of Historical Populations | Number of Current (Extant) Populations | ESA-Listing Status | Current Blocked Areas (Yes/No) | Historical Abundance | CBP Medium Goal      | Current Abundance (10yr geomean) | Current as Percent of Historic | Current as Percent of CBP Medium |
|--|----------------------------------|--|--------------------|--------------------------------|----------------------|----------------------|----------------------------------|--------------------------------|----------------------------------|
| Mid-Columbia River Spring Chinook      | 14                               | 7                                      | Not listed         | No                             | 246,500              | 40,425               | 11,600                           | 4.7%                           | 28.7%                            |
| Mid-Columbia River Summer/Fall Chinook | 1                                | 1                                      | Not listed         | No                             | 17,000               | 13,000               | 11,500                           | 67.6%                          | 88.5%                            |
| Mid-Columbia River Coho                | 4                                | 1                                      | Extirpated         | No                             | 75,000               | 11,600               | 6,324                            | 8.4%                           | 54.5%                            |
| Mid-Columbia River Sockeye             | 2                                | 0                                      | Extirpated         | Yes                            | 230,000              | 45,000               | 1,036                            | 0.5%                           | 2.3%                             |
| Mid-Columbia River Steelhead           | 20                               | 17                                     | Threatened         | No                             | 132,800              | 43,850               | 18,044                           | 13.6%                          | 41.1%                            |
| Upper Columbia River Spring Chinook    | 10                               | 3                                      | Endangered         | Yes                            | 259,450              | 19,840               | 1,131                            | 0.4%                           | 5.7%                             |
| Upper Columbia River Summer Chinook    | 14                               | 7                                      | Not listed         | Yes                            | 733,500              | 78,350               | 16,920                           | 2.3%                           | 21.6%                            |
| Upper Columbia River Fall Chinook      | 5                                | 4                                      | Not listed         | Yes                            | 680,000              | 62,215               | 92,400                           | 13.6%                          | 148.5%                           |
| Upper Columbia River Coho              | 5                                | 0                                      | Extirpated         | Yes                            | 44,500               | 15,000               | 392                              | 0.9%                           | 2.6%                             |
| Upper Columbia River Sockeye           | 5                                | 2                                      | Not listed         | Yes                            | 1,800,000            | 580,000              | 40,850                           | 2.3%                           | 7.0%                             |
| Upper Columbia River Steelhead         | 11                               | 4                                      | Threatened         | Yes                            | 1,121,400            | 31,000               | 2,052                            | 0.2%                           | 6.6%                             |
| Snake Spring/Summer River Chinook      | 68                               | 28                                     | Threatened         | Yes                            | 1,000,000            | 98,750               | 7,013                            | 0.7%                           | 7.1%                             |
| Snake River Fall Chinook               | 2                                | 1                                      | Threatened         | Yes                            | 500,000              | 10,780 <sup>12</sup> | 9,207                            | 1.8%                           | 85.4%                            |
| Snake River Coho                       | 6                                | 2                                      | Extirpated         | Yes                            | 200,000              | 26,600               | 100                              | 0.1%                           | 0.4%                             |
| Snake River Sockeye                    | 9                                | 1                                      | Endangered         | Yes                            | 84,000               | 15,750               | 46                               | 0.1%                           | 0.3%                             |
| Snake River Steelhead                  | 40                               | 25                                     | Threatened         | Yes                            | 600,000              | 75,000               | 18,689                           | 3.1%                           | 24.9%                            |

<sup>12</sup> This estimate is based on the production potential of existing, not historically available, habitat.

### **Question 3: What is the importance and context of climate change (e.g., ocean conditions, snowpack, drought, flow, mainstem/tributary water temperature) on the life-cycle productivity, resilience, extinction risk, and recovery potential of priority stocks?**

Climate change generally exacerbates threats and limiting factors, including those currently impairing salmon and steelhead survival and productivity. The growing frequency and magnitude of climate change related environmental downturns will increasingly imperil many ESA-listed stocks in the Columbia River basin and amplify their extinction risk (Crozier et al. 2019, 2020, 2021). This climate change context means that opportunities to rebuild these stocks will likely diminish over time. As such, management actions that increase resilience and adaptation to these changes should be prioritized and expedited. For example, the importance of improving the condition of and access and survival to and from the remaining functional, high-elevation spawning and nursery habitats is accentuated because these habitats are the most likely to retain remnant snowpacks under predicted climate change (Tonina et al. 2022).

Climate change is already evident. It will continue to affect air temperatures, precipitation, and wind patterns in the Pacific Northwest (ISAB 2007, Philip et al. 2021), resulting in increased droughts and wildfires and variation in river flow patterns. These conditions differ from those under which native anadromous and resident fishes evolved and will likely increase risks posed by invasive species and altered food webs. The frequency, magnitude, and duration of elevated water temperature events have increased with climate change and are exacerbated by the CRS (EPA 2020a, 2020b; Scott 2020). Thermal gradients (i.e., rapid change to elevated water temperatures) encountered while passing dams via fish ladders can slow, reduce, or altogether stop the upstream movements of migrating salmon and steelhead (e.g., Caudill et al. 2013). Additional thermal loading occurs when mainstem reservoirs act as a heat trap due to upstream inputs and solar irradiation over their increased water surface area (EPA 2020a, 2020b, 2021). Consider the example of the adult sockeye salmon, both Upper Columbia and Snake River stocks, in 2015, when high summer water temperatures contributed to extremely high losses during passage through the mainstem Columbia and Snake River (Crozier et al. 2020), and through tributaries such as the Salmon and Okanogan rivers, below their spawning areas. Some stocks are already experiencing lethal thermal barriers during a portion of their adult migration. The effects of longer or more severe thermal barriers in the future could be catastrophic. For example, Bowerman et al. (2021) concluded that climate change will likely increase the factors contributing to prespawn mortality of Chinook salmon across the entire Columbia River basin.

Columbia River basin salmon and steelhead spend a significant portion of their life-cycle in the ocean, and as such the ocean is a critically important habitat influencing their abundance and productivity. Climate change is also altering marine environments used by Columbia River basin salmon and steelhead. This includes increased frequency and magnitude of marine heatwaves, changes to the intensity and timing of coastal upwelling, increased frequency of hypoxia (low oxygen) events, and ocean acidification. These factors are already reducing, and are expected to continue reducing, ocean productivity for salmon and steelhead. This does not mean the ocean is getting worse every year, or that there will not be periods of good ocean conditions for salmon and steelhead. In fact, near-shore conditions off the Oregon and Washington coasts were considered good in 2021 (NOAA 2022). However, the magnitude, frequency, and duration of downturns in marine conditions are expected to increase over time due to climate change.

Any long-term effects of the stressors that fish experience during freshwater stages that do not manifest until the marine environment will be amplified by the less-hospitable conditions there due to climate change. Together with increased variation in freshwater conditions, these downturns will further impair the abundance, productivity, spatial structure, and diversity of the region's native salmon and steelhead stocks (ISAB 2007, Isaak et al. 2018). As such, these climate dynamics will reduce fish survival through direct and indirect impacts at all life stages (NOAA 2022, ODFW 2020).

The increasing role of deteriorating ocean or freshwater conditions from climate change on the health of salmon and steelhead stocks does not diminish the importance or necessity of taking meaningful actions in areas society has more direct influence over. In fact, the importance and necessity of meaningful actions is heightened, not diminished because of the impacts of climate change. For example, as the frequency of drought, low snowpack, elevated water temperature, and poor marine conditions increase, managers must do more, not less, to restore properly functioning tributary habitats and mainstem migration corridors currently degraded by human uses (Jordan and Fairfax 2022). These changes counteract the less-manageable deficits created by climate change in marine habitats.

All habitats used by Pacific salmon and steelhead will be affected by climate dynamics. However, the impacts and certainty of the changes will likely vary by habitat type. Some changes affect salmon at all life stages in all habitats (e.g., increasing temperature), while others are habitat-specific (e.g., stream-flow variation in freshwater, sea-level rise in estuaries, upwelling in the ocean). How climate change will affect each individual salmon or steelhead stock also varies widely, depending on the extent and rate of change and the unique life-history characteristics of different natural populations (Crozier et al. 2008). In light of this variability, habitat restoration actions should support climate resilience (Jorgensen et al. 2021) in freshwater spawning, rearing, and migratory habitats, including access to high elevation, high quality cold-water habitats, and the reconnection of floodplain habitats across the interior Columbia River basin. As all of these potential climate resilience tactics represent major long-term, large-scale restoration efforts, they should be guided by ongoing analyses of changing conditions and effectiveness in order to provide the most relevant science support for regional management action strategies.

## **Question 4: What are the primary ecological threats or limiting factors, by life stage, to achieving abundance and productivity goals? What is the relative and collective importance of addressing these threats? How much have these threats changed?**

The CBP examined limiting factors<sup>13</sup> in its *Phase 2 Report* to identify constraints on natural production of salmon and steelhead and the potential pathways for achieving the CBP's qualitative and quantitative goals. While some factors are specific to a given life stage (e.g., fisheries largely affect adult life stages), most negatively impact multiple points in the life cycle—e.g., by reducing not only freshwater survival, but also carry over impacts on later marine life stages.

In general, the CBP found the biggest threats and limiting factors to be:

- Large-scale tributary and estuary habitat and water quality degradation.
- Hydrosystem impacts, including direct mortality, and indirect mortality, where delayed effects from transiting the hydrosystem occur during the first year of ocean residence.
- Impassable human-constructed barriers prohibiting access to much of the habitat historically accessible throughout the basin.
- Predation from pinnipeds, native and non-native fishes, and colony nesting waterbirds that are taking advantage of habitats altered by the CRS.

All priority stocks are subject to all of these major threat categories; however, the relative impacts of these limiting factors vary by stock and geography. As such, the rebuilding process will be stock and context dependent.

**Table 3** shows limiting factors ranked according to their relative impacts (i.e., ranked 1 through 7 based on largest to smallest impact) for each interior Columbia River basin salmon and steelhead stock. In this framework, hydrosystem impacts are the largest threats, followed by habitat made inaccessible due to human-constructed impassable barriers and then degradation of tributary and estuary habitats.

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<sup>13</sup> In this report, the terms limiting factors and threats are used somewhat interchangeably to indicate the human-caused impacts that have reduced and continue to reduce salmon and steelhead abundance and productivity. We use the same categories used in the CBP's *Phase 2 Report* (tributary habitat, estuary habitat, hydropower [direct and latent], blocked habitat, predation, fisheries, and hatcheries). These categories are also generally consistent with how limiting factors and threats were identified in ESA recovery plans for salmon and steelhead. The CBP did not explicitly assess ocean or climate change threats at the stock scale.

**Table 3.** Ranking of limiting factor impact levels (modification of CBP Phase 2 Report, Figure 13). Ranking of 1 indicates highest magnitude of impact. Shading indicates stocks from the same geographic area.<sup>14</sup>

| Stock                                   | Tributary Habitat | Estuary Habitat | Hydrosystem (Direct & Indirect) | Blocked    | Predation  | Fisheries  | Hatcheries |
|---|-------------------|-----------------|---------------------------------|------------|------------|------------|------------|
| Snake River Spring/Summer Chinook       | 2                 | 5               | 1                               | 3          | 4          | 7          | 6          |
| Snake River Steelhead                   | 2                 | 5               | 1                               | 4          | 3          | 6          | 7          |
| Upper Columbia River Fall Chinook       | 4                 | 3               | 1                               | 7          | 5          | 2          | 6          |
| Upper Columbia River Spring Chinook     | 3                 | 6               | 1                               | 2          | 5          | 7          | 4          |
| Upper Columbia River Steelhead          | 4                 | 4               | 2                               | 1          | 3          | 7          | 6          |
| Upper Columbia River Summer Chinook     | 3                 | 5               | 1                               | 3          | 7          | 2          | 5          |
| Mid-Columbia River Spring Chinook       | 1                 | 6               | 2                               | 3          | 3          | 7          | 5          |
| Mid-Columbia River Steelhead            | 1                 | 3               | 4                               | 5          | 2          | 7          | 6          |
| Upper Columbia River Sockeye            | 3                 | 5               | 2                               | 1          | 4          | 6          | 7          |
| Snake River Fall Chinook                | 5                 | 4               | 1                               | 2          | 6          | 3          | NA         |
| Snake River Sockeye                     | 5                 | 4               | 1                               | 2          | 3          | 6          | NA         |
| Mid-Columbia River Summer/Fall Chinook  | 4                 | 2               | 3                               | 6          | 5          | 1          | 7          |
| Mid-Columbia River Coho                 | 6                 | 4               | 1                               | 5          | 3          | 2          | NA         |
| Mid-Columbia River Sockeye              | 6                 | 3               | 2                               | 1          | 4          | 5          | NA         |
| Upper Columbia River Coho <sup>15</sup> | 3                 | 6               | 1                               | 2          | 5          | 7          | 4          |
| Snake River Coho <sup>16</sup>          | 2                 | 5               | 1                               | 3          | 4          | 7          | 6          |
| <b>Average</b>                          | <b>3.4</b>        | <b>4.4</b>      | <b>1.6</b>                      | <b>3.1</b> | <b>4.1</b> | <b>5.1</b> | <b>5.8</b> |

<sup>14</sup> **Table 3** is modified from Figure 13 in the CBP’s *Phase 2 Report*. The report displayed each impact as a percentage reduction in abundance from historical conditions as a result of that limiting factor. Here, **Table 3** displays only the relative impacts. In addition, the report displayed impacts for direct (mainstem) and indirect (latent) hydrosystem mortality separately, while in **Table 3** they are combined. The CBP separated direct and indirect hydrosystem mortality because one is estimated directly and the other inferred based on trends in time series. The CBP identified a range of values for indirect hydrosystem mortality that was generally consistent with existing information, and **Table 3** combines the direct mainstem mortality and the mid-point of the range identified by the CBP for indirect mortality. This table, as with Figure 13 in the CBP’s *Phase 2 Report*, provides an appropriate basis for exploring the relative magnitude of key limiting factors at the stock scale, but additional evaluation will be needed in some cases to refine understanding of these impacts.

<sup>15</sup> The CBP did not evaluate limiting factors for this stock due to lack of data; for purposes of this report, metrics for spring/summer Chinook were applied as surrogates.

<sup>16</sup> The CBP did not evaluate limiting factors for this stock due to lack of data; for purposes of this report, metrics for spring/summer Chinook were applied as surrogates.

The *CBP Phase 2 Report* does not quantify impacts of ocean and climate conditions on each stock, nor does it identify potential for management actions for the marine environment. Human impacts have reduced ocean productivity for salmon and steelhead stocks, and the Northern California Current is one of the more highly impacted regions from land activities along the west coast (Halpern et al. 2009). Widespread loss and degradation of estuary habitat (Greene et al. 2015, Toft et al. 2018), fishing that disrupts seafloor communities (Teck et al. 2010), high nutrient inputs to the coastal zone in runoff, removal of forage fishes, and aquaculture practices (Andrews et al. 2015) have widespread cumulative impacts on salmon and ecosystem capacity. The manageable components of the marine environment could have a substantial impact on the restoration and recovery of interior Columbia River basin salmon and steelhead stocks. Salmon population dynamics are highly sensitive to mortality rates in the marine environment, often swamping effects from other life stages (Kareiva 2000; Crozier 2021). Yet, management of these components is rarely considered a viable option. To identify management actions, we must first acknowledge that salmon in the ocean are part of a complex ecosystem. Components of the ocean ecosystem that impact salmon population processes include the habitat (e.g., freshwater plumes, water buoyancy fronts, eddies, water temperatures, upwelling intensity and frequency), “bottom-up” productivity in time and space (phytoplankton, zooplankton, larval and juvenile fishes), particularly in the spring, and “top-down” predator population controls (birds, mammals, fish, and fishing).

The most devastating impacts of climate change are not uniform across life stages in all stocks. In some cases, the worst threats could be addressed with targeted water protection and restoration actions, and these should be a high priority. For example, low flow and high temperature in the free-flowing lower Salmon River is projected to pose the greatest threat to endangered Snake River sockeye salmon under climate change scenarios, and this threat could be mitigated by restoring flows and natural river processes to the mainstem Salmon River. In other cases, such as Snake River spring Chinook, the marine stage is the most threatened, and actions to improve marine survival need to be identified (Crozier et al. 2019). If carryover effects from early life stages are lowering marine survival, as suggested by the strong impacts of density dependence in freshwater habitat, then these impacts must be prioritized in the rebuilding strategy.

As described in the *CBP Phase 2 Report*, including estimates of direct and indirect mortality, the broad range of ecological and physical impacts of hydrosystem-related limiting factors have the largest collective impacts on survival for the most interior stocks, including all four extant Snake River basin stocks, and four of the six upper Columbia River stocks. Dams in the Columbia River and its tributaries (storage, irrigation, hydro) have altered flow regimes that have dramatically degraded water quantity and quality, reduced fish passage success, decreased sediment movement, and created conditions for native and non-native predator and competitor (e.g., shad) species to thrive.

Blocked access to historical habitats was the highest limiting factor for the remaining two upper Columbia stocks. For mid-Columbia stocks, the primary limiting factors were mixed, with no single factor emerging as the largest across most stocks.

Stream, river, and estuary habitat degradation is a major limiting factor and continued threat to the rebuilding success of all interior Columbia River basin stocks. The quality of salmon and steelhead habitats (freshwater and estuarine) is determined by physical, biological, and chemical processes. Physical and biological factors determining habitat quality and quantity are understood, and suites of action strategies are continually improving in their capacity to address the needed ecological uplift.

However, the chemical, or “water quality” component is a major, and often overlooked, factor shaping the environmental health of individual salmon. With nuanced effects on survival, reproduction, and other life history traits that map directly to population growth and abundance, poor water quality cuts across all aspects of the “clean, cool water” habitat requirements for salmonids. However, the linkages between physical (high stream temperatures, excess sediments), biological (invasion of pollution-tolerant taxa), and chemical (toxic contaminants) aspects of water quality also make it particularly challenging. For example, the degree of management uncertainty around physical and biological processes (e.g. surface water temperatures, invasive pikeminnow predation) is dwarfed by the poorly understood impacts of toxics from agriculture, mining, municipal wastewater treatment discharges, historical industrial pollution, and urban/suburban stormwater runoff. Therefore, expanding the scale and pace of habitat restoration must also include integrating physical, biological, and chemical process impairments into the riverscape restoration strategies implemented.

Fisheries and hatcheries also impact interior Columbia salmon and steelhead stocks, and can have demographic impacts. Natural-origin salmon and steelhead across the Columbia River basin share their environmental space with hatchery-origin salmon. Hatchery-origin salmon represent the majority of fish returning to the region above Bonneville Dam and are produced at dozens of facilities distributed throughout the Columbia and Snake rivers and their tributaries. One of the primary purposes for these facilities is the production of fish to support harvest in both ocean and in-river fisheries, benefiting cultural, sport, and commercial fishing sectors.

Natural-origin and hatchery-origin fish are isolated from each other for much of their early rearing, from spawning through release as yearling smolts, making it easy to assume there is no interaction between these fish. However, interactions occur between natural- and hatchery-origin juvenile salmon after release in the riverine migration corridor, in the Columbia River estuary, and subsequently in the Columbia River plume and coastal ocean. Competition may occur between juvenile fish, especially if migration by hatchery fish is slow or delayed. Moreover, large numbers of hatchery-origin juveniles may attract predators, increasing mortality of co-migrating natural-origin juveniles. This underscores the importance of continued hatchery risk management and reform and maintaining harvest regimes that are responsive to stock status and run size.

Each sector of threats, mainstem river conditions, tributary and estuary habitat quality and quantity, ocean conditions, climate impacts, and fishery management, contributes to a decrement in life-stage specific survival, or the capacity of the environment to support these life-stages. Survival and capacity impact population processes differentially - as a rate versus a ceiling—but they also interact within a life-stage and can carry over between life-stages. Therefore, any rebuilding strategy must recognize the need to comprehensively address survival and capacity limits, and do so in a manner that leverages the opportunities and challenges presented by the interactions.

For example, in order to reach abundance goals approaching the mid-range CBP goals, it is critical to increase freshwater carrying capacity and juvenile condition in the tributaries. Parr rearing and overwintering conditions affect juvenile survival in both their tributary and marine stages. In Salmon River spring Chinook populations, marine survival is inversely proportional to the number of spawners that produced that cohort, but also depends on ocean conditions. Because reduced marine survival can be a carryover effect from early life stages via fish size or condition, addressing these problems in freshwater could improve the ability of populations to rebound during good ocean years and reduce the impacts of worsening ocean conditions.

Although the CBP assessment is several years old (NMFS 2020a) and efforts to understand and improve fish conditions are ongoing, we believe its general approach for ranking manageable limiting factors and threats is still both relevant and accurate for current (2022) conditions. It is important to recognize that the backdrop of climate change (see Question 3) will exacerbate these identified manageable threats, while also magnifying less-manageable threats such as deteriorating ocean conditions, reduced snowpack, and increased drought.

Some of these threats have been recognized far longer than others and some have only recently emerged as primary limiting factors. For example, some of the worst degradation of tributary habitats occurred more than 100 years ago, whereas pinniped predation was recognized and addressed only recently. Caspian terns began nesting on dredge material islands in the lower river in the 1980s, but recognition that bird predation affects salmon and steelhead survival basin-wide is relatively recent. Fish passage routes at Bonneville Dam became focused foraging areas for sea lions and colony nesting water birds forage in tailraces, fish ladders, and reservoirs. Although harvest was historically a significant threat to some stocks, fisheries are currently managed more conservatively and are the only threat category responsively managed to run size, with fewer impacts allowed as runs diminish. The scope of tributary habitat threats remains large and is not just limited to habitats degraded anthropogenically, but more broadly across remote, wilderness-designated watersheds vulnerable to climate change and ongoing deficits of marine-derived nutrients from collapsed anadromous fish runs.

Taken together with the widely recognized, pervasive impacts of predator communities and other survival threats resulting from altered mainstem habitats, the main limiting factors present in the Columbia River basin dramatically impact all interior Columbia salmon and steelhead stocks. They require a comprehensive suite of actions, coupled with robust scientific monitoring to continually evaluate and adjust its implementation (Williams et al. 2009).

## **Question 5: Which actions have the highest likelihood of helping by avoiding additional abundance and productivity downturns and providing reasonable certainty of achieving the mid-range CBP goals by addressing primary life-cycle threats and bottlenecks to survival and distribution in the face of climate change?**

No single action is enough, given the abundance and survival goals for rebuilding, the stock priorities, the stocks' current status, and the primary threats within the context of climate change. To make progress towards healthy and harvestable stocks it is essential that the comprehensive suite of management actions includes:

- Significant reductions in direct and indirect mortality from mainstem dams, including restoration of the lower Snake River through dam breaching.
- Management of predator and competitor numbers and feeding opportunities.
- Focused tributary and estuarine habitat and water quality restoration and protection.
- Passage and reintroduction into priority blocked areas, including the upper Columbia River (and, potentially, the Middle Snake River and Yakima River).
- Focused hatchery and harvest reform.

It will be essential that we implement *all* these actions, and that we do so at a large scale. While efforts in all these areas have been underway, there is a need in most cases to substantially enhance and focus implementation, and to incorporate new and emerging knowledge about effective implementation. These actions are needed to provide the highest likelihood of reversing near-term productivity declines and rebuilding towards healthy and harvestable runs in the face of climate change.

Primary life-cycle threats to survival and distribution vary across and even within stocks (NMFS 2020a). Thus, the successful rebuilding of interior Columbia stocks will require a diverse suite of actions. Generally, actions that benefit multiple stocks, and multiple populations within a stock, will have the greatest impact on overall adult returns. Similarly, identification of carry-over and interacting impacts across life-stages allows the opportunity to amplify benefits of actions. Likewise, actions that provide more immediate effects, rather than actions with longer time-lagged benefits, are necessary to help avoid near-term productivity declines and help reduce extinction risk while providing an additional buffer to climate change effects. However, long-term planning horizons for large actions cannot be a rationale to continually focus on small, fast-acting projects—sequencing and prioritizing will be needed over all action types across all sectors of priority stocks.

It is also important to recognize that, within the comprehensive suite of actions listed above, several centerpiece actions are paramount for specific stocks. Implementing this comprehensive suite of actions that address threats to salmon and steelhead across the basin, including the identified centerpiece actions, will provide the greatest potential to make progress towards healthy and harvestable abundances.

- **For Snake River stocks, the centerpiece action is restoring the lower Snake River via dam breaching.**<sup>17</sup> Restoring more normalized reach-scale hydrology and hydraulics, and thus river conditions and function in the lower Snake River, requires dam breaching. Breaching can address the hydrosystem threat by decreasing travel time for water and juvenile fish, reducing powerhouse encounters, reducing stress on juvenile fish associated with their hydrosystem experience that may contribute to delayed mortality after reaching the ocean, and providing additional rearing and spawning habitat.
- **For upper Columbia River stocks, the centerpiece action is reintroducing fish into blocked areas.**<sup>18</sup> Establishing adult and juvenile passage to and from areas of the upper Columbia River blocked by high-head dams provides the highest likelihood for achieving mid-range CBP goals. This action addresses the blocked area threat by providing access to additional and more productive spawning and nursery areas, indirectly benefits other species through ecosystem impacts, and buffers populations against climate change effects.
- **For mid-Columbia stocks, in addition to improved passage through lower mainstem dams, it is important to improve water quality and quantity and passage survival in focused areas of low- to mid-elevation tributary habitats.** Maximizing functional tributary habitats (primarily instream flows, water quality, and fish passage improvements) and improving passage in the lower mainstem Columbia River is necessary to provide the highest likelihood for achieving mid-range CBP goals. For example, for high-risk Yakima basin stocks, smolt survival through the Yakima River should be significantly increased by increasing spring flows, implementing structural and operations improvements at federal diversion dams, and targeting specific habitat improvements. These actions address habitat threats in tributaries and help reduce direct and indirect effects of the hydrosystem threat in the mainstem.

The urgency of the comprehensive suite of actions is accentuated by ongoing climate change. Actions that have the highest likelihood to **buffer climate change** impacts and support restoration fit into three categories:

*Maintaining suitable water temperatures and flows in mainstem and tributary habitats.* Juvenile and adult salmon and steelhead use migration corridors in the mainstem Columbia and Snake Rivers to move between their spawning and rearing areas and the ocean. These corridors suffer from rising water temperatures and reduced flows. Increased temperature and reduced flow in

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<sup>17</sup> Breaching the four lower Snake River dams specifically refers to removing the earthen portion of each dam, and allowing a naturalized river channel to be established around the concrete spillway and powerhouse structures.

<sup>18</sup> Passage into blocked areas specifically recommended for high-head dams that lack fish ladders and/or juvenile bypass facilities (e.g., upper Columbia and, potentially, North Fork Clearwater, Middle Snake, and Yakima Rivers). Restoring adult and/or juvenile passage within tributaries (e.g., culverts, irrigation diversions) is covered under tributary habitat restoration.

adult holding and spawning areas and juvenile rearing areas is also becoming a concern. Some examples of actions necessary to provide reasonable confidence in addressing this need include:

- Normalizing reach-scale hydrology and hydraulics in the mainstem Columbia and Snake Rivers.
- Attaining EPA Clean Water Act water quality standards and associated TMDLs for temperature, turbidity, toxics, and nutrient loading.
- Maintaining and enhancing flow augmentation from Columbia River Treaty and U.S. storage projects for spring and summer juvenile migration.
- Systematically and extensively restoring tributary habitat, especially at the riverscape scale. Restoring natural rates and dynamics of biological and physical processes that create and maintain healthy functioning riparian and floodplain habitats.
- Durable, targeted agreements to accomplish increased instream flow volumes through water acquisitions, irrigation system conversions, conservation, and land-use modification.

*Maximizing survival and production from freshwater habitats (including migration corridors).*

This will help reduce productivity declines during periods of poor ocean conditions, and increase rebuilding during periods of good ocean conditions. Some examples of actions necessary to provide reasonable confidence in addressing this need include:

- Maintain and enhance fish passage structures and operations at remaining mainstem dams and reservoirs. This will increase juvenile survival, decrease indirect mortality, and increase adult returns.
- Minimizing predation on juveniles as they migrate to the ocean.
- Minimizing predation on adults as they return to their spawning grounds.
- Minimizing passage delays and removing passage barriers to adults returning to spawning grounds.
- Increasing tributary habitat quality and quantity through focused actions that support sustained productivity<sup>19</sup> across much broader return rates.
- Increasing the quantity and quality of and access to estuary habitat that provides migration corridor refugia and highly productive juvenile rearing environments.

*Maintaining and restoring access to climate resilient habitats for spawning and rearing (e.g., high-elevation spawning and rearing habitats with snowpack-driven hydrology, or extensive connected floodplain habitats).* Some examples of actions necessary to provide reasonable confidence in addressing this need include:

- Restoring or improving adult and juvenile passage to and from high elevation upper Columbia and upper Snake historical production areas and reintroduction and passage into currently blocked tributary (e.g., above Enloe Dam on the Similkameen River or Yakima basin reservoirs) and mainstem (e.g., Grand Coulee) areas.

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<sup>19</sup> Freshwater productivity of at least 100 smolts per female across broad return rates is a generally accepted rule of thumb for robust freshwater productivity of stream-type salmonids. Stock specific freshwater productivity goals have not been uniformly established across the interior Columbia River basin.

- Protecting and restoring cold-water refugia in tributary adult holding areas and in spawning and nursery areas.
- Maintaining and maximizing thermal refugia within the mainstem migration corridor.
- Restoring connected floodplain habitat across all ecoregions of the interior Columbia River basin.

Building off the CBP effort, **Table 4a** generally assesses action urgency and priority based on stock status and limiting factor impact level. From there, further refinement helps provide stock-specific priority actions. **Table 4b** identifies the most common actions in the high priority categories: hydro (11 stocks), tributary habitat (10 stocks), blocked habitat (10 stocks), and predation (7 stocks). As action implementation planning moves to finer scales, there will be a need for additional consideration of how to sequence management actions. For example, as the CBP acknowledged, the goal is to align harvest and fishing with the need to restore natural production (consistent with the CBP's vision for thriving future salmon and steelhead populations). Similarly, artificial production is an important tool for supporting conservation and providing fish for harvest. There is a need to continually align hatchery and harvest with natural production.

**Table 4a.** Biological criteria matrix for action prioritization.<sup>20</sup>

|              |                     | Impact Level                   |                                 |                               |                                  |
|--------------|---------------------|--------------------------------|---------------------------------|-------------------------------|----------------------------------|
|              |                     | Impact Level Low<br>(less 20%) | Impact Level Medium<br>(20-30%) | Impact Level High<br>(31-50%) | Impact Level Very High<br>(>50%) |
| Stock Status | Low<br>(<25%)       | Priority 3                     | Priority 2                      | Priority 1                    | Priority 1                       |
|              | Medium<br>(26-50%)  | Priority 4                     | Priority 4                      | Priority 2                    | Priority 2                       |
|              | High<br>(51%-75%)   | Priority 5                     | Priority 4                      | Priority 3                    | Priority 2                       |
|              | Very High<br>(>75%) | Priority 5                     | Priority 5                      | Priority 4                    | Priority 4                       |

<sup>20</sup> The action prioritization criteria in **Table 4a** are based on a combination of impact and stock status derived from the CBP *Phase 2 Report*. The impact level categories refer to the limiting factor impacts in the CBP *Phase 2 Report* Figure 13, that displayed, for each stock, the impact of each limiting factor as a percent reduction in productivity from historical conditions. Stock status is based on the average annual returns of natural-origin salmon and steelhead to the Columbia River, 2008–2017 (as displayed in the CBP *Phase 2 Report*, Table 8) as a percent of the CBP mid-range abundance goal (as displayed in the CBP *Phase 2 Report*, Table 8).

**Table 4b.** Priority actions for rebuilding each stock based on the action prioritization criteria in **Table 4a**. Shading in “stock and status” column indicates stocks from the same geographic areas.<sup>21</sup>

| Stock and Status                                     | Priority 1  | Priority 2   | Priority 3   | Priority 4   | Priority 5  |
|--|---|--|--|--|---|
| Snake Spring /Summer Chinook<br><b>Low</b>           | Hydro, Tributary Habitat  | Predation, Blocked Habitat                           | Estuary Habitat, Fishery, Hatchery                     |  |   |
| Snake Steelhead<br><b>Low</b>                        |   | Tributary Habitat, Hydro, Blocked Habitat, Predation |  | Estuary Habitat, Fishery, Hatchery                             |   |
| Upper Columbia Fall Chinook<br><b>Very High</b>      |   |  |  | Hydro, Fishery   | Tributary Habitat, Estuary Habitat, Blocked Habitat, Predation, Hatchery        |
| Upper Columbia Spring Chinook<br><b>Low</b>          | Tributary Habitat, Hydro, Blocked Habitat, Hatchery                   | Predation  | Estuary Habitat, Fishery                               |  |   |
| Upper Columbia Steelhead<br><b>Low</b>               | Tributary Habitat, Estuary Habitat, Hydro, Blocked Habitat, Predation | Hatchery   | Fishery  |  |   |
| Mid-Columbia Spring Chinook<br><b>Medium</b>         |   | Tributary Habitat, Hydro                             |  | Estuary Habitat, Blocked Habitat, Predation, Fishery, Hatchery |   |
| Mid-Columbia Steelhead<br><b>Medium</b>              |   | Tributary Habitat, Predation                         |  | Estuary Habitat, Hydro, Blocked Habitat, Fishery, Hatchery     |   |
| Upper Columbia Sockeye<br><b>Low</b>                 | Tributary Habitat, Hydro, Blocked Habitat                             | Predation  | Estuary Habitat, Hatchery                              | Fishery  |   |
| Snake Fall Chinook<br><b>Very High</b>               |   |  |  | Hydro, Blocked Habitat, Fishery                                | Tributary Habitat, Estuary Habitat, Predation, Hatchery                         |
| Snake Sockeye<br><b>Low</b>                          | Hydro, Blocked Habitat  | Predation  | Tributary Habitat, Estuary Habitat, Fishery, Hatchery  |  |   |
| Upper Columbia Summer Chinook<br><b>Low</b>          | Tributary Habitat, Hydro, Blocked Habitat, Fishery                    | Estuary Habitat, Hatchery                            | Predation  |  |   |
| Mid-Columbia Summer/Fall Chinook<br><b>Very High</b> |   |  |  | Fishery  | Tributary Habitat, Estuary Habitat, Hydro, Blocked Habitat, Predation, Hatchery |
| Mid-Columbia Coho<br><b>High</b>                     |   |  | Hydro  | Fishery  | Tributary Habitat, Estuary Habitat, Blocked Habitat, Predation, Hatchery        |
| Mid-Columbia Sockeye<br><b>Low</b>                   | Blocked Habitat   | Hydro  | Tributary Habitat, Estuary Habitat, Predation, Fishery |  | Hatchery  |
| Upper Columbia Coho<br><b>Low</b>                    | Tributary Habitat, Hydro, Blocked Habitat                             | Predation  | Estuary Habitat  | Fishery  | Hatchery  |
| Snake Coho<br><b>Low</b>                             | Hydro, Tributary Habitat  | Blocked Habitat                                      | Estuary Habitat, Predation                             | Fishery  | Hatchery  |

<sup>21</sup> Stock status in **Table 4b** is based on the stock status categories defined in **Table 4a** (low, medium, high, very high), that are based on current abundance as a percent of the CBP mid-range goal (see Table 2 for current abundance and current as percent of CBP goal). Stock-specific actions in **Table 4b** are derived from the limiting factor impact levels in the *CBP Phase 2 Report*, Figure 13, and the action prioritization criteria in **Table 4a** of this report. This table provides an appropriate basis for exploring prioritization of rebuilding actions, but additional evaluation will be needed in some cases to refine understanding of action priorities.

**Question 6: Given the status in Question 2 above, what is the urgency for implementation of actions toward the goals? What sequencing of actions achieves the highest likelihood of minimizing the potential for productivity declines and achieving the generational growth necessary to achieve goals?**

Given the status of interior Columbia stocks and ongoing climate change described in Questions 2 and 3, achieving the CBP mid-range goals by 2050 requires urgent action.

Improvements in ocean conditions during 2021 provided a welcome respite, but are not expected to reverse ongoing trajectories (i.e., the increased frequency, magnitude, duration, and scope of environmental downturns) associated with a changing climate. The higher returns in 2022 have demonstrated that the salmon and steelhead populations have retained some resiliency and that aggressive large-scale actions now will be rewarded with increased abundance, in particular, those addressing density dependent limitations across the salmon life-cycle. However, 2022 has also demonstrated that despite short-term up-turns, stocks have not returned to “healthy and harvestable” levels.

All actions identified under Question 5 need to be implemented as soon as possible, but the most urgent are those that: a) provide tangible benefits shortly after implementation, b) provide the most significant survival boost for a broad range of priority populations, and c) also address habitat capacity limitations. Additional predator controls in the mainstem and expedited actions on readily accessible tributary and estuary habitat and water quality impairments address this need, but must be part of a comprehensive package that provides additional fish protections at mainstem dams, fish passage into critical blocked areas, focused habitat protection and restoration in tributaries and the estuary, and an expedited pathway to mainstem lower Snake River restoration.

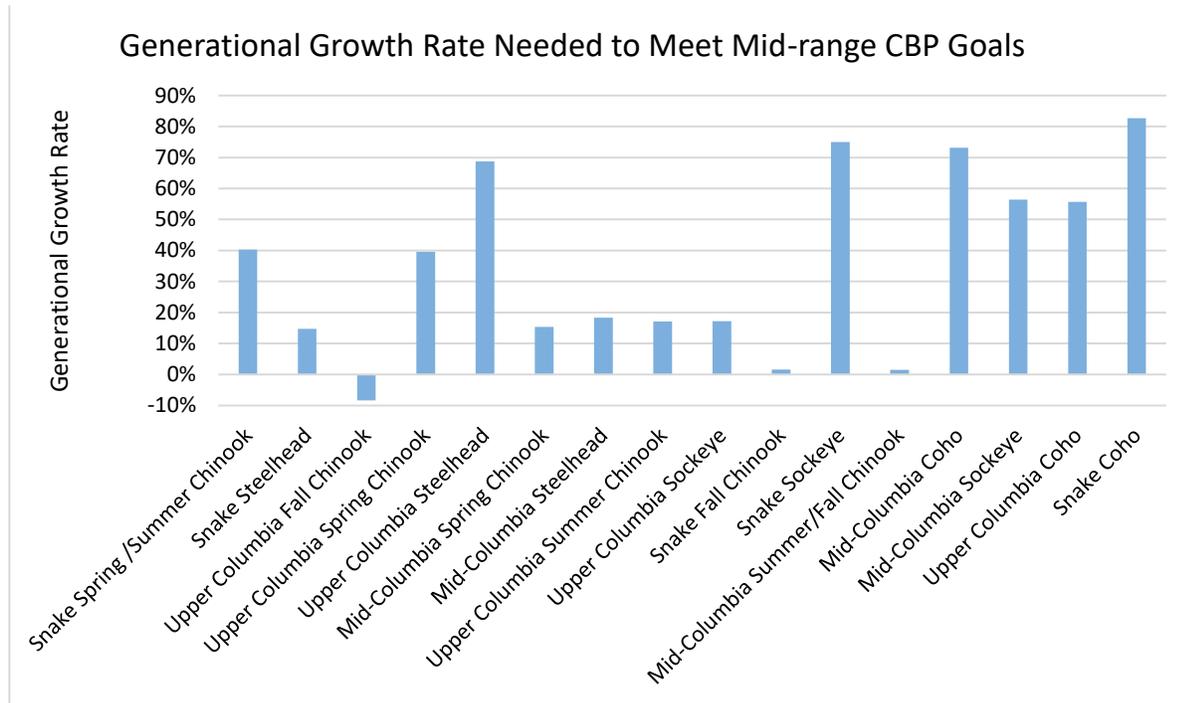
Only this comprehensive package is likely to provide the productivity improvements and expanded capacity necessary to achieve the CBP abundance goals.

All but one of the interior Columbia salmon and steelhead stocks are below their CBP mid-range goals (**Table 2**). On average, stock abundance is 33% of its goal (range: 0–149%). With most stocks at extremely low abundance, achieving mid-range abundance goals requires increasing stock productivity (by, for example, reducing mortality and increasing capacity) to levels well above replacement rate, and sustaining these levels for multiple generations. Simply put, survival under the best conditions can only double or triple abundance in a single generation, and these rates are not achievable within the constraints of density dependent limitations. Generation time varies by stock, ranging from three to six years. Depending on the stock, this provides five to nine generations between 2023 and 2050 for abundance and productivity increases to reach CBP mid-range goals.

Generational productivity varies over time. A base-level positive generational growth rate (analogous to continuous interest with compounding gains over time) must be met each generation between now and 2050—the necessary average rate across stocks being 36% (range: –8% to +83%; **Figure 3**). This required productivity increases even further if crucial survival rate improvements are not realized immediately. Survival rate increases will be delayed unless the following are begun immediately: 1)

actions that are likely to produce benefits relatively quickly after implementation, and 2) actions that have a lag time between implementation and environmental response.

Unfortunately, not all restoration actions will achieve their intended benefit. In addition, disturbance events are likely to occur that will reduce productivity. As such, the suite of targeted restoration actions should exceed the minimum level of necessary improvement. Otherwise, there is a potential for extreme natural events to cause localized extinctions (McElhany et al. 2000).



**Figure 3.** Stock-specific generational growth rate needed to achieve CBP mid-range goals by the year 2050.

The rebuilding plan for interior Columbia River basin steelhead and salmon must be based on quantitative evaluations and full life-cycle forecasts of expected benefits from action scenarios. The prioritization and sequencing will form the basis of an adaptively managed implementation scheme that must be responsive to short-term, interim performance metrics. For example, in the near-term, progress away from a quantifiably large risk of extinction for these stocks is paramount. Quasi-Extinction Thresholds (QETs) are a standard, commonly applied metric for evaluating population viability and the risk of extinction. QETs represent tipping points for population collapse, where the actual extinction potential may not be predictable or, in some cases, avoidable. Populations that fall below their QETs face higher genetic, demographic, and environmental risks, reducing their resilience and increasing their risk of extinction. The result can be an extinction vortex and a greatly reduced likelihood of recovery (Gilpin and Soulé 1986, Simberloff 1988, Fagan and Holmes 2006). Stock status assessments indicate numerous populations within the Columbia River basin are already at or below QET, with more likely to hit this threshold in the next five years (Storch et al. 2022). Over the coming decade, the probability of a stock hitting its QET can be a critically important programmatic performance metric, with the intention of moving all stocks out of the abundance and productivity range where QETs are relevant.

To achieve the CBP's mid-range goals, given the current stock status and demographic inertia identified above, it is imperative to start taking actions immediately. Also, given the large-scale, long-term nature of the necessary actions, it is critically important to continue and expand scientific monitoring and adaptive management to most effectively structure and guide the interior Columbia River basin salmon and steelhead rebuilding effort.

## **Question 7: Given the status in Question 2, what confidence do we have that salmon and steelhead will respond favorably if the actions identified in Question 5 are implemented comprehensively?**

We are confident that extant interior Columbia stocks still retain the inherent resilience to respond favorably once the recommended actions are implemented. This confidence is informed by the strong positive responses observed in the early 2000 and mid-2010s among natural-origin Snake River spring/summer Chinook salmon and steelhead when favorable ocean and other conditions aligned to provide more productive conditions for salmon and steelhead stocks. We are also confident that the comprehensive suite of actions identified in Question 5 provides the highest and only reasonable certainty of achieving survival, productivity, and capacity improvements necessary to realize the CBP’s long-term mid-range abundance goals.

Salmon life-cycle models used in previous analyses predict that breaching lower Snake River dams—in combination with other fish protection measures (e.g., enhanced spill at the four lower Columbia River dams and freshwater habitat restoration)—would have the highest increase in survival of all the alternatives considered. The range of current population projection models varies, both in the proposed mechanisms, and in the magnitude of direct and indirect mortality associated with fish passage through the mainstem hydrosystem in the Columbia River basin.<sup>22</sup> However, the common message is clear across all the work: salmon rebuilding depends on large-scale actions, including breaching dams, systematically restoring tributary and estuary habitats, and securing a more functional salmon ocean ecosystem.

Our certainty that actions must be large-scale, comprehensive, and begin immediately to avoid long-term declines and achieve abundance and survival goals is driven by the pace and completeness of implementation, tempered by ongoing climate change, and deteriorating environmental conditions beyond society’s direct or immediate influence. Question 9 addresses the range of uncertainty relating to several important salmon and steelhead population rebuilding actions, while Question 10 addresses how a science-informed decision structure could facilitate decision-making and ensure that rebuilding actions are effective, given the uncertainties that exist.

Nonetheless, our lack of precise measures or quantitative estimates of the magnitude of biological benefit expected from large-scale management actions in no way indicates that we lack confidence in their efficacy. The science robustly supports riverscape-scale process-based stream habitat restoration, dam removal (breaching), and ecosystem-based management<sup>23</sup>, and overwhelmingly supports acting, and

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<sup>22</sup> Ranges of scenarios across combinations of management sectors evaluated are presented in McCann et al. (2018), Petrosky et al. (2020), Zabel and Jordan (2020), and USACE et al. (2020).

<sup>23</sup> Ecosystem-based management (EBM) refers to actions that protect ecosystem structure, function and key processes. In the case of interior Columbia basin salmon and steelhead stocks, EBM could be a suite of management and mitigation options that attenuate the recent increase in predator abundance, increased consumption rates that coincide with warmer ocean conditions, and the anticipated reduction in marine survival rates due to climate change (Crozier *et al.* 2021). These include A) more active management of salmon predators such as seabirds and pinnipeds, including harvest management, B) enhanced forage fish management to provide a predator refuge for salmon, C) optimizing freshwater actions to “carryover” physiological benefits for salmon (such as increased size)

acting now. Notwithstanding uncertainty surrounding the exact magnitude of beneficial response of acting, the CBP's mid-range abundance goals will not be met unless these actions are implemented.

The fisheries management community of the Columbia River basin has identified a wide range of management actions with confidence in achieving intended physical and biological benefits. Recent, large-scale dam removal projects on the Elwha, Nooksack, Hood, Wind, White Salmon, Sandy, and Rogue rivers have all resulted in broader and quicker biological and physical benefits to local and regional riverscapes than expected. Process-based stream, river, and floodplain restoration projects in portions of many watersheds across the West (e.g., Lemhi, Pahsimeroi, John Day, McKenzie, Whychus, Fivemile, and Bell rivers) have resulted in rapid increases in abundance and productivity of resident or anadromous salmonids.<sup>24</sup> Ecosystem-based management actions have addressed the impacts of some natural and human-influenced activities in the mainstem and estuary of the Columbia and Snake Rivers, effectively reducing their impacts on migrating juvenile and adult salmonids.

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into the marine environment, and D) altering hatchery practices and management actions to strategically benefit other protected species in the ocean, such as southern resident killer whales.

<sup>24</sup> By returning some normative fluvial and biogeomorphic processes to these riverscapes.

## **Question 8: If the actions identified in Question 5 are implemented comprehensively for salmon and steelhead, how would they benefit or degrade conditions for other species?**

Generally, native aquatic and terrestrial species will benefit from the actions identified above for anadromous salmon and steelhead due to the restoration of natural ecosystem structure and function (Storch et al. 2022). Breaching of the lower Snake River mainstem dams would transform the anthropogenic reservoir habitats back into a river with more functional connected floodplains, naturalized water velocity, and favorable river-channel morphological conditions. Passage improvements and reintroduction of anadromous salmon and steelhead to blocked areas would inject currently missing marine derived nutrients, benefit ecosystem function through improved primary productivity, provide aquatic and terrestrial connectivity, and increase diversification of native aquatic biota (Gende et al. 2002, Mathewson et al. 2003, Francis et al. 2006, Tonra et al. 2015, Bryson et al. 2022). Tributary water quality and quantity improvements would increase the quality of spawning and rearing habitats for both salmon and steelhead, but also for native resident species such as bull trout. These benefits would take time to fully realize, therefore accentuating the need for sequencing, prioritization, and long-term planning.

Some exceptions to the overall benefits of these actions may result due to the long-term existence of the anthropogenic function of the system that has altered historical ecosystem functions. For example, actions to intentionally reduce the abundance or distribution of native aquatic, terrestrial and avian species that feed on salmon and steelhead, e.g., lethal removal or hazing of pinnipeds, northern pikeminnows, and birds, such as gulls, terns, cormorants, and pelicans, would negatively impact their production and survival. These native species have capitalized on the hydropower system operations that result in slower transit times of migrating salmonids due to reservoir creation and island habitat formation. In the short-term, some management of these species may be necessary to support survival of salmon and steelhead recovery efforts. However, balancing multiple overlapping and interacting protected species is inherently complex and involves full consideration of both the long and short-term consequences.

The comprehensive suite of actions provides a myriad of benefits with some ramifications to native species, if fully implemented. The following sections provide a high-level review of the benefits and complicating factors for several key native species (e.g., bull trout, Pacific lamprey, white sturgeon, pikeminnow, avian and terrestrial waterfowl) for the actions identified in Question 5.

Breaching the lower Snake River dams would directly improve floodplain connectivity, natural sediment distribution and riparian habitat conditions benefiting both aquatic and terrestrial species, improve spawning habitat for species such as white sturgeon, and restore free-flowing migratory corridors for several aquatic species including bull trout, lamprey and sturgeon. Restoring and reconnecting floodplains clearly provides a myriad of benefits. A floodplain-connected valley is inherently more diverse and productive, not only for aquatic species, but across the entire floodplain (Bellmore and Baxter 2014). On the seasonally wet floodplain surface, vegetation productivity and plant and animal species richness and diversity are higher than on a disconnected, permanently dry terrace (Wohl et al. 2021). In the channels of a connected floodplain reach, primary productivity is higher, macroinvertebrate communities are richer and more productive (Nummi et al. 2021), and amphibian and fish productivity is higher (Anderson et al. 2015, Bouwes et al. 2016a) than in the simple channels of a disconnected reach. While these internal benefits are independently valuable, they are only a small fraction of the potential benefits that restored riverscapes can provide in the face of climate change (Wohl et al. 2017). When we reconnect streams and

rivers to their floodplains, we perform both climate mitigation work (slowing/ stopping the trajectory of global warming impacts) and climate adaptation work (building resilience and resistance to climate-driven disturbances that are already occurring (Skidmore and Wheaton 2022)).

Connectivity for migratory resident and anadromous species will directly improve with breaching of the Snake River dams. Currently fish passage facilities are designed for salmonids, however the effectiveness of the Snake River dam passage facilities at passing bull trout is unclear. Bull trout, listed as threatened under the ESA, exhibit a continuum of life histories involving lengthy migrations between spawning and rearing areas and areas of foraging and overwintering habitats. Maintaining connectivity between tributaries and within the mainstem Columbia and Snake rivers is essential for genetic exchange among core populations, supporting their resiliency against environmental and anthropogenic disturbances and ensuring a high likelihood of population viability and recovery (Barrows et al. 2016; USFWS 2015). In addition, bull trout with free-flowing, well connected habitats are larger, more fecund, and resilient to consequences of climate change and non-native species presence (i.e., brook trout). Breaching of the Snake River dams would increase access to essential foraging, migration and overwintering habitat important for bull trout throughout the Snake and Columbia Rivers (USFWS 2015, USFWS 2020a).

Current mainstem dam adult fish ladder structures preclude passage of about 50% of adult Pacific lamprey, such that fewer than 1% make it to the upper portions of the Columbia and Snake River basins. Juvenile Pacific lamprey mortality occurs when they impinge on the turbine screens designed to protect juvenile salmonids as they emigrate to the ocean. Breaching the lower Snake River dams would remove these threats to adult and juvenile Pacific lamprey in the lower Snake River reach, as well as the juvenile mortality associated with dredging navigation channels in that reach (USFWS 2020b). Substrates in the Snake River would return to more natural consistency, improving rearing conditions for juvenile Pacific lamprey.

White sturgeon migration and passage at the Snake River dams is limited. Breaching of the dams would provide free passage and access to additional spawning areas allowing for viable natural recruitment and continuous connectivity with areas upstream in the Snake and Clearwater Rivers (Storch et al. 2022). Spawning and subsequent juvenile production is currently constrained to the free-flowing reach of the Snake River between the upper end of Lower Granite Reservoir and Hells Canyon Dam. As there is currently no upstream passage for adult white sturgeon at the dams, breaching the lower Snake River dams would ultimately allow unrestricted movement of juvenile and adult white sturgeon throughout the expanded free-flowing reach from McNary Dam to Hells Canyon Dam.

Dam breaching will likely negatively impact native sedentary species such as freshwater mussels or lamprey ammocoetes in the short-term due to changes in water elevations and sediment distribution (USFWS 2020b). This effect will be particularly acute in the Lower Snake River and the McNary Reservoir (i.e., Lake Wallula). While there will likely be negative impacts on freshwater mussel habitat and other non-migratory species associated with the release of accumulated sediment, these impacts will also be short-term given the sediment transport capacity of the Lower Snake River (Grant and Lewis 2015). Over the long-term, breaching the earthen portions of the four Lower Snake River dams will likely lead to the reestablishment of natural hydrologic processes (e.g., deposition and sediment transport). Returning to a more natural flow regime would, in turn, promote island habitat and side channel sub-habitat formation, habitat that supports many aquatic species and multiple life history strategies.

In addition, the removal of reservoir habitat due to dam breach will likely decrease the abundance of northern pikeminnow as well as other non-native predatory species who have capitalized on the lowered

velocities and shallow areas formed by reservoir operations. Although native to the Columbia River basin, the current abundance of northern pikeminnow is unnaturally high due to their increased productivity in reservoir habitats. Elevated pikeminnow population levels have resulted in unnaturally high predation rates on juvenile salmon and steelhead, necessitating Washington to implement a “bounty” program for northern pikeminnow within the mainstem Columbia and Snake Rivers. Restoring a more natural flow regime and riverine channel morphology in the mainstem reaches of the Columbia and Snake Rivers will dramatically reduce the abundance, distribution and encroachment of undesirable non-native species that thrive in reservoir habitats. Several of these species (walleye, smallmouth bass, and catfish) feed on native juvenile salmon, steelhead, and lamprey. Several other non-native species (e.g., carp and American shad) alter the food web and likely compete with native species for food. Native, diverse macro-invertebrate communities will improve, and while eliminating the reservoir environments will not preclude future invasion by zebra or quagga mussels, it would add approximately 140 miles of viable habitat for native mussel species and likely improve substrate conditions for native host species (e.g. sculpin).

Within the lower Snake River corridor, gulls, terns, cormorants, and pelicans congregate and feed on disoriented juvenile salmon and steelhead in dam forebays and tailraces. Avian nesting colonies are not prevalent within this reach, so breaching the lower Snake River dams would not alter nesting habitat, but it could change the distribution of avian species into the mid- and lower Columbia reservoir habitats. Restoration of natural riparian conditions along the Snake River after dam breach will increase habitat for terrestrial species (e.g., deer and waterfowl) and amphibians over time. The improved riparian conditions, combined with natural flow regimes in the Snake River are expected to increase the presence of cottonwood galleries and other riparian shrubs and vegetation, which are limited in the region. These habitats are key for ESA listed yellow-billed cuckoo and other avian species such as osprey, eagles, and herons.

While there are some uncertainties on the full extent of the benefits of dam breach for native aquatic species and short-term negative effects are expected, there is evidence from other dam removals in the region that the overall long-term benefit is high. For example, in the Elwha River, the removal of several dams has opened up habitat to anadromous salmon, steelhead, and bull trout that were historically blocked. Recent reports show that all species of salmon, steelhead and bull trout have migrated to areas above the historical dams and increased spawning has occurred (Brenkman et al 2019; Duda et al 2021). In the White Salmon River, the removal of Condit Dam resulted in new observations of bull trout above the historical dam site and evidence of migrations between the Columbia River and above the dam site (USFWS 2020).

As with breach, actions to restore access to blocked areas (e.g., above dams that provide no upstream passage) and reintroduction of anadromous salmon would benefit not only salmon and steelhead, but also resident aquatic and terrestrial species. For example, Fish and Hanavan (1948) reported the construction of Grand Coulee Dam, in the upper Columbia River, precluded anadromous fish from over 1,000 miles of spawning and rearing streams, and as a result, substantial fish production was lost (UCUT 2019). While listed in the Columbia River basin, threatened Kootenai River white sturgeon are unlikely to be impacted positively or negatively as they are geographically isolated due to natural and manmade barriers for approximately 10,000 years (Alden 1953, USFWS 1999).

Bull trout and other native resident species such as cutthroat, redband, mountain whitefish, and white sturgeon all benefit from passage improvements and reintroduction of anadromous salmon and steelhead to any of the anthropogenically blocked areas (Hardiman et al 2017). Most of these species historically coexisted with anadromous salmon populations, and the loss of marine derived nutrients has reduced

nutrients and productivity in these areas. The marine-derived nutrients from spawned-out salmon carcasses fertilize low- productivity, high-elevation streams, setting the stage for the next generation of juveniles emerging from the gravel. As a result, aquatic flora and fauna will proliferate, supporting populations of resident fish species that are currently constrained or limited by low productivity. Juvenile salmonids provide high quality forage for bull trout and other native species and increased natural production over time aids in the diversification of forage base for native species. Some risks to populations in blocked areas could occur with reintroduction due to possible introduction of pathogens and increased competition in spawning and rearing areas of bull trout and other native resident species (Hardiman et al 2017).

Tributary habitat improvements for water quality and quantity are likely completely beneficial to bull trout and other native resident species. Similar to the benefits described for dam breach, bull trout and other native aquatic species will have better access to spawning and rearing areas and high-quality forage with improvements in water quality and quantity. Although native fish communities in the Columbia River basin represent a broad range of life-history strategies and have varying habitat requirements, many of the processes and mechanisms that dictate survival and productivity likely overlap. Thus, it stands to reason that actions restoring and reconnecting floodplains essential to support the life histories of salmon and steelhead would also benefit other native migratory species (e.g., Pacific lamprey) that have been imperiled by partial or complete loss of access to essential spawning and rearing habitat.

Healthy, productive salmon and steelhead populations are critical to multiple aquatic and human ecosystems in our region. Adult and juvenile salmon are the natural prey base for marine mammals. Tribal cultural and subsistence harvest opportunities have become limited, and commercial and recreational fisheries are closing. Pacific salmon and steelhead can no longer be the base for key biological and social networks across the region. Mainstem river rehabilitation, together with stream restoration across the tributary environment, is needed.

## **Question 9: Are there **uncertainties** associated with the efficacy of the actions identified in Question 5 and how might the region resolve these uncertainties?**

NOAA Fisheries' recovery plans (NMFS 2009, 2015, 2017a, 2017b; UCSRB & NMFS 2007) and 5-Year Reviews (NMFS 2022a, b, c, d, e, f ) for ESA-listed interior Columbia River basin salmon and steelhead stocks advise that many substantial actions, affecting every stage of their life-cycles, will be needed to increase the abundance and productivity of salmon and steelhead populations to achieve ESA recovery goals. Clearly, even more substantial actions will be needed to achieve the substantially higher mid-range abundance goals in the *CBP Phase 2 Report* (NMFS 2020a). It is true that despite the wealth of scientific knowledge and practical experience with salmon restoration, uncertainties regarding the efficacy of many of the actions described in response to Question 5 remain. It is equally true that these uncertainties are unlikely to be addressed unless large-scale actions are implemented and the effects of these actions on the productivity and abundance of salmon and steelhead are assessed. Adaptive management could play a central role and guide regional efforts in order to increase the likelihood of achieving the mid-range abundance goals. The following list, while by no means exhaustive, is intended to identify important factors or actions for which understanding and managing the implications of the uncertainty will be important. The sequencing and prioritization of actions during implementation should consider relevant uncertainties and make use of adaptive management approaches described under question 10.

- Climate change will continue to affect salmon and steelhead and their habitat in freshwater, estuarine, and marine environments. However, there is uncertainty about how these environments will be affected decades into the future, whether these types of effects can be mitigated, and how individual stocks and the communities they depend upon will respond to the changing conditions. Monitoring and modeling will be essential for developing actions that might be effective at lessening the impacts of climate change for individual stocks of salmon and steelhead throughout the life cycle.
- In many instances, density dependent factors are likely constraining the productivity (limiting the number of juvenile salmon and steelhead produced in freshwater spawning and rearing areas) of salmon and steelhead populations, since even under current abundance levels that are far below historical levels, life-stage specific productivity is low. Additionally, low survival rates of juvenile salmon and steelhead from tributary streams to the mainstem Columbia and Snake rivers likely constrain the productivity of the affected populations. Identifying what factors are responsible for these low survival rates will be essential for developing effective actions to reduce this constraint. Separating survival from capacity limitations, that is, understanding why density dependence is more evident than expected at low abundance, will be needed in order to develop effective actions to reduce this constraint.
- Decades of stream and river habitat restoration actions have made improvements in the quality and quantity of salmon and steelhead spawning and rearing environments, but measuring the magnitude of fish population response is challenging. Of the large-scale experimental watershed restoration projects in the Pacific Northwest (Intensively Monitored Watersheds, or IMWs), half have documented a beneficial response of restoration actions with respect to salmon and steelhead abundance or productivity metrics (Bilby et al. 2022). Importantly, this does not mean that the actions are not providing a benefit, especially when viewed in the context of long-term implementation of habitat improvement actions. Actions may be having a benefit even though the benefit cannot be detected in modeling or monitoring for various reasons, including

countervailing effects such as ocean conditions or increased predation, variability in life-stage survivals, the fact that not a large enough portion of a watershed or the right factors have yet been treated, and, in the case of models, uncertainty in assumptions or parameters (Appendix A of NMFS 2020b; also see Hillman et al. 2016, Pess and Jordan eds. 2019). Given the scale of stream and river habitat restoration that will be required to achieve the CBP mid-range goals, the current model for identifying, designing, and implementing stream, river, and floodplain restoration needs to be improved. Key advances in adaptive management and program design (Bouwes et al. 2016b), understanding of bio-fluvial processes, and how to leverage this knowledge in riverscape restoration (e.g., Powers et al. 2019), provide a framework for an evolving approach to riverscape restoration that would enhance benefits to salmon and steelhead.

- Long-term, on-going field surveys have shown that all salmon and steelhead reside for some time in polluted habitats, with environmental health consequences that may be delayed in time (i.e., sick fish do not survive their first year in the ocean). Many food webs in the lower river are contaminated with PCBs, DDTs, PAHs, and other legacy pollutants. Moreover, human population growth in the greater Portland metropolitan area (as well as cities inland) remains ongoing, and is expected to increase substantially with future climate migration. This will invariably increase toxic exposure, as more people on the landscape translates to more land conversion (to impervious surfaces), more stormwater, more wastewater, etc. The relative exposure risk will also be influenced by climate change and water quantity, as lower in-river flows mean less dilution for more pollution in salmon rearing and migration corridors. These chemical habitat considerations (limiting factors) have generally not been addressed by the decision support tools currently guiding federal salmon recovery managers in the Columbia River basin. There are numerous management options that demonstrably reduce toxic loadings, with clean water outcomes that improve salmon survival. This remains a potentially highly consequential area of uncertainty for species conservation and restoration in the basin.
- Non-native invasive species, including fish species like smallmouth bass, walleye, and brook trout, are important sources of predation on juvenile salmon and steelhead stocks and have affected their productivity (Carey et al. 2012; Sanderson et al. 2009). The current combined impact of these species on salmon and steelhead is not well known and thus could not be fully assessed in the *CBP Phase 2 Report*. Exactly how these species are altering food webs and affecting salmon and steelhead stocks in response to changing climate conditions is also unknown. More non-native species are likely to be introduced into the Columbia River basin in the coming decades, but the effect of these species on extant populations of salmon and steelhead is largely speculative. For example, northern pike are of great concern, as these voracious predators have been introduced above Grand Coulee Dam and are increasing in abundance and distribution. They are expected to eventually make their way into the salmon migration corridors of the Columbia River and its tributaries. Climate change is also altering the distribution and assemblages of predator, prey, and competitor species in the marine environment. Understanding how invasive species and altered species assemblages affect salmon and steelhead stocks, both in the freshwater and marine environments, will be critical for developing effective actions to limit these impacts.
- Avian predators (e.g. gulls, cormorants, terns) annually consume large numbers of juvenile salmon and steelhead in the Columbia River basin. Predation opportunities are enhanced by human activities on the landscape (breeding habitat on islands created from dredged material and on bridges, feeding opportunities in the tailraces and reservoirs of mainstem and tributary dams). At the same time, our hatchery programs, although crucial to replace lost production, ensure that piscivorous birds have a prey base every year. That is, we have lost, or at least substantially dampened, any predator/prey cycle that may have existed in the undeveloped system. The

magnitude of future losses of juvenile salmonids to avian predators, and the extent to which this will be a compensatory or additive type of mortality is uncertain—especially with respect to future geographic, seasonal, and inter-annual variability. Continuing to assess the results of our management actions will be needed to sustainably manage native, predacious bird populations to minimize their impacts on salmon and steelhead stocks.

- There is uncertainty regarding the direct productivity and survival benefits that might accrue to salmon and steelhead stocks from breaching Snake River dams. Breaching would, over time, substantially increase the amount of available spawning habitat for fall Chinook salmon in the Snake River basin, but the productivity of this habitat relative to other major spawning areas is unknown. It is also expected that juvenile survival rates would increase as they would no longer pass through dams and the associated reservoirs would no longer exist (i.e., decreased migration times, increased turbidity levels, etc.). If dams were breached, predators (birds and native and non-native fish species) would likely disperse and no longer be concentrated near the dam sites, but we assume they would continue to prey upon juvenile salmon and steelhead in other areas to some degree. Thus, while juvenile survival rates would be expected to increase, compared to the roughly 75 percent average survival rates currently observed for yearling Chinook salmon, sockeye, and steelhead smolts between Lower Granite and McNary dams, the actual survival rates that would result in the lower Snake River from dam breaching would be less than 100 percent due to continuing impacts of predators.
- Latent, or indirect, mortality is defined as mortality associated with passing dams that is not expressed until after a juvenile fish passes through the hydropower system and enters the estuary and ocean. While most researchers agree that some level of latent mortality results from an individual fish's passage experience through mainstem Columbia and Snake river hydroelectric projects, there continues to be substantial disagreement with regard to its potential magnitude, with studies supporting both high and low magnitudes. Additionally, most estimates are specific to only a few stocks of fish—primarily stream type Chinook salmon and steelhead populations. Many of the benefits associated with operational or structural actions aimed at reducing the number of juveniles passing mainstem hydroelectric projects via turbine units or bypass systems, including increased voluntary spill and dam breaching, are dependent on the magnitude of latent mortality associated with passing the dams. Dam breaching would eliminate the latent mortality associated with passing through the lower Snake River hydropower system. Given the uncertainty regarding the magnitude of latent mortality, assessing restoration actions and whether they result in predicted improvements on targeted salmon and steelhead stocks, e.g., employing a monitoring system to track the fate of individuals both before and after dam breaching, will be an important part of a comprehensive strategy to rebuild these stocks.
- The fate of hatchery-origin adults returning to the interior Columbia river basin extends beyond harvest in fisheries or return to a hatchery. Adult hatchery-origin salmon may enter and spawn within natural spawning areas, directly competing with natural-origin adults for space and spawning opportunities. These interactions are simply indexed by the pHOS measures that are represented in **Table 3**, from data reported in the CBP report. The actual quantitative effects of straying hatchery-origin adults on the productivity of natural-origin populations are not well established. Progeny produced from hatchery and natural-origin crosses may not meet conservation mandates and these juveniles may or may not match the productivity of natural-origin juveniles. Together, these issues suggest that there are trade-offs that need to be recognized and assessed with regard to increasing the productivity, abundance, and harvest opportunities associated with natural-origin stocks and also maintaining or optimizing the current harvest of hatchery-origin fish. Increasing the productivity, abundance and harvest opportunities

associated with natural-origin stocks may require decreasing the release of hatchery-origin juveniles and the associated return of hatchery-origin salmon adults. The cumulative effect of potential decreases in hatchery production, designed to benefit natural-origin stocks, on total harvest opportunity for adult salmon (natural + hatchery) is an issue worthy of examination. An overall conclusion is that population trajectories for natural-origin stocks cannot be assessed or predicted without considering the effects of co-occurring hatchery-origin fish.

- Reintroduction of salmon into blocked areas above Grand Coulee Dam appears to be conceptually the only way to meet the goals identified by the CBP for the Upper Columbia. However, successful reintroduction will be challenging. Even if spawning adults can be successfully re-established above Grand Coulee, there is uncertainty regarding how to achieve juvenile passage and survival rates through the large upper reservoirs sufficient to meet the CBP goals. Current reintroduction plans by the Upper Columbia United Tribes call for a staged, carefully monitored, adaptive approach, which is sensible and appropriate given these uncertainties. Similar planning to understand the logistical considerations and manage uncertainties exist for other potential reintroductions, such as the Middle Snake. It is important to continue to support reintroductions of salmon into blocked areas with scientific studies that will allow managers to make the best informed choices in order to increase the odds of success.

Clearly, there are many factors that substantially affect the abundance and productivity of interior Columbia River basin salmon and steelhead stocks, and for which uncertainties exist. Working to resolve these uncertainties will support successfully rebuilding these fish stocks. However, any effort to resolve or reduce uncertainty will require an investment in science. While the current state of scientific understanding in the basin supports actions as described in this report, there is a strong and ongoing need to continue to reduce and resolve the uncertainties listed above and to rigorously monitor and understand change, including climate change and the impacts from management actions, throughout the rebuilding program implementation. As such, the development and use of a transparent, integrative decision support framework (see Question 10) will be critical for both assessing the relative importance of differing assumptions and for incorporating new information to adaptively manage the interior Columbia River basin salmon and steelhead rebuilding enterprise.

## **Question 10: What is the role of a science-informed decision structure in the implementation of major management actions for priority stocks?**

The most appropriate decision structure to deal with the scale of the issues surrounding rebuilding salmon stocks of the Columbia River basin is the development and implementation of an adaptive management strategy. Adaptive management is defined as a structured, iterative process of decision to reduce uncertainty over time through monitoring and evaluation (Williams et al. 2009). Adaptive management has been used to guide large-scale aquatic restoration programs including programs in the Chesapeake Bay, the Florida Everglades, the Great Barrier Reef, and the Elwha River (Peters et al. 2014, Diefenderfer et al. 2021). It is important to note that many adaptive management programs have failed due to three primary reasons. First, a lack of the human and financial resources for the monitoring needed to carry out large-scale actions in the context of interim performance metrics and regular, structured adjustments. Second, the need to admit and embrace uncertainty in making policy choices. Lastly, a lack of individuals willing to do all the hard work necessary to plan and implement new and complex management programs (Walters, 2007).

Successfully implementing adaptive management would be important to inform decision making on the scale of rebuilding Columbia basin salmon and steelhead stocks. It provides the ability to incorporate all types of human impacts – climate change, habitat degradation, hydropower development, harvest, and hatcheries – and to integrate the effects of management actions using a suite of viable salmonid population metrics (VSP: abundance, productivity, spatial structure, and diversity; McElhany et al. 2000, Peters et al. 2014). Each management action can be associated, directly and indirectly, to the VSP metrics, allowing the management community to use data to guide the types and sequencing of actions needed for rebuilding. To demonstrate progress, the program must collectively establish the most relevant performance metrics around which to build the program's implementation, evaluation, and reporting structure.

For example, consider the Elwha River dam removal project, a major salmon and steelhead rebuilding effort that required considerable investment and the development of a societally accepted plan prior to implementation. The Elwha River dam removal included not only a change in habitat condition due to the reconnection of 90% of the historically available habitat, but included other management actions such as a harvest moratorium, alterations to hatchery practices, and stream restoration work in the Lower Elwha River below the dams. Managers and scientists working on the dam removal project recognized that cumulative, simultaneous restorative actions were necessary to reverse the trend of declining salmon and steelhead populations.

Before the dams were removed, a detailed adaptive management guideline document was developed by both managers and scientists working in the Elwha (Peters et al. 2014). The document focused on two of the three listed species – Chinook salmon and steelhead. It recognized that NOAA Fisheries had called for the phasing out of hatchery operations over the long term, but that those programs were needed in the short term. The group developed performance metrics for the different phases that were linked to the viable salmon population metrics. These metrics are measured and reported annually, and used by program managers to decide if hatchery or harvest management of the focal species can move to the next phase. The annual reporting, discussion, and decision making process also allows the managers and scientists to identify emerging issues and elements that are not working smoothly and the status of

uncertainties in both the management actions and metrics. This structure also allows for the co-managers to lead the effort and the federal agencies to be a supporting role for the ultimate programmatic decision making.

The limiting factor and action priorities provided in this report are a basis for exploring the relative magnitude of key limiting factors and action priorities at the stock scale for the interior Columbia basin. Although some factors, such as manageable effects on ocean conditions, some manageable impacts of predators, and toxic pollutants were not integrated into the CBP limiting factors analysis, they could be integrated into implementation planning moving forward. In addition, for tributary habitat restoration, hatchery reforms, and, in some cases, opening access to blocked habitat, a population- or finer-scale analysis would be appropriate to guide sequencing watershed-scale implementation planning. For instance, to develop implementation plans for providing access to blocked areas at a stock scale, watershed-scale evaluations are needed to rank implementation order by return on investment or risk, as well as integrating secondary effects such as legacy toxic contamination, and potential for habitat improvement. Such broad-scale evaluations over the range of limiting factors across the priority stocks of the interior Columbia basin highlights the importance of a science-based decision support structure as the region moves forward with implementation planning.

In summary, adaptive management-based decision making can structure plans and actions that increase salmon populations regionally. Multiple, long-term, cumulative impacts have contributed to depleted salmon and steelhead stocks. Reversing these effects and rebuilding abundant and diverse, healthy and harvestable stocks, and high-quality freshwater, estuary, and ocean habitat will require multiple and synchronized cumulative large-scale actions through a well-designed and societally-supported adaptive management plan.

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League of Conservation Voters \* Northwest Guides and Anglers Association  
Nimiipuu Protecting the Environment \* Northwest Sportfishing Industry Association  
Orca Conservancy \* Oregon League of Conservation Voters  
Pacific Coast Federation of Fishermen's Associations \* Snohomish County Indivisible  
Save Our wild Salmon Coalition \* Sierra Club \* Washington Conservation Action  
Washington Wild \* Wild Orca \* Wild Steelhead Coalition \* Willamette Riverkeeper*

January 29, 2024

The Honorable Jeff Duncan, Chair  
Subcommittee on Energy, Climate, and Grid Security  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Diana DeGette, Ranking Member  
Subcommittee on Energy, Climate, and Grid Security  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chair Duncan and Ranking Member DeGette, and members of the Subcommittee:

In advance of the January 30 hearing in the House Energy and Commerce Committee's Subcommittee on Energy, Climate, and Grid Security, we write to you on behalf of millions of our members to express our strong support for protecting and restoring abundant Columbia and Snake River salmon and steelhead populations – and rebuilding the many irreplaceable benefits they bring to the Northwest and nation.

Salmon and steelhead are an integral part of life in the Northwest. They are the foundation of an entire ecosystem from forests to orcas; they support multi-billion dollar industries and family wage jobs from commercial fishing to tourism and manufacturing in rural communities; and most importantly, they are indispensable to the cultures and ways of life for many Northwest Tribes that have relied on them since time immemorial and to whom we owe solemn legal responsibility enshrined in treaties and other agreements.

The Columbia and Snake rivers were once the largest salmon-producing river system in the contiguous United States, but now many runs – and all of those that still return to the Snake River-- are listed as endangered or threatened. Many others have already been lost. Decades of scientific study confirm that the federal hydroelectric dams on the Columbia and Snake Rivers play a leading role in these devastating declines.

It is impossible to imagine the Northwest without salmon—yet we are perilously close to losing many runs of these remarkable fish. The federal government’s own analysis predicts that the continued operation of these dams will drive many Snake River salmon runs to extinction in the near term. (1) More recent analysis by fisheries experts with the Nez Perce Tribe predicts that many of these same Snake River populations may become functionally extinct in the near future, unless we act with urgency to change their trajectory. (2)

The loss of our native salmon is as unnecessary as it is unacceptable. Salmon scientists have repeatedly concluded that even in a warming world, we can restore Snake River salmon and steelhead to healthy and abundant levels—if and only if we restore the lower Snake River by breaching its four costly federal dams. (3)

In 2021 Representative Simpson of Idaho (R) put forth an ambitious and comprehensive proposal advancing an important conversation across the region regarding the urgency and opportunities to responsibly restore the lower Snake River and replace the services provided by its four dams so that the Northwest will continue to have abundant and affordable clean energy, accessible transportation for agricultural products and other goods, and irrigation for established farmland.

Additional analyses, including the lower Snake River report and recommendations (August 2022) by Senator Murray and Governor Inslee, stated, “the status quo is not a responsible option; extinction of salmon is categorically unacceptable”. Senator Murray and Governor Inslee further stated in their recommendations, “we must move forward in a way that restores our salmon populations and acknowledges and redresses the harms to Tribes while responsibly charting the course to an energy and economic future for Washington state and the region. It is for these reasons that we previously stated that breaching of the Lower Snake River Dams should be an option, and why we believe, at the conclusion of this Process, that it must be an option we strive to make viable”. (4)

Gov. Inslee and Washington State legislators followed through on these commitments and secured \$7.5 million dollars in 2023 to begin the planning processes to replace the energy, transportation, and irrigation services currently provided by the dams. We know we can feasibly and affordably replace the services of the lower Snake River dams with reliable, modernized infrastructure.

The Biden Administration has also made clear that we must turn away from the “business as usual” approach of the past and chart a new path forward in the Columbia Basin. (5) Last month, the White House, the States of Oregon and Washington and four Columbia Basin Tribes announced an historic Agreement and important first step toward a comprehensive solution to restore healthy and abundant salmon populations. (6)

The Agreement provides a multi-year pause in litigation to allow for implementation of commitments, actions, and federal investments advancing the recovery of salmon, steelhead and other Native fish populations throughout the Columbia River Basin, including more than half a billion dollars in federal funding to the region and additional resources for habitat restoration and fish passage infrastructure.

Federal investments required to restore the lower Snake River and replace and modernize irrigation, energy, and transportation infrastructure will provide significant economic benefits to

Tribal and non-tribal communities in the Columbia Basin and across the Pacific Northwest, while addressing the impacts of climate change and the crisis facing salmon and orcas. The December Agreement represents a turning point in the long-standing litigation to protect and restore Snake River salmon, and it builds upon comprehensive bi-partisan efforts, conclusive science, regional planning, public input, and State, Federal and Tribal leadership.

The Northwest today faces a moment of great urgency *and* opportunity. We ask the members of this subcommittee to work closely with the Biden Administration, Tribal Nations, stakeholders, and the region's residents to support this December Agreement and help secure funding and advance programs to replace the services of the Snake River dams so we can restore the river and breach the dams by 2030 at the latest.

Congress has a critical role to play to help develop and implement a comprehensive solution that will restore healthy and abundant salmon in the Columbia and Snake Rivers, provide a long-overdue measure of justice for Native American Tribes, invest in a clean and affordable energy grid, and ensure healthy communities and a successful transition to a strong and robust future.

Sincerely,

Bill Arthur, Snake/Columbia River Salmon Campaign Chair  
*Sierra Club*

Liz Hamilton, Executive Director  
*Northwest Sportfishing Industry Association*

Lennon Bronsema, Vice President of Campaigns  
*Washington Conservation Action*

Cameron Walkup, Senior Legislative Assistant  
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Glen H. Spain, J.D., NW Regional Director  
*Pacific Coast Federation of Fishermen's Associations*

Tom Uniack, Executive Director  
*Washington Wild*

Thomas O'Keefe, PhD, Pacific Northwest Stewardship Director  
*American Whitewater*

Susan Holmes, Executive Director  
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Madeleine Foote, Deputy Legislative Director  
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Rev. AC Churchill, Executive Director  
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Robert Dewey, Vice President, Government Relations  
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Miles Johnson, Legal Director  
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Travis Williams, Executive Director  
*Willamette Riverkeeper*

Donald J Miller, Environmental Liaison  
*Snohomish Co. Indivisible*

Rich Simms, Founding Member  
*Wild Steelhead Coalition*

Shari Tarantino, Executive Director  
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Rick Williams, FFI Senior Conservation Adviser  
*Fly Fishers International*

Mitch Cutter, Salmon & Steelhead Associate  
*Idaho Conservation League*

Bob Rees, President  
*Northwest Guides and Anglers Association*

Nic Nelson, Executive Director  
*Idaho Rivers United*

**CITATIONS:**

1. See NMFS' Endangered Species Act Section 7(a)(2) Biological Opinion for the Continued Operation and Maintenance of the Federal Columbia River Power System at p.275 ("Based on life-cycle modelling of [hydrosystem operations in combination with] future RCP 8.5 climate emission scenario for [Snake River] spring/summer Chinook salmon populations, the median abundance of stream-type spring and summer-run Chinook salmon populations could decline substantially in the next two to three decades. Declines of this magnitude, if they were to occur, would threaten to extirpate a large number of small populations, and would substantially reduce the abundance and productivity of larger populations.").

Statement of the *American Fisheries Society* (AFS) and the *Western Division AFS* (WDAFS) about the need to breach the four dams on the Lower Snake River (January 2023)

Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2023 Draft Annual Report (August 2023)

2. Nez Perce Tribe and the New Perce Fisheries: Snake Basin Chinook and Steelhead Quasi-Extinction Threshold Alarm and Call to Action (May 2021)

3. National Oceanographic and Atmospheric Administration (NOAA): Rebuilding Interior Columbia Basin Salmon and Steelhead; National Marine Fisheries Service (Sept. 30, 2022)

4. Sen. Murray / Gov. Inslee: Pacific Northwest Salmon Recovery Recommendations (Aug. 2022)

5. Biden Administration Columbia Basin Salmon Recovery Commitment Document (Aug. 2022)

6. Biden-Harris Administration Announces 10-Year Partnership with Tribes and States to Restore Wild Salmon, Expand Clean Energy Production, Increase Resilience, and Provide Energy Stability in the Columbia River Basin (December 2023).



December 1, 2023

The Honorable Jennifer Granholm  
Secretary  
U.S. Department of Energy  
1000 Independence Ave. SW  
Washington, D.C. 20024

Secretary Granholm:

The National Rural Electric Cooperative Association (“NRECA”) and American Public Power Association (“APPA”) are alarmed by the Draft Mediated Agreement, entitled “U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative and in Partnership with the Six Sovereigns” (“Draft Agreement”) recently released by Congress. If this Agreement is ratified, it would jeopardize electric reliability and increase costs for millions of Americans throughout the Pacific Northwest.

The Draft Agreement clearly shows that the Administration’s goal is dam breaching, a conclusion that runs counter to decades of studies, science, and governmental actions, and an outcome that would destabilize the economy of an entire region of the nation. Not only does this expose a severe lack of understanding about the importance of keeping the lights on, it also reveals a misplaced desire to undermine our nation’s essential emissions-free hydropower system without considering the cost.

The Draft Agreement would weaken the Administration’s stated greenhouse gas reduction goals by undermining hydropower, an always available, emissions-free source of electric generation critical to grid stability. As our nation depends on electricity to power more of the economy, we need more generating resources – not fewer. This proposal flies in the face of common sense and would make hydroelectric operations unnecessarily costly and unstable. BPA’s hydropower system forms the backbone of reliability in the region. Communities across the West, including those in rural America, many of which are located in persistent poverty counties, would suffer the brunt of these impacts.

In addition to the severely questionable obligations of the Draft Agreement, NRECA and APPA also have significant concerns about the lack of transparency inherent in this Columbia River System Operations (CRSO) mediation, as well as the Council on Environmental Quality’s (CEQ) Request for Information on the management of the CRSO (Docket No: CEQ-2023-0002). This process has shut critical stakeholders and parties out of this Agreement and the administrative process. It has deprived our members in the Northwest, intimate stakeholders in CRSO operations, and millions of their customers of having fair representation in these proceedings.

We strongly oppose the ratification of the Draft Agreement. The reliability of the Western electric grid is critical to continued national security, stability of our domestic food and mineral supplies, national economic stability, and our nation’s energy security. Reliability should be prioritized as the U.S. Government moves forward in assessing the legality and appropriateness of these proposed obligations.

Moreover, the Administration should engage in an open and transparent process with our members, all CRSO stakeholders, and Congress to address our concerns going forward.

Respectfully,



Jim Matheson  
CEO  
National Rural Electric Cooperative Association



Scott Corwin  
CEO  
American Public Power Association

Cc. John Podesta, Senior Advisor to the President of the United States  
The Honorable Deb Haaland  
The Honorable Tom Vilsack  
The Honorable Pete Buttigieg  
The Honorable Michael Connor  
The Honorable Brenda Mallory

Washington Congressional Delegation  
Idaho Congressional Delegation  
Montana Congressional Delegation  
Oregon Congressional Delegation

# Economic Contribution of Irrigated Agriculture Supported by the Columbia Basin Project



May 2022

*Prepared For:*

South Columbia Basin Irrigation District

East Columbia Basin Irrigation District

Quincy Columbia Basin Irrigation District

*Prepared by:*



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## EXECUTIVE SUMMARY

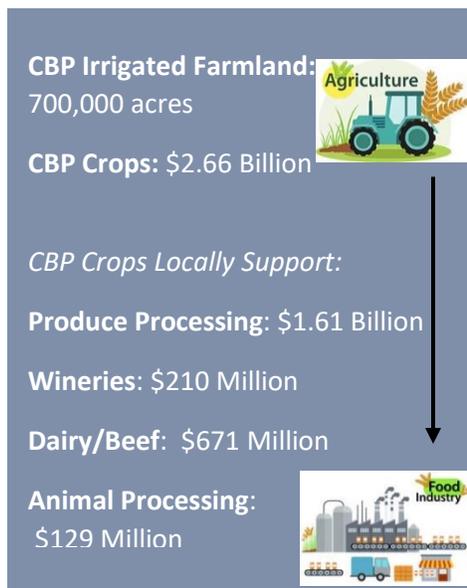
The Columbia Basin Project (CBP) is a Bureau of Reclamation irrigation project located in east central Washington. Originally authorized by Congress to irrigate 1,029,000 acres, CBP infrastructure of reservoirs and canals currently irrigates about 700,000 acres annually in Adams, Franklin, Grant, and Walla Walla Counties. The primary crops grown include hay, potatoes, corn, wheat, beans, orchard fruits, grapes, herbs, onions, grass seed, and vegetables.

**The estimated annual value of crops in the CBP is \$2.66 billion dollars annually, or a value of approximately \$3,800 per acre.<sup>1</sup>** CBP crops are vital inputs to other key food production sectors in the east central region of Washington State: dairy and beef cattle production, animal processing, frozen food and other food processing sectors, and wineries. **Further, a portion of CBP crops are used to produce animal products valued at \$671 million annually, while other CBP crops are used by regional food industries to produce food products valued at \$2.0 billion annually** (note: total animal and food processing production value in the region is over \$6.0 billion annually; the combined \$2.671 billion is the estimated value of animal and food processing production reliant on CBP crops). Unless otherwise noted, all dollar values in this analysis are expressed in 2021 dollars.

CBP irrigation infrastructure and the agricultural production and food processing it supports underpin substantial economic activity in the region, throughout the State of Washington, and even the rest of the nation. The purpose of this report is to quantify the economic contribution of lands irrigated by the CBP as well as the recreation supported by CBP reservoirs and associated fish and wildlife areas. Recreation at sites created by CBP irrigation infrastructure, such as Banks Lake, Potholes Reservoir, Columbia National Wildlife Refuge, and Scootney Reservoir, results in recreational spending in the local economy that also supports numerous businesses and economic sectors. The report estimates the employment, income, and tax revenues supported by the CBP at the local, state, and national levels.

The study region is six counties: Adams, Franklin, Grant, Walla Walla, Lincoln, and Benton counties. Adams, Franklin, and Grant have the vast majority of CBP-irrigated acreage. Walla Walla has some CBP irrigated acreage; agricultural land in Lincoln is authorized by Congress to receive CBP irrigation water (although the project has not been completed to reach lands in Lincoln), and Benton is closely tied with

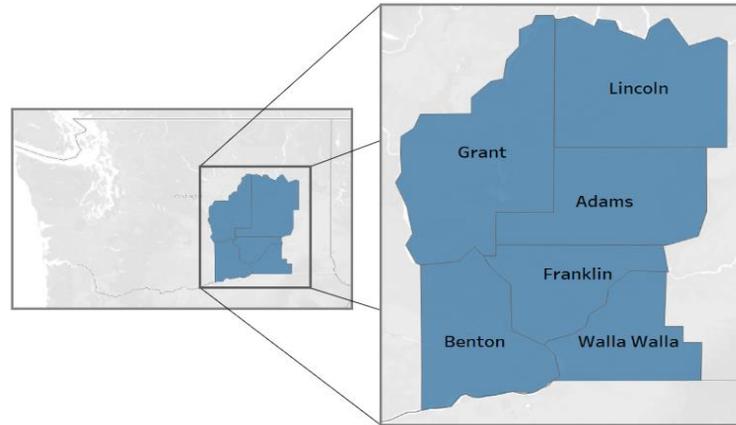
## ANNUAL AGRICULTURAL PRODUCTION VALUES



<sup>1</sup> This compares to \$1.44 billion in crop revenue estimated in a comparable study in 2010; even adjusting for inflation the CBP current crop production value has risen 48% in value. Animal production and food processing supported by the CBP was estimated in the 2010 report at \$1.25 billion, or \$1.56 billion, after adjusting to 2021 dollars. The 2010 animal production and food processing values did not include dairy or animal processing that were included in this report.

the economy of the other counties as the regional hub of the tri-cities of Kennewick, Pasco and Richland spans both Benton and Franklin counties.

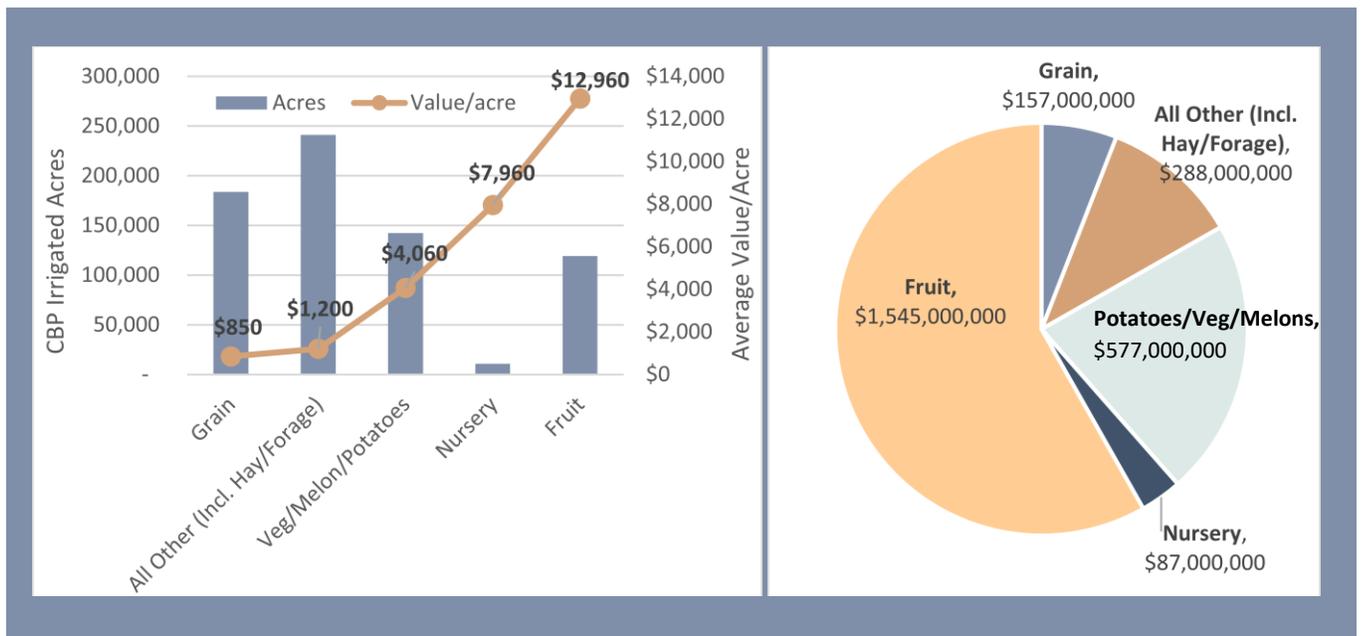
Figure ES-1: Study Area Counties



**CBP AGRICULTURAL PRODUCTION**

Total CBP crop production value is estimated at \$2.66 billion annually. CBP fruit and vegetable production of approximately \$2.1 billion annually accounts for 80% of total CBP crop production value on just 37% of CBP irrigated acreage due to its high value per acre (nearly \$13,000 per acre for fruit). A diverse array of fruits and vegetables are produced, including apples, cherries, grapes (table and wine grapes), peaches, berries, melons, squash, carrots, cauliflower, asparagus, celery, lettuce, onions, sweet corn, and potatoes. Approximately three-quarters of vegetable value is from potatoes and onions. Nursery crops are limited in acreage but have the next highest value per acre, at nearly \$8,000 per acre. Grain, hay, and other field crops account for over 60% of irrigated acreage and 17% of total crop

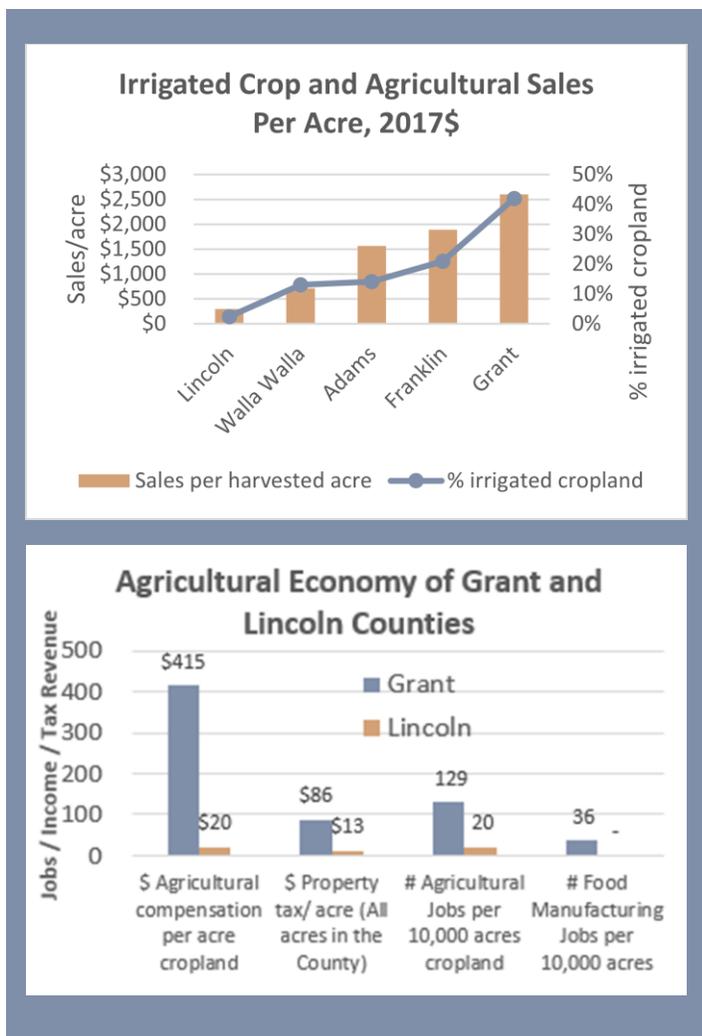
Figure ES-2: CBP Production Values by Crop





production value; while providing a lower sales value per acre, these crops are necessary as inputs for high-valued dairy and beef production and are also vital for soil health and rotation with vegetable and other crops.

Figure ES-3: Irrigation = Higher Economic Value



**IMPORTANCE OF IRRIGATION WATER**

The figures below highlight the importance of irrigation in supporting high value agricultural production. For example, irrigated grain acres (including dry bean production) produce crops valued at approximately \$850 per acre; this is approximately double the value produced on dryland grain acreage.<sup>2</sup> The figure highlights the relatively low countywide average sales per crop acre for Lincoln County (from the 2017 Census of Agriculture), where only 7% of lands are irrigated. In Franklin, Grant, Adams, and Walla Walla counties, CBP irrigation water not only increases the yields of grain crops, but also enables production of the high value fruit, vegetable, nursery, and other diverse crops planted in the CBP service areas.

As shown in the upper part of figure ES-3, as more cropland is irrigated, the sales value produced per acre increases dramatically. This relationship highlights the importance of irrigation water from the CBP in increasing agricultural production value per acre. Higher agricultural production values also translate into greater net economic value

<sup>2</sup> The average per acre production value of irrigated grain acres (approximately \$850) was calculated by estimating total value of grain farming in CBP acres (\$156.9 million) and dividing it by the average annual CBP acres in grain farming (183,588). The yield for irrigated grain is based the reported yields in CBP districts. NASS reported yields for Lincoln County, where irrigation is limited, are approximately half those reported in CBP districts.

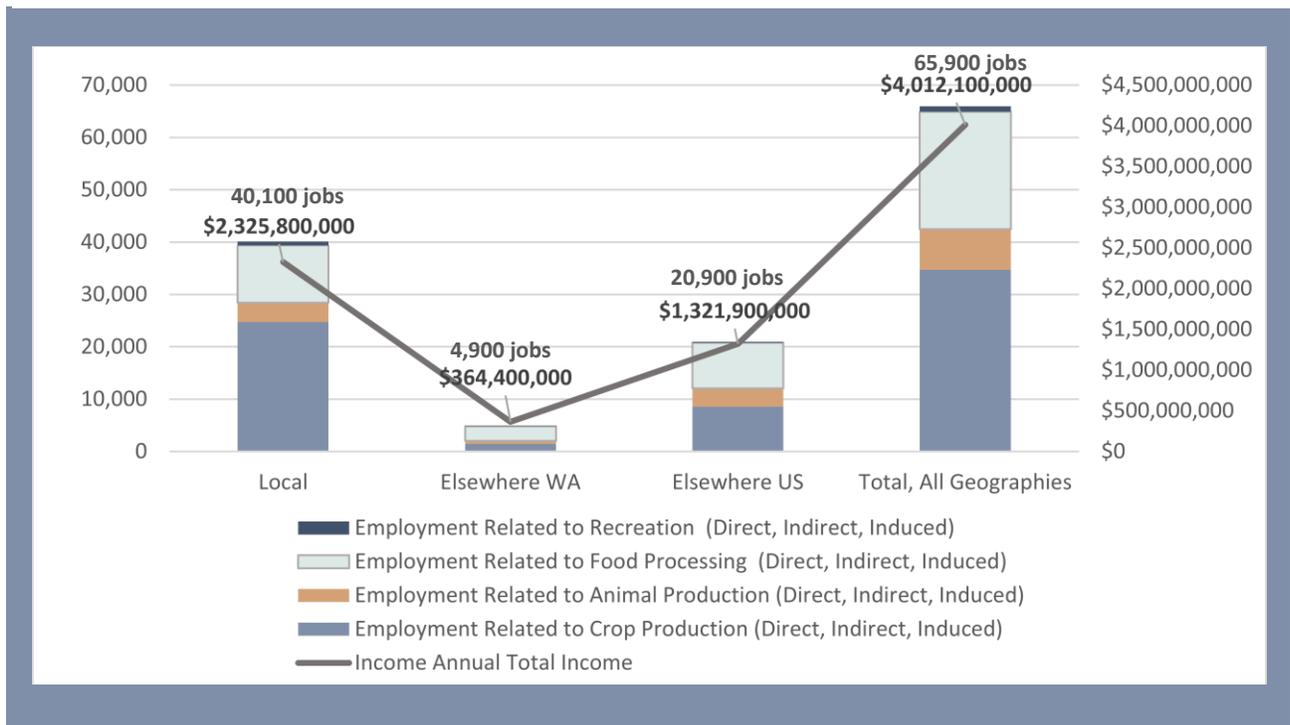
to farmers and greater economic activity supported in diverse sectors throughout the region.

The economic conditions in Lincoln County compared to Grant County highlight the importance of the CBP to overall economic development in east central Washington. As shown in the lower part of Figure ES-3 comparing the agricultural economies of Grant and Lincoln counties, agricultural compensation (including to proprietors and farm laborers) per acre of farmland is over 20 times higher in Grant County, while property taxes for all acreage in the county (agricultural and otherwise) and the number of farm jobs per acre is approximately 6 times higher in Grant County. Grant County also has a robust food processing industry that does not exist in Lincoln County.

### CBP ECONOMIC CONTRIBUTION

CBP crop production supports economic activity throughout the local region, as well as throughout the rest of Washington State and the nation. The total economic contribution of the CBP includes: 1) the direct effects on farms of agricultural jobs and income supported by irrigated crop production, 2) the indirect effects in other sectors of jobs and income supported by farms purchasing inputs such as seed, fertilizer, and farm equipment necessary for crop production, and 3) the induced effects in other sectors such as real estate and health care resulting from the spending of employee wages. There are also additional economic effects of the CBP: CBP crop production is a vital input and makes possible substantial local animal production and food processing, and CBP irrigation infrastructure provides water-based recreation opportunities that support a thriving local recreation economy; these values are also included in Figure ES-4. The total economic contribution (direct, indirect, and induced) of each

Figure ES-4: Total Annual Employment and Annual Income Supported by CBP Irrigation Infrastructure (Direct, Indirect, & Induced)



## TYPES OF ECONOMIC EFFECTS

**Direct:** Farm jobs and income related to irrigated crop production.

**Indirect:** Jobs and income at businesses supplying inputs, such as fertilizer, machinery, seeds to the CBP-irrigated farms.

**Induced:** Jobs and income at businesses such as retail stores and service providers supported by the spending of CBP-related income.

**Forward-Linked:** Jobs and income in industries reliant on CBP crop production, such as animal production and food processing, and reliant on CBP infrastructure, such as water-based recreation. This analysis shows the effects on forward-linked animal production and processing industries reliant on CBP as a direct effect, and then estimates the direct/indirect effects of this animal production and processing.

these types of effects is summarized in the figure below, as estimated using an IMPLAN model of the six-county region. While all direct, on-farm jobs and income supported by the CBP and many of the indirect and induced job and income effects are in the local, six-county region, substantial indirect and induced employment and income elsewhere in the state and nation are supported as well. Economic effects elsewhere are due to the purchase of inputs and supplies from throughout the state and nation to support CBP-related economic activities. For example, farm equipment purchased from a manufacturer in the Midwest would support manufacturing jobs and income in the Midwest, as well as the indirect and induced jobs and income linked to that manufacturing. **In the local region, the CBP supports an estimated 40,100 jobs (full and part-time jobs) and nearly \$2.33 billion in income (including total employee compensation and proprietor income) annually<sup>3</sup>.** Elsewhere in Washington State, an estimated 4,900 jobs and \$364 million in income are supported annually, while elsewhere in the nation, 20,900 jobs and \$1.32 billion in income may be supported annually (estimation of effects elsewhere in the nation is less certain). Note that in the absence of the CBP, economic activity would fall by less than this amount as many people directly or indirectly employed in CBP-related activities would engage in other

economic activities.

As shown in Figure ES-5, **in the local area approximately 60% of all jobs and income supported by the CBP are related to crop production, with approximately 30% related to food processing, and 10% related to animal production and recreation supported by the CBP.**

Elsewhere in Washington and the United States, all jobs and income supported are indirect and induced effects related to supplying inputs to the CBP region to support crop and animal production, food processing, and recreation occurring in the CBP region. Elsewhere in Washington, approximately 60% of

<sup>3</sup> This compares to estimates of 28,500 jobs and \$1.6 billion in income (\$2.0 billion in 2021 dollars) supported in the local area in a comparable study from 2010. Nationally, the 2010 report estimated 38,900 jobs and \$2.4 billion in income (\$3.0 billion in 2021 dollars). The estimated employment and income is higher in this report partly due to the increased current value of crop production, and partly due to higher values of processing supported. This report also uses multi-regional input output analysis, which was not available for IMPLAN in 2010, which allows for greater accuracy of estimation of economic contribution elsewhere in Washington State (but not for the Nation).

economic effects are related to supporting food processing in the CBP region, 30% related to supporting CBP crop production, and 10% related to supporting animal production in the CBP region. Elsewhere in the United States, over 80% of effects are related to supporting CBP food processing and crop production.

Direct animal and crop production employment are estimated using data from the Bureau of Economic Analysis on agricultural employment in the region; indirect and induced employment effects are estimated using IMPLAN economic modeling software.

### FISCAL IMPACTS

Economic activity associated with CBP-irrigated crop production results in tax payments to local, state, and federal levels of government. As shown in the figure below, the overwhelming majority of tax revenues associated with the CBP are experienced at the federal level. Federal-level taxes include personal income tax, corporate income tax, social insurance taxes (such as Medicare and social security), and excise and custom taxes. At the state level, tax payments include sales tax, property tax, and social insurance taxes. At the local level, governments receive property tax and sales tax payments.

Accounting for the tax revenues from all direct, indirect, and induced activity resulting from CBP crop production, associated animal and food processing, and associated recreation, **the revenues to all government jurisdictions related to CBP production are estimated to total approximately \$1.29 billion annually, with 68% of these tax revenues accruing to the federal government.** Note that in the absence of the CBP, tax revenues would not fall by this amount as many people directly or indirectly employed in activities associated with the CBP would engage in alternative economic activities that would generate tax revenues.

In nearly all jurisdictions (with the exception of local governments elsewhere in Washington), approximately half of the revenues are related to crop production (dark blue bars in the chart). The tax revenues associated with just the direct crop production in the CBP region, not including the indirect and induced effects of crop production or any other linked activity, are estimated at \$238.1 million annually across all jurisdictions. In other words, approximately 10% of the gross crop production value of approximately \$2.66 billion is paid in the form of taxes to local, state, and federal governments (primarily the federal government in the form of income taxes and social insurance payments).

Figure ES-5: Distribution of Direct, Indirect, and Induced Effects by Source and Location

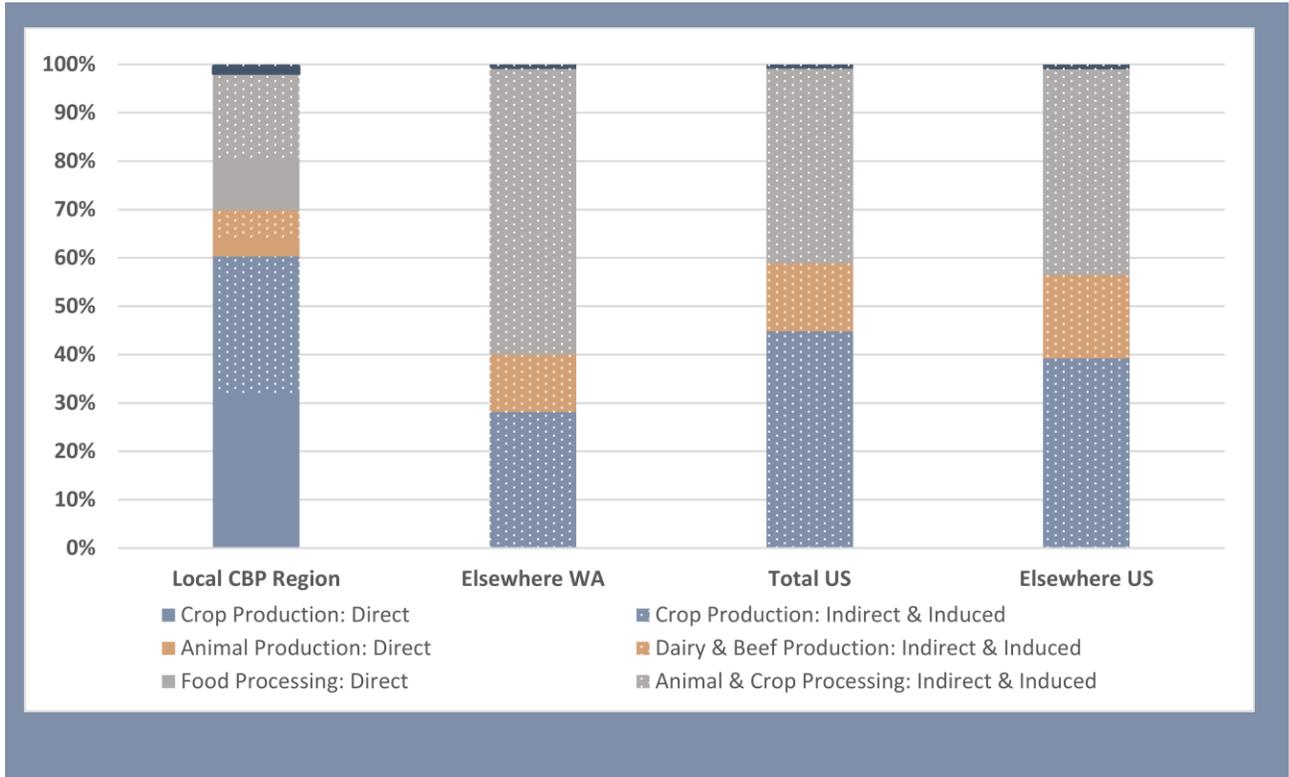
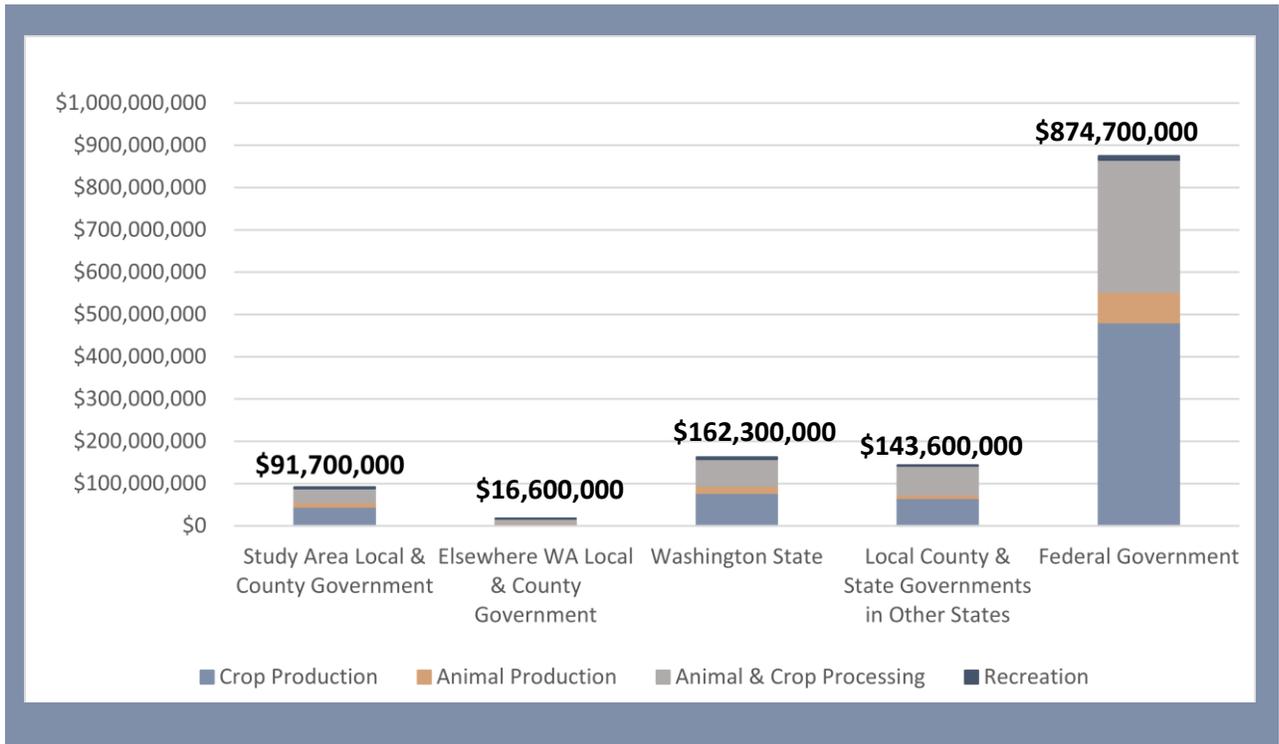


Figure ES-6: Distribution of CBP-Supported Tax Revenues by Location and Source



### OTHER CBP BENEFITS

There are other social benefits of the CBP. In particular, the CBP provides economic opportunity to rural and minority populations, particularly Hispanic populations. The CBP infrastructure also provides water-based recreational opportunities, which both support the local recreation economy and provide social and recreational enjoyment for locals and non-locals. Finally, review of the publicly available financial data for the CBP indicates high levels of agricultural profit through time.



#### Recreation

### CBP RECREATION VALUE OF \$30 MILLION+

- CBP irrigation reservoirs provide opportunities for recreation, estimated at 1.1 million to 1.6 million visitors annually (not including Roosevelt Reservoir).
- Value of recreation opportunities to recreators is estimated to be at least \$30 million annually, while recreation spending is estimated to support 750 job and \$26.7 million in annual income.

Irrigation-related infrastructure of the Columbia Basin Project (CBP) creates significant opportunities for recreation. The reservoirs intended for irrigation water storage can also be used for water-based recreation, including: hunting, fishing, boating, swimming, camping, and wildlife viewing. Key components of CBP infrastructure such as Banks Lake and Potholes Reservoir support water-dependent recreation at Potholes State Park, Steamboat Rock State Park, Columbia National Wildlife Refuge, and Scootenev Reservoir. In addition to these recreation destinations, public boat launches, municipal parks, and concessioner resorts throughout the CBP region offer recreational opportunities that are made possible because of CBP water and CBP irrigation facilities. In total, based on the available visitation data and interviews with local recreation managers, this study estimates that there are approximately **1.1 million to 1.6 million recreation visits annually in the region supported by CBP infrastructure (not including Lake Roosevelt<sup>4</sup>)**. Visitation is likely even higher due to recreation occurring on private lands, such as through hunting leases.

There are two types of benefits of this recreation: 1) economic activity generated through recreation-related expenditures in the local economy, and 2) the net economic benefit to

recreators of the opportunity to recreate (i.e., the value of the recreation experience, less the cost of recreational expenditures). Based on other studies of expenditures by recreation visitors to the region,

<sup>4</sup> We focus on the CBP irrigation infrastructure that is necessary solely for agricultural production and do not include Lake Roosevelt, which is formed by Grand Coulee Dam. In addition to serving agriculture, Grand Coulee Dam is the largest hydropower facility in the United States, generating more than 21 billion kilowatt-hours of electricity each year (US Bureau of Reclamation, 2021).

this study estimates that the CBP-supported recreation visitors spend between \$31.6 million and \$129.2 million annually in the local area. We take the mid-point of this expenditure estimate, or approximately \$80 million, to highlight **the potential economic contribution to the region of CBP-supported recreation: approximately 750 jobs and \$26.7 million in annual income.** As illustrated above, this economic contribution of recreation is relatively small relative to the economic contribution of crop/animal production and associated food processing. However, recreation opportunities are an important aspect of quality of life, and the recreational opportunities supported by CBP irrigation infrastructure provide value and enjoyment to over one million visitors a year. Based on numerous studies of the value of recreation for hunting, fishing, boating, and general recreation, a reasonable estimate of the net value to recreators (benefits less trip expenditures noted above) per recreator day is at least \$30 per visit. Applying this to the over one million annual recreation visits supported by the CBP infrastructure indicates **over \$30 million in annual net value to recreators is provided at water-based recreation areas created by CBP facilities.**

### CBP SUPPORTS RURAL & HISPANIC POPULATIONS

- CBP supports 40,100 jobs in a predominantly rural region of Washington, where approximately 50% of the population is Hispanic.
- Employment supported by the CBP represents over one-third of all employment in Grant, Franklin, and Adams counties, and may support approximately 70,000 people in the local area.

#### Economic Opportunity for Rural Areas & Minority Populations

This study estimates that approximately 40,100 jobs are supported in the CBP local region, primarily in the counties of Franklin, Grant, and Adams. This represents over one-third of the employment (approximately 105,000 jobs according to the Bureau of Economic Analysis) in these three counties. Based on Census data, there are approximately 216,400 people living in these three counties; if, proportionate with employment, one-third of the population is supported directly or indirectly by the CBP, this would represent over 70,000 people in the region living in a household wholly or partially supported by the CBP. Said differently, **the farming, food processing, and recreation-related employment made possible by the CBP likely provide rural economic opportunity for approximately 70,000 people in the study area.**

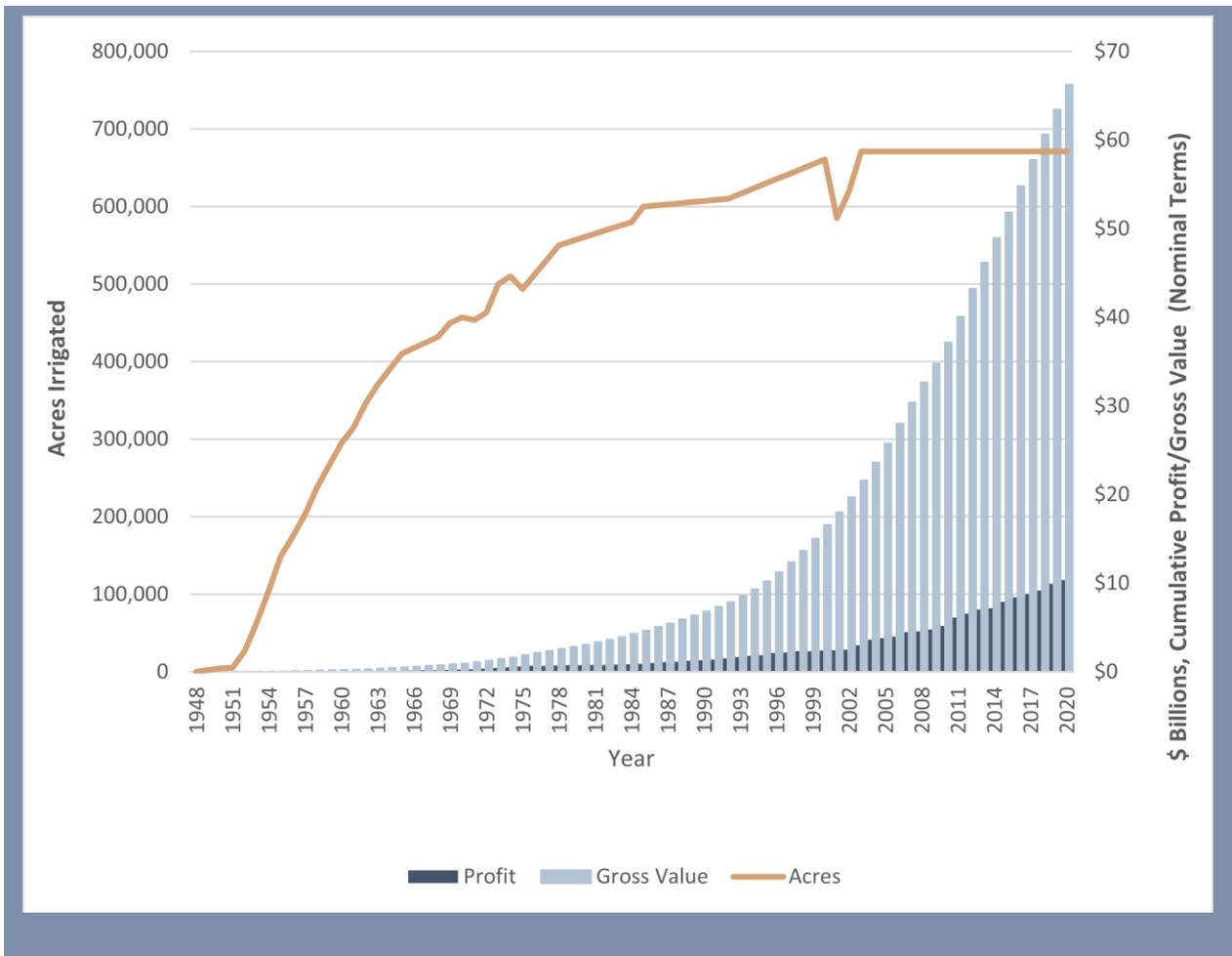
Approximately 50% of the population of Franklin, Grant, and Adams counties is Hispanic, while for the State as a whole only 14% of the population is Hispanic. **The jobs and people economically supported by the CBP are thus likely disproportionately minority populations.** This study

estimates that approximately 14,400 farm jobs are created by CBP-irrigated agriculture, and agricultural farmworkers are overwhelmingly Hispanic. Data from the 2017-2018 National Agricultural Worker Survey for the Northwest region (an eight-state region including Washington) indicates that 78% of agricultural workers in this region are foreign-born (primarily from Mexico). CBP agriculture can provide opportunities for immigrants to take the first step in achieving greater economic security for themselves and their families.

**Agricultural Production and Profit Values in CBP Through Time**

Previous annual reports prepared by the Bureau of Reclamation have documented acreage irrigated by the Columbia Basin Project (CBP) and estimated the gross value of crops produced from the project. Using data presented in available reports and interpolating the missing data points, the cumulative gross revenue of crops produced by CBP’s irrigated acreage is approximately \$66.7 billion from 1948 through 2020 (this amounts to approximately \$108.8 billion in 2021 dollar values). The US Department of Agriculture’s Economic Research Service (ERS) maintains estimates of farm profitability as a percentage of gross revenue as part of their Farm Income and Wealth Statistics for Washington State producers (USDA ERS 2021). Based on this dataset, and adjusting to account solely for crop production, annual profit from 1948 to 2020 accounted for between -2% (loss of 2%) to 47% of gross revenue to the operator, with an average of nearly 21% annually. Thus, the CBP project has likely generated approximately \$10.4 billion in cumulative profit from 1948 to 2020 (this amounts to approximately \$18.1 billion in 2021 dollar values).

**Figure ES-7: Acreage & Cumulative Crop Farm Sales and Profits Thru Time**



### Food Security

The CBP provides irrigation water for crops and associated animal production valued at over \$3.3 billion annually. This level of farmgate production value equates to approximately 2.7% of all American food grocery store purchases, representing approximately the food purchases of 8.9 million Americans. While in reality much of the production from the CBP is currently exported, these figures highlight the magnitude of the food produced in the CBP and the number of people that can be supported by this food production.

The importance of the CBP is likely to only grow in the future as drought, warmer temperatures, and severe weather events threaten agricultural production in other key agricultural production regions. In Washington State, overall vulnerability of agricultural production to a changing climate is expected to be low in the CBP where irrigation water supplies are available (Snover, Mauger, Whitely Binder, Krosby, & Tohver, 2013). This is not the case for many other regions in the world. For example, California is a key American agricultural production area (particularly for vegetables, fruits, and nuts) facing numerous challenges related to water scarcity, water quality, and rising temperatures. Based on the relatively low climate-related risks to agricultural production in the Columbia River Basin, researchers at the Agriculture Climate Network are already studying how future reduced agricultural production in California could be offset by increased vegetable production in the Columbia River Basin (Maureira, 2020).

With an abundance of water forecasted and a lengthening of the growing season, the Columbia Basin region is particularly well suited to face climate change, especially when compared to many other agricultural producing regions. Due to the anticipated decrease in agricultural production in other parts of the nation and world due to rising temperatures and water shortages associated with climate change, the potential additional output produced by the CBP under climate change highlights the likely growing importance of CBP food production in the future.

### CBP SUPPORTS FOOD SECURITY

- CBP food production value is equivalent to the grocery store purchases of 8.9 million Americans (2.7% of all grocery store purchases).
- CBP food production is reliable and resilient to climate change, providing a long-term, highly stable food supply relative to other western food production regions.



## 1 INTRODUCTION

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The Columbia Basin Project (CBP) is a Bureau of Reclamation irrigation project located in east central Washington. Originally authorized by Congress to irrigate **1,029,000 acres, the project currently irrigates about 700,000 acres annually in Adams, Franklin, Grant, and Walla Walla Counties.**<sup>5</sup> Water is diverted at Grand Coulee Dam, which is a multi-purpose dam that in addition to storing irrigation water also provides hydropower electricity, flood control, municipal water supply, and recreational opportunities. Primary irrigation facilities in the CBP are the Feeder, Main, West, East Low, and Potholes Canals; Banks Lake and Dry Falls Dam; Billy Clapp Lake and Pinto Dam; and Potholes Reservoir and O`Sullivan Dam. The CBP includes over 300 miles of main irrigation canals, 2,000 miles of laterals, and 3,500 miles of drains and wasteways (U.S. Bureau of Reclamation, 2020). The primary crops grown include hay, potatoes, corn, wheat, beans, apples and other orchard fruits, grapes, herbs, onions, grass seed, and vegetables.

Three irrigation districts manage and distribute the irrigation water from CBP: East Columbia Basin Irrigation District (ECBID), Quincy Columbia Basin Irrigation District (QCBID), and South Columbia Basin Irrigation District (SCBID). ECBID lands are split between Adams and Grant Counties, QCBID's lie mainly in Grant County with a small portion in Adams County, and SCBID lands are in Franklin and Grant Counties with a small portion in Walla Walla County. Additionally, there are approximately 49,000 acres of "other CBP lands" in Grant County served by CBP water through groundwater service contracts (CBP water recharges groundwater, which is then used to irrigate these lands). Lands originally authorized by Congress to be included in the CBP that are not presently served are primarily located in counties currently served by the CBP (Adams, Franklin, Grant, and Walla Walla) as well as in Lincoln County, Washington. These counties, in addition to Benton County, which is closely tied to the Franklin County economy<sup>6</sup>, constitute the six-county study area.

The purpose of this study is to quantify the economic contribution of irrigated lands and recreation supported by the CBP. This includes impacts to employment, income, and tax revenues supported directly and indirectly by the CBP at the local, state, and national levels. In addition to quantifying the direct economic impacts (in terms of jobs, income, and taxes), this study also quantifies the secondary (indirect and induced) economic impacts that arise from spending related to the direct economic activity and ripple out through the local regional, state, and national levels.

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<sup>5</sup> The second phase of the CBP project was 'shelved' in the early 1990's due to the Endangered Species Act and associated moratorium on additional water withdrawals from the Columbia to protect salmon. This moratorium was lifted in 2003.

<sup>6</sup> The tri-cities is the major urban area in the region, and is located in both Franklin and Benton counties.

This study also explores environmental justice considerations relating to the CBP, and how the economic activity supported by the CBP plays a key role in supporting Hispanic residents of the study area due to their high participation in local agricultural production. This study also highlights the importance of



irrigation to the economic development in the region, focusing on how agricultural production and overall economic activity differ between Grant and Lincoln counties. These two adjacent counties are both predominantly agricultural counties with a similar land area in farms, but with very different levels of irrigation.

## 1.1 DATA SOURCES & METHODS

This study relies on crop data from the three CBP irrigation districts: Quincy, East, and South Columbia Basin Irrigation Districts; these data include total acreage irrigated by crop over approximately the past ten years. Yield, price, and animal production data are from the U.S. Department of Agriculture’s National Agricultural Statistics Service, while other demographic and economic data are from local, state, and national agencies such as the Census Bureau, the Bureau of Labor Statistics, and the Bureau of Economic Analysis. Recreation data are from recreation management agencies.

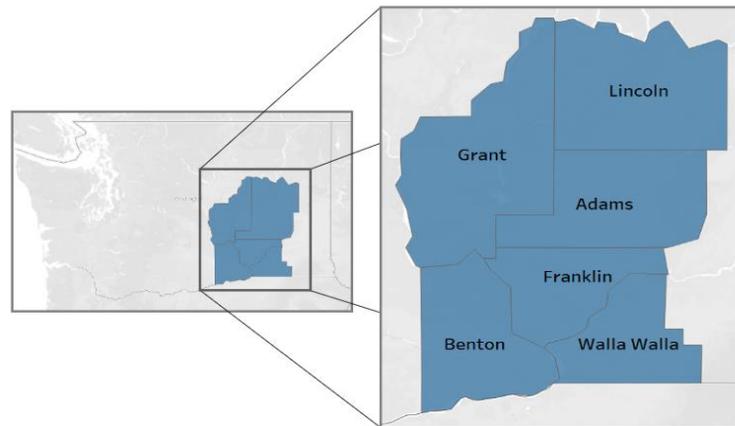
In addition to quantifying the direct economic impacts on farm employment and income, this study uses an IMPLAN model to quantify the secondary (indirect and induced) economic impacts that ripple out through the local regional, state, and national levels (a multi-regional input-output analysis method is used to estimate impacts at the state and national levels).

- **Direct impacts:** Economic effects in the sector under study, such as crop production, animal production, food processing, or recreation.
- **Indirect impacts:** Economic ripple effects of farm production are experienced in varied sectors and are derived from farm spending on inputs such as equipment, fertilizer, seed, and agricultural services.
- **Induced impacts:** Economic ripple effects are derived from employees and proprietors of farm businesses and other linked businesses spending their wages on goods and services; these induced impacts tend to be concentrated in retail, services, real estate, and financial industries.
- **Forward linked impacts:** The study also estimates the economic impacts of regional industries that are heavily reliant on CBP crop production as necessary inputs to their operations, including dairy farming, beef cattle production, animal processing, wineries, frozen fruit and vegetable food processing, and cheese manufacturing. There are many other food processing sectors in the region that use CBP crops as inputs; however, this analysis focuses on the sectors where CBP crops account for a relatively high proportion of inputs to the production process.

## 1.2 STUDY AREA

The study focuses on Adams, Franklin, and Grant counties where the vast majority of acreage is CBP-irrigated acreage is located. However, the study area region for the economic impacts analysis includes a six-county area: Adams, Franklin, Grant, Walla Walla, Lincoln, and Benton counties. Walla Walla County has some CBP irrigated acreage; land Lincoln County is authorized by Congress to receive CBP irrigation water (although currently there is no land in Lincoln County irrigated with CBP water), and Benton County is closely tied with the economy of the other counties as the tri-cities of Kennewick, Pasco and Richland span both Benton and Franklin counties.

Figure 1-1: Study Area Counties



## 1.3 REPORT ORGANIZATION

The remainder of this report is divided into four sections. Section 2 presents a regional socioeconomic profile in terms of population, demographics, economic base, and tax base. Section 3 outlines the regional agricultural profile in terms of land, agricultural products produced, and employment and income associated with agricultural production. Section 4 presents the economic contribution of the CBP-supported agricultural economy. Section 5 presents the economic contribution of CBP-supported recreation. Section 6 presents the tax revenues, or fiscal, contribution of the CBP to local, state, and federal governments based on the economic activity estimates. Section 7 presents other benefits of the project, including benefits related to economic opportunity for rural areas and minority populations, recreation opportunities, and food security.

## 2 SOCIOECONOMIC PROFILE

This section explores the population, demographics, economic base, and tax base of the study area, all of which provide a foundation to understanding the economic impacts of the CBP. The profile of the local study area is often compared against Washington State to provide context. The study region is six counties: Adams, Franklin, Grant, Walla Walla, Lincoln, and Benton counties. Adams, Franklin, and Grant have the vast majority of CBP-irrigated acreage. Walla Walla has some CBP irrigated acreage; agricultural land in Lincoln is authorized by Congress to receive CBP irrigation water (although the project has not been completed to reach lands in Lincoln), and Benton is closely tied with the economy of the other counties as the regional hub of the tri-cities of Kennewick, Pasco and Richland spans both Benton and Franklin counties.

### 2.1 POPULATION AND DEMOGRAPHICS

According to the 2020 Census, the six-county study area had a total population of approximately 497,000 people, which grew 15% from its 2010 population of 430,500 (a growth rate of 1.4% annually over 10 years). The study area comprises about 6.4% of the state's total population. Table 2-1 outlines the population by county, as well as Washington State. As shown in the table, the largest population growth has been, and is expected to continue to be, in Franklin and Benton counties where the Tri-Cities of Kennewick, Pasco, and Richland are located. Growth for 2020 to 2040 in Adams and Grant counties, however, is expected to be robust and above the Washington State average. No growth is expected in Lincoln County and low growth is expected in Walla Walla County. Franklin County (which had a smaller population than Grant County in 2020) is expected to grow larger than Grant County before 2040.

Table 2-1: Population Growth, Past and Projected

| Area                         | 2010 Population | 2020 Population | Project 2040 Population | Annual Growth 2010-2020 | Annual Growth 2020-2040 |
|------------------------------|-----------------|-----------------|-------------------------|-------------------------|-------------------------|
| <i>Primary CBP Counties</i>  |                 |                 |                         |                         |                         |
| Adams County                 | 18,728          | 20,613          | 25,062                  | 1.00%                   | 1.00%                   |
| Franklin County              | 78,163          | 96,749          | 158,574                 | 2.20%                   | 2.50%                   |
| Grant County                 | 89,120          | 99,123          | 132,995                 | 1.10%                   | 1.50%                   |
| <i>CBP County Subtotal</i>   | <i>186,011</i>  | <i>216,485</i>  | <i>316,631</i>          | <i>1.53%</i>            | <i>1.92%</i>            |
| <i>Other CBP Counties</i>    |                 |                 |                         |                         |                         |
| Benton County                | 175,177         | 206,873         | 250,524                 | 1.70%                   | 1.90%                   |
| Lincoln County               | 10,570          | 10,876          | 10,848                  | 0.30%                   | 0.00%                   |
| Walla Walla County           | 58,781          | 62,584          | 67,457                  | 0.60%                   | 0.40%                   |
| <i>Other County Subtotal</i> | <i>244,528</i>  | <i>280,333</i>  | <i>328,829</i>          | <i>1.38%</i>            | <i>0.80%</i>            |
| Region Total                 | 430,539         | 496,818         | 645,460                 | 1.44%                   | 1.32%                   |
| Washington State             | 6,724,540       | 7,705,281       | 9,242,022               | 1.40%                   | 0.90%                   |

Sources: (U.S. Census Bureau, 2010), (U.S. Census Bureau, 2020), (State of Washington Office of Financial Management, 2018)

In Adams County, the largest population center is Othello, with a population of 7,364 people (36% of the county population). Franklin County's largest city is Pasco with 59,781 people (62% of the county

population), which together with Kennewick and Pasco in Benton County, comprises the Tri-Cities region and is the largest population center in the study area. Moses Lake is Grant County's largest city with 20,366 people (21% of the county population). Lincoln County's largest population center is Davenport, containing 1,734 people (16% of the county population). The most populous city in Walla Walla County is the City of Walla Walla (31,731 people), representing 51% of the county's population.

Table 2-2 provides the racial breakdown of the study area, as well as the proportion of the population that is ethnically Hispanic or Latino (note that all races can be of Hispanic or Latino ethnicity, so the percent distributions are presented separately). Compared to the state, counties with substantial CBP irrigated acreage (Adams, Franklin, and Grant) generally have higher proportions of Hispanic and Latino populations. With the exception of Lincoln County (where there is no irrigation from CBP currently), the fraction of Hispanics and Latinos is 9 to 50 percentage points higher in the study area counties than in Washington more broadly. Regarding race, the proportion of all non-white racial groups, with the exception of the American Indian and Alaska Native population, tend to be smaller in the study area than the state as a whole. The proportion of American Indian and Alaska Native populations is higher in Adams, Grant and Lincoln counties, and slightly lower than the state average in Franklin and Walla Walla counties.

Table 2-3 shows the proportion Hispanic/Latino of agricultural producers (farm operators) according to the 2017 Census of Agriculture. For the primary CBP-supported agriculture counties (Adams, Franklin, and Grant), a larger proportion of producers are Hispanic or Latino compared to the average in Washington. For farmworkers, Hispanics make up the vast majority of agricultural workers nationwide. The 2017-2018 National Agricultural Workers Survey found at the national level that 87% of farmworkers classified their ethnicity as Hispanic or Latino (JBS International, 2021). Farmworkers are also predominantly Hispanic or Latino in the study area. The prevalence of migrant and seasonal workers also indicates how CBP economic activity is benefiting economically disadvantaged populations. As shown in Table 2-4, the proportion of farmworkers that are migrants in Adams and Grant counties is similar to the state (around 25%), while Franklin County has a much higher proportion of migrant workers (38%). This suggests that the economic impacts of CBP agriculture in Franklin County may provide disproportionate support to migrant workers compared to Washington's agricultural workers as a whole.

Table 2-2: General Population Race & Ethnicity

| Population                                 | Adams | Franklin | Grant | Primary<br>CBP<br>Counties,<br>Subtotal | Benton | Lincoln | Walla<br>Walla | Other<br>Regional<br>Counties,<br>Subtotal | Region<br>Total | WA    |
|--|-------|----------|-------|---|--------|---------|----------------|--|-----------------|-------|
| <b>Race</b>                                |       |          |       |   |        |         |                |  |                 |       |
| White alone                                | 88.5% | 89.9%    | 92.1% | 90.8%                                   | 90.0%  | 93.8%   | 91.4%          | 90.5%                                      | 90.6%           | 78.5% |
| Black or African American alone            | 2.2%  | 2.8%     | 1.8%  | 2.3%                                    | 1.8%   | 0.6%    | 2.2%           | 1.8%                                       | 2.0%            | 4.4%  |
| American Indian and Alaska Native alone    | 6.2%  | 1.7%     | 2.3%  | 2.4%                                    | 1.3%   | 2.0%    | 1.4%           | 1.4%                                       | 1.8%            | 1.9%  |
| Asian alone                                | 1.4%  | 2.4%     | 1.2%  | 1.8%                                    | 3.3%   | 0.5%    | 1.7%           | 2.8%                                       | 2.4%            | 9.6%  |
| Native Hawaiian and Pacific Islander alone | 0.1%  | 0.4%     | 0.2%  | 0.3%                                    | 0.3%   | 0.1%    | 0.4%           | 0.3%                                       | 0.3%            | 0.8%  |
| Two or more races                          | 1.7%  | 2.7%     | 2.4%  | 2.5%                                    | 3.3%   | 2.8%    | 2.8%           | 3.2%                                       | 2.9%            | 4.9%  |
| All Races                                  | 100%  | 100%     | 100%  | 100%                                    | 100%   | 100%    | 100%           | 100%                                       | 100%            | 100%  |
| <b>Hispanic/Latino Ethnicity</b>           |       |          |       |   |        |         |                |  |                 |       |
| Hispanic or Latino population              | 64%   | 54%      | 43%   | 50%                                     | 24%    | 4%      | 23%            | 23%  | 35%             | 14%   |
| Non-Hispanic or Latino population          | 36%   | 46%      | 57%   | 50%                                     | 76%    | 96%     | 77%            | 77%  | 46%             | 57%   |
| Total                                      | 100%  | 100%     | 100%  | 100%                                    | 100%   | 100%    | 100%           | 100%                                       | 100%            | 100%  |

Sources: (U.S. Census Bureau, 2020; U.S. Census Bureau, 2019)

Table 2-3: Agricultural Producer Race and Ethnicity

| Population                       | Adams | Franklin | Grant | Primary<br>CBP<br>Counties,<br>Subtotal | Benton | Lincoln | Walla<br>Walla | Other<br>Regional<br>Counties,<br>Subtotal | Region<br>Total | WA |
|----------------------------------|-------|----------|-------|---|--------|---------|----------------|--|-----------------|----|
| <b>Hispanic/Latino Ethnicity</b> |       |          |       |   |        |         |                |  |                 |    |
| Hispanic or Latino               | 6%    | 8%       | 9%    | 8%                                      | 10%    | 2%      | 2%             | 6%   | 7%              | 5% |

Source: (USDA NASS, 2017)

Table 2-4: Migrant and Seasonal Farmworkers

| Population                           | Adams | Franklin | Grant  | Primary<br>CBP<br>Counties,<br>Subtotal | Benton | Lincoln | Walla<br>Walla | Other<br>Regional<br>Counties,<br>Subtotal | Region<br>Total | WA      |
|--------------------------------------|-------|----------|--------|---|--------|---------|----------------|--|-----------------|---------|
| Operations with hired workers        | 263   | 399      | 721    | 1,383                                   | 416    | 335     | 318            | 1,069                                      | 2,452           | 10,484  |
| Operations with migrant workers      | 15    | 98       | 154    | 267                                     | 79     | 4       | 23             | 106  | 373             | 1,245   |
| Total hired workers                  | 3,404 | 13,208   | 42,925 | 59,537                                  | 15,881 | 1,153   | 11,226         | 28,260                                     | 87,797          | 228,588 |
| Number of migrant workers            | 929   | 5,038    | 10,979 | 16,946                                  | 4,115  | 37      | 1,970          | 6,122                                      | 23,068          | 56,348  |
| Workers hired <150 days              | 2,484 | 10,200   | 31,170 | 43,854                                  | 11,118 | 704     | 8,142          | 19,964                                     | 63,818          | 170,752 |
| % of operations with migrant workers | 6%    | 25%      | 21%    | 19%                                     | 19%    | 1%      | 7%             | 10%  | 15%             | 12%     |
| % migrant workers                    | 27%   | 38%      | 26%    | 28%                                     | 26%    | 3%      | 18%            | 22%  | 26%             | 25%     |
| % of workers hired <150 days         | 73%   | 77%      | 73%    | 74%                                     | 70%    | 61%     | 73%            | 71%  | 73%             | 75%     |

Source: (USDA NASS, 2017)

## 2.2 ECONOMIC BASE

### 2.2.1 Employment

In 2019, the six-county study area employed over 262,000 full- and part-time workers, representing about 6% of the state's total (U.S. Bureau of Economic Analysis, 2020). Of these, about 22,000 were farm-related workers, representing 8% of the study area total employment. The level of farm employment for the study area was fairly consistent from 2015 to 2019. Employment statistics for the study area, the state, and the nation are shown in Table 2-5 below.

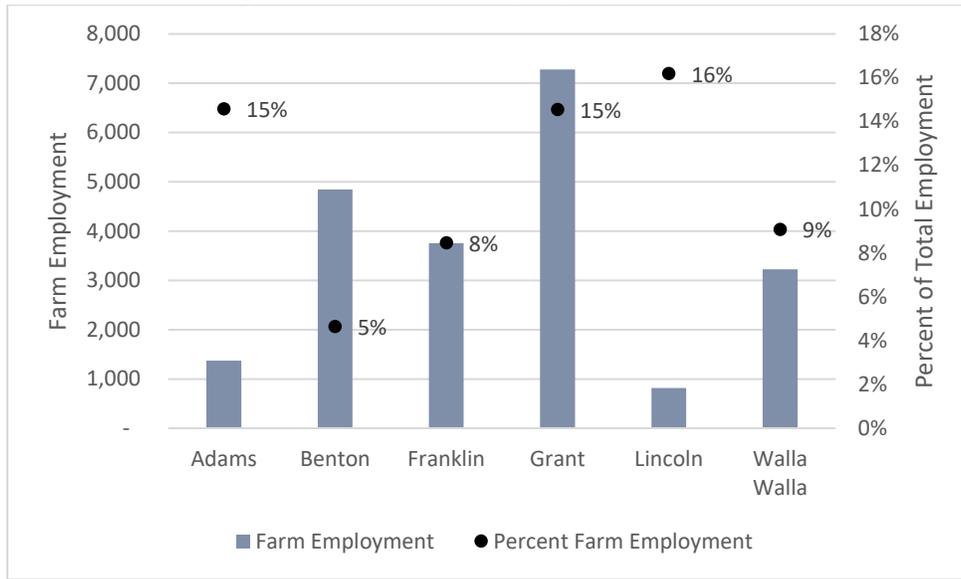
**Table 2-5: Full and Part-Time Employment in 2019**

| Geography                    | Total Employment | Farm Employment |            | Non-Farm Employment |            |
|------------------------------|------------------|-----------------|------------|---------------------|------------|
|                              | Jobs             | Jobs            | Percent    | Jobs                | Percent    |
| <i>Primary CBP Counties</i>  |                  |                 |            |                     |            |
| Adams                        | 9,840            | 1,435           | 15%        | 8,405               | 85%        |
| Franklin                     | 43,940           | 3,717           | 8%         | 40,223              | 92%        |
| Grant                        | 50,380           | 7,331           | 15%        | 43,049              | 85%        |
| <i>CBP County Subtotal</i>   | <i>104,160</i>   | <i>12,483</i>   | <i>12%</i> | <i>91,677</i>       | <i>88%</i> |
| <i>Other CBP Counties</i>    |                  |                 |            |                     |            |
| Benton                       | 116,100          | 5,387           | 5%         | 110,713             | 95%        |
| Lincoln                      | 4,967            | 804             | 16%        | 4,163               | 84%        |
| Walla Walla                  | 36,827           | 3,342           | 9%         | 33,485              | 91%        |
| <i>Other County Subtotal</i> | <i>157,894</i>   | <i>9,533</i>    | <i>6%</i>  | <i>148,361</i>      | <i>94%</i> |
| Study Area Total             | 262,054          | 22,016          | 8%         | 240,038             | 92%        |
| Washington                   | 4,593,480        | 92,764          | 2%         | 4,500,716           | 98%        |
| United States                | 201,644,200      | 2,601,000       | 1%         | 199,043,200         | 99%        |

*Source: (U.S. Bureau of Economic Analysis, 2020)*

Figure 2-2 below illustrates that the majority of farm jobs were in the study area are in Grant, Benton and Franklin counties (about 16,000 jobs, or three-quarters of the six-county total). Farm jobs in Adams, Grant, and Lincoln counties comprise roughly 15% of all employment in each respective county, while in Benton, Walla Walla and Franklin counties farm employment is a slightly smaller proportion of total employment (5% to 9% of all jobs). By comparison, only 2% of all jobs in WA and only 1% of jobs nationwide are farm jobs (U.S. Bureau of Economic Analysis, 2020). This comparison highlights the relative importance of farm employment in the study area.

Figure 2-1: Farm Employment in 2019



Source: Highland Economics’ analysis of (U.S. Bureau of Economic Analysis, 2020)

Aside from farming, other large employment sectors in the study area include manufacturing (over 19,000 jobs), retail trade (25,000 jobs), health care and social assistance (over 26,000 jobs), and local government (27,000 jobs). Construction employs a larger proportion of workers in Franklin and Lincoln counties. Health care employment is particularly high in Walla Walla County. Lincoln County has proportionally higher employment in local government than the other counties. Total jobs by industry are shown in Table 2-6 below. In the table below, and many that follow in Section 3, data for some counties is suppressed (indicated by an ‘S’ in the table); for regional totals including such counties, we include a ‘+’ after the estimate to indicate that the sum of the available data is the minimum, and that the actual value may be higher due to suppressed values.

Table 2-6: Non-Farm Employment by Industry in 2019

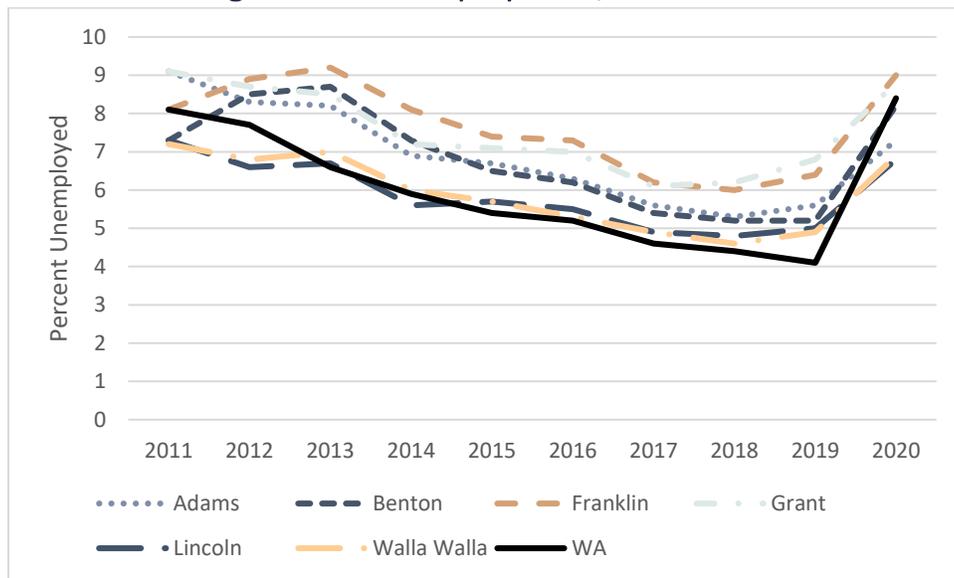
| Industry  | Adams | Franklin | Grant  | Primary<br>CBP<br>Counties,<br>Subtotal | Benton  | Lincoln | Walla<br>Walla | Other<br>Regional<br>Counties,<br>Subtotal | Region<br>Total |
|---|-------|----------|--------|---|---------|---------|----------------|--|-----------------|
| Nonfarm employment                                      | 8,405 | 40,223   | 43,049 | 91,677                                  | 110,713 | 4,163   | 33,485         | 148,361                                    | 240,038         |
| Private nonfarm employment                              | 6,691 | 33,104   | 34,135 | 73,930                                  | 97,736  | 2,929   | 27,641         | 128,306                                    | 202,236         |
| Forestry, fishing, and related activities               | 521   | S        | S      | 521+                                    | S       | S       | S              | 0+   | 521+            |
| Mining, quarrying, and oil and gas extraction           | 22    | S        | S      | 22+                                     | S       | S       | S              | 0+   | 22+             |
| Utilities   | S     | S        | 21     | 21+                                     | 164     | S       | 142            | 306+                                       | 327+            |
| Construction  | 233   | 3,054    | 2,163  | 5,450                                   | 9,353   | 388     | 1,447          | 11,188                                     | 16,638          |
| Manufacturing   | 1,154 | 3,909    | 4,831  | 9,894                                   | 5,067   | S       | 4,439          | 9,506+                                     | 19,400+         |
| Wholesale trade   | S     | 2,100    | 1,717  | 3,817+                                  | 1,756   | 232     | 768            | 2,756                                      | 6,573+          |
| Retail trade  | 857   | 4,342    | 4,473  | 9,672                                   | 12,010  | 374     | 3,032          | 15,416                                     | 25,088          |
| Transportation and warehousing                          | S     | S        | 1,629  | 1,629+                                  | 2,254   | S       | 717            | 2,971+                                     | 4,600+          |
| Information   | 19    | 192      | 589    | 800                                     | 845     | 29      | 364            | 1,238                                      | 2,038           |
| Finance and insurance                                   | 152   | 802      | 987    | 1,941                                   | 3,682   | 112     | 1,099          | 4,893                                      | 6,834           |
| Real estate and rental and leasing                      | 393   | 1,514    | 2,080  | 3,987                                   | 4,034   | S       | 1,283          | 5,317+                                     | 9,304+          |
| Professional, scientific, and technical services        | 169   | 1,208    | 1,265  | 2,642                                   | 11,345  | 213     | S              | 11,558+                                    | 14,200+         |
| Management of companies and enterprises                 | 33    | 50       | 77     | 160                                     | 606     | 0       | S              | 606+                                       | 766+            |
| Admin. & support and waste mgmt & remediation services  | 187   | 1,655    | 2,214  | 4,056                                   | 11,693  | 113     | 864            | 12,670                                     | 16,726          |
| Educational services                                    | S     | 753      | 322    | 1,075+                                  | 1,183   | S       | 1,572          | 2,755+                                     | 3,830+          |
| Health care and social assistance                       | S     | 3,616    | 3,374  | 6,990+                                  | 15,022  | S       | 4,903          | 19,925+                                    | 26,915+         |
| Arts, entertainment, and recreation                     | 58    | 706      | 578    | 1,342                                   | 2,386   | 71      | S              | 2,457+                                     | 3,799+          |
| Accommodation and food services                         | 502   | 2,386    | 2,856  | 5,744                                   | 8,555   | 147     | S              | 8,702+                                     | 14,446+         |
| Other services (except government and govt enterprises) | 386   | 2,327    | 1,971  | 4,684                                   | 5,374   | 249     | 1,805          | 7,428                                      | 12,112          |
| Government and government enterprises                   | 1,714 | 7,119    | 8,914  | 17,747                                  | 12,977  | 1,234   | 5,844          | 20,055                                     | 37,802          |
| Federal civilian  | 38    | 482      | 781    | 1,301                                   | 754     | 61      | 1,334          | 2,149                                      | 3,450           |
| Military  | 50    | 232      | 242    | 524                                     | 528     | 27      | 146            | 701  | 1,225           |
| State and local   | 1,626 | 6,405    | 7,891  | 15,922                                  | 11,695  | 1,146   | 4,364          | 17,205                                     | 33,127          |
| State government  | 71    | 1,701    | 838    | 2,610                                   | 1,567   | 49      | 1,891          | 3,507                                      | 6,117           |
| Local government  | 1,555 | 4,704    | 7,053  | 13,312                                  | 10,128  | 1,097   | 2,473          | 13,698                                     | 27,010          |

Note: "S" indicates where data was suppressed in the original dataset to avoid disclosure of confidential information; estimates are included in higher-level totals.

Source: Highland Economics' analysis of (U.S. Bureau of Economic Analysis, 2020)

The unemployment rate provides a useful indicator of the health of an economy. Figure 2-1 shows the unemployment rate for the six counties and Washington as a whole. As shown in the graph, the unemployment rate for the six counties was generally higher than the state over the last decade (with some exceptions for Lincoln, Walla Walla, and Adams counties for certain years). On average during this decade, Adams, Franklin, and Grant counties had unemployment rates that were roughly 1% to 1.7% higher than the state average (6%) while Lincoln and Walla Walla counties' rates were similar to Washington as whole. The trend in unemployment during the last decade was a general decline, both for the six counties and the state; however, that trend ended when rates began to rise in 2019 (in the counties but not the state) and increased sharply in 2020, a trend that was common nationwide during the coronavirus pandemic.

Figure 2-2: Unemployment, 2011-2020



Source: (U.S. Bureau of Labor Statistics, 2021)

### 2.2.2 Income

As shown in Table 2-7 median household income is lower in each of the six counties than the state as a whole, ranging from 65% to 95% of the state's value. While Washington's median household income is 17% higher than the US, most of the study area counties are 8% to 23% lower than the national median. Franklin and Benton counties are the exception, which have median household incomes that are higher than the US.

Table 2-7: Median Household Income, 2019

| Geography     | Median Household Income |
|---------------|-------------------------|
| Adams         | \$50,292                |
| Benton        | \$72,084                |
| Franklin      | \$66,215                |
| Grant         | \$57,855                |
| Lincoln       | \$56,892                |
| Walla Walla   | \$60,252                |
| Washington    | \$76,828                |
| United States | \$65,443                |

*Note: Values were adjusted for inflation to 2021 dollars using the Consumer Price Index.*

*Source: (U.S. Census Bureau, 2019)*

On average from 2015-2019, total compensation in the six county study area was approximately \$13.3 billion per year for all types of employment (U.S. Bureau of Economic Analysis, 2020).<sup>7</sup> In the individual counties, farm compensation comprised 2% to 10% of all income, totaling approximately \$650 million annually (U.S. Bureau of Economic Analysis, 2020).<sup>7</sup> The study area comprised about 6% of the state's total compensation but 32% of the state's farm compensation. Table 2-8 below breaks down the income by industry for each county and the state.

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<sup>7</sup> Annual values were adjusted for inflation to 2021 dollars using the Consumer Price Index prior to averaging.

Table 2-8: Income by Industry, annual average from 2015-2019

| Industry                                 | Adams   | Franklin  | Grant     | Primary<br>CBP<br>Counties,<br>Subtotal | Benton    | Lincoln | Walla<br>Walla | Other<br>Regional<br>Counties,<br>Subtotal | Region<br>Total | Washington  |
|--|---------|-----------|-----------|---|-----------|---------|----------------|--|-----------------|-------------|
| Total compensation (\$000s) <sup>A</sup> | 420,469 | 2,027,482 | 2,314,630 | 4,762,581                               | 6,640,718 | 168,370 | 1,720,305      | 8,529,393                                  | 13,291,973      | 292,525,658 |
| Farm compensation (\$000s) <sup>A</sup>  | 42,389  | 133,314   | 235,675   | 411,377                                 | 129,547   | 8,082   | 101,007        | 238,636                                    | 650,014         | 2,056,082   |
| Farm compensation                        | 10%     | 7%        | 10%       | 9%                                      | 2%        | 5%      | 6%             | 3%   | 5%              | 1%          |
| Nonfarm compensation                     | 90%     | 93%       | 90%       | 91%                                     | 98%       | 95%     | 94%            | 97%  | 95%             | 99%         |
| Private nonfarm compensation             | 63%     | 68%       | 59%       | 63%                                     | 79%       | 46%     | 66%            | 76%  | 71%             | 79%         |
| Construction                             | 2%      | 7%        | 4%        | 5%                                      | 8%        | 7%      | 3%             | 7%   | 7%              | 6%          |
| Specialty trade contractors              | 1%      | 6%        | 2%        | 4%                                      | 4%        | 2%      | 3%             | 4%   | 4%              | 3%          |
| Manufacturing                            | 19%     | 11%       | 16%       | 14%                                     | 5%        |         | 16%            | 7%   | 10%             | 10%         |
| Durable goods manufacturing              | 1%      | 2%        | 7%        | 4%                                      | 1%        |         | 5%             | 2%   | 3%              | 8%          |
| Nondurable goods manufacturing           | 17%     | 9%        | 9%        | 10%                                     | 4%        | 0%      | 12%            | 6%   | 7%              | 2%          |
| Food manufacturing                       |         | 8%        | 6%        | 6%                                      | 1%        |         |                | 1%   | 3%              | 1%          |
| Wholesale trade                          |         | 8%        | 5%        | 6%                                      | 2%        | 11%     | 3%             | 2%   | 3%              | 5%          |
| Retail trade                             | 6%      | 8%        | 6%        | 7%                                      | 6%        | 5%      | 5%             | 6%   | 6%              | 8%          |
| Health care and social assistance        |         | 8%        | 6%        | 6%                                      | 12%       |         | 17%            | 9%   | 8%              | 10%         |
| Ambulatory health care services          | 6%      | 4%        | 3%        | 4%                                      | 6%        | 1%      | 4%             | 5%   | 5%              | 4%          |
| Government and government enterprises    | 27%     | 26%       | 31%       | 28%                                     | 19%       | 49%     | 28%            | 21%  | 24%             | 20%         |
| Federal civilian                         | 1%      | 3%        | 4%        | 3%                                      | 2%        | 3%      | 9%             | 3%   | 3%              | 3%          |
| State and local                          | 26%     | 23%       | 26%       | 25%                                     | 17%       | 46%     | 19%            | 18%  | 20%             | 15%         |
| State government                         | 1%      | 6%        | 2%        | 4%                                      | 2%        | 2%      | 9%             | 3%   | 3%              | 5%          |
| Local government                         | 25%     | 16%       | 24%       | 21%                                     | 15%       | 43%     | 10%            | 15%  | 17%             | 10%         |

*A/ Annual values were adjusted for inflation to 2021 dollars using the Consumer Price Index prior to averaging.*

*Source: Highland Economics' analysis of (U.S. Bureau of Economic Analysis, 2020).*

For non-farm sectors, the largest wage paying industries are similar to the largest employers. These include manufacturing (especially non-durable goods), local government, retail trade, and health care and social assistance. The proportion of wages in agricultural and forest support industries tends to be higher than the state average, as it does in the food manufacturing and wholesale trade industries.

### 2.3 TAX BASE

This section describes the tax base for the study area. Economic activity supports the tax base by fostering property ownership and property values (which generate property taxes), stimulating the sale of goods (which results in sales taxes), and generating income (which results in income taxes). In the study area, property taxes and sales taxes are levied at the local (city and county) and state level, while income taxes are collected at the state and national levels.

#### 2.3.1 Property Tax

Property taxes are based on the assessed value of a property and the rate at which that value is taxed by various districts in the county. Common taxing districts include the county government, roads, cities, schools, hospitals, libraries, ports, fire departments, and parks & recreation. The CBP contributes to property taxes by increasing the value of land through irrigation and by providing income to property owners that allows them to pay their property taxes. Table 2-9 below shows the total assessed value and levied property taxes by county. Benton County has the highest total assessed property value, while Grant County collects the largest sum of property taxes. The average combined tax rate for the counties ranges from 0.1% to 1.25% of the total assessed value.

Table 2-9: Property Tax, Assessed Value and Levy, FY 2021

| Category                           | Total Assessed Value    | Total Property Tax Levied |
|------------------------------------|-------------------------|---------------------------|
| <i>Primary CBP Counties</i>        |                         |                           |
| Adams                              | \$2,385,179,541         | \$29,321,495              |
| Franklin                           | \$10,066,109,464        | \$100,685,113             |
| Grant                              | \$13,440,750,820        | \$147,888,758             |
| <i>Primary CBP County Subtotal</i> | <i>\$25,892,039,825</i> | <i>\$277,895,366</i>      |
| <i>Other CBP Counties</i>          |                         |                           |
| Benton <sup>1</sup>                | \$22,360,652,009        | \$24,816,015              |
| Lincoln                            | \$1,644,771,201         | \$18,617,631              |
| Walla Walla                        | \$6,994,579,034         | \$87,097,721              |
| <i>Other CBP County Subtotal</i>   | <i>\$31,000,002,244</i> | <i>\$130,531,367</i>      |
| <b>Region Total</b>                | <b>\$56,892,042,069</b> | <b>\$408,426,733</b>      |

1/ Benton County data is for FY 2020, as FY 2021 data were not available.

#### 2.3.2 Sales and Use Tax

Sales and use taxes are based on the sale and use of property and goods. All sales of tangible property in Washington are taxed the minimum rate of 6.55%, upon which localities can levy additional sales tax (with certain statutory limitations). Adams, Benton, Franklin, and Lincoln counties levy additional sales taxes of 1.5% (for an effective total sales tax rate of 8%), Grant County has an additional 1.7% sales tax (total rate of 8.2%), and Walla Walla County charges an additional 2.2% (total rate of 8.7%) (MRSC,

2020).<sup>8</sup> As Table 2-10 shows, the six counties generate nearly \$844 million in sales and use taxes annually, of which Benton County accounts for roughly 60% (WA Office of Financial Management, 2019).<sup>9</sup>

**Table 2-10: Sales and Use Taxes**

| Category                           | Sales Tax Rate <sup>1</sup> | Taxable Retail Sales <sup>2</sup> | Sales & Use Tax Receipts <sup>3</sup> |
|------------------------------------|-----------------------------|-----------------------------------|---------------------------------------|
| <i>Primary CBP Counties</i>        |                             |                                   |                                       |
| Adams                              | 8.0%                        | \$370,847,918                     | \$21,483,509                          |
| Franklin                           | 8.0%                        | \$1,771,382,070                   | \$106,594,457                         |
| Grant                              | 8.2%                        | \$2,412,548,750                   | \$134,042,588                         |
| <i>Primary CBP County Subtotal</i> | <i>N/A</i>                  | <i>\$4,554,778,738</i>            | <i>\$262,120,554</i>                  |
| <i>Other CBP Counties</i>          |                             |                                   |                                       |
| Benton                             | 8.0%                        | \$4,499,103,353                   | \$502,757,601                         |
| Lincoln                            | 8.0%                        | \$145,760,061                     | \$8,430,561                           |
| Walla Walla                        | 8.7%                        | \$1,114,725,214                   | \$70,456,193                          |
| <i>Other CBP County Subtotal</i>   | <i>N/A</i>                  | <i>\$5,759,588,628</i>            | <i>\$581,644,355</i>                  |
| Region Total                       | N/A                         | \$10,314,367,366                  | \$843,764,909                         |

1/ These do not include any sales taxes that other local entities (such as cities or transit districts) impose. Source: (MRSC, 2020)

2/ Average from 2016-2020. Annual values were adjusted to 2021 dollars using the Consumer Price Index prior to averaging. Source: (WA Department of Revenue, 2021)

3/ Data is from Fiscal Year 2016. Values were adjusted to 2021 dollars using the Consumer Price Index. Source: (WA Office of Financial Management, 2019)

<sup>8</sup> These do not include any sales taxes that other local entities (such as cities or transit districts) impose.

<sup>9</sup> Data is from Fiscal Year 2016 (the most recent available). Values were adjusted to 2021 dollars using the Consumer Price Index.

## 3 REGIONAL AGRICULTURAL PROFILE

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This section explores the study area's agricultural profile in terms of the extent and character of production and the jobs and income associated with agricultural activity. The agricultural production is defined by its acreage and location, the value of production, and the value of irrigation water. The evaluation of agricultural employment and income includes on-farm work, industries that support farming activity, and industries that add value to agricultural goods. This profile provides information on agricultural production in each of the region's counties, except for Benton County as there is no CBP land in Benton County. As noted above, Benton County is included in the study area as it is closely linked economically to the CBP production area.

### 3.1 AGRICULTURAL PRODUCTION

This section describes the acreage of agricultural lands, the crops grown, and the value of the agricultural goods produced. This section also explores the value of irrigation water, and specifically the additional agricultural production value made possible by irrigation.

#### 3.1.1 Land Area

Of the approximately 700,000 acres irrigated in the CBP, about 99% are located in Adams, Grant, and Franklin counties. Table 3-1 outlines the irrigated land in each county, the amount of CBP-irrigated land by county, and the share of CBP irrigated acreage relative to total irrigated land in each county. CBP lands comprise the majority of irrigated acres in Adams, Franklin, and Grant Counties but only a small portion of Walla Walla County's irrigated acres. The table also highlights the relatively small proportion of irrigated land in Lincoln County.

Table 3-1: Land by CBP County

| Metric                                    | Adams   | Franklin | Grant     | Primary CBP Counties, Subtotal | Lincoln   | Walla Walla | Other CBP Counties, Subtotal | CBP County Total |
|---|---------|----------|-----------|--------------------------------|-----------|-------------|------------------------------|------------------|
| Land in farms (acres) <sup>A</sup>        | 972,095 | 615,274  | 1,041,582 | 2,628,951                      | 1,181,197 | 702,537     | 1,883,734                    | 4,512,685        |
| Harvested cropland (acres) <sup>A</sup>   | 363,578 | 248,297  | 568,572   | 1,180,447                      | 398,485   | 260,568     | 659,053                      | 1,839,500        |
| Total irrigated area (acres) <sup>A</sup> | 127,913 | 188,119  | 448,040   | 764,072                        | 29,512    | 101,678     | 131,190                      | 895,262          |
| Percent cropland irrigated in county      | 35%     | 76%      | 79%       | 65%                            | 7%        | 39%         | 20%                          | 49%              |
| Total CBP acres in county <sup>B</sup>    | 77,865  | 178,140  | 438,031   | 694,035                        |           | 4,537       | 4,537                        | 698,572          |
| CBP % of irrigated acres in county        | 61%     | 95%      | 98%       | 91%                            |           | 4%          | 3%                           | 78%              |

A/ Source: (USDA NASS, 2019)

B/ Source: District-reported (ECBID, QCBID, SCBID) assessed acreage by County, plus the estimated 49,000 acres supported by CBP groundwater service area contracts.

Table 3-2 below shows the average annual acreage by district and crop type, as reported by district patrons.<sup>10</sup> High-value crops (vegetables, fruit, and greenhouse/nursery) make up 39% of all district acres. The largest category of district acres is for “All other crop farming,” which consists primarily of hay. QCBID has the largest acreage of vegetable and melon farming, while SCBID has the most acres in fruit farming and greenhouse/nursery/floriculture production. Other CBP lands include 49,000 acres in Grant County that are irrigated with groundwater recharged with CBP water; these acres have groundwater service contracts with the Bureau of Reclamation.

<sup>10</sup> ECBID and QCBID provided data from 2010-2020 (East Columbia Basin Irrigation District, 2021; Quincy-Columbia Basin Irrigation District, 2021). SCBID provided data for the years 2008, 2009, 2010, 2015, and 2021 (South Columbia Basin Irrigation District, 2021).

Table 3-2: Average Annual CBP District Acres by Crop Type

| Crop Type (IMPLAN Crop Category)                                      | ECBID   | QCBID   | SCBID   | Other CBP Lands <sup>11</sup> | Total   |
|---|---------|---------|---------|-------------------------------|---------|
| Oilseed farming   | 135     | 689     | 0       | 40                            | 864     |
| Grain farming (including grain corn and dry beans)                    | 54,014  | 72,228  | 43,386  | 13,961                        | 183,588 |
| Vegetable and melon farming (Including potatoes)                      | 32,601  | 49,683  | 38,966  | 20,872                        | 142,122 |
| Fruit farming (including orchards, vines, and other non-melon fruits) | 2,642   | 44,106  | 70,858  | 1,622                         | 119,228 |
| Tree nut farming  | 1       | 0       | 4       | -                             | 5       |
| Greenhouse, nursery, and floriculture production                      | 2,436   | 3,283   | 4,802   | 366                           | 10,887  |
| Sugar beet farming  | 381     | 315     | 0       | 6                             | 702     |
| All other crop farming (including alfalfa hay and forage)             | 57,259  | 95,031  | 76,752  | 12,134                        | 241,176 |
| Total   | 149,469 | 265,335 | 234,768 | 49,000                        | 698,572 |

Sources: (East Columbia Basin Irrigation District, 2021; South Columbia Basin Irrigation District, 2021; Quincy-Columbia Basin Irrigation District, 2021) For ECBID and SCBID, data is an average of data spanning the years 2010 to 2020. For SCBID, the data is an average of the years 2008, 2009, and 2015 (2010 and 2021 data were excluded due to inconsistencies).

### 3.1.2 Value of Agricultural Production

In 2017, the five-county area (the six county study area minus Benton County where there are no CBP authorized lands) produced an estimated \$3.6 billion in agricultural sales, comprising 37% of the state's total (USDA NASS, 2019). Around three-quarters of sales came from crops while one-quarter came from sales of livestock products.<sup>12</sup> Table 3-3 outlines the sales by county and the state as reported in the 2017 Census of Agriculture. NASS does not publish data that would identify an operation; in cases where NASS has suppressed data for a county, the table shows an 'S' or the analysis approximated the suppressed data, in which case the estimate is indicated with an asterisk (\*) after the estimate. For regions containing counties with suppressed data, regional totals were not feasible to estimate and are indicated in the table with 'N/A' for not available.

<sup>11</sup> These are 49,000 acres of lands that are dependent on groundwater recharged by CBP irrigation water (these lands have groundwater service contracts with the Bureau of Reclamation). These lands are located in the CBP in Grant County.

<sup>12</sup> Due to suppressed data, Walla Walla County was excluded from this calculation. NASS does not publish data that would identify an operation (for example, if there is only one producer of a particular commodity in a county).

Table 3-3: Sales of Agricultural Products, 2017 (in thousands)

| Metric                             | Adams     | Franklin  | Grant       | Primary<br>CBP<br>Counties,<br>Subtotal | Lincoln   | Walla<br>Walla | Other CBP<br>Counties,<br>Subtotal | CBP<br>County<br>Total | WA          |
|------------------------------------|-----------|-----------|-------------|---|-----------|----------------|------------------------------------|------------------------|-------------|
| Total sales (000s)                 | \$363,876 | \$631,598 | \$1,938,897 | \$2,934,371                             | \$130,237 | \$526,236      | \$656,473                          | \$3,590,844            | \$9,634,461 |
| Average sales per acre             | \$374     | \$1,027   | \$1,861     | \$1,116                                 | \$110     | \$749          | \$348                              | \$796                  | \$656       |
| <i>% of total sales</i>            |           |           |             |   |           |                |                                    |                        |             |
| Crop sales                         | 71%       | 74%       | 76%         | 75%                                     | 91%       | S              | N/A                                | 76%*                   | 72%         |
| Grains, oilseeds, dry beans & peas | 26%       | 6%*       | 6%          | 8%                                      | 77%       | 17%            | 29%                                | 11%*                   | 10%         |
| Vegetables, melons, potatoes       | 21%       | 27%       | 13%         | 17%                                     | 5%        | 13%            | 12%                                | 16%*                   | 11%         |
| Fruits, tree nuts, and berries     | 14%       | 30%       | 47%         | 39%                                     | 1%        | 47%            | 38%                                | 38%*                   | 38%         |
| Other crops and hay                | N/A       | 11%       | 8%          | 9%                                      | 9%        | S              | N/A                                | 9%*                    | 9%          |
| Livestock                          | 29%       | 26%       | 24%         | 25%                                     | 9%        | S              | N/A                                | 24%*                   | 28%         |
| Cattle and calves                  | 12%       | 12%*      | 17%         | 15%                                     | 8%        | S              | N/A                                | 15%*                   | 11%         |
| Milk from cows                     | 17%*      | 14%       | 8%          | 6%                                      | 0%        | 0%             | 0%                                 | 6%*                    | 11%         |

Source: (USDA NASS, 2019)

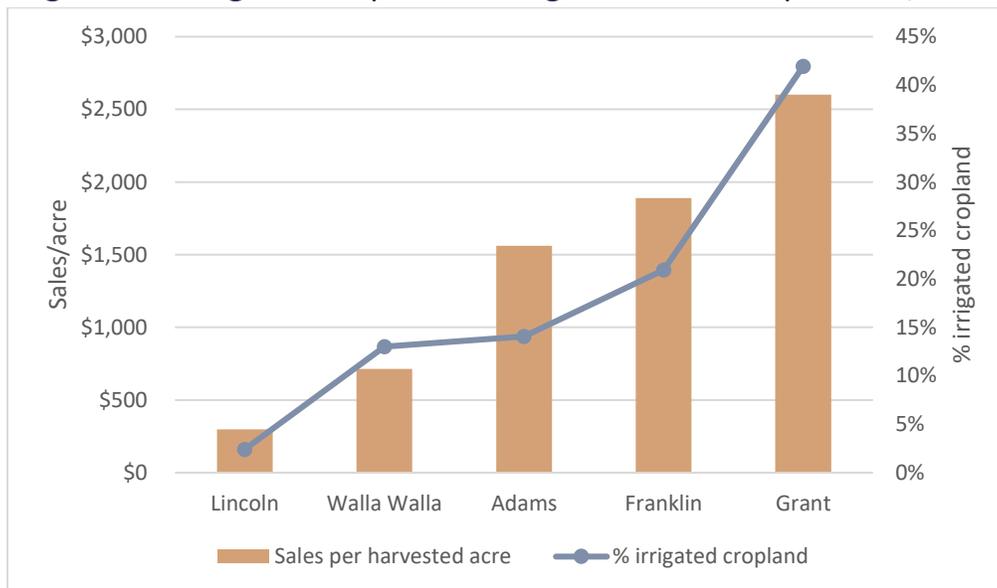
S = Data suppressed by NASS.

\* = Data suppressed by NASS but approximated by Highland Economics.

N/A = Regional subtotal not available due to suppressed data for counties of the region.

The counties comprise less than 30% of the state’s land in farms but produce about 37% of the state’s sales, highlighting that the region generates more agricultural sales per acre than the state average. Looking at the third row of Table 3-3 (average sales per acre), it is evident that Franklin and Grant Counties have especially high sales per acre. This is due to the relatively higher percentages of vegetable and fruit crops grown in those counties and the higher proportion of irrigated acreage compared to dryland acreage. By comparison, Lincoln County, which grows primarily grain and hay crops, has much lower sales per acre. The higher sales per acre, as well as the prevalence of high-value crops, is highly related to irrigation water availability. This is evident in Figure 3-1 below, which compares the sales per harvested acre in each county to the proportion of all farmland that is irrigated cropland. As shown in the graph, as the irrigated land becomes more prevalent, the sales value produced per acre increases. This relationship highlights the importance of irrigation water from the CBP in increasing agricultural production value per acre. Higher agricultural production value per acre also generally translates into greater net economic value to farmers and also greater economic activity supported in diverse sectors throughout the region.

**Figure 3-1: Irrigated Cropland and Agricultural Sales per Acre, 2017**



*Source: (USDA NASS, 2019)*

Using the acreages in Table 3-2, we estimate the annual value of production based on publicly available data on yields and prices (as is further described in the Methodology section). The current total annual value of CBP crop production is estimated at \$2.66 billion. Of this, approximately 11% is generated in ECBID, 38% is generated in QCBID, 45% in SCBID, and 5% in other CBP lands. About 58% of the total value is fruit crops, most of which are produced in SCBID and QCBID. Vegetables are the next largest source of value (22%), with significant value produced in each area of the CBP.

Table 3-4: Average Annual CBP District Production Value by Crop Type

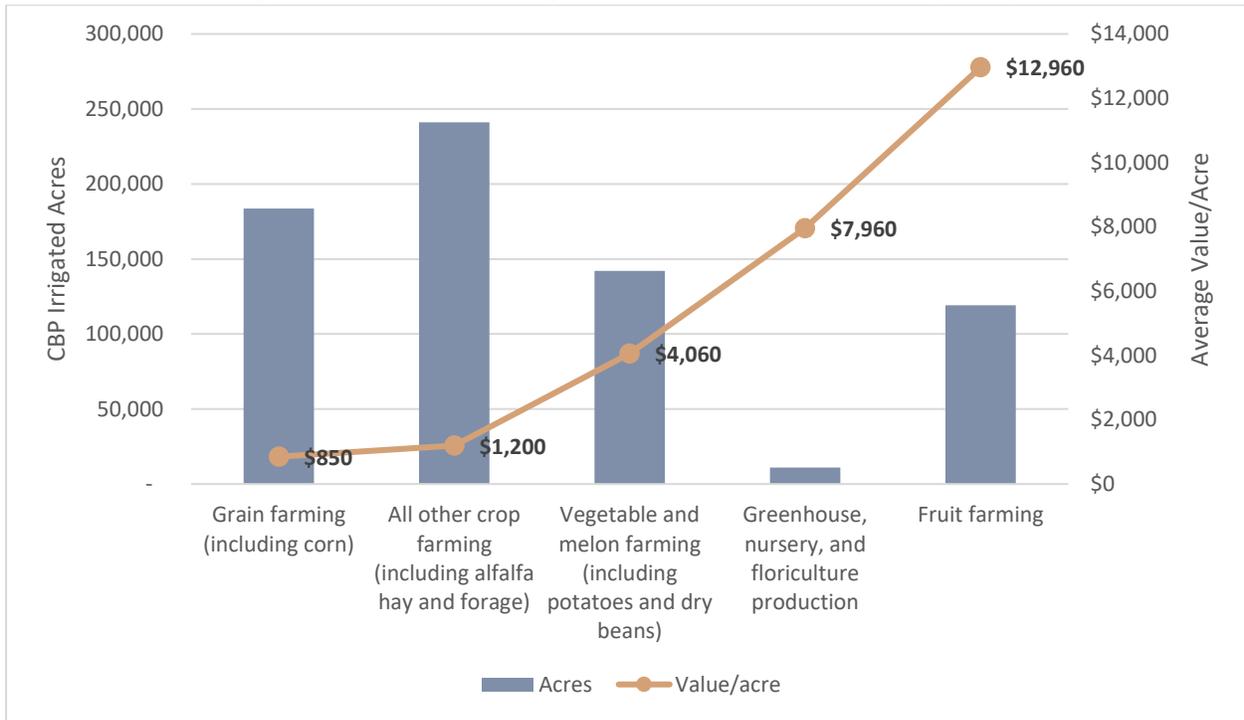
| Crop Type (IMPLAN crop category)                          | ECBID         | QCBID           | SCBID           | Other CBP Lands <sup>13</sup> | Total           |
|---|---------------|-----------------|-----------------|-------------------------------|-----------------|
| Oilseed farming   | \$100,000     | \$200,000       | \$0             | \$0                           | \$300,000       |
| Grain farming (including grain corn and dry beans)        | \$46,400,000  | \$62,800,000    | \$36,100,000    | \$11,600,000                  | \$156,900,000   |
| Vegetable and melon farming (including potatoes)          | \$148,600,000 | \$166,600,000   | \$175,000,000   | \$87,100,000                  | \$577,300,000   |
| Fruit farming   | \$37,100,000  | \$611,700,000   | \$874,900,000   | \$21,700,000                  | \$1,545,400,000 |
| Greenhouse, nursery, and floriculture <sup>14</sup>       | \$9,700,000   | \$57,000,000    | \$17,300,000    | \$2,600,000                   | \$86,600,000    |
| Sugarcane and sugar beet farming                          | \$900,000     | \$700,000       | \$0             | \$0                           | \$1,600,000     |
| All other crop farming (including alfalfa hay and forage) | \$61,900,000  | \$115,400,000   | \$96,600,000    | \$14,500,000                  | \$288,400,000   |
| Total   | \$304,700,000 | \$1,014,400,000 | \$1,199,900,000 | \$137,500,000                 | \$2,656,500,000 |

Source: Highland Economics analysis of district crop acreage data and NASS yields and prices.  
Totals may not sum due to rounding.

<sup>13</sup> These are 49,000 acres of lands that are dependent on groundwater recharged by CBP irrigation water; these lands are located in the CBP in Grant County.

<sup>14</sup> Note that the per acre value of production in this sector varies widely, such that while SCBID has fewer acres than ECBID, it has much higher value.

Figure 3-2: CBP Acreage and Production Value by Crop



Source: Highland Economics analysis of (USDA NASS, 2019).

### 3.1.3 Value of Irrigation Water

As is evident in Figure 3-1 above showing the relationship between irrigated water and agricultural sales value per acre, the availability of irrigation water allows farms to increase the value of agricultural production from their land. Irrigation makes it possible to grow high-value crops, such as fruits and vegetables that would otherwise be impossible in the CBP region of eastern Washington that receives very little rainfall. As Table 3-5 below indicates, annual rainfall in the area ranges from 9 to 15 inches per year. When compared to the crop requirements (shown in Table 3-6 below), it is clear that, in an average year, rainfall alone is not capable of meeting the full water needs of crops in the study area in almost all cases.<sup>15</sup> In most cases, the crops grown in the region and shown in Table 3-6 require at least 25 inches of water in an average year. As a result, irrigation plays a critical role in crop production in the study area.

<sup>15</sup> The one exception being peas in Walla Walla County. Additionally, most of the rainfall in the region occurs in the winter and spring whereas crop water needs are spring through fall.

Table 3-5: Average Annual Rainfall by County (Inches)

| County      | Average Annual Precipitation (in inches) |
|-------------|--|
| Adams       | 11                                       |
| Franklin    | 9  |
| Grant       | 9  |
| Lincoln     | 14                                       |
| Walla Walla | 15                                       |

Table 3-6: Average Annual Water Requirement by Crop and Location (Inches)

| Crop             | George, Grant County | Lind, Adams County | Legrow, Walla Walla County | Odessa, Lincoln County |
|------------------|----------------------|--------------------|----------------------------|------------------------|
| Alfalfa          | 37.5                 | 39.3               | 40.9                       | 39.2                   |
| Apples           | 35                   | N/A                | 39.0                       | N/A                    |
| Asparagus        | N/A                  | N/A                | 34.4                       | N/A                    |
| Bluegrass seed   | N/A                  | 17.8               | 17.2                       | 18.7                   |
| Concord Grapes   | N/A                  | N/A                | 29.9                       | N/A                    |
| Dry Beans        | 18.9                 | 19.3               | 21.9                       | 20.2                   |
| Field Corn       | 25.0                 | 27.5               | 27.9                       | 28.3                   |
| Hay              | 40.4                 | 17.8               | N/A                        | N/A                    |
| Lawn             | 36.1                 | 38.6               | 39.1                       | 38.5                   |
| Onions           | 22.4                 | 32.4               | 28.6                       | 28.0                   |
| Pasture          | 29.7                 | 31.1               | 33.1                       | 31.2                   |
| Peas             | 14.8                 | 15.2               | 12.0                       | 16.8                   |
| Peppermint       | 24.4                 | N/A                | 22.3                       | N/A                    |
| Potatoes         | 25.5                 | 27.0               | 25.5                       | 27.4                   |
| Shepody Potatoes | N/A                  | N/A                | 26.2                       | N/A                    |
| Spring Grain     | 24.1                 | 24.1               | 25.1                       | 25.0                   |
| Sugar Beets      | 30.6                 | 32.4               | N/A                        | 33.2                   |
| Sweet Corn       | 21.3                 | N/A                | 22.4                       | N/A                    |
| Wine Grapes      | N/A                  | N/A                | 25.0                       | N/A                    |
| Winter Grain     | 21.7                 | 23.4               | 22.5                       | 25.4                   |

Source: (AgriMet, 2015)

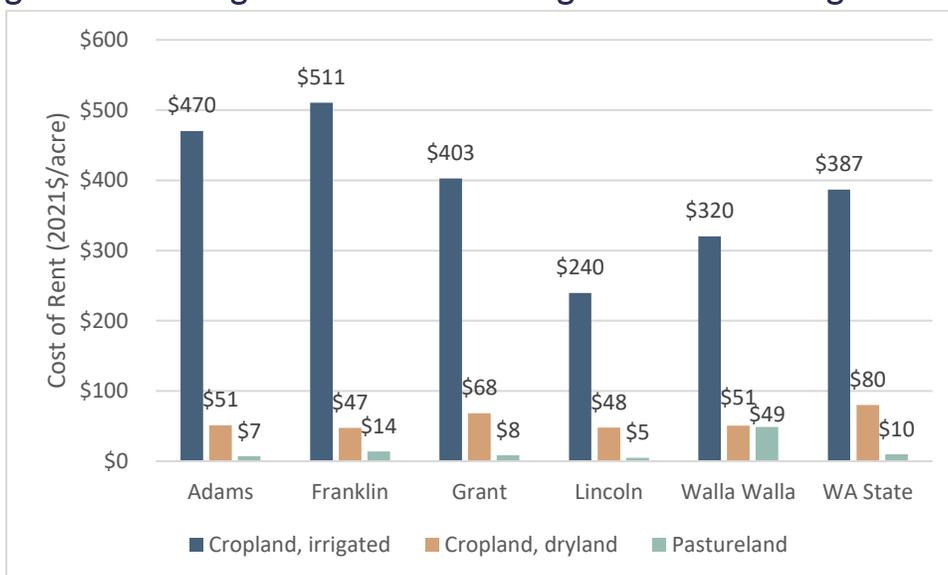
Data from the 2017 Census of Agriculture suggests that very few crops in the study area are grown without irrigation. These primarily-dryland crops include:

- Barley (in Grant, Lincoln, and Walla Walla Counties)
- Canola (Lincoln)
- Chickpeas (Lincoln and Walla Walla)
- Hay (only in Lincoln, elsewhere irrigated)
- Dry peas (only in Walla Walla, elsewhere irrigated)
- Wheat (all six counties) (USDA NASS, 2021).

A majority of the acreage in all other crops (for which there are data available) is irrigated, with all acreage irrigated for most other crops.

Comparing the rental rates for irrigated land to the rental rates for dryland provides a useful indication of the per-acre value of irrigation water. Figure 3-3 below compares rental rates of irrigated cropland, dryland cropland, and pastureland (which is almost completely non-irrigated in the study area according to the 2017 Census of Agriculture). Across the CBP counties, the average rental rate for irrigated cropland is \$389 per acre (2021 dollars), which is nearly identical to the state average of \$387.<sup>16</sup> Rent for dryland cropland averages \$53 per acre, suggesting that access to irrigation generates an additional value of \$336 per acre per year on average. Within the CBP counties, this additional value of irrigation ranges from \$192 in Lincoln County to \$463 in Franklin County, and the primary CBP counties (Adams, Franklin, and Grant) have an average additional value of \$405 per acre. The value of water in the CBP as reflected in land rental rates is 32% higher than the state average (\$307 per acre, estimated based on \$387 for irrigated cropland versus \$80 for dryland cropland), suggesting that the CBP irrigation brings higher-than-average value to agriculture production relative to the state average.

Figure 3-3: Average Rental Rates for Irrigated and Non-Irrigated Land



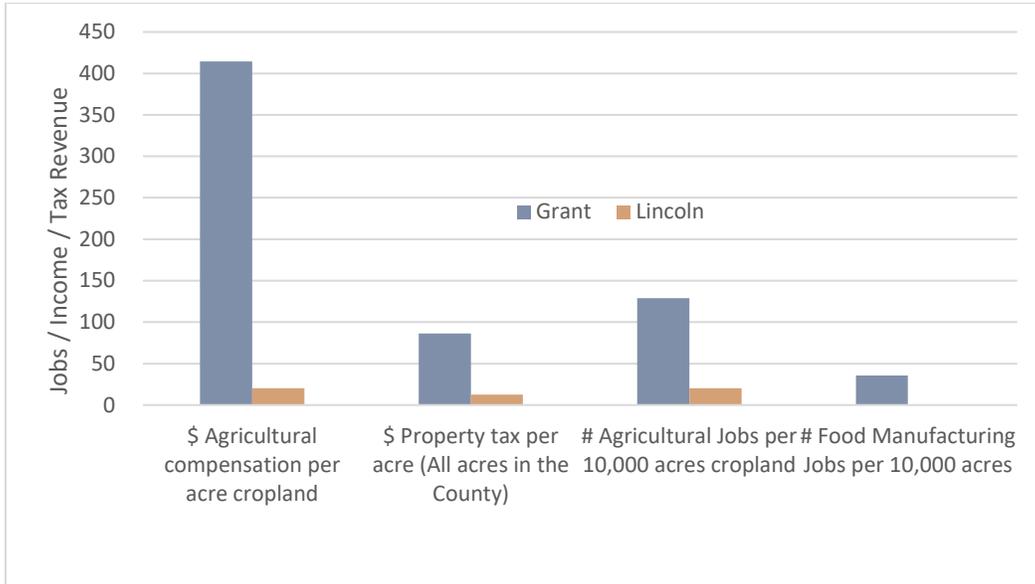
Note: Values represent the average rental rate from 2012-2020, where data was available. Annual values were adjusted to 2021 dollars using the Consumer Price Index prior to averaging.

Source: Highland Economics' analysis of (USDA NASS, 2021)

The economic conditions in Lincoln County compared to Grant County in Figure 3-4 highlight the importance of the CBP to overall economic development in east central Washington. As shown in the figure below, comparing the agricultural economies of Grant and Lincoln counties, agricultural compensation (including to proprietors and farm labors) per acre of farmland is over 20 times higher in Grant County, while property taxes for all acreage in the county (agricultural and otherwise) and the number of farm jobs per acre is approximately six times higher in Grant County. Grant County also has a robust food processing industry that is non-existent in Lincoln County.

<sup>16</sup> Values represent the average rental rate from 2012-2020, where data was available (USDA NASS, 2021). Annual values were adjusted to 2021 dollars using the Consumer Price Index prior to averaging.

Figure 3-4: Agricultural Economy of Grant and Lincoln Counties Compared



### 3.2 AGRICULTURAL EMPLOYMENT AND INCOME

This section outlines the sources of farm jobs and income in the study area, as well as jobs and income generated by industries that depend on agriculture. Agriculturally-dependent industries include those that sell goods and services to agricultural operations (e.g., fertilizer companies) and those that use agricultural goods in their own products (e.g., frozen food manufacturers).

#### 3.2.1 Farming

Crop and animal production comprises 18% of all private employment in the five-county area (U.S. Bureau of Labor Statistics, 2019). In Grant County, where farm employment is especially high, over one-quarter of all private employment is dedicated to crop and animal production. Table 3-7 breaks down the average annual employment by farming industry, with detail provided for each farming sectors as defined by the North American Industry Classification System (NAICS). In the table below, and many that follow, data for some counties is suppressed (indicated by an ‘S’ in the table); so for regional totals including such counties, we include a ‘+’ after the estimate to indicate that the sum of the available data is the minimum, and that the actual value may be higher due to suppressed values.

Industries, by NAICS name, with highest farming employment include:

- Fruit and tree nut farming (9,516 employees)
- Other crop farming, including hay (1,992 employees)
- Vegetable and melon farming (1,804 employees)
- Cattle ranching and farming (1,364 employees)
- Other crop farming (1,992 employees)
- Greenhouse and nursery production (933 employees)

Table 3-7: Wage and Salary Employment in Farming Industries, 2019

| Industry  | Adams        | Franklin     | Grant        | Primary<br>CBP<br>Counties,<br>Subtotal | Lincoln      | Walla<br>Walla | Other<br>CBP<br>Counties,<br>Subtotal | CBP<br>County<br>Total |
|---|--------------|--------------|--------------|---|--------------|----------------|---------------------------------------|------------------------|
| Total, all industries<br>(private/non-governmental)           | 7,229        | 28,281       | 31,486       | 66,996                                  | 1,523        | 22,341         | 23,864                                | 90,860                 |
| NAICS 11 Agriculture,<br>forestry, fishing and hunting        | 2,981        | S            | S            | 2,981+                                  | S            | S              | 0+                                    | 2,981+                 |
| <b>NAICS 111 Crop<br/>production</b>                          | <b>849</b>   | <b>3,306</b> | <b>7,612</b> | <b>11,767</b>                           | <b>196</b>   | <b>3,270</b>   | <b>3,466</b>                          | <b>15,233</b>          |
| NAICS 1111 Oilseed<br>and grain farming                       | 160          | 106          | 162          | 428                                     | 156          | 198            | 354                                   | 782                    |
| NAICS 1112 Vegetable<br>and melon farming                     | 154          | 754          | 896          | 1,804                                   | S            | S              | 0+                                    | 1,804+                 |
| NAICS 1113 Fruit and<br>tree nut farming                      | 261          | 1,506        | 5,006        | 6,773                                   |              | 2,743          | 2,743                                 | 9,516                  |
| NAICS 1114<br>Greenhouse and<br>nursery production            | 85           | 170          | 678          | 933                                     | S            | S              | 0+                                    | 933+                   |
| NAICS 1119 Other crop<br>farming                              | 189          | 770          | 870          | 1,829                                   | 25           | 138            | 163                                   | 1,992                  |
| <b>NAICS 112 Animal<br/>production and<br/>aquaculture</b>    | <b>351</b>   | <b>S</b>     | <b>525</b>   | <b>876+</b>                             | <b>S</b>     | <b>111</b>     | <b>111+</b>                           | <b>987+</b>            |
| NAICS 1121 Cattle<br>ranching and farming                     | 302          | 480          | 490          | 1,272                                   | 10           | 82             | 92                                    | 1,364                  |
| NAICS 11211 Beef<br>cattle ranching,<br>farming, and feedlots | 41           | 141          | 183          | 365                                     | 10           | 82             | 92                                    | 457                    |
| NAICS 11212 Dairy<br>cattle and milk<br>production            | 260          | 339          | 307          | 906                                     |              |                |                                       | 906                    |
| NAICS 1129 Other<br>animal production                         | S            | 13           | S            | 13+                                     | S            | S              | 0+                                    | 13+                    |
|   |              |              |              |   |              |                |                                       |                        |
| <b>Total Farm Proprietor<br/>Employment, All Sectors</b>      | <b>487</b>   | <b>673</b>   | <b>1,136</b> | <b>2,296</b>                            | <b>1,882</b> | <b>787</b>     | <b>2,669</b>                          | <b>4,965</b>           |
|   |              |              |              |   |              |                |                                       |                        |
| <b>TOTAL FARM<br/>EMPLOYMENT</b>                              | <b>1,687</b> | <b>4,472</b> | <b>9,273</b> | <b>10,960+</b>                          | <b>2,088</b> | <b>4,168</b>   | <b>6,256</b>                          | <b>17,216+</b>         |

Note: "S" indicates the value was suppressed in the original dataset to protect the identity (or identifiable information) of cooperating employers, or to protect sensitive information from another industry or area.

Source: (U.S. Bureau of Labor Statistics, 2019) and Bureau of Economic Analysis, 2021.

The Bureau of Labor Statistics data presented by NAICS code in Table 3-7 only includes wage and salary employment but does not include proprietor employment. Data from the Bureau of Economic Analysis, which does include proprietor employment (but does not provide the level of employment by crop type), indicate that proprietor farm employment is also sizable in the region. Including both wage and

salary and proprietor farm employment, in the three primary CBP counties of Adams, Franklin, and Grant, there are approximately 15,432 people employed in the farm sector.

Table 3-8 shows the total wages by farming industry and county (the estimates do not include profits to farm proprietors but solely show wages paid to employees). Crop and animal farming in the five-county area paid roughly \$548 million in wages in 2019 (this is the sum of NAICS sectors 111 and 112), comprising 14% of all wages from private companies (U.S. Bureau of Labor Statistics, 2019).<sup>17</sup> Over 90% of those wages were related to crop production (as opposed to animal production). Farming industries (by NAICS sector) that paid the largest number of total wages were:

- Fruit and tree nut farming (nearly \$271 million)
- Vegetable and melon farming (nearly \$86 million)
- Other crop farming, including hay (over \$74 million)
- Cattle ranching and farming (over \$63 million)

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<sup>17</sup> Dollar values were adjusted to 2021 dollars using the Consumer Price Index. Note that the values in Table 3-8 differ from the data presented in Table 2-8 that showed total compensation by industry; total compensation includes proprietor income as well as wage income.

Table 3-8: Wages in Farming Industries, 2019 (in millions)

| Industry   | Adams    | Franklin | Grant    | Primary<br>CBP<br>Counties,<br>Subtotal | Lincoln | Walla<br>Walla | Other CBP<br>Counties,<br>Subtotal | CBP<br>County<br>Total |
|--|----------|----------|----------|---|---------|----------------|------------------------------------|------------------------|
| NAICS 11 Agriculture, forestry, fishing and hunting    | \$100.12 | S        | S        | \$100.12+                               | S       | S              | \$0.00+                            | \$100.12+              |
| NAICS 111 Crop production                              | \$33.88  | \$118.75 | \$232.85 | \$385.48                                | \$6.09  | \$110.31       | \$116.40                           | \$501.88               |
| NAICS 1111 Oilseed and grain farming                   | \$6.35   | \$4.12   | \$5.53   | \$16.00                                 | \$4.64  | \$7.10         | \$11.74                            | \$27.74                |
| NAICS 11114 Wheat farming                              | \$2.52   | \$3.83   | \$3.18   | \$9.53                                  | \$3.58  | \$5.50         | \$9.08                             | \$18.61                |
| NAICS 11119 Other grain farming                        | S        | S        | \$2.16   | \$2.16+                                 | \$1.06  | S              | \$1.06+                            | \$3.22+                |
| NAICS 1112 Vegetable and melon farming                 | \$7.24   | \$38.97  | \$39.40  | \$85.61                                 | S       | S              | \$0.00+                            | \$85.61+               |
| NAICS 11121 Vegetable and melon farming                | \$7.24   | \$38.97  | \$39.40  | \$85.61                                 | S       | S              | \$0.00+                            | \$85.61+               |
| NAICS 1113 Fruit and tree nut farming                  | \$7.93   | \$36.70  | \$135.98 | \$180.61                                |         | \$90.37        | \$90.37+                           | \$270.98+              |
| NAICS 11133 Noncitrus fruit and tree nut farming       | \$7.93   | \$36.70  | \$135.98 | \$180.61                                |         | \$90.37        | \$90.37+                           | \$270.98+              |
| NAICS 1114 Greenhouse and nursery production           | \$5.39   | \$6.63   | \$23.10  | \$35.12                                 | S       | S              | \$0.00+                            | \$35.12+               |
| NAICS 11141 Food crops grown under cover               | S        |          | \$3.22   | \$3.22+                                 | S       | S              | \$0.00+                            | \$3.22+                |
| NAICS 11142 Nursery and floriculture production        | S        | \$6.63   | \$19.88  | \$26.51+                                |         | S              | \$0.00+                            | \$26.51+               |
| NAICS 1119 Other crop farming                          | \$6.97   | \$32.32  | \$28.84  | \$68.13                                 | \$0.99  | \$5.24         | \$6.23                             | \$74.36                |
| NAICS 11194 Hay farming                                | \$4.14   | \$14.11  | \$11.00  | \$29.25                                 | \$0.23  | \$1.90         | \$2.13                             | \$31.38                |
| NAICS 11199 All other crop farming                     | \$2.82   | \$18.22  | \$17.84  | \$38.88                                 | \$0.75  | \$3.34         | \$4.09                             | \$42.97                |
| NAICS 112 Animal production and aquaculture            | \$15.95  | S        | \$24.87  | \$40.82+                                | S       | \$5.23         | \$5.23+                            | \$46.05+               |
| NAICS 1121 Cattle ranching and farming                 | \$14.12  | \$21.67  | \$23.52  | \$59.31                                 | \$0.27  | \$3.93         | \$4.20                             | \$63.51                |
| NAICS 11211 Beef cattle ranching, farming, and feedlot | \$1.76   | \$6.16   | \$9.56   | \$17.48                                 | \$0.27  | \$3.93         | \$4.20                             | \$21.68                |
| NAICS 11212 Dairy cattle and milk production           | \$12.35  | \$15.51  | \$13.95  | \$41.81                                 |         |                |                                    | \$41.81                |
| NAICS 1129 Other animal production                     | S        | \$0.65   | S        | \$0.65+                                 | S       | S              | \$0.00+                            | \$0.65+                |
| NAICS 11291 Apiculture                                 | S        | \$0.65   | S        | \$0.65+                                 |         | \$1.30         | \$1.30                             | \$1.95+                |

Note: "S" indicates the value was suppressed in the original dataset to protect the identity (or identifiable information) of cooperating employers, or to protect sensitive information from another industry or area. All values were adjusted to 2021 dollars using the Consumer Price Index.

Source: (U.S. Bureau of Labor Statistics, 2019)

### 3.2.2 Agricultural Support and Product Processing

Because agriculture is such a large sector of the economy in the study area, many other agriculture-related industries depend on it. These include businesses that sell agricultural inputs and equipment (such as fertilizer and tractors), offer agriculture-related services (e.g., soil analysis and packing), and create value-added products (e.g., canning and preserving fruits and vegetables). Support activities to agricultural and forestry industries comprise 4% of all private employment in the six-county area; a total of 7,361 employees (U.S. Bureau of Labor Statistics, 2019). Table 3-9 below outlines the employment by industry for the six counties.

Food manufacturing (also referred to as food processing) represents about 5% of private employment (over 9,252 employees) in the study area, most of which are in the fruit and vegetable preserving and specialty (over 6,700 employees) and frozen food manufacturing (over 1,427 employees) industries. Other notable agricultural support industries include:

- Farm supplies merchant wholesalers (over 859 employees)
- Farm and garden equipment merchant wholesalers (over 1,346 employees)
- Grocery and related products wholesalers (over 644 employees)
- Nursery, garden, and farm supply stores (over 315 employees)

Table 3-9: Employment in Agricultural Support and Processing Industries, 2019

| Industry  | Adams | Franklin | Grant  | Primary<br>CBP<br>Counties,<br>Subtotal | Benton | Lincoln | Walla<br>Walla | Other<br>CBP<br>Counties,<br>Subtotal | Region<br>Total |
|---|-------|----------|--------|---|--------|---------|----------------|---------------------------------------|-----------------|
| Total, all industries (private/non-governmental)        | 7,229 | 28,281   | 31,486 | 66,996                                  | 79,597 | 1,523   | 22,341         | 103,461                               | 170,457         |
| NAICS 115 Agriculture and forestry support activities   | 1,781 | 2,503    | 1,389  | 5,673                                   | 1,445  | 65      | 178            | 1,688                                 | 7,361           |
| NAICS 1151 Support activities for crop production       | S     | S        | 1,378  | 1,378+                                  | S      | S       | 164            | 164+                                  | 1,542+          |
| NAICS 11511 Support activities for crop production      | S     | S        | 1,378  | 1,378+                                  | S      | S       | 164            | 164+                                  | 1,542+          |
| NAICS 311 Food manufacturing                            | 1,003 | 2,959    | 2,036  | 5,998                                   | 1,480  | S       | 1,774          | 3,254+                                | 9,252+          |
| NAICS 3111 Animal food manufacturing                    | S     | S        | 100    | 100+                                    | S      |         | S              | 0+                                    | 100+            |
| NAICS 31111 Animal food manufacturing                   | S     | S        | 100    | 100+                                    | S      |         | S              | 0+                                    | 100+            |
| NAICS 3114 Fruit and vegetable preserving and specialty | 964   | 2,593    | 1,790  | 5,347                                   | 1,359  |         | S              | 1,359+                                | 6,706+          |
| NAICS 31141 Frozen food manufacturing                   | S     | S        | 1,427  | 1,427+                                  | S      |         | S              | 0+                                    | 1,427+          |
| NAICS 31142 Fruit and vegetable canning and drying      | S     | S        | 363    | 363+                                    | S      |         | S              | 0+                                    | 363+            |
| NAICS 42382 Farm and garden equip. merchant wholesalers | 88    | 261      | 239    | 588                                     | 713    | S       | 45             | 758+                                  | 1,346+          |
| NAICS 4244 Grocery and related product wholesalers      | S     | 274      | 229    | 503+                                    | 56     |         | 85             | 141+                                  | 644+            |
| NAICS 42448 Fruit and vegetable merchant wholesalers    | S     | S        | 164    | 164+                                    | 284    |         | S              | 284+                                  | 448+            |
| NAICS 4245 Farm product raw material merch. whls.       | S     | S        | 81     | 81+                                     | S      | S       | 114            | 114+                                  | 195+            |
| NAICS 42451 Grain and field bean merchant wholesalers   | S     | S        | 63     | 63+                                     |        | S       | S              | 0+                                    | 63+             |
| NAICS 42491 Farm supplies merchant wholesalers          | S     | 370      | 429    | 799+                                    |        | S       | 60             | 60+                                   | 859+            |
| NAICS 44422 Nursery, garden, and farm supply stores     | S     | 132      | 119    | 251+                                    | 64     |         | S              | 64+                                   | 315+            |
| NAICS 44523 Fruit and vegetable markets                 | S     | S        | 7      | 7+                                      | S      |         | S              | 0+                                    | 7+              |
| NAICS 3253 Agricultural chemical manufacturing          |       | 11       | S      | 11+                                     | S      |         |                | 0+                                    | 11+             |
| NAICS 32531 Fertilizer manufacturing                    |       | 11       | S      | 11+                                     | S      |         |                | 0+                                    | 11+             |

Note: "S" indicates the value was suppressed in the original dataset to protect the identity (or identifiable information) of cooperating employers, or to protect sensitive information from another industry or area.

Source: (U.S. Bureau of Labor Statistics, 2019)

Businesses in the six county study area that support agricultural and forestry production paid approximately \$243 million in wages in 2019, 75% of which occurred in Adams, Franklin, and Grant Counties (U.S. Bureau of Labor Statistics, 2019).<sup>17</sup> Large wage-paying industries that supply agriculture include farm and garden equipment merchant wholesalers (over \$47 million) and farm supplies merchant wholesalers (over \$62 million).<sup>17</sup> Food manufacturing wages totaled over \$475 million, with Franklin and Grant Counties generating half of that value (see Table 3-10).<sup>17</sup> Based on the available data, most of these wages come from the fruit and vegetable preserving and specialty industry (over \$352 million) and the frozen food manufacturing industry (over \$78 million).<sup>17</sup>

Table 3-10: Wages in Support and Processing Industries, 2019 (in millions)

| Industry  | Adams   | Franklin | Grant    | Primary<br>CBP<br>Counties,<br>Subtotal | Benton  | Lincoln | Walla<br>Walla | Other<br>CBP<br>Counties,<br>Subtotal | Region<br>Total |
|---|---------|----------|----------|---|---------|---------|----------------|---------------------------------------|-----------------|
| Total, all industries (private/non-governmental)        | \$290   | \$1,213  | \$1,310  | \$2,813                                 | \$4,619 | \$59    | \$1,000        | \$5,678                               | \$8,491         |
| NAICS 115 Agriculture and forestry support activities   | \$50.30 | \$75.94  | \$56.08  | \$182.32                                | \$51.66 | \$3.31  | \$6.02         | \$60.99                               | \$243.31        |
| NAICS 1151 Support activities for crop production       | S       | S        | \$55.81  | \$55.81+                                | S       | S       | \$5.50         | \$5.50+                               | \$61.31+        |
| NAICS 11511 Support activities for crop production      | S       | S        | \$55.81  | \$55.81+                                | S       | S       | \$5.50         | \$5.50+                               | \$61.31+        |
| NAICS 311 Food manufacturing                            | \$57.95 | \$135.80 | \$108.36 | \$302.11                                | \$87.94 | S       | \$85.31        | \$173.25+                             | \$475.36+       |
| NAICS 3111 Animal food manufacturing                    | S       | S        | \$4.58   | \$4.58+                                 | S       |         | S              | \$0.00+                               | \$4.58+         |
| NAICS 31111 Animal food manufacturing                   | S       | S        | \$4.58   | \$4.58+                                 | S       |         | S              | \$0.00+                               | \$4.58+         |
| NAICS 3114 Fruit and vegetable preserving and specialty | \$56.04 | \$117.69 | \$96.10  | \$269.83                                | \$82.21 |         | S              | \$82.21+                              | \$352.04+       |
| NAICS 31141 Frozen food manufacturing                   | S       | S        | \$77.71  | \$77.71+                                | S       |         | S              | \$0.00+                               | \$77.71+        |
| NAICS 31142 Fruit and vegetable canning and drying      | S       | S        | \$18.39  | \$18.39+                                | S       |         | S              | \$0.00+                               | \$18.39+        |
| NAICS 42382 Farm and garden equip. merchant whls.       | \$6.44  | \$19.68  | \$15.81  | \$41.93                                 | \$3.01  | S       | \$2.63         | \$5.64+                               | \$47.57+        |
| NAICS 4244 Grocery and related product wholesalers      | S       | \$10.90  | \$7.20   | \$18.10+                                | \$17.85 |         | \$3.85         | \$21.70+                              | \$39.80+        |
| NAICS 42448 Fruit and vegetable merchant wholesalers    | S       | S        | \$3.71   | \$3.71+                                 | S       |         | S              | \$0.00+                               | \$3.71+         |
| NAICS 4245 Farm product raw material wholesale          | S       | S        | \$3.21   | \$3.21+                                 | S       | S       | \$8.93         | \$8.93+                               | \$12.14+        |
| NAICS 42451 Grain and field bean merchant wholesalers   | S       | S        | \$2.95   | \$2.95+                                 |         | S       | S              | \$0.00+                               | \$2.95+         |
| NAICS 42491 Farm supplies merchant wholesalers          | S       | \$27.35  | \$25.90  | \$53.25+                                | \$5.27  | S       | \$3.90         | \$9.17+                               | \$62.42+        |
| NAICS 44422 Nursery, garden, and farm supply            | S       | \$7.11   | \$7.70   | \$14.81+                                | S       |         | S              | \$0.00+                               | \$14.81+        |
| NAICS 44523 Fruit and vegetable markets                 | S       | S        | \$0.08   | \$0.08+                                 | S       |         | S              | \$0.00+                               | \$0.08+         |
| NAICS 3253 Agricultural chemical manufacturing          |         | \$0.48   | S        | \$0.48+                                 | S       |         |                | \$0.00+                               | \$0.48+         |
| NAICS 32531 Fertilizer manufacturing                    |         | \$0.48   | S        | \$0.48+                                 | S       |         |                | \$0.00+                               | \$0.48+         |

Note: "S" indicates the value was suppressed in the original dataset to protect the identity (or identifiable information) of cooperating employers, or to protect sensitive information from another industry or area. All values were adjusted to 2021 dollars using the Consumer Price Index.

Source: (U.S. Bureau of Labor Statistics, 2019)

## 4 ECONOMIC CONTRIBUTION OF THE CBP AGRICULTURAL ECONOMY

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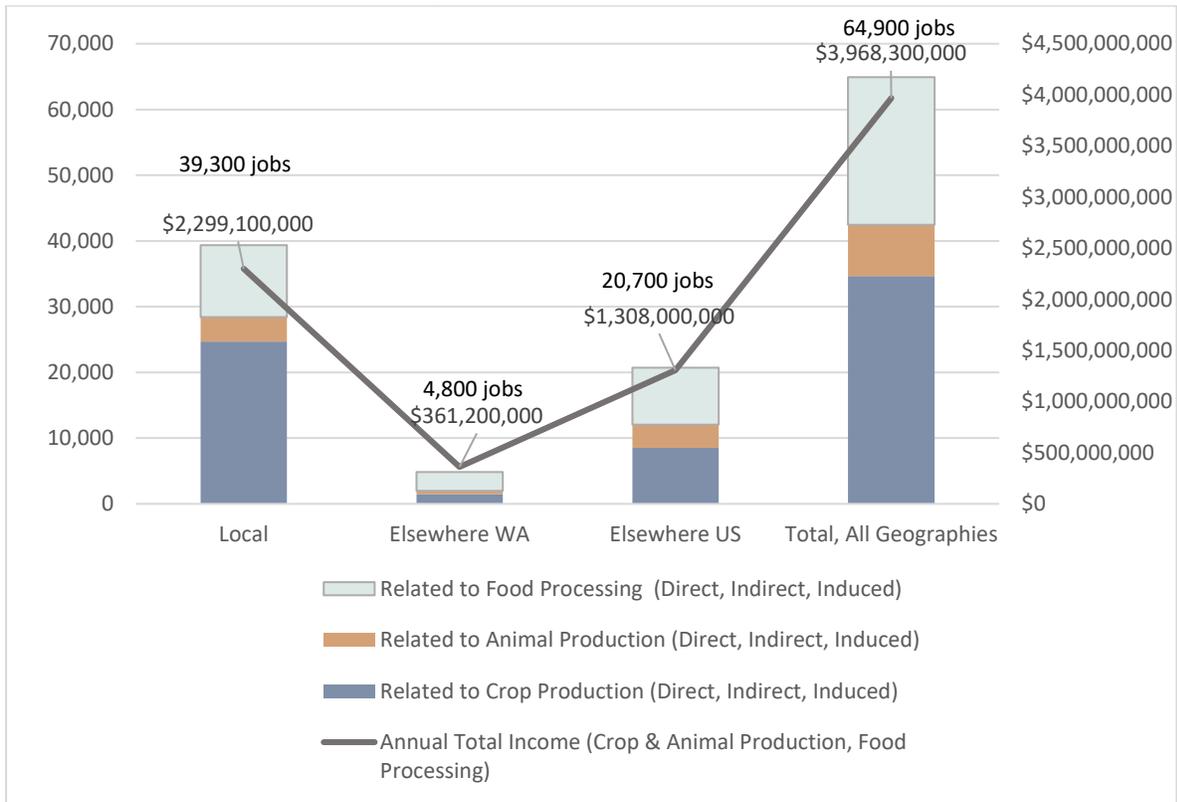
This section describes the methods used to estimate the economic impacts of the CBP and details the results of that analysis. CBP crop production supports economic activity throughout the local region, as well as throughout the rest of Washington State and the nation. The total economic contribution of the CBP includes: 1) the direct effects on farms of agricultural jobs and income supported by irrigated crop production, 2) the indirect effects in other sectors of jobs and income supported by farms purchasing inputs such as seed, fertilizer, and farm equipment necessary for crop production, and 3) the induced effects in other sectors such as real estate and health care resulting from the spending of employee wages. There are also additional economic effects of the CBP: CBP crop production is a vital input and makes possible substantial local animal production and food processing, and CBP irrigation infrastructure provides water-based recreation opportunities that support a thriving local recreation economy (discussed in Section 5).

The total economic contribution (direct, indirect, and induced) of each these types of effects from agricultural production is summarized in Figure 4-1 below.<sup>18</sup> **In the local region, the CBP agricultural production (not including recreation effects of the CBP) supports an estimated 39,300 jobs (full and part-time jobs) and \$2.3 billion in income (including total employee compensation and proprietor income) annually.** Elsewhere in Washington State, an estimated 4,800 jobs and \$361 million in income are supported annually, while elsewhere in the nation, 20,700 jobs and \$1.3 billion in income may be supported annually (estimation of effects elsewhere in the nation is less certain). Note that in the absence of the CBP, economic activity would fall by less than this amount as many people directly or indirectly employed in CBP-related activities would engage in other economic activities.

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<sup>18</sup> Note that Figure 4-1 includes only agricultural production-related economic contribution while the similar Figure ES-4 also includes recreation-related economic contribution so has slightly higher estimates.

Figure 4-1: Total Employment and Annual Labor Income (Direct, Indirect, Induced) Supported by CBP Irrigated Agriculture



#### 4.1 METHODOLOGY & DATA SOURCES

This section outlines the data sources and methods to estimate the total economic contribution of production on CBP-irrigated lands. **Economic contribution is measured in terms of employment (full and part-time jobs) and labor income (employee compensation and proprietor income) directly or indirectly supported by CBP crop production.**

The analysis first estimated the direct jobs, income, and employment from crop production. Using regional economic models, the analysis then estimated the “backward-linked”, secondary “ripple” effects on sectors that provide inputs to agriculture (indirect effects), as well as the ripple effects of farm employees (and other linked sector employees) spending wages and spurring economic activity at retail, service sector, and other businesses (induced effects). Finally, the analysis also estimated the total

#### TYPES OF ECONOMIC EFFECTS

**Direct:** Farm jobs and income related to irrigated crop production.

**Indirect:** Jobs and income at businesses supplying inputs, such as fertilizer, machinery, seeds to the CBP-irrigated farms.

**Induced:** Jobs and income at businesses such as retail stores and service providers supported by the spending of CBP-related income.

**Forward-Linked:** Jobs and income in industries reliant on CBP crop production, such as animal production and food processing, and reliant on CBP infrastructure, such as water-based recreation.

economic effects (direct, indirect, and induced) of ‘forward-linked’ animal production and food processing production that is reliant on CBP production as key inputs. **Total effects in economic impact analysis are equal to the sum of direct, indirect, and induced effects of both backward linked and forward linked sectors.**

To estimate the indirect and induced “ripple” effects of CBP economic activity, this analysis used IMPLAN, a regional economic model that simulates the economic relationships between industries in terms of input and output, jobs, and taxes (IMPLAN, 2021). The study region is six counties: Adams, Franklin, Grant, Walla Walla, Lincoln, and Benton counties. Adams, Franklin, and Grant have the vast majority of CBP-irrigated acreage. Walla Walla has some CBP irrigated acreage; agricultural land in Lincoln is authorized by Congress to receive CBP irrigation water (although the project has not been completed to reach lands in Lincoln), and Benton is closely tied with the economy of the other counties as the regional hub of the tri-cities of Kennewick, Pasco and Richland spans both Benton and Franklin counties. The economic impacts of the CBP influence the economies of these immediately surrounding

counties, particularly Benton County, due to food processing and winery operations that are reliant on local crop production.

The economic impact analysis for Washington State and for the local six-county region was done using a multiple-region input output, or MRIO, methodology. In this method, the IMPLAN model estimates not only the economic impacts of inter-industry spending and ripple effects within the study area, but also models the purchase of inputs from Washington State that are used in the six-county study area to produce the crops, animals, and food products analyzed.

It is not feasible to use IMPLAN software to conduct MRIO analysis to estimate the economic linkages and the inputs purchased from elsewhere in the Nation to support CBP economic activity. As such the analysis could only approximate the purchases from elsewhere in the Nation that support CBP crop/animal production and related food processing and the associated total economic contribution. Specifically, the analysis used a separate, national-level economic model to estimate the average total economic contribution throughout the nation that would be expected to result from the level of crop, animal, and food processing output associated with the CBP. At the national level there is a higher level of total economic contribution than estimated to occur in just Washington State as goods and services can be sourced from throughout the entire nation, and not just from Washington State (i.e., if most farm equipment is not manufactured in Washington State, then the economic effect on the manufacturing sector of CBP farms purchasing farm equipment will not be captured by the MRIO analysis for the 6-county region and Washington State). The national model captured the higher level of economic contribution that results from a greater geographic area providing a larger portion of the economic inputs required to support this level of crop/animal production and food processing. As such, the economic effects estimated in this analysis for the rest of the nation are based on the difference between the national model estimates and the MRIO model estimates for the six-county region and the State of Washington. While this is the only available way to estimate the impacts of the CBP that are experienced at the national level, there is less certainty in the accuracy of the estimates than at the local and state level, as the national level model provides average economic contribution estimates for production that occurs anywhere in the United States as a whole.

#### 4.1.1 Data Sources

The key data sources for the economic impact analysis of agricultural production are as follows:

- Farm-Level Employment. Data on crop and animal farm employment, including workers and proprietors, were gathered at the County level from the Bureau of Economic Analysis. Direct crop employment effects of the CBP were based on the proportion of CBP irrigated acreage relative to total county acreage (e.g., if 80% of the irrigated acreage in a given county is in the CBP, we assumed 80% of the county farm employment was reliant on the CBP)<sup>19</sup>, while direct animal employment effects of the CBP were based on the proportion of total county milk production and cattle production reliant on CBP crop production.
- CBP Irrigated Acreage by Crop. These data was provided by the three irrigation districts in the CBP. ECBID and QCBID provided data on the annual acres under production by crop from 2010 to 2020 (East Columbia Basin Irrigation District, 2021; Quincy-Columbia Basin Irrigation District, 2021). SCBID provided similar data for the years 2008, 2009, 2010, 2015, and 2021 (South Columbia Basin Irrigation District, 2021). In total, the districts' data included the production acreage for 121 crops.
- Value per Acre by Crop. To estimate the production value per acre of each crop grown, the analysis used yield and farmgate price<sup>20</sup> data from the USDA National Agricultural Statistical Service (NASS) database Quickstats (USDA NASS, 2021).

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<sup>19</sup> With this assumption, we assume that the irrigated crop production in the CBP requires approximately the same labor per acre as other irrigated lands in each county.

<sup>20</sup> Farmgate prices are the prices growers receive for their agricultural products.

- Dairy Production Value in CBP. To estimate the annual milk production value in CBP counties, the analysis relied on 2020 data gathered by the US Department of Agriculture under the Pacific Northwest Federal Milk Marketing Order (US Department of Agriculture, 2021). The analysis also relied on data from the Washington Department of Agriculture on the location of dairy facilities in the CBP region, which indicates that all dairies in Grant, Adams, and Franklin Counties are located within the CBP boundaries (Washington State Department of Agriculture, 2021). As such, the analysis assumes all milk production in Adams, Franklin, and Grant counties is reliant on CBP irrigated agricultural production.
- Beef Cattle Value in CBP Counties. To estimate the value of beef cattle, the analysis used US Department of Agriculture National Agricultural Statistics Service (NASS) data on the total sales of cattle (including calves) in Adams, Grant, and Franklin counties in the years 2002, 2007, 2012, and 2017. To estimate the value of beef cattle reliant on CBP production, the analysis used NASS data on the total hay acreage of production in Adams, Grant, and Franklin counties coupled with data from the districts on crop acreage to estimate the total proportion of hay acreage in the three-county area that is irrigated by the CBP. The analysis assumes that the proportion of livestock value in the three counties that is supported by the CBP is equivalent to the proportion of hay acreage in the three counties that is grown in the CBP: approximately 75%.<sup>21</sup> To the extent that hay and other forage crops in the CBP supports livestock production elsewhere in the three-county region, the analysis will underestimate the total local livestock value supported by the CBP.
- Food Manufacturing or Processing Value. To estimate the value of local food processing that is reliant on CBP crop production, the analysis uses data from Bureau of Economic Analysis and Bureau of Labor Statistics on the size of the regional food processing industry; data from the IMPLAN model on the reliance of each local food processing industry sector on key crops grown in the CBP (i.e., the proportion and amount of crop inputs sourced locally); data from NASS on the proportion of vegetable acreage grown in Adams, Franklin, and Grant counties that is for processing; and wine industry publications regarding wine grape acreage and wineries.

## 4.2 CBP CROP PRODUCTION VALUE AND CBP-SUPPORTED ANIMAL & PROCESSING VALUES

To estimate the annual production value from CBP-supported crops, the analysis started with the acreage data provided by the irrigation districts. For each of the 121 crops in the dataset, the analysis used average annual acres under production for the years of data available. For about half of the crops in the districts' data, NASS statistics had yield and farmgate price data. For the other half of crops (mostly small acreage specialty crops) that did not have price and yield data, the analysis assigned values for a similar crop that had available yield and price data. For example, prices and yields for leaf lettuce (for which there was data) were used to approximate the per acre value of endive kale (which had no available yield and price data). In cases where similar crops have a lower production value per acre than the actual crop, it would lead to an underestimate of CBP impacts; in cases where the production value was higher, it would lead to an overestimate of CBP impacts. However, care was taken to assign the most relevant substitute crops based on available price and yield data, and the resulting overall

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<sup>21</sup> Note that much of the hay grown in the three-county area is exported; the analysis assumes that hay from the CBP and from non-CBP acreage in the three-county area are equally likely to be used locally to support animal production or be exported.

estimated production value is considered a good approximation for the actual value produced on CBP-irrigated agricultural lands.

The availability of price and yield data varied by crop and geography. For some crops, yield data existed at the county level. For other crops, yield data were only available at the state or national level. For all crops, price data were only available at the state or national levels. For each crop, data at the most proximate geographic level was used in order to match the local conditions as closely as possible (i.e., county data was prioritized first, then state, and national only when others were not available). When county-level yield data were available for districts that straddle multiple counties, a weighted average was taken of the county yields according to the approximate percentage of the district that lies within each county. ECBID was weighted 55/45 between Adams and Grant Counties. SCBID was weighted 80/20 between Franklin and Grant Counties. QCBID was based on Grant County alone. Once the most relevant yield and price were determined, the analysis multiplied the average annual acres dedicated to each crop by its corresponding yield and price to estimate the total production value for each crop. Each crop was assigned to a general crop category to match the categories used in IMPLAN software. The total production value of each crop category is shown in Figure 4-2 and Table 4-1 below.

Figure 4-2: CBP Crop Production Value (By IMPLAN crop category)

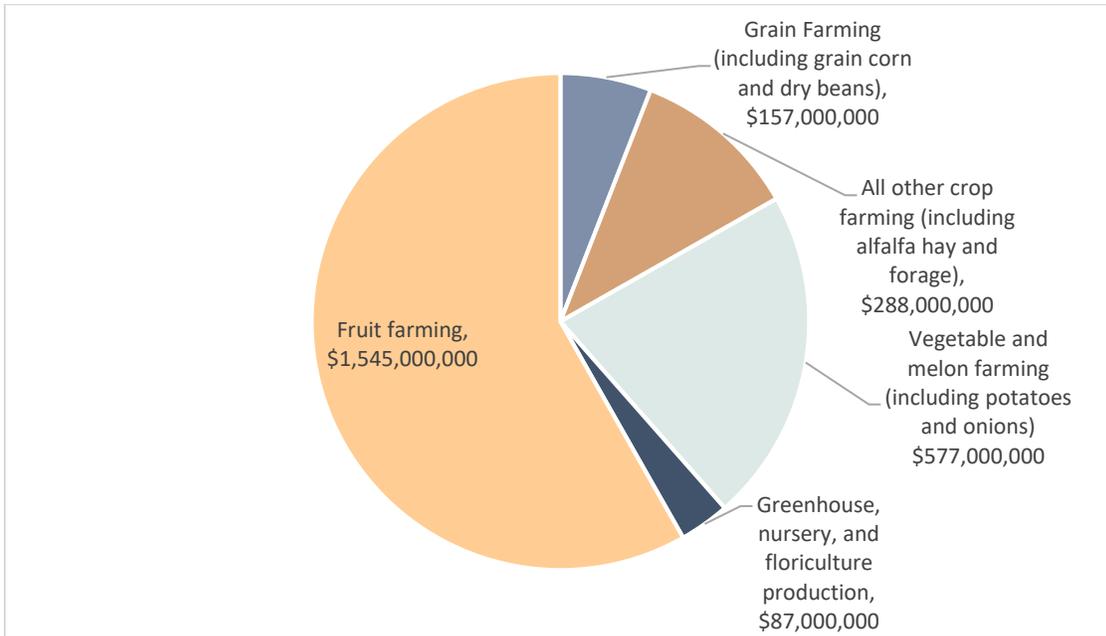


Table 4-1: Estimated Annual CBP Crop Production Value by IMPLAN crop category

| Crop Type (by IMPLAN Crop Category)                       | CBP Annual Average Production Value |
|---|-------------------------------------|
| Oilseed farming   | \$300,000                           |
| Grain farming (including grain corn and dry beans)        | \$156,900,000                       |
| Vegetable and melon farming (including potatoes)          | \$577,300,000                       |
| Fruit farming   | \$1,545,400,000                     |
| Greenhouse, nursery, and floriculture production          | \$86,700,000                        |
| Sugar beet farming  | \$1,600,000                         |
| All other crop farming (including alfalfa hay and forage) | \$288,400,000                       |
| Total   | \$2,656,500,000                     |

CBP irrigation water not only supports crop production, but also supports a local livestock industry dependent on those crops for feed. The study area supports a thriving dairy and cattle industry. As noted above, to estimate the value of dairy milk production supported by CBP crops, this analysis used data from the US Department of Agriculture under the Pacific Northwest Federal Milk Marketing Order (US Department of Agriculture, 2021) and data from the Washington Department of Agriculture on the location of dairy facilities in the CBP region. In total, the 39 dairies in Adams, Franklin, and Grant Counties (there are no dairies reported in Walla Walla County), all of which are located within CBP boundaries, produced 1,720,783,000 pounds of milk in 2021. NASS data for 2010 to 2020 indicates that during this time the price of milk (expressed in 2021 dollars) averaged \$0.21 per pound. As such, the total value of milk produced in the CBP, and supported by CBP crop production, is estimated at approximately \$358,800,000 annually. Dairies may source feed from other areas, but many components of dairy feed, such as silage, are heavy and are expensive to transport. As such, dairies typically grow some of their own feed or source it locally. Based on the location of all dairies in Adams, Franklin, and Grant counties within CBP boundaries, this study assumes that all dairy production (100%) in these three counties is reliant on and supported by feed crops from the CBP.

To estimate the value of local cattle production that is supported by feed crops grown in the CBP, the analysis assumes that the proportion of cattle sold in the three primary CBP counties (Adams, Franklin, and Grant) that is reliant on CBP production is equal to the proportion of total hay acreage in the three counties that is grown in CBP-irrigated areas. Accordingly, the analysis calculates the average annual cattle (including calves) sales in each of the three counties using the data available in the years 2002, 2007, 2012, and 2017 (\$416.9 million), and the average annual acres dedicated to hay production for the data available from 2014 to 2020 (259,359 acres) (USDA NASS, 2021).<sup>22</sup> By calculating the percent of the total three-county hay acres that are grown on CBP-irrigated lands (approximately 75%), and applying this percent to the annual value of cattle (including calves) in the three-county area, the analysis estimates the value of three-county cattle sales supported by CBP irrigation. These values are shown in Table 4-2 under “Beef cattle ranching & farming.”

<sup>22</sup> The annual production value in each year was adjusted for inflation to 2021 dollars using the Consumer Price Index prior to averaging.

**Table 4-2: Estimated Annual CBP-Supported Animal Production Value**

| Crop Type                        | Total 3 County Value | Approximate % of 3-County Value | Estimated CBP-Supported Annual Average Production Value |
|----------------------------------|----------------------|---------------------------------|---|
| Beef cattle ranching & farming   | \$416,900,000        | 75%                             | \$312,300,000   |
| Dairy cattle and milk production | \$358,800,000        | 100%                            | \$358,800,000   |
| Total                            | \$775,700,000        | 87%                             | \$671,100,000   |

Regarding food and animal processing, this analysis relied on data from a variety of sources to estimate the processing values that are heavily reliant on the local CBP crop and animal production. The sectors that are most reliant are listed in Table 4-3; these are the sectors in which a large share of the total final product value is a crop or animal input that is produced in the CBP. Note that the total local food processing sector includes many sectors not highlighted in Table 4-3, but these are the primary sectors that are heavily reliant on locally produced crops and animals. Data that was used to estimate the values presented in Table 4-3 include:

- US Census of Agriculture data for 2012 and 2017 indicate that 80% of the vegetable acreage<sup>23</sup> harvested in Adams, Franklin, and Grant Counties is for processing (146,300 acres out of 181,700 acres). Further the three primary CBP counties of Adams, Franklin, and Grant account for approximately 60% of the processing vegetable acreage in the overall six-county region.
- US census of Agriculture data for 2012 and 2017 indicate that for fruit acreage (excluding grapes), approximately 70% of six county region sales are from acreage in the three-county region.
- For grape acreage, US census of Agriculture data for 2012 and 2017 indicate approximately 33% of the six-county acreage is located in the three primary CBP counties.
- For wine grapes, a 2018 report published by Washington Wine presented data on wineries and wine production by County as well as wine grape acreage by county that was useful in estimating the proportion of six-county winery production that is supported by the CBP. As of 2018 there were 944 wineries in the State of Washington, of which 30 were in Adams, Franklin, and Grant counties, and 292 of which were in the six-county study area. The wineries in the six-county study area produced 67% of the total wine production in the State of Washington (13,081,450 cases out of 19,424,190 cases statewide), approximately equivalent to the proportion of statewide wine grape acreage grown in the six-county region of 66%. These data highlight the importance of wine grape production in the CBP and other regions of the study area, and the use of CBP wine grapes by wineries in the broader six-county region (as there are few wineries in the three counties where the vast majority of CBP acreage is located). As the CBP has 31% of the vineyard acreages in the six-county region (12,250 acres out of 39,200 acres), this analysis assumes that it supports 30% of the six-county winery output value.
- IMPLAN data on the total crop and animal demand by each food manufacturing or processing sector, and the proportion of local inputs used in these sectors.

<sup>23</sup> Nearly three-quarters of the vegetable acreage is in potatoes, dry onions, and sweet corn.

Table 4-3: Estimated Food Processing/Manufacturing Value Reliant on CBP Crop Production

| IMPLAN Sector | Processing Sectors                                 | Local Production Value (6 County Area) | % of Total Local (Six County) Production Value | 6-County Production Value Supported by CBP |
|---------------|--|--|--|--|
| 77            | Frozen fruits, juices and vegetables manufacturing | \$2,473,383,000                        | 65%  | \$1,607,700,000                            |
| 82            | Cheese manufacturing                               | \$103,141,000                          | 50%  | \$51,600,000                               |
| 89            | Animal, except poultry, slaughtering               | \$428,227,000                          | 30%  | \$128,500,000                              |
| 107           | Wineries   | \$699,314,000                          | 30%  | \$209,800,000                              |

### 4.3 TOTAL ECONOMIC CONTRIBUTION ESTIMATES

The figures below highlight the total employment and local income supported by: crop production, animal production (dairy and beef cattle), and food processing (including crop and animal processing). For each of these three components or pathways of economic impact, the direct impacts are presented (represented by the orange bars) separately from the indirect/induced impacts (grey bars) in order to show the level of employment and income in the directly affected crop (or animal production or food processing sectors) versus the level of employment and income estimated in linked, supporting sectors. The total economic impact, which is the sum of direct and indirect/induced, is also presented for each component (represented by the dark blue bars).

Results are presented for three geographic areas: the local six-county area, elsewhere in Washington, and elsewhere in the nation. As shown in Figures 4-3 and 4-4, total employment supported in the CBP local region is estimated at approximately 39,300 jobs and \$2.3 billion in income. As highlighted in these figures and in Figure 4-9, approximately 60% of these local impacts are the direct, indirect, and induced effects of crop production. Elsewhere in Washington (as shown in Figures 4-5 and 4-6), total effects are estimated at 4,800 jobs and \$361.2 million in income, of which approximately 60% are related to supporting food-processing activities in the local area that are associated with the CBP. Elsewhere in the nation (as shown in Figures 4-7 and 4-8), total effects are estimated at 20,700 jobs and \$1.3 billion in income, of which approximately 40% are related to supporting CBP crop production and another 40% are related to supporting CBP food processing.

Figure 4-3 Local Employment Supported by the CBP

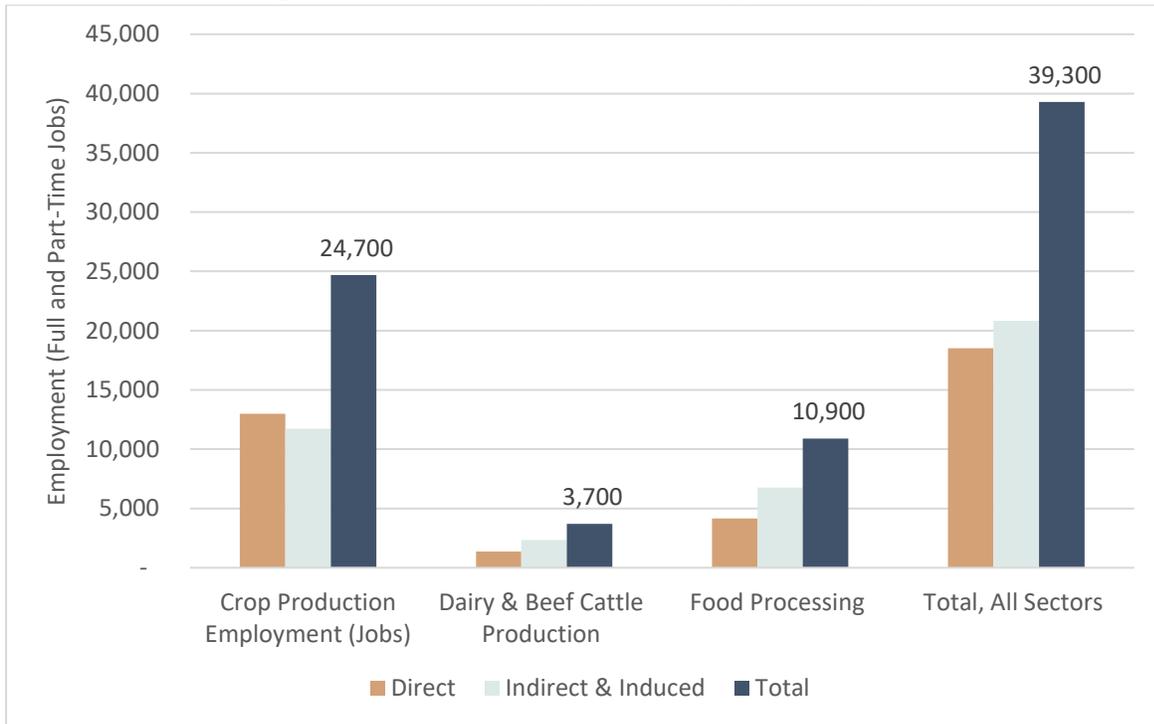


Figure 4-4 Local Income Supported by the CBP

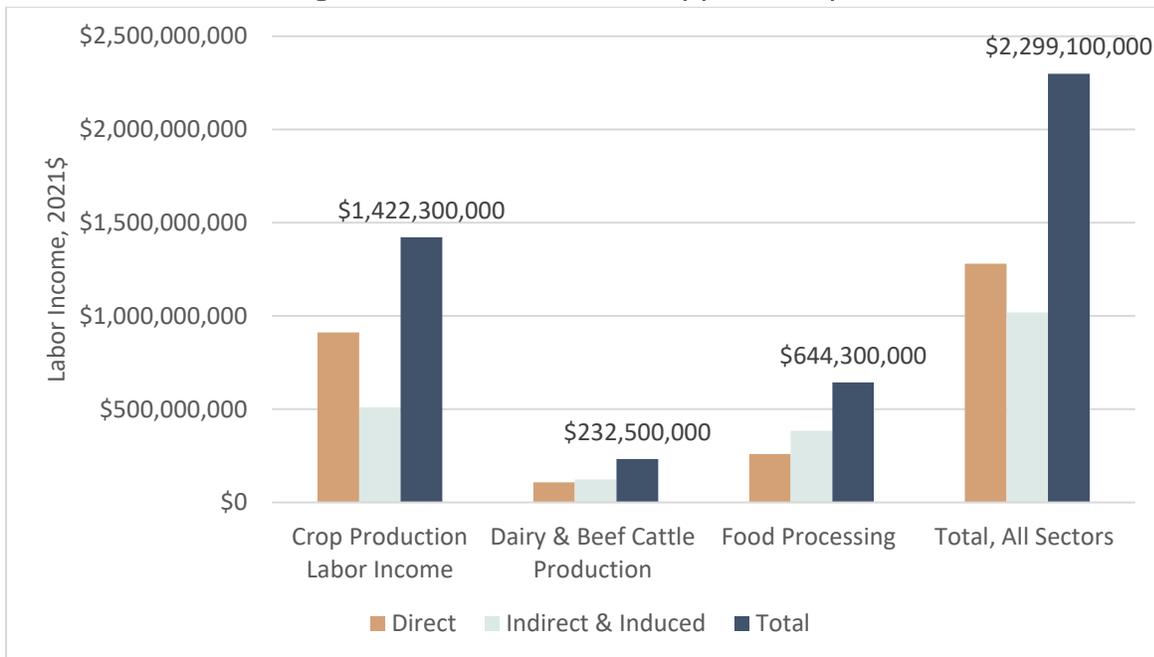


Figure 4-5 Elsewhere in Washington, Employment Supported by the CBP

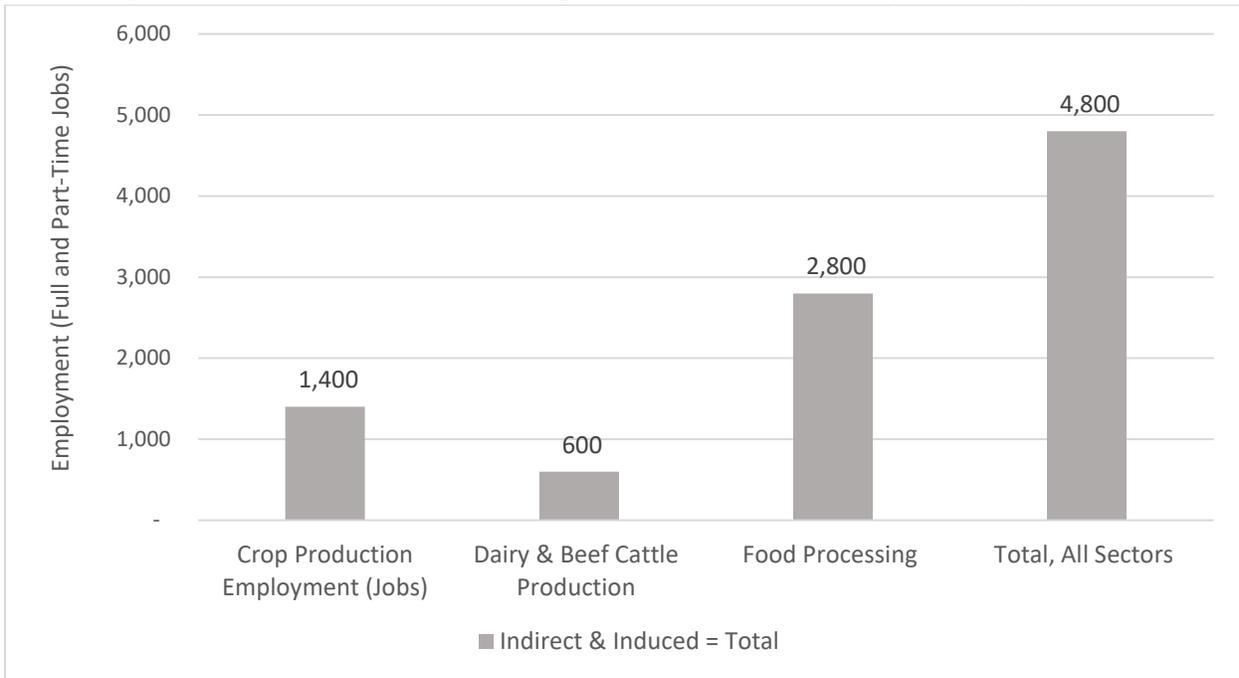


Figure 4-6 Elsewhere in Washington, Income Supported by the CBP

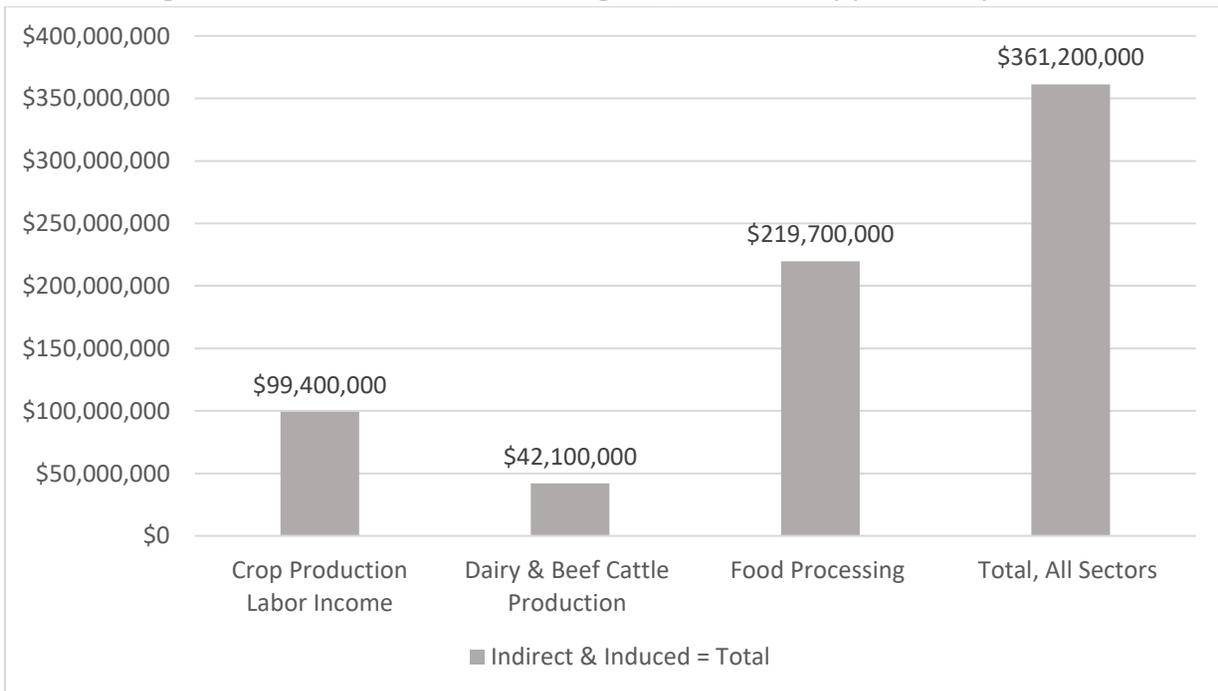


Figure 4-7 Elsewhere in Nation, Employment Supported by the CBP

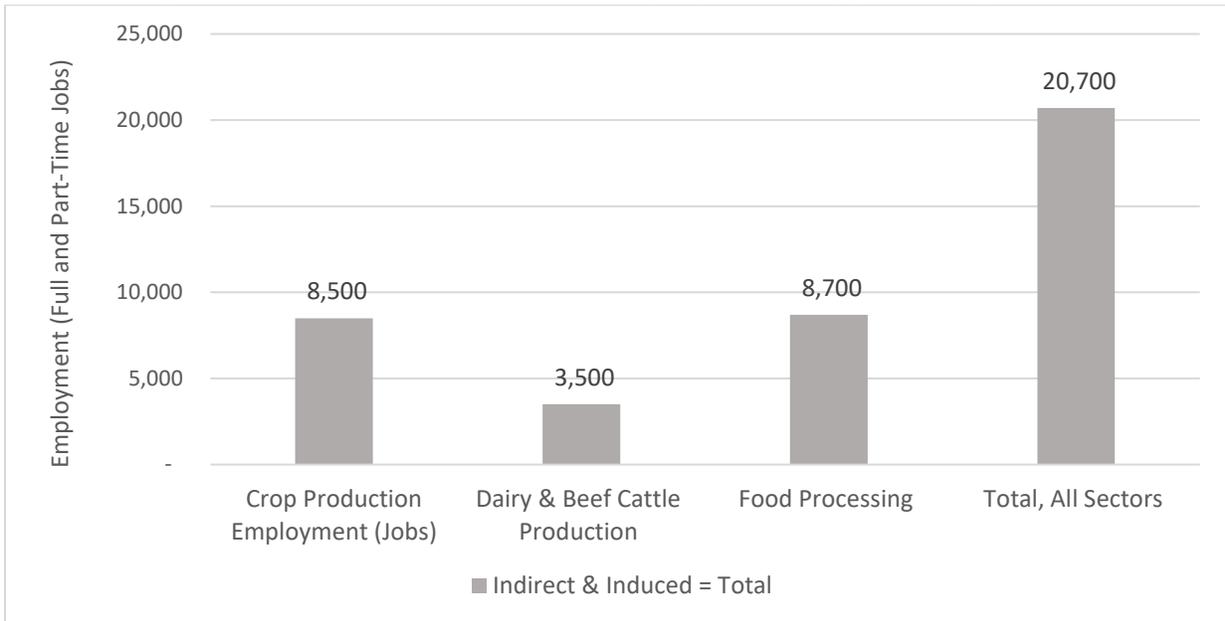


Figure 4-8 Elsewhere in Nation, Income Supported by the CBP

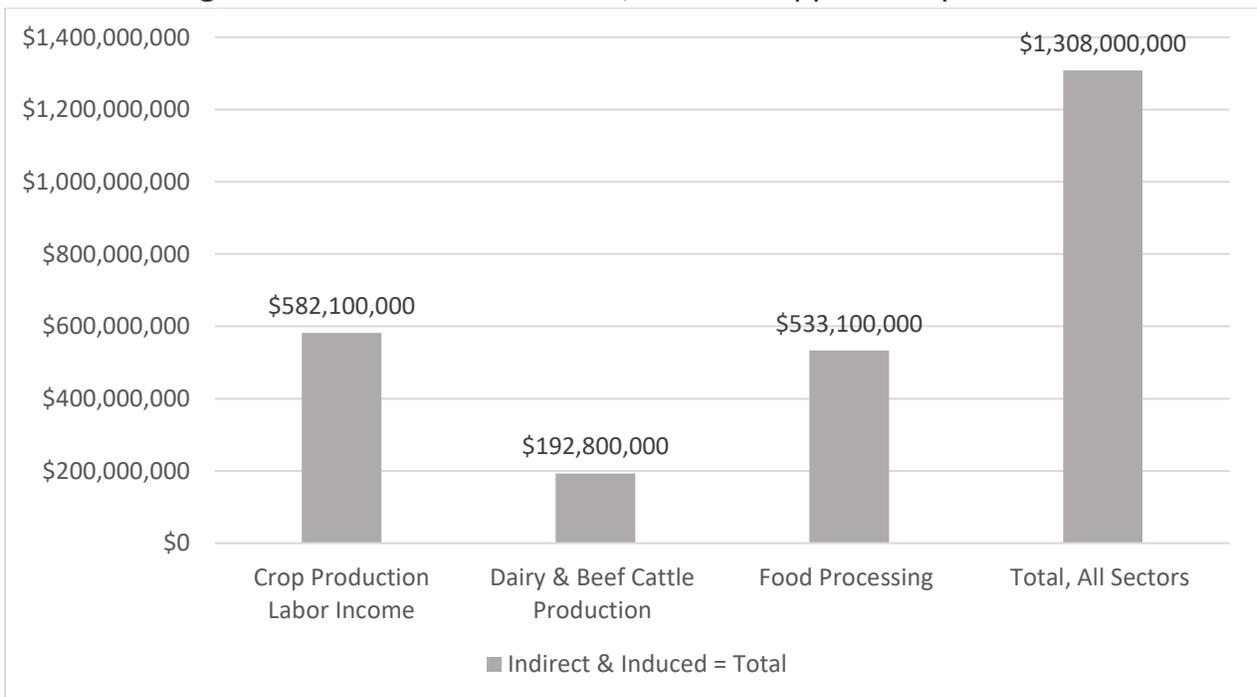
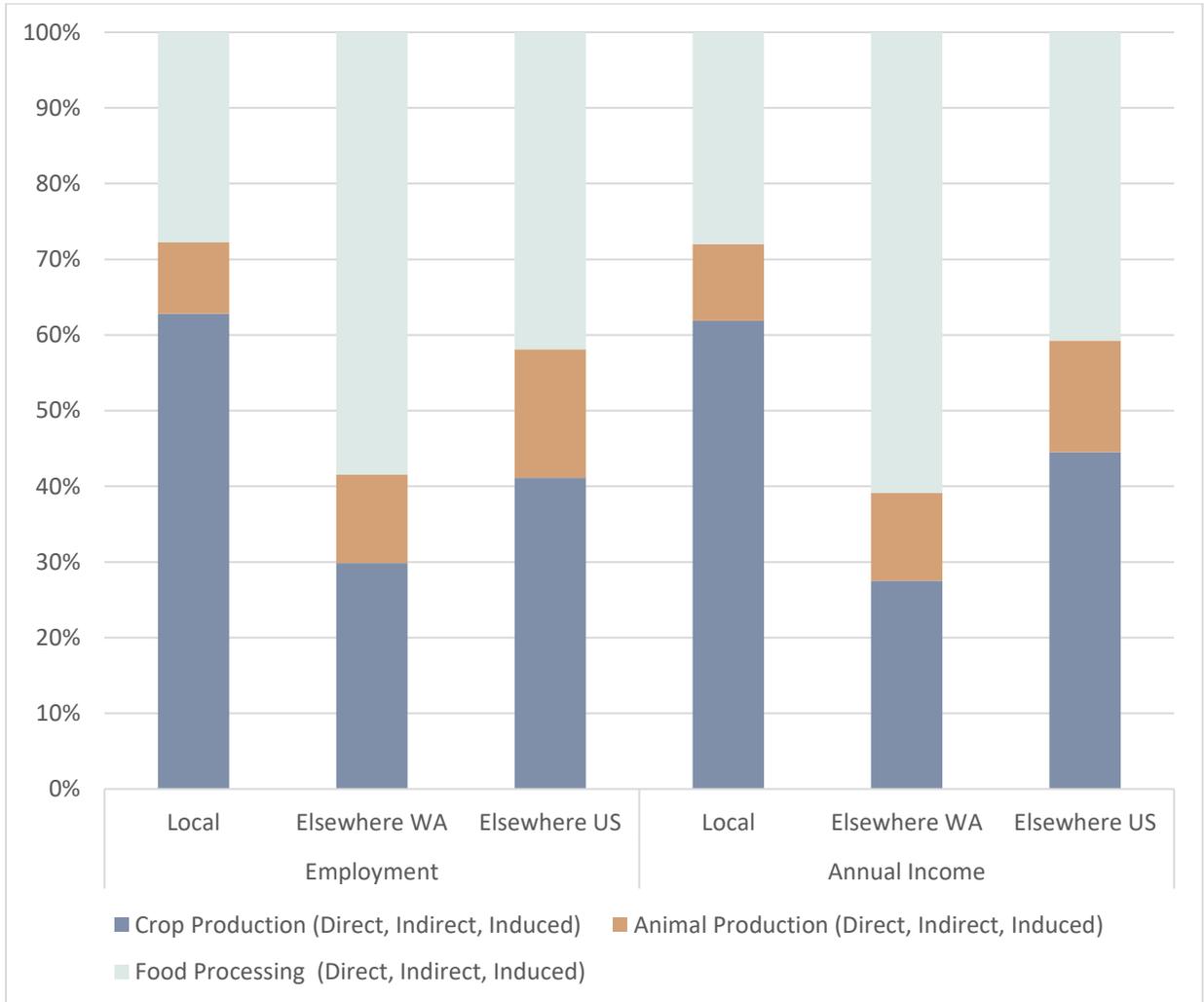


Figure 4-9 Source of Economic Effects: Crop Production, Animal Production vs. Food Processing



## 5 ECONOMIC CONTRIBUTION OF CBP-RELATED RECREATION

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Irrigation-related infrastructure created as part of the Columbia Basin Project (CBP) creates significant opportunities for recreation. The reservoirs intended for irrigation water storage can also be used for water-based recreation, including: hunting, fishing, boating, swimming, camping, and wildlife viewing. According to Washington Department of Fish and Wildlife, Grant County is Washington's top producer of ducks and geese. In 2019 for example, 50,874 ducks and 16,718 geese were harvested in Grant County while 9,634 ducks and 3,016 geese were harvested in Adams County (Washington Department of Fish and Wildlife, 2021).

Key components of CBP infrastructure such as Banks Lake and Potholes Reservoir support water-dependent recreation at Potholes State Park, Steamboat Rock State Park, Columbia National Wildlife Refuge, and Scooteney Reservoir. In addition to these recreation destinations, public boat launches, municipal parks, concessioner resorts, and private hunting lands throughout the CBP region offer recreational opportunities that are made possible because of CBP water and CBP irrigation facilities.

### 5.1 METHODOLOGY

The economic impact of recreation is based on the total number of visitors and their level of expenditures in the region. This study uses publicly available data on visitation where available and estimates visitation where data are not available. Visitor spending by recreators can vary greatly, largely determined by whether the recreator is from the local area (non-locals tend to spend more), whether the recreator is an overnight visitor or a day trip recreator (overnight visitors tend to spend more), and the type of recreation activity (some activities, such as boating, tend to have higher expenditures per trip). As such, visitation is analyzed to estimate the proportion of recreators who are local (come from within 50 miles) and the proportion who stay overnight at the destination or are on a day trip. Visitor expenditures by recreation type are taken from an Oregon study of outdoor recreation (Dean Runyan, 2009).

A range of values is presented for the total visitation and the total economic activity supported by CBP-related recreation as there is uncertainty in the level of visitation (given that many sites do not have publicly available visitation data or were not able to provide visitation estimates). This analysis focuses on expenditures and the associated economic activity supported by recreational visits to recreation sites with waterbodies created or supported by CBP infrastructure. The enjoyment and value to recreators themselves of these recreational opportunities (known in economics as recreation consumer surplus) is not evaluated as part of this study.

For recreational impacts, the analysis uses visitation estimates and spending profiles to estimate the total spending by visitors to CBP-supported recreational areas and then uses an IMPLAN model of the six-county study area to estimate the total economic impacts (direct, indirect, and induced) of this recreation expenditures. The same methodology is used to estimate the indirect and induced impacts elsewhere in Washington and elsewhere in the United States (as described in Section 4.1).

## 5.2 ESTIMATES OF RECREATION VISITATION IN THE CBP

Recreation visitation in the region occurs at sites managed by federal, state, municipal, and private concessioner entities. Data are available for visitation at state parks and the federally-managed Columbia National Wildlife Refuge; less data are available for other sites.<sup>24</sup> In total, using all available data sources, we estimate that there are approximately 1.1 million to 1.6 million recreation visits in the region supported by CBP infrastructure (not including Lake Roosevelt, which is not included as the infrastructure at Lake Roosevelt is not exclusively used for irrigation<sup>25</sup>).

### 5.2.1 State Parks & Columbia National Wildlife Refuge

There are three public recreation sites supported by CBP water for which there are visitation data available: Columbia National Wildlife Refuge, Steamboat Rock State Park, and Potholes State Park. Visitation to these recreation areas are presented in Table 5-1.<sup>26</sup> There is significant fluctuation in annual visitation, partly due to disruptions such as fires and water quality issues, as well as the recent pandemic (Felton, 2021). However, on average over the last ten years, the three sites have hosted roughly 674,000 visitors annually, of which approximately 560,000 are estimated to be day use visitors. Because expenditures vary by whether a visitor is an overnight or day use visitor (with overnight visitors spending more) and whether a visitor is local or non-local (non-locals generally spend more), this analysis attempts to differentiate between these types of visitors. An average of 80% of visitors at Potholes SP and 89% of visitors at Steamboat Rock SP are day use visitors to the park. All visitation at Columbia National Wildlife Refuge is day use. Based on other studies of recreation participation in the region and elsewhere in Washington State, we estimate that just over half of visitors to these state parks (55%<sup>27</sup>) are residents of the local area.

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<sup>24</sup> While data are available from Washington Department of Fish and Wildlife for hunting and fishing, they are not available by site to determine the dependence on CBP irrigation-related infrastructure, so this analysis focused on visitation data available from sites with known dependence on CBP irrigation infrastructure.

<sup>25</sup> We focus on the CBP irrigation infrastructure that is necessary solely for agricultural production and do not include Lake Roosevelt, which is formed by Grand Coulee Dam. In addition to serving agriculture, Grand Coulee Dam is the largest hydropower facility in the United States, generating more than 21 billion kilowatt-hours of electricity each year (US Bureau of Reclamation, 2021).

<sup>26</sup> Visitation figures to the Columbia National Wildlife Refuge are only available for 2011 (Carver & Caudill, 2013) and are adjusted over time based on the average rate of visitation growth at Steamboat Rock SP and Potholes SP between 2011 and 2020.

<sup>27</sup> This figure is averaged from studies on recreation participation in Washington State (Dean Runyan, 2002) (Schundler, Mojica, & Briceno, 2015) (Carver & Caudill, 2013)

**Table 5-1: Average Annual Total Visitation to Major Recreational Sites in the CBP**

| State Park        | 2011           | 2012           | 2013           | 2014           | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | Average        |
|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Potholes SP       | 156,993        | 162,183        | 108,540        | 173,354        | 99,209         | 240,485        | 206,547        | 158,140        | 159,482        | 130,772        | 159,571        |
| Steamboat Rock SP | 314,529        | 409,295        | 456,391        | 436,071        | 571,527        | 535,720        | 427,927        | 455,130        | 442,972        | 474,699        | 452,426        |
| Columbia NWR      | 51,874         | 53,942         | 56,093         | 58,330         | 60,655         | 63,074         | 65,589         | 68,204         | 70,923         | 73,751         | 62,244         |
| <b>Total</b>      | <b>523,396</b> | <b>625,420</b> | <b>621,024</b> | <b>667,755</b> | <b>731,391</b> | <b>839,279</b> | <b>700,063</b> | <b>681,474</b> | <b>673,377</b> | <b>679,222</b> | <b>674,240</b> |

*Note: Recreation at Columbia NWR is extrapolated based on visitation at Potholes SP and Steamboat Rock SP.*

*Source: (Carver & Caudill, 2013) (Washington State Parks, Accessed 2021) (Thrasher, 2021)*

Visitor spending can also vary by recreational activity. Visitors to these three parks participate in fishing, hunting, camping, hiking, boating, and other outdoor activities. Though hunting is not allowed on state park lands, hunters at the parks are able to hunt on the reservoirs. Data are available from 2011 for Columbia National Wildlife Refuge regarding the type of recreation participated in by visitors (Carver & Caudill, 2013): 4% were hunters, 19% were anglers, and 77% were other recreational users (including non-hunting/fishing boating and swimming). Assuming the same breakdown of recreation participation by activity at the state parks, we estimate that the three sites annually host an average of approximately 27,000 hunters, 128,000 anglers, and 509,000 other recreators.<sup>28</sup>

#### *5.2.1.1 Washington Department of Fish and Wildlife*

Washington Department of Fish and Wildlife maintains roughly 50 boat launches across the Columbia Basin, with recreational access to CBP infrastructure of varying sizes and improvement level (Eidson, 2021). For example, WDFW has six water access points at Banks Lake and nine water access points at Potholes Reservoir as well as access at Scooteney Reservoir. These WDFW sites receive year-round use, though summer is the busiest season (Eidson, 2021). Total use data is not collected at WDFW sites, though WDFW has collected car counts at area sites, which can be used to extrapolate total visitation. Roughly 350,000 day-use vehicles and 27,000 overnight vehicles access CBP infrastructure through WDFW managed locations annually (Finger, 2021)<sup>29</sup>. In order to convert estimates of vehicles to estimates of visitors, the number of visitors per vehicle (vehicle occupancy) is needed. According to a 2009 study of recreation in Washington State, average travel party size in Washington for hunting, fishing, and wildlife watching recreational trips ranges from 2.3 recreators per party to 3.7 recreators per party (Dean Runyan, 2009). Since party size may be larger than vehicle occupancy if parties travel in multiple vehicles, we conservatively assume a vehicle occupancy range of 1 to 2 recreators per vehicle. In total this suggests between 377,000 and 750,000 annual person-visits to WDFW sites supported by CBP infrastructure.

Similar to other regional outdoor recreation destinations, visitors to WDFW sites participate in fishing, hunting, camping, hiking, boating, and other outdoor activities (Finger, 2021). Visitor participation by type of activity is not recorded at WDFW sites so participation rates are assumed to follow that of Columbia National Wildlife Refuge as presented in (Carver & Caudill, 2013). Assuming the same breakdown of recreation participation by activity at WDFW sites, we estimate that WDFW sites annually host approximately 16,000 to 31,000 hunters, 73,000 to 145,000 anglers, and between 289,000 and 574,000 other recreators.<sup>30</sup>

#### *5.2.1.2 Other Recreation Locations*

CBP infrastructure also supports recreation at concessioner resorts and municipal parks particularly in Coulee City and Moses Lake. Mar Don Resort on Potholes Reservoir has an active boat ramp and overnight use. Municipal parks in Coulee City and Moses Lake maintain boat ramps, campgrounds and other facilities that attract recreators to the area. Visitation data requested from these other recreation locations generated no response or inconclusive data. Visitation to these other recreation locations is

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<sup>28</sup> Figures may not sum due to rounding

<sup>29</sup> Data was collected at inconsistent intervals and varying sites over multiple years and is not statistically sound. Data is used here to provide a rough estimate of visitation.

<sup>30</sup> Figures may not sum due to rounding

estimated as 10% of total visitation to Potholes State Park, Steamboat Rock State Park, Columbia National Wildlife Reserve, and Washington Department of Fish and Wildlife operated sites<sup>31</sup>. In total, this visitation is estimated between 104,000 to 141,000 visitors annually, with visitors engaged in water-dependent activities at the same rate as estimated at Columbia National Wildlife Refuge.

Additionally, there is extensive hunting that occurs on private lands, including on private hunting leases that is supported by the CBP irrigation water and infrastructure. Irrigation infrastructure provides water while grain and forage crop fields in the region provide feed that supports waterfowl and other species. Visitation on these private lands that is supported by CBP infrastructure and cropping was not available.

#### 5.2.1.3 Total Estimated Recreation Visitation

In order to understand the magnitude of recreational visitation to CBP infrastructure, annual visitation is summed at Potholes State Park, Steamboat Rock State Park, Columbia NWR, Columbia Basin WDFW sites, municipal parks and concessioner resorts. In total, there is an estimated combined 1.1 to 1.6 million annual visits to these locations. Of these recreational visit estimates, between 1 million and 1.4 million visits are day trips with the remainder overnight trips.

To provide context and to evaluate whether these estimates are reasonable, we reviewed the existing tourism studies for the region. In 2014, an estimated 1.5 million overnight person trips occurred in Grant County with an additional 217,000 overnight person trips in Adams County (Dean Runyan, 2015); our estimate of approximately 150,000 overnight person trips indicates CBP-related recreation may support approximately 9% of the overnight tourism visitation in the region. The numbers from this general tourism study covers all visitation and not just recreation-based tourism, in the context of this other study, our estimates of CBP-related tourism appear reasonable.

#### 5.2.2 Recreation Expenditures in the CBP

Recreators generate economic activity through expenditures on transportation, food, lodging and other categories. To estimate the economic impact of CBP-related recreation, we combine the above estimates of recreation visitation with estimates of per visit expenditures. Recreator expenditures are estimated in a variety of studies. For this analysis, we rely on expenditures by visitors estimated at Washington state Parks (Schundler, Mojica, & Briceno, 2015), which is supported by other expenditure data collected within the region (Carver & Caudill, 2013). As noted above, we differentiate expenditures by day user versus overnight user and by local versus non-local visitor as overnight visitors spend more on average than day users, and non-locals typically spend more than locals. We estimate the per visit expenditure for these different types of recreation visitors as shown in Table 5-2. As this study aims to estimate the total economic contribution of recreation associated with the CBP, we include local recreation activity. Without the recreation opportunities provided by the CBP, local recreators may still spend their recreation dollars in the local area, but at different locations or on other recreational or entertainment activities. On the other hand, local recreators may choose to travel to other regions and spend their recreation dollars in other regions if opportunities are not available in their local area. As such, while non-resident recreator spending likely represents additional spending in the region, local recreator spending may or may not represent additional spending in the region.

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<sup>31</sup> Derived from personal communication with (Eidson, 2021).

Table 5-2: Recreator Trip-Related Expenditures per Person Visit, 2021 dollars

| Type of Recreator                   | Average Expenditure |          |
|-------------------------------------|---------------------|----------|
|                                     | Low                 | High     |
| <b>Activity: General Recreation</b> |                     |          |
| Local Day                           | \$6.85              | \$23.32  |
| Non-Local Day                       | \$43.35             | \$157.62 |
| Local Overnight                     | \$16.35             | \$55.69  |
| Non-Local Overnight                 | \$61.86             | \$224.88 |
| <b>Activity: Hunting</b>            |                     |          |
| Local Day                           | \$31.34             | \$45.88  |
| Non-Local Day                       | \$84.36             | \$102.73 |
| Local Overnight                     | \$66.70             | \$97.62  |
| Non-Local Overnight                 | \$182.49            | \$263.21 |
| <b>Activity: Fishing</b>            |                     |          |
| Local Day                           | \$15.13             | \$30.26  |
| Non-Local Day                       | \$37.33             | \$74.66  |
| Local Overnight                     | \$32.20             | \$64.39  |
| Non-Local Overnight                 | \$80.75             | \$161.50 |

Source: Adapted from (Carver & Caudill, 2013) and (Schundler, Mojica, & Briceno, 2015)

Based on the total 1.1 to 1.6 million visitors to recreation sites supported by CBP water and the range of estimated expenditures presented in Table 5-2, we estimate total recreation expenditures supported by CBP infrastructure of between \$31.6 million and \$129.2 million annually (see Table 5-3). Based on the Dean Runyan 2015 study of all tourism spending in Washington state referenced above, our range estimate represents between 9% and 38% of all estimated visitor spending in Grant and Adams Counties, the two counties where CBP-supported recreation facilities are primarily located. However, a different study estimated spending associated with outdoor recreation in Washington State of \$445 million in these two counties in 2019, including spending by visitors and locals. Based on this estimate of recreation-related spending, our estimate for the spending associated with CBP infrastructure represents approximately 7% to 29% of outdoor recreation-related spending in the two-county area. Based on the context provided by these two studies, we expect that the mid-point estimate of our analysis, or approximately \$80 million, is a reasonable estimate to use as the basis for the economic contribution of recreation associated CBP facilities. Table 5-3 summarizes the apportionment of this recreation expenditure by sector; this apportionment is based on a 2009 study of recreation visitor spending in Washington State (Dean Runyan, 2009).

Table 5-3: Total Annual Estimated Recreation Expenditures, 2020 Dollars

| Expenditure Type             | Low                 | High                 | Mid                 |
|------------------------------|---------------------|----------------------|---------------------|
| Accommodations               | \$6,200,000         | \$26,900,000         | \$16,550,000        |
| Food & beverages             | \$6,900,000         | \$29,600,000         | \$18,250,000        |
| Food stores                  | \$7,000,000         | \$27,700,000         | \$17,350,000        |
| Ground transportation        | \$5,500,000         | \$21,800,000         | \$13,650,000        |
| Retail                       | \$3,300,000         | \$13,000,000         | \$8,150,000         |
| Outfitter/guide/charter fees | \$1,200,000         | \$3,900,000          | \$2,550,000         |
| Other                        | \$1,500,000         | \$6,300,000          | \$3,900,000         |
| <b>TOTAL</b>                 | <b>\$31,600,000</b> | <b>\$129,200,000</b> | <b>\$80,400,000</b> |

Source: Highland Economics analysis using data on proportion recreational expenditure from (Dean Runyan, 2009).

### 5.3 ECONOMIC IMPACT OF CBP-RELATED RECREATION SPENDING

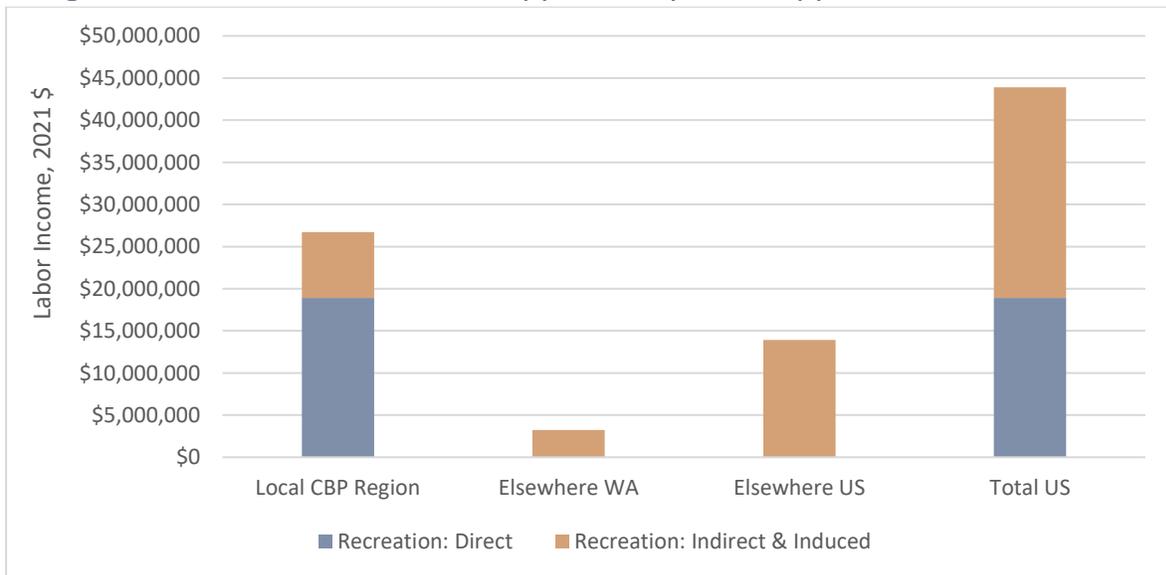
Figures 5-1 and 5-2 summarize the approximate economic contribution of recreation supported by CBP-facilities. As shown in the figures below, the total economic activity associated with CBP-supported recreational infrastructure in the local region is 750 jobs and \$26.7 million in income, 40 jobs and \$3.2 million elsewhere in Washington, and 210 jobs and \$13.9 million in income elsewhere in the United States. In total, approximately \$80 million in estimated recreation-related spending at CBP-related facilities supports approximately 1,000 jobs and \$43.9 million annually in income across the United States.

This economic contribution includes spending by local recreators; this spending by locals might occur even in the absence of the CBP facilities as local recreators in that case might still spend their recreational dollars in the local area. However, as noted above, to the extent that local recreators would instead recreate and spend their dollars elsewhere, the CBP recreation opportunities help to retain in the region these recreational expenditures by locals. Expenditures by non-locals at CBP-related facilities likely generate additional spending and economic activity that would not otherwise occur in the region in the absence of the CBP facilities.

Figure 5-1 Total Employment Supported by CBP-Supported Recreation Facilities



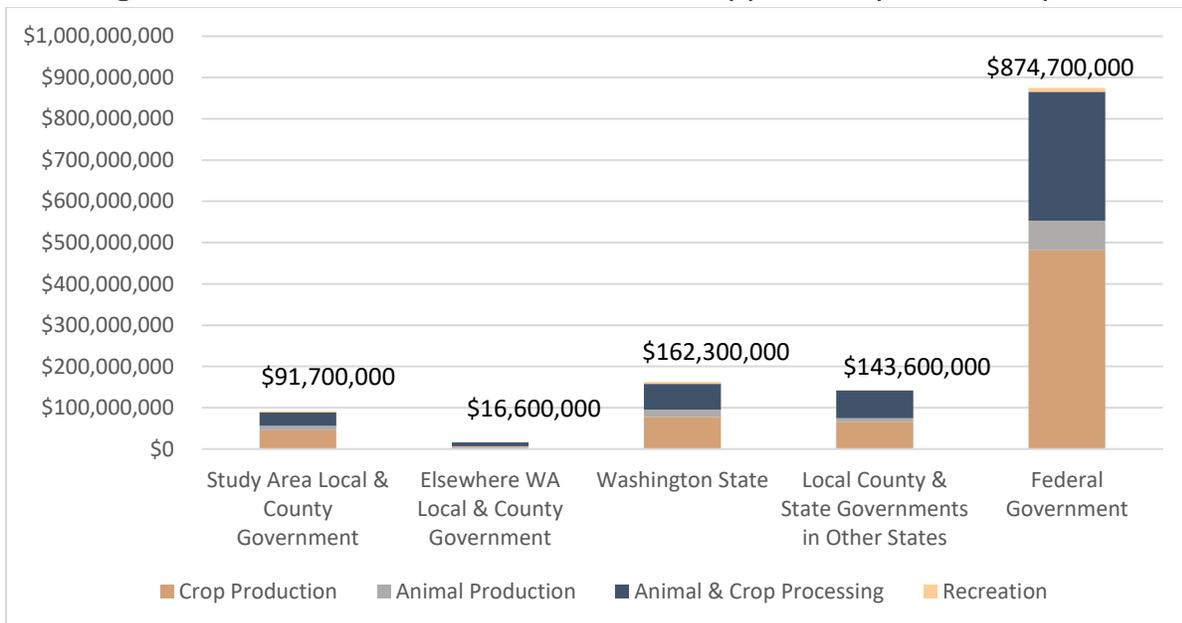
Figure 5-2 Total Labor Income Supported by CBP-Supported Recreation Facilities



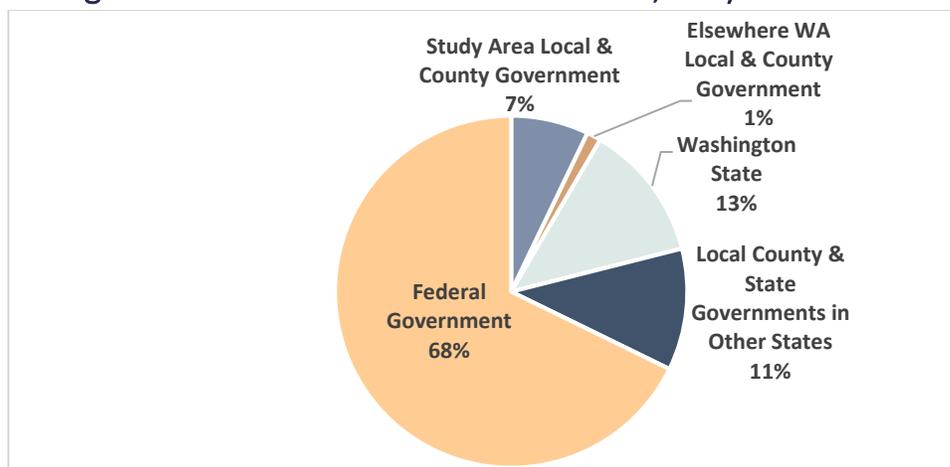
## 6 FISCAL CONTRIBUTION OF CBP-SUPPORTED AGRICULTURE & RECREATION

This section presents the estimated tax revenues supported by the CBP, related to both agriculture and recreation. The fiscal analysis is based on the economic analysis: the total economic activity estimated in the preceding sections generates tax revenues in the form of property tax, sales tax, income tax, social insurance, and other taxes; the fiscal analysis presented here is conducted using the IMPLAN model described in Section 4.1. Figure 6-1 summarizes the tax revenues associated with each component of economic activity analyzed in this study. As highlighted in the Figure 6-2, the tax revenues at the federal government-level comprise 68% of the total revenues, although tax revenues at the local level are larger as a percent of total revenues. In total, across all governments, tax revenues are estimated at \$1.29 billion.

**Figure 6-1 Estimated Total Tax Revenues Supported by the CBP by Source**



**Figure 6-2 Estimated Total Tax Revenues, % by Jurisdiction**



## 7 OTHER BENEFITS OF THE CBP

There are other social benefits of the CBP. In particular, the CBP provides economic opportunity to rural and minority populations, particularly Hispanic populations. The CBP infrastructure provides water-based recreational opportunities, which both support the local recreation economy and provide social and recreational enjoyment for locals and non-locals. Finally, review of the publicly available financial data for the CBP indicates that the level of agricultural profit it has enabled through time far exceeds the Project's cost.

### 7.1 ECONOMIC OPPORTUNITY FOR RURAL AREAS & MINORITY POPULATIONS

This study estimates that approximately 40,100 jobs are supported in the CBP local region, primarily in the counties of Franklin, Grant, and Adams. This represents over one-third of the employment (approximately 105,000 jobs according to the Bureau of Economic Analysis) in these three counties. Based on Census data, there are approximately 216,400 people living in these three counties; if, proportionate with employment, one-third of the population is supported directly or indirectly by the CBP, this would represent over 70,000 people in the region living in a household wholly or partially supported by the CBP. Said differently, **the farming, food processing, and recreation-related employment made possible by the CBP likely provide rural economic opportunity for approximately 70,000 people in the study area.**

Approximately 50% of the population of Franklin, Grant, and Adams counties is Hispanic, while for the State as a whole only 14% of the population is Hispanic. **The jobs and people economically supported by the CBP are thus likely disproportionately minority populations.** This study estimates that approximately 14,400 farm jobs are created by CBP-irrigated agriculture, and agricultural farmworkers are overwhelmingly Hispanic. Data from the 2017-2018 National Agricultural Worker Survey for the Northwest region (an eight-state region including Washington) indicates that 78% of agricultural workers in this region are foreign-born (primarily from Mexico). CBP agriculture can provide opportunities for immigrants to take the first step in achieving greater economic security for themselves and their families.

### 7.2 RECREATION BENEFITS

As discussed in Section 5, this study estimates that there are approximately **1.1 million to 1.6 million recreation visits annually in the region supported by CBP infrastructure (not including Lake Roosevelt<sup>32</sup>), highlighting the importance of these facilities for providing value and enjoyment to locals and non-locals alike.** Recreational opportunities are an important aspect of quality of life. Based on numerous studies of the value of recreation for hunting, fishing, boating, and general recreation, the net value (benefits to the recreator less costs of recreation) of a recreator day for these activities can be higher than \$100 per day. A review of recreational studies of the net value to recreators of various

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<sup>32</sup> We focus on the CBP irrigation infrastructure that is necessary solely for agricultural production and do not include Lake Roosevelt, which is formed by Grand Coulee Dam. In addition to serving agriculture, Grand Coulee Dam is the largest hydropower facility in the United States, generating more than 21 billion kilowatt-hours of electricity each year (US Bureau of Reclamation, 2021).

recreational opportunities conducted for the Forest Service found that for the Pacific Northwest region, the value from diverse studies conducted from 1958 to 2015 had found net values to recreators for these activities averages around \$75 per day (Rosenberger, White, Kline, & Cvitanovich, 2017). However, the U.S. Army Corps of Engineers uses much lower values per recreator day, in the range of \$4 to \$12 per day for general recreation. This study uses a reasonable estimate of the net value per recreator day of \$30. Applying this to the over one million annual recreation visits supported by the CBP infrastructure indicates **over \$30 million in annual value to recreators is provided at water-based recreation areas created by CBP facilities.**

### 7.3 AGRICULTURAL GROSS PRODUCTION & PROFITS THROUGH TIME

Previous annual reports prepared by the Bureau of Reclamation provide estimates of both acreage irrigated and total gross value of crops produced in the CBP.<sup>33</sup> Using data presented in a select number of these available reports<sup>34</sup> as well as a 2020 study of water supply and use in the CBP that includes acreage estimates through time (U.S. Bureau of Reclamation, 2020), **we estimate the cumulative gross revenue of crops produced by CBP's irrigated acreage at \$66.7 billion from 1948 through 2020 (this amounts to approximately \$108.8 billion in 2020 dollar values)**<sup>35</sup>. Economic Research Service (ERS) maintains estimates of farm profitability as a percentage of gross revenue as part of their Farm Income and Wealth Statistics for Washington State producers (USDA ERS 2021). Based on this dataset, and adjusting for just crop production (i.e., not including animal production), from 1948 to 2020 annual profit accounted for between -2% (loss of 2%) to 47% of gross revenue to the operator, with an average of nearly 21% annually. Assuming 21% of gross revenue is profit, **we estimate that the CBP has generated \$10.4 billion in cumulative profit from 1948 to 2020 (this amounts to approximately \$18.1 billion in 2020-dollar values).**

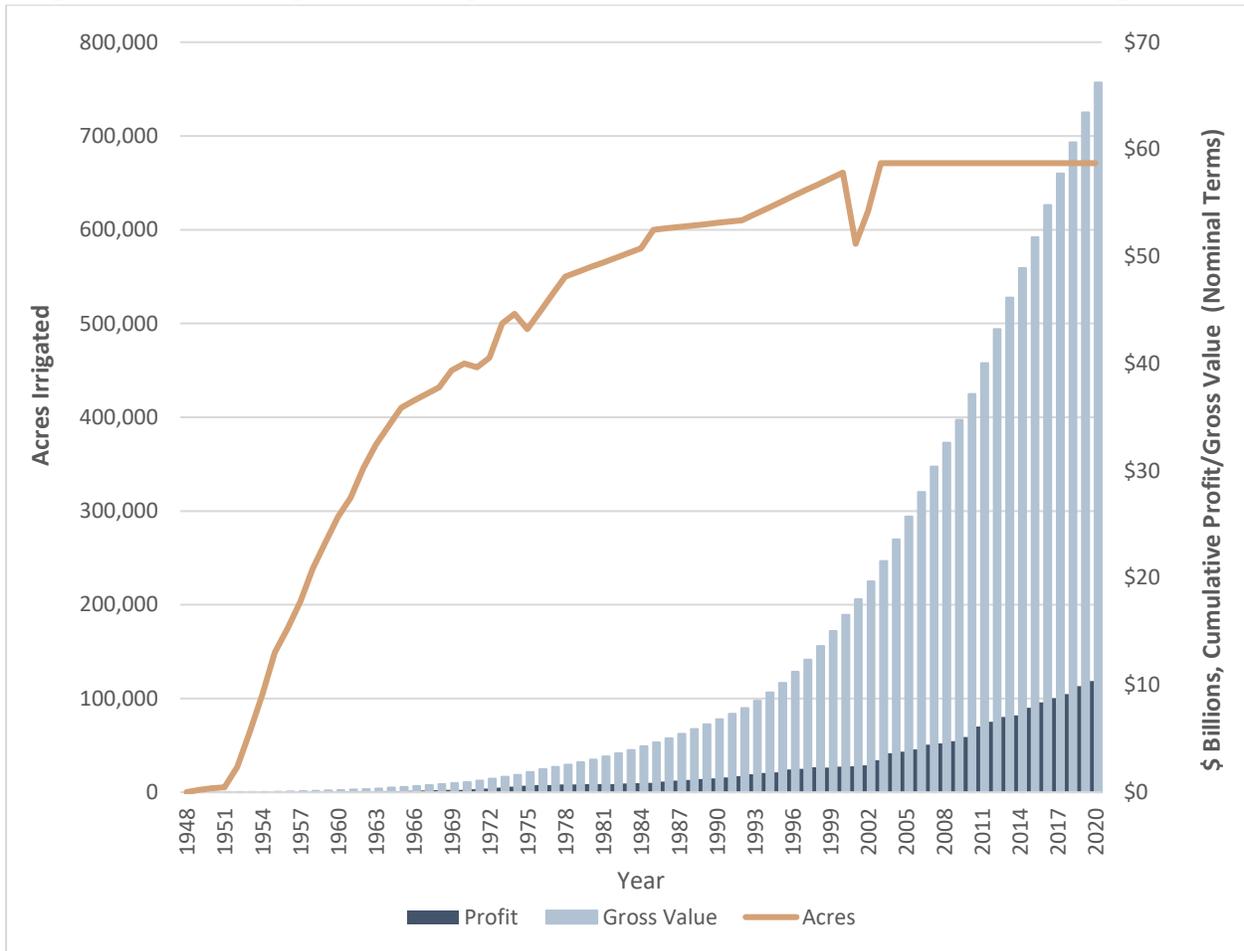
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<sup>33</sup> For example, see United States Department of Interior, Bureau of Reclamation, Summary Statistics, Water, Land and Related Data reports from the 1950's to mid-1990's (Denver: US Government Printing Office).

<sup>34</sup> Specifically, data was available for 1950, 1955, 1960, 1965, 1972, 1975, 1978, 1984, 1985, and 1992.

<sup>35</sup> Nominal values were converted to 2020 dollar values through the Producer Price Index, annual value (USDA NASS 1948-2020).

Figure 7-1 CBP Irrigated Acreage & Cumulative Farm Sales and Profit through Time



Source: Highland Economics analysis of Bureau of Reclamation reports and USDA Economic Research Service data.

#### 7.4 FOOD SECURITY

The CBP provides irrigation water for crops and associated animal production valued at an estimated \$3.328 billion annually.<sup>36</sup> On average, American farmers in 2019 received approximately 14 cents of every dollar spent on food purchased by consumers (Economic Research Service, USDA, 2021). Converting the \$3.328 billion value of farmgate food production value to the retail value of food, and assuming CBP farmers receive on average 14% of the retail value of food, the CBP produces roughly \$23.8 billion of food sold in grocery stores or other establishments. In 2020, Americans spent a total of \$876.8 billion for food to be consumed at home (i.e., purchased at supermarkets and other retailers) (Economic Research Service, USDA, 2021). **These data suggest that the CBP thus produces the equivalent of approximately 2.7% of all American food grocery store purchases, representing approximately the food purchases of 8.9 million Americans** (based on a US population of 328.2 million people). While in reality much of the production from the CBP is currently exported, these figures

<sup>36</sup> This includes \$2.66 value of crop production and \$671 million in animal production.

highlight the magnitude of the food produced in the CBP and the number of people that can be supported by this food production.

The importance of the CBP is likely to only grow in the future as drought, warmer temperatures, and severe weather events threaten agricultural production in other key agricultural production regions. In Washington State, overall vulnerability of agricultural production to a changing climate is expected to be low in areas such as the CBP where irrigation water supplies are available (Snover, Mauger, Whitely Binder, Krosby, & Tohver, 2013). This is not the case for many other regions in the world. For example, California is a key American agricultural production area (particularly for vegetables, fruits, and nuts) facing numerous challenges related to water scarcity, water quality, and rising temperatures. In 2015 and 2016 for example, roughly 1 million acres of California's 27 million acres of cropland were fallowed due to water shortages (Xides, Kehmeier, & Kerr, 2016). In addition to water shortages, sea level rise related to climate change threatens some areas of California agricultural production. Due to the low elevation of the Central Valley, the region is especially sensitive to sea levels rising, which is expected to cause an increase in salinity in the San Joaquin Delta (Hanak, et al., 2019). In total, The San Joaquin valley is expected to fallow roughly 200,000 acres annually due to climate change (Hanak, et al., 2019).

Climate change is impacting crop yields as well. In lower-latitude regions, crop yields including that of corn and wheat have already been negatively impacted by climate change, while crop yields of corn, wheat and sugar beets in higher-latitude regions have been positively impacted by climate change (IPCC, Accessed 2021). While yield impacts vary by crop and location, overall across the globe, one study led by researchers at Cornell University estimates that total agricultural output is 21% lower than it would have been without climate change (Ortiz-Bobea, Ault, Carillo, Chambers, & Lobell, 2021).

Agricultural production in the Columbia Basin Project is expected to be resilient to climate change. The region is expected to face warmer and slightly wetter conditions due to climate change. These changes are expected to lead to an earlier and wetter start to the growing season and a reduction in the irrigation season for most crops (WA DOE, 2016). However, the Washington Department of Ecology forecasts an increase in annual water supplies across the Basin, and increased temperatures could lead to a lengthening of the growing season on the Columbia Basin (WA DOE, 2016). Changes in agricultural production in the region as a response to climate change include the potential to increase double cropping as crops mature earlier in the season and a change in crop mix (WA DOE, 2016). **Based on the relatively low climate-related risks to agricultural production in the Columbia River Basin, researchers at the Agriculture Climate Network are already studying how future reduced agricultural production in California could be offset by increased vegetable production in the Columbia River Basin** (Maureira, 2020).

With an abundance of water forecasted and a lengthening of the growing season, the Columbia Basin region is particularly well suited to face climate change especially when compared to many other agricultural producing regions. Due to the anticipated decrease in agricultural production in other parts of the nation and world due to rising temperatures and water shortages associated with climate change, the potential additional output produced by the CBP under climate change highlights the likely growing importance of CBP food production in the future.

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