# THE LOWER SNAKE RIVER REGION

An Opportunity to Invest in our Communities and a Future Salmon Stronghold



## **OVERVIEW / Changed Realities, Urgent Opportunities**

For generations, communities in the Pacific Northwest have debated how to protect salmon while sustaining economic growth. Too often, the debate has devolved into "people vs. fish"—pitting the energy, shipping, and agriculture industries in our communities against measures that would best protect salmon.

At the heart of this debate has always been the Lower Snake River Dams.

Scientists and the federal government have long acknowledged that our iconic salmon are rapidly disappearing and headed for extinction. In fact, the situation today is more dire than ever. These experts also have long recognized that the four dams on the Lower Snake River are a major impediment to salmon recovery. Today, we know that— despite billions spent—these fundamental facts have not changed.

### What has changed is that the Lower Snake River Dams are less critical to maintaining our economies and our way of life than they used to be—even compared to 20 years ago.

Over the last two decades, the energy sector has been transformed by low-cost wind, solar, and battery storage, as well as innovative approaches to grid management—creating a diversity of approaches competitive with hydropower on price and reliability.

Agriculture is under a steady transition. Barge transport along the Lower Snake River has declined significantly, as farmers and other exporters shift to more efficient and cost-effective rail transport. Meanwhile, agricultural ownership continues to consolidate into a handful of large operators. Some local landowners have shifted to new revenue streams through tourism and recreation, sectors that are poised to benefit from a restored river. Addressing longstanding injustice to Native Americans, including Pacific Northwest Tribes that depend on salmon, has become central to the federal Administration's mission, as part of a much broader and urgent conversation about equity and justice in America.

These decided shifts in the landscape are opportunities for our region: 1) an opportunity to restore what would be the largest and best salmon stronghold in the lower 48 states; 2) an opportunity to build stronger local economies and an electric grid resilient in the face of a changing climate and



global uncertainty; and 3) an opportunity to begin addressing our unfulfilled promises to Pacific Northwest Tribes, for whom salmon have always represented the core of culture and life.

Moreover, the moment to act on these opportunities is now. Our region has the potential to harness infrastructure funding to make once-in-a-century investments that will position our economy and our ecosystems to thrive. And our current Congressional delegation and statewide leadership has never been stronger nor better positioned to seize this opportunity.

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Decades of piecemeal approaches to Columbia River salmon haven't worked. To recover these species, we need to remove the Lower Snake River Dams.

At a cost of over **\$17 billion and counting,** attempts to restore Columbia Basin salmon have been expensive and produced few results. No wild salmon or steelhead populations have recovered sufficiently to delist them from the Endangered Species Act; all remain far from the sustainable abundance needed to support robust recreational, commercial, and tribal fisheries.

The one strategy many leading scientists agree would have the most significant positive impact on salmon—removal of the Lower Snake River Dams—has remained absent from serious conversations. That is, until now.

To successfully restore Snake River salmon populations, we need more juveniles to make it downriver and return upstream as adults. The biggest impediment to their success is the Lower Snake River Dams. This multi-dam gauntlet forces young fish to swim through powerhouses and creates **140 miles** of lethally hot, slow moving reservoirs where food is nonexistent and predators are abundant. **Only 54% of Snake River juveniles survive dam passage.**  Scientists have affirmed that to recover Snake River salmon, we need a 4-6% smolt-to-adult return ratio, or SAR. That means, for every 100 smolts that leave spawning areas and migrate downstream, we need at least 4-6 adult fish to return. However, since the dams were built along the Lower Snake River, salmon and steelhead populations have achieved SARs of 4% only once. That happened during an extremely high-water year when juveniles more easily reached the ocean. Over the last 25 years, **Snake River spring Chinook, have an average SAR of less than 1%.**<sup>1</sup> This reality has put salmon on a path to extinction.<sup>2</sup>

The best tool for salmon recovery in the Columbia Basin has always been and still is removing the Lower Snake River dams—a conclusion acknowledged in multiple studies over the last two decades including by the Corps of Engineers in 2002,<sup>3</sup> the October 2020 Columbia River System Operations Environmental Impact Statement (CRSO EIS),<sup>4</sup> the December 2020 multi-agency Comparative Survival Study<sup>5</sup>. Removal of the dams, in conjunction with increased spill at other downstream dams, is projected to result in salmon

Extinction Spiral: Snake River Chinook's Post-Dam Declines, in Smolt-to-Adult (SAR) Ratio.



(From smolts at uppermost Snake River dam to Columbia River returns)

Expected Salmon Response: Lower Snake River Dam Breach and Increased Water Spilling at Downstream Dams.



returns two to three times higher than the alternative preferred by federal agencies.<sup>6</sup>

Moreover, the positive impacts are expected to begin as soon as the first few generations of returning salmon. That's because restoring the Lower Snake River to its free-flowing state would have immediate benefits—reducing water temperatures to levels where juvenile salmon can thrive and eliminating warm-water reservoirs that provide habitat for predators.

A free-flowing Lower Snake River will open up passage to and from the largest, most climateresilient salmon stronghold in the lower 48 states. By 2080, the Upper Snake River Basin will contain 65 percent of the coldest, most climate-resilient stream habitats on the West Coast and is expected to remain productive for salmon and steelhead even with a warmer climate.<sup>7</sup> Already, the existing wild fish that reach this habitat are genetically diverse, mountain swimmers that travel above 6,000 feet to



spawn and head for cold mountain streams early in the year to wait out dry, hot summer conditions—a key climate adaptation very likely to improve their chance of survival.

Removing the Lower Snake River Dams is a critical and urgent opportunity to bring salmon back from the verge of extinction. But it is also an opportunity that is bigger than salmon.



# WHAT HAS CHANGED / An Opportunity Bigger than Salmon

By harnessing new technologies, we can make the region's energy cleaner and more reliable.

# The Right Grid for a Changing Climate

For nearly a century, hydropower represented the cleanest, most affordable energy available, and Pacific Northwest industries and communities grew around it. Today, it is just one of several reliable, affordable, and flexible clean energy options.

Twenty years ago, wind and solar (among other advanced energy technologies) were costly and unproven at scale; annual investment in their development was incremental at best. However, beginning about a decade ago, bold policies by federal policymakers and states sought to jump start a clean energy economy while reducing carbon emissions that accelerate climate change. The 2009 American Recovery and Reinvestment Act, for example, invested \$90 billion in innovation and deployment incentives, ultimately leveraging an additional \$150 billion in private and other non-federal capital.<sup>8</sup>

As a result of these and other investments, U.S. renewables deployment doubled between 2008 and 2018.<sup>9</sup> At the same time, costs for these technologies—once much higher than fossil fuels or hydropower—declined exponentially and are still dropping rapidly today.

Solar is now the cheapest power in 16 states (including Idaho and Oregon) and will be in nearly every state (including Montana and Washington) by 2028<sup>10</sup>—the same year that utility contracts with BPA are set to expire. Battery storage,long considered the holy grail for addressing the intermittency of wind and solar, is following a similar trajectory. Utility scale battery storage costs dropped about 50% between 2015 and



When Utility-Scale Solar Will Be the Lowest-Cost Generation by State.

**2019,**<sup>11</sup> and Bloomberg New Energy Finance noted in April 2020 that batteries had become cost competitive with natural gas peaker plants.<sup>12</sup>

Innovative hybrid projects that combine renewable generation and storage technologies are also breaking new cost barriers. Solar plus storage projects set to come online in the 2021-2023 timeframe have contracted for electricity at prices between \$22-\$32/MWh<sup>13</sup>—comparable or less than electricity costs in the Pacific Northwest today.<sup>14</sup>



# Unsubsidized Levelized Cost of Utility-Scale Battery Storage (\$/MW).

## Reducing Energy Risks

In addition to affordability, reliability has always been a key feature of hydropower. Reliability can be affected by sufficient capacity as well as a variety of factors (including voltage, frequency, and stability) along the transmission and distribution system.

Twenty years ago, the fear of intermittent renewables leading to blackouts was a genuine one. Today, grid managers have a much greater variety of tools for integrating and utilizing renewables in complementary ways that can actually improve reliability and make the grid more resilient to the effects of climate change. Implementing these tools will be critical even with the existing hydropower system; but they can also enable new and better infrastructure.

A 2018 study by Energy Strategies for the NW Energy Coalition (NWEC) analyzed five portfolios for replacing the power from the four Lower Snake River dams, including a Non-Generating Alternative that would rely wholly on energy efficiency, demand response, and a small amount of battery storage; and a Balanced Portfolio that would rely on a mix of energy efficiency, demand response, wind, and solar. **The study found that all of the replacement portfolios performed better on sufficient capacity than the current hydropower system and none had any adverse impacts on reliability.<sup>15</sup> In other words, each of the replacement scenarios actually reduced the risk that power would be curtailed.** 

Given current trends, options for replacement portfolios will continue to grow in the coming decade and beyond. A recent report by the Northwest Power and Conservation Council shows that energy efficiency in the region is already outpacing goals set in 2016, and demand response remains poised to be an important grid management tool that also delivers value to customers.<sup>16</sup>



Ambitious new climate policies are also accelerating change in the region and opening new opportunities for advanced energy solutions and grid modernization. Washington state's Clean Energy Transformation Act, for example, requires utilities to eliminate coal-fired electricity by 2025, reach net-zero emissions by 2030, and achieve 100% renewable or non-emitting electricity by 2040.<sup>17</sup>

Such policies will drive transformational changes to the grid and present an opportunity to consider—and analyze in much greater detail than BPA or utilities have to date—how removing the Lower Snake River dams can enable not just more affordable and reliable power generation but a more resilient grid and more sustainable economies.



## WHAT HAS CHANGED / An Opportunity Bigger than Salmon

Dam removal will allow inland communities to rethink legacy transportation routes and reposition economies for growth

## Evolving Ag and Shipping Economies

The Lower Snake River was once a thriving channel for transporting diverse and important products. In the last two decades, however, barge traffic along the Lower Snake has declined significantly.<sup>18</sup>

Petroleum products and shipping containers have all but disappeared, and even grain shipping which currently accounts for 90% of all freight on the Lower Snake waterway—has trended downward. This trend reflects the reality that some farmers have shifted to shipping their products by rail, which for them has proven more efficient, convenient, and cost-effective.

Removing the Lower Snake River Dams—and thereby removing the river as a competitor to rail freight—has potential consequences for local businesses' bottom line. However, it is also an opportunity to invest in faster shipping methods and routes that can benefit export-oriented shippers and communities.

The Lower Snake River Dams also support 47,000 acres of irrigated farmland—37,000 acres through

water drawn from the reservoir created by Ice Harbor Dam and 10,000 acres through groundwater wells and a higher water table created by the dams.<sup>19</sup>

Like shipping, farms that depend on the Lower Snake River for irrigation have evolved over the last two decades. Many family farms have sold to larger operators, leaving 92% of agricultural production in the region in the hands of nine owners. All but one of these owners are corporations and other large organizations.<sup>20</sup>

High-value orchards and vineyards, which account for a small but economically significant part of irrigated land, have thrived in recent years and are particularly reliant on a consistent water supply from the Lower Snake River for irrigation. Farmers remain concerned that removing the dams could affect irrigation and farming and reduce the economic viability of local communities.<sup>21</sup> These issues need to be fully addressed by any dam removal process. Solving them is fundamentally a matter of listening, planning, and targeted investments that will keep the ag industry running strong.





Many economic studies have highlighted the potential for job growth and new industries with dam removal. Dam removal is essentially a massive public works project; one study states that a capital project of this size would add **over 300 jobs per year in the counties adjacent to the river for more than 30 years.**<sup>22</sup>

Restoring the river corridor to a natural state by including replanting streamside forests and rebuilding wetlands is a proven job creator, providing up to 30 jobs per \$1 million spent.<sup>23</sup> **Restoration of the river could also open up business opportunities and new jobs in recreation, fishing, and tourism**—not just on the river itself, but at ports, at orchards and vineyards, and along waterfronts that may be underutilized today.

As one of the least-used major navigable waterways in the United States, the Lower Snake River and its aging supporting infrastructure is due for revitalization. What's needed is an economic vision that both honors the character of local communities and positions them for future growth. Restoring the Lower Snake offers the opportunity to do both.





# WHAT HAS CHANGED / An Opportunity Bigger than Salmon

"We view restoring the Lower Snake River – a living being to us, and one that is injured – as urgent and overdue." - Chairman Shannon Wheeler, Nez Perce Tribe

"Since time immemorial, the salmon have faithfully returned to the Columbia River and sustained the native people of this region." - Chairman Delano Saluskin, Yakama Nation

## Fulfilling Our Commitments to Pacific Northwest Tribes

For millennia, Pacific Northwest Tribes thrived along a free-flowing waterway, abundant with salmon, steelhead, and lamprey. However, the installation of the Lower Snake River Dams transformed that waterway into a series of "large, unshaded, slow-moving, and relatively shallow reservoirs"<sup>24</sup> and devastated many Tribes' fishing rights, health, culture, and way of life. This profound loss is also a breach of the treaties made between the United States and the tribes of the northwest. In signing those treaties, tribes ceded millions of acres of land and in return, reserved their rights to hunt, fish, and gather in their usual places. Court decisions affirmed that in order to exercise their treaty rights, there must be fish in the streams and rivers. These treaties are the supreme law of the land in the U.S. Constitution. The current Administration has committed to addressing those historical wrongs. A January 2021 White House Memorandum on Tribal Consultation and



Strengthening Nation-to-Nation Relationships stated that **"The United States has made solemn promises to Tribal Nations for more than** two centuries. Honoring those commitments is particularly vital now, as our Nation faces crises related to health, the economy, racial justice, and climate change—all of which disproportionately harm Native Americans."<sup>25</sup> This is no less true for Pacific Northwest Tribes.

Although there is no simple or immediate solution for centuries of broken promises, we can begin by honoring salmon and their cultural importance to Tribes and by joining in support for a policy that many Tribes have insisted is necessary and fundamental: removing the Lower Snake River Dams.

In 1909, the U.S. Supreme Court stated that **fishing was "not much less necessary to the existence of the [Pacific Northwest Native Americans] than the atmosphere they breathed."**<sup>26</sup> We have an opportunity today to recognize this truth not just in words, but in action.



During treaty negotiations, Tribes in the Columbia River region ceded vast territories (light colors in map above) while retaining hunting and fishing rights in those territories. Source: Columbia River Inter-Tribal Fish Commission (CRTFC).



## WHAT'S NEXT / A Commitment to Move Forward

Removing the Lower Snake River Dams offers a leverage point to tackle interconnected Northwest priorities: salmon, energy, transportation and rural economies. These interconnected issues are core to the future of the Northwest

The evolution of our energy, transportation, and agriculture systems creates a unique and urgent opportunity for action. We have a chance to reshape the future of the Northwest, and to do it—not under judicial order—but on our own terms.

We no longer have to choose between people and fish—between ensuring resilient communities and protecting our last, best salmon strongholds. We can achieve both and more for our region. Mile-for-mile, the Snake River basin contains the coldest, most undisturbed stream habitats in the continental U.S. A free-flowing Snake River will create the largest, most climate-resilient salmon stronghold in the lower 48 states.

Urgent action is needed to develop a regional path forward to a comprehensive solution that recovers Snake River salmon and steelhead rather than continues to drive them to extinction. Ensuring that salmon recovery actions also prioritize energy, transportation, agriculture and rural economic



solutions will deliver value up and down the Columbia River, across Washington and over the entire region.

### Northwest Congressional leaders and stakeholders need to take strategic actions to build a regional future that successfully includes:

- Removal of the four federal Lower Snake River dams as a critical element in key regional salmon recovery efforts.
- Establish a significant fund to develop a comprehensive plan to breach the dams, restore the river basin and mitigate the impacts of dam removal, e.g., replacement energy, and create a sustainable future for local communities.
- Ensure the process is led by government-to-government engagement between the federal government and Pacific Northwest Tribes that honors commitments to the Tribes.
- Suspend the Trump-Administration Record of Decision (ROD) on operation of the federal Columbia River Hydropower System, and issue a new ROD based on the alternative that targets removal of the four Lower Snake Dams.
- Fund critical infrastructure and studies now that are needed to move the Lower Snake River Dam removal process forward.

The alternative future, one without salmon, without reliable, clean power or vibrant river communities is not the future we all want.



## Endnotes

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