

Dams, Energy and Salmon

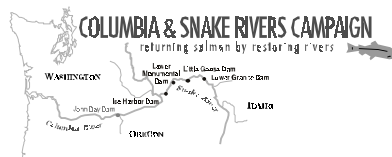
We can afford to save salmon by replacing the four Lower Snake River dams with clean energy



photo by Butz Ramsey

Bringing back Snake River salmon will help the people and economies of the Northwest

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Salmon and Dams

From Riding The Rapids To Rapid Decline

As dams plug our rivers, wild salmon plummet toward extinction



photo by LeeAnne Tryon

FISHLADDERS: When the dams were built, most experts were concerned with how adult salmon would get around the dams to return upstream to spawn. Fish ladders that allowed adults to climb over the dams eased part of that problem, but salmon continued to plunge toward extinction. Now we know that dams pose nearly insurmountable barriers to young salmon on their way to the ocean and are the major cause of dying runs on the Lower Snake



photo by LeeAnne Tryon

RESERVOIRS: Dams slow the river current and back up water for miles, forming deep reservoirs in which young fish heading to the ocean can get lost. A journey that once took two weeks now takes up to three months, severely affecting the young salmon's ability to adapt to salt water. Lost and confused salmon are easy prey for other fish, and many never survive the reservoirs.



photo courtesy of BPA

DAM TURBINES: When salmon get to the dams, things go from bad to worse. The river's flow spins turbines deep within the dams to generate electricity, and many young salmon are swept into the turbines along with the water. Spinning turbine blades and high water pressures kill and injure a large number of fish at each dam.

Dams are the main killers of salmon and steelhead in the Columbia and Snake Rivers. The major dams were built over a 40 year period, starting with **Rock Island Dam** on the Columbia in 1933 and ending with **Lower Granite Dam** on the Snake in 1975.

The combined effects of long, slow-moving reservoirs and deadly turbines kill between 5-15% of migrating young fish at each dam. Most Columbia and Snake River salmon and steelhead must survive four to eight dams on their trip to the ocean. **The dams will kill 80-95% of the fish which have to face all eight of them.**

The federal government's answer to this high death rate is to take the fish out of the water and transport them downriver in trucks and barges. Fish barging, which began as an experiment 20 years ago, has become the federal government's catch-all solution for protecting salmon from the lethal effects of dams on the Columbia and Snake Rivers. Barging salmon doesn't work, and wastes millions of taxpayer dollars.

Not all dams spell death for salmon and steelhead. In some areas of the Northwest, utilities have made a commitment to modify dams to reduce their harmful effects on fish. Unfortunately, modification isn't enough to make the Snake dams safe for salmon. Only partially removing them will restore salmon and steelhead runs.

This year the federal government will make key decisions on whether to continue barging endangered salmon and steelhead downstream or to make the Snake River safer for fish by partially removing four dams. Removing part of the Lower Snake River dams is reasonable, affordable, and makes good economic sense for both the Northwest and the nation.

Saving Snake River salmon must be a priority for the Clinton Administration.

Lower Snake River

Extinction Is Forever — Dams Are Not

Experts agree: partially removing dams is the only option to save fish

Saving salmon in the Northwest means taking a hard look at removing part of four dams on the **Lower Snake River in Washington State**. Science tells us that salmon need more natural river conditions. Although there are other measures that will help the salmon — including increasing river flows — partially removing these dams is the only option that will reverse the decline and actually rebuild salmon and steelhead runs.



The Lower Snake dams are located in Eastern Washington



photo courtesy of BPA

Lower Granite Dam is one of four dams on the Snake River that may be partially removed to save salmon

Partial removal is a reasonable solution

One of the region's more conservative newspapers, **The Idaho Statesman**, supports bypass of the four dams to save salmon. The **Seattle Post-Intelligencer** urges policymakers to listen to scientists calling for more natural river conditions. Independent scientists are virtually certain that Snake River salmon will come back if the four dams are partially removed.

We can afford to remove part of these dams

Bypassing the dams is affordable. It will cost money up front but will bring the expensive and failed practice of barging fish around dams to an end and eliminate dam operation and maintenance costs.

The Idaho Statesman

ESTABLISHED IN 1864 • IDAHO'S CAPITAL NEWSPAPER

— September 22, 1997 —

Breaching four dams on the Lower Snake River makes economic sense and restores an Idaho treasure. If salmon return to the state in substantial numbers — which they will if the dams are breached — the long-term benefits outweigh any short-term losses.

Removing part of the Snake River dams will leave most of each dam whole. Only the dirt bank connecting the dam to the riverbank will be removed. The concrete portion of the dam will remain in place, allowing the

river to flow around it.

Benefits provided by the four dams can easily be replaced:

- Together, the four dams only produce 5% of the Northwest's power. We can replace that power through common sense investments in energy conservation and renewable energy such as wind power.
- The dams provide absolutely no flood control.
- Only 13 agri-businesses pull water out of the river for irrigation, watering just 35,000 acres. If the dams were bypassed the river level would drop, but the irrigators could extend their water lines to reach the lower water level.
- Navigation locks at the dams allow **Lewiston, Idaho**, to operate a seaport in the Rocky Mountains, nearly 500 miles from the ocean. Instead of sacrificing salmon for subsidized barge shipping, industries could use rail or trucks to move their products.

Independent Scientists Agree:

Removing part of the four Lower Snake River dams will save salmon and steelhead



photo courtesy of the Conserver Society

Clean, cold rivers are vital for salmon

Removing part of the four dams is the best biological option to restore salmon on the Snake River. It will:

- remove the largest threat to fish on the river — the dams, which kill over 50% of young salmon and 20% of adults;
- improve river habitat and conditions for salmon by lowering water temperature and increasing flow speed;
- ease predation on young salmon by speeding them on their way to the ocean and reducing predator habitat;
- reduce fish stress and disease by ending the practice of taking fish out of the river and barging them downstream.

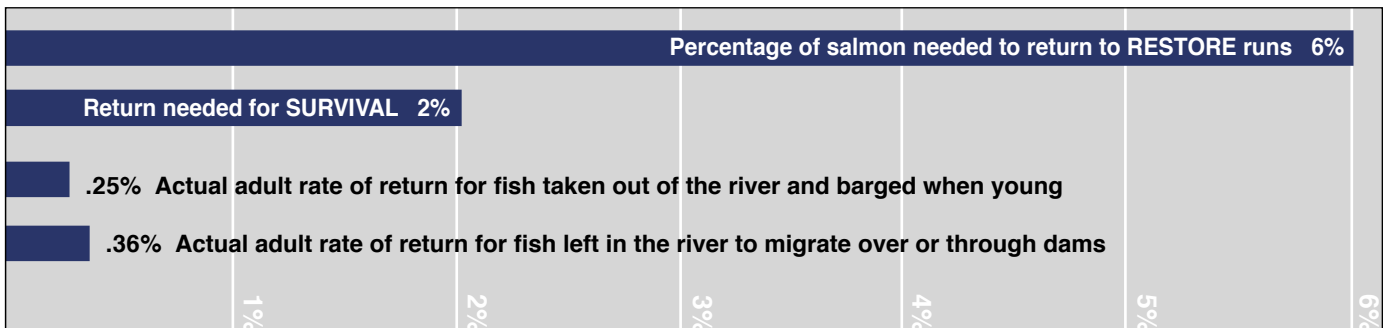
Scientists agree that no other option besides dam removal will save Snake River salmon

Two computer models developed by state, tribal, federal and non-governmental fisheries scientists agree that partially removing the four dams is virtually certain to restore Snake River salmon and steelhead, predicting an 80% and 99% probability of success within 24 years for spring/summer and fall chinook, respectively. Based on these results, the **Idaho Department of Fish and Game** and large numbers of other scientists have issued policy statements endorsing this natural river option as the best biological choice to restore Snake River runs.

Independent scientists also agree that the current “recovery” plan, which takes young salmon and steelhead out of the river and ships them downstream in trucks and barges, is a failure. Barging salmon wastes money and does not even slow the decline of fish runs, let alone restore them.

At least 2% of young salmon need to return as adults to prevent extinction, and 6% have to return to restore runs.

Scenarios	Meets Recovery Standard	24-year Recovery Probability
Spring/Summer Chinook	1) Status Quo	No 42%
	2) Maximum Barging	No 38%
	3) Partial Removal	Yes 80%
Fall Chinook	1) Status Quo	— —
	2) Maximum Barging	No 27%
	3) Partial Removal	Yes 99%



Barging fish or forcing them to navigate dams doesn't work. Only partially removing the Snake River dams will save salmon.

Partially Removing Dams Is Affordable

Northwest residents are willing to pay \$1 to \$5 per month to save the salmon

The cost of partially removing the four Lower Snake River dams is reasonable and affordable, particularly when compared to the cost of current unsuccessful efforts to restore salmon and steelhead.

The **Bonneville Power Administration (BPA)** is already spending over \$200 million per year on salmon recovery efforts that don't work. The number jumps to \$400 million when "forgone revenues" are taken into account — costs charged to the fish budget for power that could have been produced by the dams instead of increasing flows for migrating salmon.

BPA's counter-intuitive measures, such as taking young salmon out of the river and trucking them around the lethal dams, are not only expensive but also fail to restore fish. Partially removing the Lower Snake River dams also has costs, but is the only real chance of rebuilding salmon and steelhead runs. It makes sense to pay for actions that will actually benefit the fish.

Removing the dirt bank of the dams has a one-time cost of \$500-\$800 million. Other partial removal costs include replacing electricity generated at the dams, valued at \$150-\$300 million per year; \$15-\$30 million per year to replace barge shipping on the river; and \$14 million in irrigation mitigation for 13 farms that use water from one of the reservoirs.

Seattle Post-Intelligencer

THE VOICE OF THE NORTHWEST SINCE 1861

A Seattle Post-Intelligencer article published on January 14, 1999 stated that partially removing the four Lower Snake River dams to help salmon would probably raise the monthly electric bill of an average Seattle household by less than \$1 per month.

Residential customers of Tacoma City Light and Puget Sound Energy may see an even smaller increase, since they rely on less federal power than Seattle City Light.



photo courtesy of BPA

Most electric bills will increase by only \$1 per month

There are many savings associated with partial dam removal. The four dams are due for major service soon, including an expensive turbine rewind. Partially removing the dams will make this unnecessary and save nearly \$420 million — almost enough to offset the one-time cost of removing the dams. Ongoing operation and maintenance will not be needed, saving an additional \$34 million per year. And BPA can stop wasting money trucking young salmon downstream.

The biggest economic benefit from bypassing the Snake dams is restoring the commercial and sport fisheries that depend on healthy salmon and steelhead runs. **The Idaho Statesman**, a Boise-based newspaper, estimates increased economic benefits from healthy fisheries at \$248 million per year in Idaho alone. Coastal and rural communities in Oregon, Washington and Alaska will also be rejuvenated. Restoring salmon will allow us to meet our treaty obligations to **Columbia River Indian Tribes** and to Canadian fishermen.

So what do all these numbers mean to the average residential electric customer in the Northwest?

Restoring the salmon by partially removing the four Lower Snake River dams will mean a slight increase in electric bills in the region, with the amount varying by how much power local utilities buy from BPA. Estimates range from \$1-\$5 per month, with utilities that buy less from BPA on the lower end of the range. Numerous polls have shown that Northwesterners are willing to pay this small amount to restore salmon, the cultural icon of the region.

Clean Energy

Saving Salmon With Clean Energy

Energy conservation and renewable resources can replace power from Snake River dams

The Northwest is world-renowned for investments which slash energy waste. Since 1981, the region has saved enough electricity to power a city one and a half times the size of Seattle. By investing in energy conservation and taking advantage of clean, renewable sources of energy like wind and geothermal power, we can replace the electricity from the Lower Snake River dams.

Dam bypass has modest power impacts

The four Lower Snake River dams produce 1136 average megawatts of power, about 5% of the electricity generated in the region. Partially removing the dams will mean removing the dirt bank connecting the concrete sections to the riverbank, allowing the river to flow freely around the dam. Although the concrete powerhouse will remain intact, power production at the dams will end. The good news is we can replace the power lost at the dams with energy conservation and clean renewable resources at a reasonable cost.

photo by Jack Odgaard



The Northwest has a large potential for developing clean renewable resources like wind power

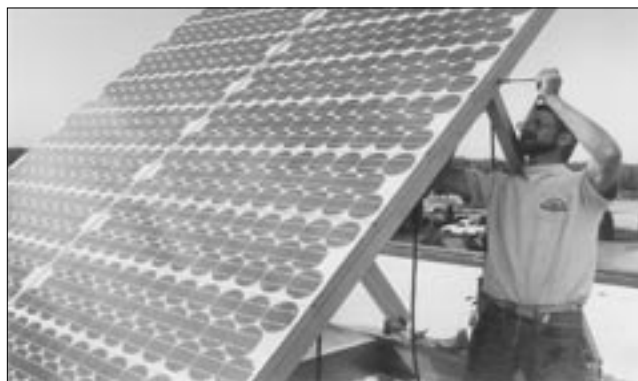


photo courtesy of SMUD

Solar power produces pollution-free electricity

We can have clean energy AND wild salmon

In its 1998 Power Plan, The **Northwest Power Planning Council** conservatively estimated that the region can save an additional 1535 average megawatts of energy — more than enough to replace the dams. These cost-effective investments in energy conservation will cost no more than buying power on the open market or building new power plants.

The Northwest is on track to achieve about one-third of the energy savings needed to remove the dams through utility conservation investments already underway and consumer purchases of energy efficient washers, furnaces and other products which cut energy waste. Public policy which requires utilities to invest further in energy conservation can achieve the remaining two-thirds of the energy savings needed to replace the dams and help consumers lower their bills.

Clean, renewable energy sources like wind, solar and geothermal power are also part of the equation. Studies by the **US Department of Energy** show that a wealth of opportunity exists in the Northwest to produce power from non-hydroelectric renewable resources. According to the **Renewable Northwest Project**, an estimated 420 average megawatts of wind, solar and geothermal power could be up and running in the region within 10 years.

Investing in energy conservation and renewable resources will ensure that we replace the power from the dams without harming our air or water, or releasing carbon dioxide, the leading cause of global warming.

1999 Decision

Removing Dams Has Worked Before

The Clinton Administration must make the right decision to save salmon in 1999

The idea of removing dams to restore salmon and steelhead runs is not a new one. Over four hundred dams have been removed nationwide, ranging from small irrigation impoundments to larger city and privately-owned dams. In the Northwest, dam removal has worked before.

Two dams on tributaries of the Snake River in Idaho were removed with excellent results for salmon. **Sunbeam Dam** on the Salmon River was removed by the **Idaho Department of Fish and Game** in 1934. By 1955, over 4,300 adult sockeye reached Redfish Lake to spawn, demonstrating that dam removal works.

On the Clearwater River, **Lewiston Dam** was removed in 1973. **Washington Water Power**, the Spokane-based utility that owned the dam, and the **Army Corps of Engineers** both agreed to remove the dam, marking the first time the Corps removed a federally-licensed dam to restore a stretch of free-flowing river. Former **Idaho Governor Cecil Andrus** presided over the ceremony to begin removing the dam.

Current “recovery” efforts don’t work

Most of the young salmon and steelhead that make it down the Columbia and Snake Rivers travel by truck or barge. Started 20 years ago as an experiment, barging salmon has become the federal government’s main solution to save fish from the lethal effects of dams.

What is barging? Fish are collected at the dams and forced into small pipes that shoot them to handling facilities. They are then pumped into barges and trucks and hauled downstream where they are eventually released below the last dam on the Columbia River.

Barging doesn’t work. The physical handling involved in barging stresses and injures the fish. Barging also subjects fish to overcrowding, exposes them to disease, and disrupts their ability to return to spawn in the streams where they were born.

The last years of this century are vital for the future of wild salmon and steelhead in the Northwest. In 1999 the **Clinton Administration** must decide to end the failed “techno-fix” of barging and commit to making the river safer for fish.



photo courtesy of BPA

Salmon are pumped into a barge on the Snake River

Making the right 1999 Decision

The Army Corps of Engineers, the federal agency that built the four Lower Snake dams, is preparing an **Environmental Impact Statement** that studies different alternatives to improve salmon migration on the Snake River. The draft, due out in the summer of 1999, analyzes three choices:

- **Do Nothing** — river operations stay the same and no further actions are taken to restore salmon and steelhead;
- **Increase barging** — more fish taken out of the river and barged downstream, with increased flows needed;
- **Partial dam removal** — remove the dirt portion of four dams, creating 140 miles of free-flowing river.

Based on the best available science, only the third option of removing part of the four Lower Snake River dams will meet salmon and steelhead recovery goals. The 1999 decision should be one that actually restores the fish.

The only reason to save salmon is because it’s the right thing to do. We should not save salmon because some economist determines that it’s cost effective. Nor can we let them go extinct because some economist determines that it’s not cost effective.

— Jeff Shields —
General Manager, Emerald People’s Utility District

Fishing

Salmon Mean Business

Removing part of the four Lower Snake River dams will restore a strong fishing economy

photo courtesy of Save Our Wild Salmon



SPORTFISHING: According to the Northwest Sportfishing Industry Association, salmon and steelhead anglers spend over \$600 million per year in the Northwest. The total economic contribution to the region in terms of hotel and motel stays, restaurant meals, and other indirect fishing-related spending tops \$3 billion per year. Sportfishing provides families a chance to enjoy the outdoors together and is a vital part of the region's economy.



photo courtesy of Anne Mossness

COMMERCIAL FISHING: The Institute for Fisheries Resources estimates that commercial troll, purse seine and gillnet salmon fishing in the Northwest account for over \$320 million in economic benefits and 15,250 jobs. Family fishermen and entire coastal communities are dependent on healthy salmon runs to sustain them. Their independent way of life is being threatened by salmon declines due to dams on the Snake and Columbia Rivers.

Dams have affected the Northwest's fishing economy

Numbers from the **American Sportfishing Association** show that salmon and steelhead fishing in the Northwest has declined as fish runs have plummeted. From 1985 to 1991, angler numbers dropped by 32% and fishing days were down by 60%. Retail sales to salmon and steelhead anglers declined by 45%, severely impacting the local economy.

On the commercial fishing side, dams on the Columbia and Snake Rivers have eliminated up to 25,000 family-wage jobs and cost the regional economy as much as \$500 million per year as almost the entire salmon fishery has been shut down. Families who have been fishing for generations have lost their boats in the economic devastation.

The cost of doing nothing

Northwest sport and commercial fishing families and economies are not the only ones to suffer if the salmon go extinct. The **United States** has salmon treaties with **Canada** and the **Northwest Indian Tribes** that must be honored. And other regions of the country, which have long envied the Northwest's low electricity rates, may use salmon extinction as an excuse to redistribute low-cost federal hydropower. Only partial removal of the Snake River dams will restore salmon to sustainable, harvestable levels that will support a robust regional and national economy.



photo by Buzz Ramsey

Sportfishing is popular with everyone