

THE STATE OF THE COLUMBIA RIVER BASIN FISCAL YEAR 2022 ANNUAL REPORT



Northwest Power and Conservation Council
To Congress and Citizens of the Pacific Northwest
October 1, 2021 - September 30, 2022

Submitted to the
Committee on Energy and Natural Resources
United States Senate

Committee on Energy and Commerce
United States House of Representatives

and

Committee on Natural Resources
United States House of Representatives

The Northwest Power and Conservation Council was established pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501) by the states of Idaho, Montana, Oregon, and Washington. The Act authorized the Council to serve as a comprehensive planning agency for energy policy and fish and wildlife policy in the Columbia River Basin and to inform the public about energy and fish and wildlife issues and involve the public in decision-making.

This annual report has been developed pursuant to Section 4(h)(12)(A) of the Northwest Power Act. The Council's bylaws, which include its organizational structure, practices, and procedures, are available to the public at nwcouncil.org/about/policies/bylaws.

Document 2023-4, posted online for 90-day comment on September 14, 2023 and final version in January 2024.

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January 8, 2024

As executive director of the Northwest Power and Conservation Council, I'm pleased to transmit the Council's Fiscal Year 2022 Annual Report to the United States Congress.

The Council adopted its 2021 Northwest Power Plan in February 2022 to ensure an adequate, efficient, economical, and reliable power supply for the region.

As more renewable energy, especially solar, is brought online to meet clean energy goals and coal plants retire, resource adequacy has become a critical issue. To address this transition, the Council is beginning to change how it evaluates the adequacy of the power system, using multiple metrics that better capture actual risks to the system.

The power plan calls for developing at least 3,500 megawatts of new renewable resources in the Northwest to provide energy and offset the emissions from the region's existing fossil fuel-based generation.

The recommended acquisition of cost-effective energy efficiency, the region's second largest energy resource, is targeted between 750 to 1,000 average megawatts to help maintain an adequate system, meet load growth from future electrification from cars for example, and reduce risk from rapidly changing market dynamics.

The Council's Columbia Basin Fish and Wildlife Program, a 40-year effort to mitigate the effects of the hydropower system on fish and wildlife in the basin, is one of the largest fish and wildlife mitigation efforts in the world.

In order to assess the effectiveness of the program over time, the Council developed a web-based tool that displays data from multiple sources to track the status of ecological and biological conditions. This information, and other work currently under development, will help the region direct resources to the most effective actions.

Council members approved an array of habitat and hatchery projects in the anadromous zone of the Columbia Basin. Annual funding for these projects is approximately \$134 million, with a reported total confirmed cost share of approximately \$463 million over time. Some of the projects in this group leverages Bonneville's funding by an impressive 8 to 1.

I invite you to review this overview of our past year's work to protect the region's fish and wildlife while ensuring our power supply.

Sincerely,

Executive Director Bill Edmonds

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Overview

Fiscal Year 2022, October 1, 2021 to September 30, 2022, marked the return to a more normal pattern of operations for the Council as the disruptions of the pandemic began to recede.

Despite the need to work remotely while developing its [2021 Northwest Power Plan](#), the plan was adopted in February 2022. Mandated by the Northwest Power Act, the plan, which includes a fish and wildlife program, is designed to ensure the region's power supply is adequate, efficient, economical, and reliable, while mitigating the impacts of the Columbia River Basin hydropower dams on fish and wildlife.

Major changes have been underway in the energy sector as new state and federal policies to decarbonize the power system were enacted in response to climate change. Resource adequacy is a critical issue going forward as more renewable energy, especially solar, is brought online to meet clean energy goals and as coal plants retire.

To address these challenges as the system transitions toward a cleaner power supply, the Council proposed changes to how it evaluates the adequacy of the power system. The Council's next adequacy assessment will be a more comprehensive analysis, using multiple metrics that better capture actual risks to the system.



Central to the Council's fish and wildlife responsibility, the [Columbia Basin Fish and Wildlife Program](#) represents a 40-year effort to mitigate the effects of the hydropower system on fish and wildlife in the basin. The program's scope and investments make it one of the

largest fish and wildlife mitigation efforts in the world and a significant part of the tapestry of mitigation and restoration efforts in the Columbia Basin.

Implementation of the Program continues through the actions of the Bonneville Power Administration, the Bureau of Reclamation, the Corps of Engineers, and the Federal Energy Regulatory Commission.



The Council appreciates and values the work on the ground from the federal and state agencies, our tribal partners, local conservation districts, utilities, recovery boards, NGOs, watershed councils, fish conservation groups, Canadian entities, local governments, landowners, and others. The coordination, collaboration, and commitment from our regional partners is essential to the success of our mitigation program.

While implementation continues, the Council, with its staff, have been working to assess how the actions called for in the Program has been implemented over time. This work has been occurring in multiple, related steps. One of these is a set of important program indicators designed to report on important information for many of the program strategies over time. This set of indicators was organized into a web-based tool that anyone can access. The program tracker tool compiles and displays data and information on strategy performance indicators to track the status of ecological and biological conditions. This information, and other work currently under development, will help the Council as it assesses the performance of the program over time.

Energy

The Council adopted its [2021 Northwest Power Plan](#) in February 2022 to ensure an adequate, efficient, economical, and reliable power supply for the region.

The plan was developed as major shifts are happening in the electricity industry: Clean energy policies and decarbonization goals to address climate change; a dramatic drop in the cost of wind and solar energy; and retiring coal plants across the West – 60 percent of the region’s fleet is set to retire by 2028.

The power plan includes a resource strategy for 2022-2041, with a focus on a near-term, six-year action plan for 2022-2027.

The six-year action plan calls for developing at least 3,500 megawatts of new renewable resources in the Northwest to provide energy and offset the emissions from the region’s existing fossil fuel-based generation. Policies and pressure to reduce carbon emissions, combined with the low cost and the ability to quickly build renewables, are driving their development.

The recommended acquisition of [cost-effective energy efficiency](#), the region’s second largest energy resource, is targeted between 750 to 1,000 average megawatts to help maintain an adequate system, meet load growth from future electrification from cars for example, and reduce risk from rapidly changing market dynamics. The plan also recommends implementing demand response that can provide low-cost ways for utilities and their customers to seamlessly reduce their electricity use when needed.

Hydropower, the Northwest’s largest resource, along with natural gas, nuclear, and the remaining coal generation will continue to be the backbone of the grid. Maximizing the use of the existing system to integrate

new resources will be critical for ensuring an adequate and affordable power system.

Ensuring Reliability in a Changing Energy Landscape

Following completion of the 2021 Power Plan, the Council initiated several months of work to prepare for the next resource adequacy assessment, an annual evaluation of the implementation of the Council’s recommended strategy in light of the changing system to act as an early warning of potential power shortfalls.

Council staff focused in particular on refining assumptions to its model to address stakeholder concerns shared during the completion of the plan, which identified greater flexibility of the existing system than previous plans. Part of this was great flexibility within the hydro system based on the Council’s redeveloped GENESYS tool that provides more insight into the operations of each hydro project. In response to public comment, Council staff worked with the region to continue to refine and improve its modeling of the hydro system.

Staff performed an in-depth review of all the documented constraints on the hydro system to ensure that each was captured in the model. Staff then met with operators for the many hydro projects across the region to gather additional details on project operation that further refined the modeling. This several months’ effort culminated in a public workshop to review the findings. The entire process increased the regional buy-in of the Council’s modeling, providing a strong starting place for future power planning and adequacy assessments.

In addition to refining the hydro modeling, staff began work on a new analytical approach to measuring adequacy. The Council will continue to refine this work and track these issues and other efforts as part of the ongoing implementation of its 2021 Power Plan.

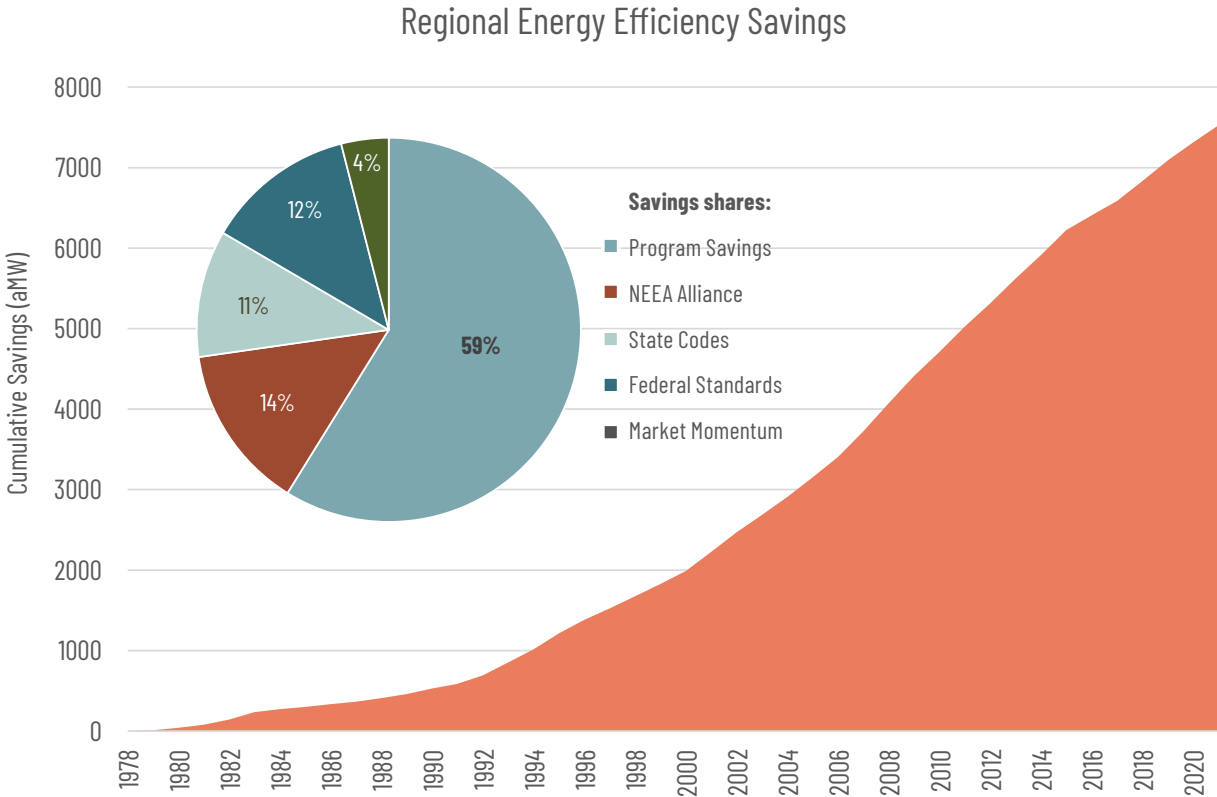
Energy Efficiency

In 2021, the Northwest saved 216 average megawatts of energy, which is slightly lower than the 223 average megawatts achieved in 2020, according to the Council’s [2021 Regional Conservation Progress Report](#).

While the Council’s 2021 Power Plan calls for less energy efficiency than in previous years, the Council considers it a critical resource for the region’s adequacy needs and outlined goals in the current plan for continued investment.

Despite the recent downward trend in efficiency, since 1978 the region has achieved about 7,530 average megawatts, as tracked by the [Regional Technical Forum](#). This represents:

- Enough electricity to power nearly 7 Seattle-sized cities for a year
- The annual energy consumption of 5.5 million homes in the Pacific Northwest
- Almost three times the generation of Grand Coulee Dam
- More than 24 million metric tons of avoided CO₂ emissions



Fish & Wildlife

Measuring the Success of the Columbia River Basin Fish and Wildlife Program

The Council's [Columbia Basin Fish and Wildlife Program](#) represents a 40-year effort to mitigate the effects of the hydropower system on fish and wildlife in the basin. The scope and investment in the program make it one of the largest fish and wildlife mitigation efforts in the world.

Understanding the program's history and context are key to assessing performance because they set the boundaries on the kinds of work that have been called for, where that work occurred, and when the work was implemented. This history and context are being captured in a unique fish and wildlife program historical retrospective report.

In characterizing that work, staff developed a set of general terms that could describe what was called for in each program in a consistent way, even as program structure and content has changed over time. These categories can be linked to the strategy performance indicators outlined in the 2020 Program addendum to track progress toward achieving the program's goals and objectives. There are a total of 104 indicators, representing a tremendous amount of data provided by fish and wildlife managers.

Further, the next assessment will consider four different categories of protection and mitigation work called for the program. These categories include work on the hydrosystem itself, including operations and fish passage; habitat, including habitat restoration and protection efforts, wildlife mitigation and predator management; natural production and artificial propagation; and program adaptive management.

2022 Spring Chinook Salmon Returns

The spring Chinook salmon returns to the Columbia and Snake rivers were encouraging. The pre-season forecast in March was for 122,900 adult salmon above Bonneville Dam and 49,370 adult salmon at Lower Granite Dam in the Snake River. In a welcome spot of good news, the spring Chinook salmon return to both Bonneville Dam and Lower Granite Dam exceeded the preseason forecast and the 10-year return average for Bonneville Dam. As a result, fishing opportunities were available in various locations in the basin.

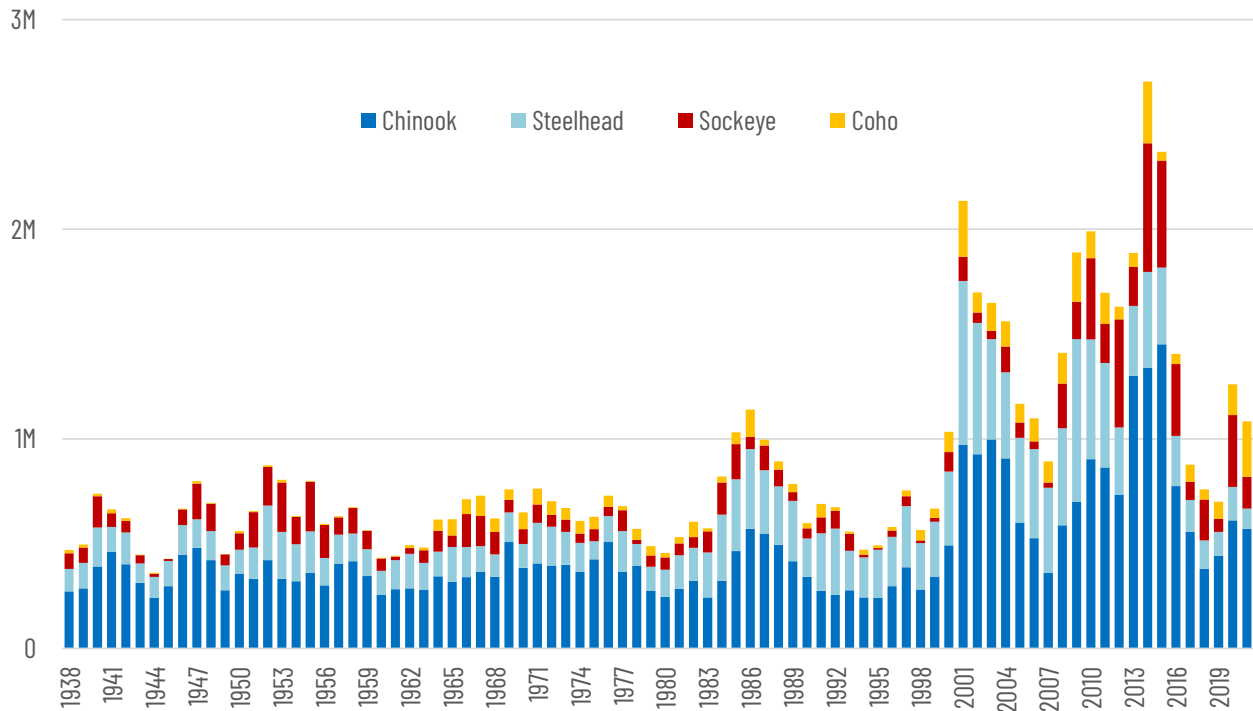
While this is news worth celebrating, many populations of spring Chinook salmon remain below objectives and some populations remain at serious risk.

Restoring Coho in the Interior Columbia Basin

Since the mid-1990s, when fish and wildlife agencies and tribes – particularly tribes – began working to restore coho, adult returns to tributaries of the Snake and upper Columbia rivers have increased from zero for some runs to more than 20,000 fish annually.

Hatcheries built in the interior basin since the mid-1980s, managed or co-managed by tribes and state fish and wildlife agencies, were instrumental in rescuing the species from extinction. Hatcheries, which take time to work, are an effective tool in reintroducing and restoring an extirpated species.

Adult fish counts at Bonneville Dam, 1938-2021



Council Recommends Funding for Habitat Restoration and Hatchery Projects

An array of habitat and hatchery projects in the anadromous zone of the Columbia Basin received [recommendations](#) from the Council in the spring of 2022, completing the final set of projects reviewed for funding through the Council's fish and wildlife program for the current review cycle.

The Anadromous Fish Habitat and Hatchery Project Review considered 124 projects ranging from a variety of work like hatchery operation and maintenance, fish screen installation, habitat restoration, and their associated monitoring and evaluation activities. These projects, as the others reviewed earlier, are ongoing and implement measures in the Council's program.

Annual funding for these projects is approximately \$151 million, with a reported total confirmed cost share of approximately \$34 million in FY2022. Some of the projects in this group leverages Bonneville's funding by an impressive 8 to 1.

Progress on Studies of Reintroduction Feasibility

The Council's current 2014 Fish and Wildlife Program and its 2020 Addendum call for a science-based, phased approach to investigating the feasibility of reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams including juvenile and adult passage at the dams. Following the adoption of the 2014 Program, the Upper Columbia United Tribes and their member tribes secured over \$15 million non-rate payer funds to support the implementation of the study. A recent agreement between the Confederated Colville Tribe, the Spokane Tribes of Indians and the

Coeur d’Alene Tribe and the U. S. Government in 2023 to implement a phased approach to reintroduction is moving forward with funding from the Bonneville Power Administration and other federal agencies. There are many uncertainties to address when it comes to this scale of reintroduction of salmon, as with any large-scale, complicated mitigation action in the Program. The Council continues to recognize the importance of a careful, thoughtful, science-based approach for taking these types of actions and will continue to coordinate with all the relevant parties.

Council Tours the Clark Fork Delta River Restoration Project

With the combined efforts of a community, the Clark Fork Delta River Project, part of the Council’s fish and wildlife program, has helped reduce erosion in the Clark

Fork River delta in northern Idaho caused by water level fluctuations from the operation of the Albeni Falls Dam. The extensive bank erosion in the delta has meant the loss of soil, native riparian, and wetland vegetation, as well as the quantity and quality of fish and wildlife habitat.

Beginning in 2015, over 1,200 pounds of a native seed mix was hydroseeded across all fill areas; a total of 100,549 plants were planted; approximately 20,813 shrubs and trees were planted by volunteers, school groups, and Idaho Department of Fish and Game staff; and approximately 79,736 plugs were planted by volunteers, IDFG staff, and two crews from the Northwest Youth Corp.

The project’s engineering design and approach was to build the protection to appear more natural, with vegetation growing in the river rock.



Public Affairs

Overview

The Northwest Power Act directs the Council to ensure widespread public involvement in its decisionmaking. The Council's website, nwcouncil.org, is a hub of its outreach efforts, providing news, documents, databases, and other forms of information.

The 2021 Northwest Power Plan, the 2014 Columbia River Basin Fish and Wildlife Program, as well as press releases, Council white papers, official public comment on Council documents, PowerPoint presentations, videos, Council newsletters, photos, and links to the Council's social media platforms are available for the public. The monthly [Council Spotlight](#) newsletter covers Council meetings where issues are discussed and decisions made. In March 2022, the Council released its [2021 Columbia River Basin Fish and Wildlife Program Cost Report](#).

Since 2008, the Council has hosted an annual field trip for staff members of the Northwest congressional delegation during the August congressional recess. While these trips were interrupted during the pandemic, the Council resumed the tour in 2023.

Stories and Resources

- [Telling the Story of Hatcheries in the Columbia River Basin](#): The Hatchery Story Map web tool was developed to educate a broad audience about hatcheries in the Columbia River Basin.
- [Warming Ocean Highlights Need to Improve River Habitat, Estuary for Salmon](#): The latest research on the impact of ocean conditions on Chinook and coho returns to the Columbia River.
- [Transforming the Market for Energy-efficient Products](#): Getting energy-efficient products in front of consumers means that more of those products will end up in homes and businesses, helping to reduce our overall demand for electricity.
- [2020 Carbon Dioxide Emissions From Northwest Power Plants Were Lowest in Decades](#): As aging and inefficient coal-fired power plants retire, carbon emissions decline. Growing renewable generation like wind and solar, and existing hydropower, also contribute to this trend.
- [American Shad in the Columbia River: Past, Present, Future](#): A report by the Independent Scientific Advisory Board.

Administration

Budget Overview

The Bonneville Power Administration funds the Council as prescribed in the Northwest Power Act. Bonneville is a self-financing power marketing authority under the U.S. Department of Energy. The Act establishes a funding mechanism for the Council based on an estimate of Bonneville’s forecast annual firm-power sales. Funding for the Council does not come from annual federal appropriations or from state governments.

floor as the Council’s central office and using existing Council space created rent savings in 2022 that will continue into Fiscal Year 2023 and beyond. Actively seeking savings, the Council’s budget for FY 2023 Revised is now less than the Council’s budget for FY 2022.

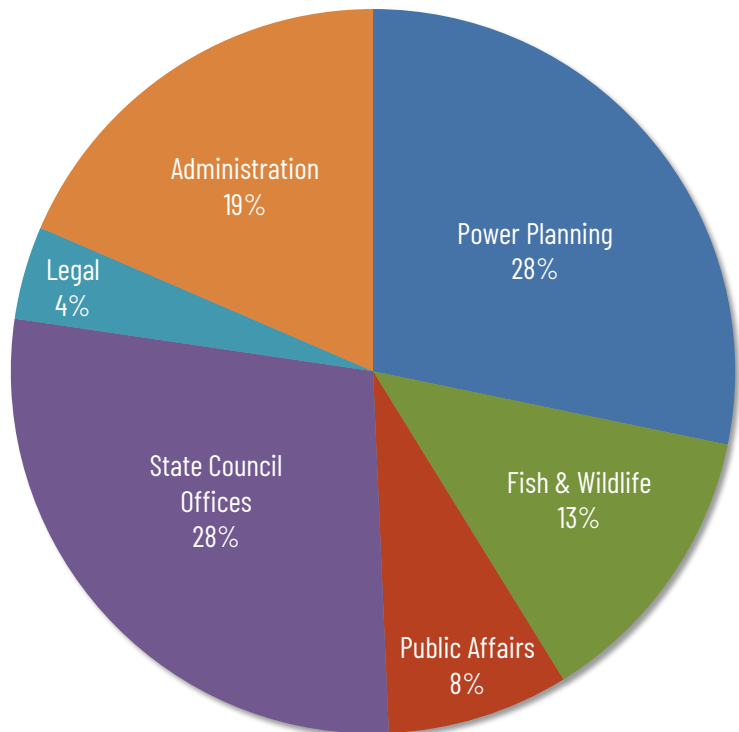
The Council is aware of economic challenges facing the four-state region and the need to maintain healthy financial conditions for Bonneville. The Council will continue to carry out its statutory responsibilities in a fiscally prudent manner by identifying efficiencies in operations and administration. Cost-containment measures for travel, contracts, and services and supplies

Budget for Fiscal Year 2023 (Revised)

The Council’s Fiscal Year 2023 revised budget of approximately \$11,850,641 is a reduction of over \$341,000 from the budget adopted last year for Fiscal Year 2023 with savings across the board in compensation and benefits, travel, contracting services, and operating expenses. Gaps in staffing due to retirements and/or departures have, in some cases, resulted in savings where the new staff had less experience than departing staff. In a few instances, positions that opened due to retirements or departures are not being filled at this time to achieve additional savings.

The Council is also taking advantage of lessons learned from the pandemic and has scaled back future travel, knowing that it has adequate technology to enable the Council to continue to meet monthly and conduct business in public without incurring significant travel expenses for the organization. Additionally, moving the Oregon state office of the Council to the same

Budget by Function for FY 2023: \$11,850,461



have also been incorporated in the budget. The Council will continue to prioritize workload and resources to ensure it can fulfill its responsibilities while being responsive to new requests for technical assistance and/or analyses that the Council finds essential to undertake.

Background on the Council

The Northwest Power Act of 1980

The Council was authorized by Congress in 1980 in the Pacific Northwest Electric Power Planning and Conservation Act (the Power Act), giving the states of Idaho, Montana, Oregon, and Washington a greater voice in how we plan our energy future and protect our fish and wildlife resources. The Act gives the four Northwest states a formal role in making decisions about the allocation of new energy resources for the region.

In the late 1960s and early 1970s, the years leading up to the congressional debate over the Act, the Bonneville Power Administration and many of the region's utilities were concerned that the region's expected growth would outstrip the power system's ability to meet electricity demand. As a result, Northwest utilities made decisions to build a number of new energy plants, including five nuclear power plants in the state of Washington. When the Act was passed in late 1980, many in the region had come to realize that those earlier decisions, based in part on inaccurate electricity demand forecasts, were a disastrous mistake. Only one of the plants, the currently operating Columbia Generating Station, formerly known as Washington Nuclear Plant 2, was completed. Due to exorbitant cost overruns, the other four plants were abandoned or mothballed prior to completion. Two of the unfinished plants were responsible for one of the largest bond defaults in the history of the nation, while the financing for the other three plants was backed by the Bonneville Power Administration. Even today, over 40 years after the Northwest Power Act was enacted, Bonneville pays debt service for two of the unfinished nuclear plants, plus the one that was completed.

Congress concluded that an independent agency, controlled by the states and without a vested interest in selling electricity, should be responsible for forecasting

the region's electricity load growth and helping determine which generating and energy-efficiency resources should be built. The Council does that in the Northwest Power Plan, which includes a component Columbia River Basin Fish and Wildlife Program to mitigate the impact of hydropower dams on fish and wildlife. The Act directs the Council to review the plan at least every five years. The Act also directs the Council to ensure widespread public involvement in formulating regional fish and wildlife and energy policies.

The Northwest Power and Conservation Council

The governors of Idaho, Montana, Oregon, and Washington each appoint two members to the Council. The eight-member Council sets policy and provides overall leadership for Council activities.

The Council's work is performed, depending on the tasks, by the Council's professional staff (including staff in a central office in Portland and in each state), by consultants under contract, or by public agencies and Indian tribes under intergovernmental agreements. The Council's executive director is responsible for coordinating with the Council, supervising the central office staff, administering contracts, and overseeing the day-to-day operations of the Council. The Council approves major contracts and the overall work plan. The Council has 59 employees.

The central staff is organized into five divisions: Power Planning; Fish and Wildlife; Public Affairs; Legal; and Administrative. Professional staff in each state provide technical review and assistance to Council members in evaluating matters before the Council. State staff also participate in designing and developing public-involvement programs that focus on the implementation of the power plan and fish and wildlife program in their particular states. This support is provided through existing state agencies or by individuals directly under Council member direction.

The Council, known until 2003 as the Northwest Power Planning Council, is an interstate compact agency authorized by Congress in the 1980 Power Act and created by the legislatures of Idaho, Montana, Oregon,

and Washington. The Council's first meeting was in April 1981.

The Northwest Power Act gives the Council three distinct responsibilities: 1) to assure the region an adequate, efficient, economical, and reliable electric power supply; 2) to prepare a program to protect, mitigate, and enhance fish and wildlife, and related spawning grounds and habitat, of the Columbia River Basin affected by the development and operation of any hydroelectric project on the Columbia River and its tributaries; and 3) to inform the Pacific Northwest public regarding these issues and involve them in decision-making. This annual report is organized around the Council's key responsibilities and five divisions.

The Power Act created a special relationship between the Council and the federal agencies that regulate and operate dams in the Columbia River Basin and sell the electricity that is generated. The administrator of the Bonneville Power Administration, the federal power marketing agency that sells the output of the Federal Columbia River Power System (a system that includes 29 federal dams within the basin and two in southwestern Oregon, and one non-federal nuclear power plant, the Columbia Generating Station), is required to make decisions in a manner consistent with the Council's Northwest Power Plan and its Columbia River Basin Fish and Wildlife Program. Other federal

agencies with responsibilities for federal and non-federal dams in the Columbia River Basin (the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and Federal Energy Regulatory Commission) are required to take the Council's power plan and fish and wildlife program into account "at every relevant stage of decision-making to the fullest extent practicable," in the words of the Act.

Despite its relationship to federal agencies, the Council is not a federal agency and its employees are not federal employees. The eight-member Council consists of two members from each state, appointed by their respective governors. The Council headquarters are in Portland.

The Columbia River Basin Fish and Wildlife Program

A key element of the Council's planning efforts is developing and periodically revising (by law, at least every five years) a program to protect, mitigate, and enhance fish and wildlife, and related spawning grounds and habitat, of the Columbia River Basin that have been affected by hydropower dams – both federal and those licensed by the Federal Energy Regulatory Commission. Consistent with direction in the Power Act, the Council first created and subsequently has revised the fish and wildlife program, followed by the initial creation and subsequent revisions of the Northwest Power Plan (see



below). That sequence is because the Act requires the Council to include measures in the fish and wildlife program to improve survival of anadromous fish – those that are born in freshwater, spend most of their lives in the ocean, and then return to freshwater to spawn – at and between dams on the Columbia and Snake rivers.

The Act directs the Council to develop its program and make periodic major revisions by first requesting recommendations from the region’s federal and state fish and wildlife agencies, Indian tribes within the basin, and other interested parties. The Council also takes comments from the designated entities and the public on those recommendations.

The Council then issues a draft amended program and initiates a public comment period on the recommendations and proposed program amendments that includes extensive written comments, public hearings in each of the four states, and consultations with interested parties. After closing the comment period and conducting a review and deliberation period, the Council adopts the revised program. The Council develops its final program on the basis of the amendment recommendations, information submitted in support of the recommendations, views and information obtained through public comment and participation, and consultation with fish and wildlife agencies, tribes, Bonneville customers, and others. The program amendments are not concluded until the Council adopts written findings as part of the program explaining its basis for adopting or not adopting program amendment recommendations.

The program is implemented through projects financed by the Bonneville Power Administration and actions undertaken by federal agencies including the U.S. Army Corps of Engineers, the Bureau of Reclamation, the Federal Energy Regulatory Commission and its licensees, and by state fish and wildlife agencies, Indian tribes, and occasionally private contractors. Projects proposed to the Council to implement the program are reviewed by the 11-member Independent Scientific Review Panel to be sure it is based on sound scientific principles and is consistent with the program.

The Northwest Power Plan

Following final approval of the fish and wildlife program, the Council revises the power plan. Under the Power Act, the fish and wildlife program is part of the power plan.

The plan is a 20-year blueprint to meet future demand for power that includes an electricity demand forecast, electricity and natural gas price forecasts, an assessment of the amount of cost-effective energy efficiency that can be acquired over the life of the plan, and a least-cost generating resources portfolio. The plan guides Bonneville’s decision-making to meet its customers’ electricity load requirements and also serves as a useful guide for investor-owned utilities in their own least-cost planning.

In the Northwest Power Act, a law that was ahead of its time, Congress concluded that energy efficiency should be the highest-priority energy resource for meeting the region’s future load growth. The Act includes a provision that directs the Council to give priority to cost-effective energy efficiency, followed by cost-effective renewable resources to meet future demand for power. In effect, for the first time, energy efficiency was deemed to be a legitimate source of energy on par with generating resources.

The rest is history. Since the release of the Council’s first Northwest Power Plan in 1983 (one year after the first fish and wildlife program), the region’s utilities have acquired the equivalent of around 7,200 average megawatts of energy efficiency. Expressed as electricity, that is more than enough to power six cities the size of Seattle.

During the roughly two years after the revision of the power plan and the beginning of work on the next fish and wildlife program, the Council and its staff monitor implementation of the two planning documents, meet with energy and fish and wildlife experts to discuss contemporary issues, and monitor progress toward goals in the plan and program.

Members

Idaho



Jeffery Allen (Chair)



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Oregon



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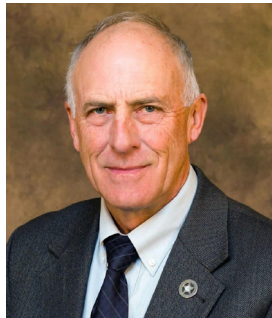


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