

The State of the Columbia River Basin

Fiscal Year 2013 ANNUAL REPORT



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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 the Council's website as Document 2003-19.

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Energy, Fish, Wildlife: The State of the Columbia River Basin, 2013

The Columbia River, fourth-largest by volume in North America, drains an area the size of France that includes parts of seven states and the Province of British Columbia and is one of the world's great hydropower rivers. From Mica Dam at river mile 1,018 in British Columbia to Bonneville Dam at river mile 146 on the border of Washington and Oregon, 14 multipurpose hydroelectric projects span the Columbia River mainstem (11 in the United States), and many more are located on Columbia tributaries. In an average water year, dams in the American part of the Columbia River Basin provide more than 16,000 average megawatts of carbon-free, renewable electricity to consumers in the Pacific Northwest states and as far south as Arizona and southern California.

The Columbia is also one the world's great fish and wildlife river basins, supporting six species of Pacific salmon, plus anadromous sturgeon and lamprey, many species of cold-water and warm-water resident fish, and abundant species of wildlife. The Columbia and its tributaries support commercial and recreational navigation as far as 450 miles inland from the ocean, and irrigation of more than 3 million acres.

Thus the Columbia is a unique river system, as habitat for fish and wildlife, as the largest single source of electricity for a region of 13.5 million people, and as a vital asset for the Pacific Northwest economy.

Energy

The Northwest's electricity system remains the cleanest in the nation. More than 70 percent of the region's energy supply, including energy efficiency, is carbon neutral, and the efficiency of electricity use continues to improve.

The Northwest is on track to meet the Council's goal in its Sixth Northwest Power Plan (2010) to improve efficiency by 1,200 average megawatts in the five years between 2010 and 2014. Expressed as power generation, that is enough for a city the size of Seattle.

Energy efficiency is the third-largest energy resource in the Northwest. It now comprises about 17 percent of the region's electricity resources, in terms of annual energy produced in an average water year, and that amount is expected to increase. In each of the last three years the region has acquired more than 250 average megawatts of new energy efficiency, or about the output of a new natural gas-fired plant each year. If that trend continued in 2012, as appeared likely, efficiency will move ahead of coal in the power supply to second place behind hydropower, which supplies about 55 percent of the region's electricity. Efficiency accomplishments in 2012 are being calculated by Council staff and should be completed late in 2013.

The value of energy efficiency to the region was made clear in a report by the Bonneville Power Administration in Fiscal Year 2013. The *Case for Conservation* report concludes that Bonneville's costs would have been \$750 million to \$1.36 billion higher over 20 years if it had purchased power on the wholesale market at Mid-Columbia trading hub prices instead of investing in efficiency improvements. According to the report, "From FY 2001 through FY 2022, BPA customers could pay over a billion dollars less than they would otherwise pay had BPA not invested in energy efficiency."

Development of renewable resources, mainly wind power, has continued in the Northwest but the pace may slow in the future because of changes in renewable energy policies in California, where much of the wind power generated in the Northwest is consumed. Wind power developed rapidly in the Northwest over the last 10 years and now totals 8,500 megawatts

of installed capacity (including parts of Utah and Nevada where power is generated and transmitted to Pacific Northwest customers). Of this amount, 87 percent (7,400 megawatts) is located in the states of Washington, Oregon, Idaho, and Montana.

Northwest wind power capacity accounts for about 13 percent of the total regional power-generating capacity and about 5 percent of average annual electricity generation. About 1,700 megawatts of new wind power capacity came online in 2012 alone; the additions in 2013 were anticipated to be lower.

Driven both by tax incentives and state renewable portfolio standards, rapid development of wind power has pushed topics such as resource integration, power system flexibility, and marketing and scheduling practices to the forefront of conversations in the region by power system operators, electric utilities, independent power producers, power traders, and government agencies. The Council will address these issues as it begins work this year on the Seventh Northwest Power Plan.

Natural gas continues to grow in importance as a fuel for generating electricity, as well, with the announced closure of the only two coal-fired power plants in the region in 2020 and 2025. Closing coal-fired plants in Boardman, Oregon, and Centralia, Washington, will reduce the region's total carbon emissions as that generation is replaced with other fuels, largely natural gas. New gas-fired plants are being planned and constructed in the region, including Idaho Power Company's 300-megawatt Langley Gulch plant, which began operation in 2012. Three other natural gas-fired plants totaling nearly 660 megawatts of capacity, all in Oregon, are planned for construction with completion dates in 2014 and 2016.

Fish and wildlife

The potential spread of invasive zebra and quagga mussels into the Northwest is a topic of increasing concern to the Council and the four states. The dime-size mussels multiply rapidly in the right conditions and form thick mats of rock-hard shells that can clog water intakes, docks, dams, pilings -- virtually any submerged object. They can be transported to other water bodies when watercraft are moved and can survive outside of water for days and longer.

If invasive mussels should spread into the Columbia River Basin it could add tens of millions of dollars to the annual maintenance costs of hydroelectric dams, according to an analysis by the Council's Independent Economic Advisory Board. State agencies in Idaho, Montana, Oregon, and Washington are fighting to protect their waters from invasive mussels.

In working to raise awareness of the threat posed by mussels, in 2013 the Council co-sponsored a workshop that brought together private and public electric utilities, natural resource agencies, industries, tribes, and environmental groups to discuss the potential threats and strategize about responses. The Council also alerted the Northwest congressional delegation about the need to increase federal funding for inspection and decontamination stations and urged support for legislation proposed in both the House and Senate to authorize funds to establish watercraft inspection stations in Idaho, Montana, Oregon, and Washington. One outcome of the workshop was a joint Declaration of Cooperation to advance critical next steps to prevent the spread of invasive mussels into the region.

In 2013 the Council began a once-every-five-years process of reviewing and amending its Columbia River Basin Fish and Wildlife Program, the largest regional effort of its kind in the nation. The program directs more than \$250 million of Bonneville Power Administration revenues annually to habitat improvements, hatchery operations, hydropower system fish-passage improvements, research, and related activities. Key issues identified by the Council for

consideration in the amendment process include the future use of fish hatcheries; biological objectives for the program; habitat in the Columbia River estuary; the impact of the ocean environment; and monitoring, evaluation, research, and data management.

The future of the Columbia River Treaty looms as an important, complex and potentially controversial issue for the United States and Canada, and as 2013 closes the American and Canadian government agencies that will advise the federal governments on the future of the treaty are gathering public input on their draft recommendations. The first opportunity for either country to announce its intention to revise or abandon the treaty is in September 2014. The Council will follow this issue carefully as it develops.

Energy and environmental issues continue to evolve in the Pacific Northwest, where electricity is becoming cleaner and lower-carbon and energy efficiency is steadily becoming a more and more important source of power. Progress is being made on improving survival of many ESA-listed fish species, thanks in large part to the Council's fish and wildlife program and the collaboration it fosters among state and federal fish and wildlife agencies, tribes, and the Bonneville Power Administration. Independent scientific review of each project that implements the program ensures that projects are based on sound science and are cost-effective. The Council is working to ensure that the Northwest power supply remains adequate, efficient, economical and reliable while protecting and enhancing fish and wildlife in the Columbia River Basin.

Council Energy Overview

Preparing for the Seventh Power Plan

In Fiscal Year 2013, the Council completed a mid-term assessment of the Sixth Northwest Power Plan (2010) as a means of checking progress in implementing its policies and recommendations and to identify issues for the Seventh Northwest Power Plan, which the Council plans to adopt in 2015. The Northwest Power Act requires to the Council to review the power plan at least every five years, following review of the Columbia River Basin Fish and Wildlife Program. The program review is under way and is expected to conclude in the summer of 2014.

The mid-term assessment, completed in April, was developed with extensive public outreach and consultation and received positive feedback and support from a broad range of stakeholders. From the assessment, the Council identified the following topics for early focus:

- Regional needs for energy, peaking capacity, and system flexibility; strategies to help meet those needs
- Renewable resources development and integration; impacts on the regional hydropower system
- Customer demand response, including its potential as a source of peaking capacity and system flexibility
- Incorporating transmission constraints in regional power system planning

Other topics identified in the mid-term assessment include:

- Making the power plan useful for all regional utilities, including utilities that face differing circumstances
- Avoided cost benchmarks to evaluate new resources
- Energy efficiency -- how can different types of measures help meet needs for energy, peaking capacity, and system flexibility
- Changing paradigm for energy efficiency; its impact on assessing cost-effectiveness
- Distributed generation
- Greenhouse gas -- regional emissions outlook, regulatory and social costs
- Growth in the use of natural gas for electricity generation; intersection of planning for the regional power and gas systems
- Inter-regional power system and market linkages, including the Northwest and California

Greenhouse gasses and the power system

In June 2013, the Council brought electric utilities, state and federal agencies, and energy groups together to discuss the challenges surrounding emissions from power plants that burn fossil fuels.

Panels addressed how state agencies and utilities are dealing with greenhouse gas emissions. While there are different perspectives and approaches depending on their respective responsibilities, common themes emerged: Retirement of aging coal plants and the growing role of natural gas-fired generation, as well as an emphasis on energy efficiency and development of renewable resources to meet renewable portfolio standards. A speaker from the Environmental

Protection Agency described how the agency uses different models to calculate the social costs of emissions. The Council could use the EPA's information in developing the Seventh Power Plan to calculate the social benefits of greenhouse gas reductions on an incremental basis.

Possible effects of climate change on the hydropower system also were discussed. Reduced snowpack and earlier runoff, combined with warmer summers, have been forecast as potential consequences.

The Council conducted more symposiums on key topics that will help in developing the next power plan. These included the Pacific Northwest power market, the California power market, and British Columbia power issues.

Electricity oversupply

The rapid increase in wind power also exacerbates a problem of generating too much electricity -- oversupply -- during the spring and early summer when snowmelt engorges the rivers and demand for power is low. During oversupply conditions, the Bonneville Power Administration displaces generation other than hydropower using its Oversupply Management Protocol (OMP). The Council continues to work with Bonneville and other regional stakeholders to reduce the occurrence of oversupply through the Oversupply Technical Oversight Committee of the Wind Integration Forum.

In 2012, around 49,600 average megawatts of generation, mainly wind power, was displaced by hydropower -- a little more than half as much as was displaced in 2011. While oversupply displacement was lower in 2012, the problem actually was worse than in 2011 because 2012 was an abundant water year in the Columbia River Basin, causing more hours of negative prices for power than in 2011.

Bonneville expected to displace 283 megawatt-months of power in 2013 at an estimated cost of \$10 million. Bonneville considers its OMP a temporary fix. By increasing the power-transfer capability out of the region, working with Canada to find more water storage, and pursuing opportunities like the Smart Grid, oversupply won't happen as often, Bonneville believes.

Proving new energy-efficiency technologies

The hunt for new energy-efficiency technologies must continue if the region is to sustain its nation-leading progress toward an ever more inexpensive, efficient, and low-carbon power supply, the Northwest Energy Efficiency Task Force (NEET) reported in 2013. The Council and the Bonneville Power Administration convened NEET in 2008 with members representing Northwest utilities, businesses, governments, and citizen groups as a collaborative approach to identify ways to accelerate energy-efficiency programs and projects. NEET meets annually.

Through 2012, the Northwest had acquired about 5,100 average megawatts of energy efficiency over the past three decades -- expressed as power, enough for five Seattles today. While there is pride in that accomplishment, there also is concern about maintaining momentum and the infrastructure of energy-efficiency programs, NEET reported. Maintaining the momentum of energy efficiency programs will help ensure efficient, low-cost and reliable electricity with energy efficiency measures that fit best in the regional power system.

The effort to test and prove new technologies is being helped by a program initiated by the Bonneville Power Administration and the Portland-based Northwest Energy Efficiency Alliance to research more than 50 emerging technologies in the last year including, for example, higher-performance heat-pump water heaters; a new generation of building lighting controls;

more efficient evaporative air coolers; low-energy irrigation equipment; and a new generation of ductless heat pumps that produce 90-degree air at outside temperatures of minus 15 degrees. Just those 50 alone could yield savings of about 3,000 average megawatts over 20 years once they enter the marketplace, according to the report.

Television energy efficiency

In the Sixth Northwest Power Plan (2010), the Council identified improving energy efficiency of televisions as a major source of reduced demand for electricity over the 20-year horizon of the plan. As if to prove the point, the energy efficiency of televisions has doubled in just the last three years, even after adjusting for an increase in average screen size.

Moreover, the market share of Energy Star or better televisions increased from less than 20 percent in 2009 to nearly 100 percent in 2012, despite the fact that the Energy Star standards became increasingly stringent over that time, according to a report by the Council's power planning staff.

Much of this success is due to the work of the Northwest Energy Efficiency Alliance (NEEA), which implemented a market-transformation effort for televisions at about the same time the Council adopted the Sixth Plan. NEEA worked with major electronics retailers like Best Buy, Costco, and Sam's Club to increase the share of high-efficiency televisions on display and ordered for inventory. Also, in 2009, California adopted efficiency standards for televisions in two phases -- first in 2011 and later in 2013. The combined effect of NEEA's work, the new California standards, and improved national Energy Star standards is responsible for the big improvements in television efficiency, according to the Council's report.

In the Sixth Plan, the Council assumed efficiency improvements in televisions would account for 390 average megawatts, or 6.6 percent, of the efficiency goal of 5,900 average megawatts over the 20 years of the plan. Since 2010, television savings have accounted for approximately 36 average megawatts, or about 3 percent, of the efficiency goal for the first five years of the plan, 1,200 average megawatts.

Guidance for energy-efficiency evaluations

In 2013, the Regional Technical Forum (RTF), established in 1999 to develop standards to verify and evaluate energy efficiency savings, completed three years of work to develop its *Roadmap for the Assessment of Energy Efficiency Measures*. The *Roadmap* includes detailed guidelines for estimating energy-efficiency measure savings, costs, benefits, and lifetimes. The *Roadmap* is a living document that will evolve over time, providing an ongoing, fully vetted and transparent description of how the RTF classifies, calculates, and updates savings.

In 2013 the RTF also tightened its organizational structure by adding a full-time manager and four full-time contract staff members. The RTF is overseen by policy advisory committee whose members, like the steering committee, are appointed by the Council.

The RTF [charter and bylaws](#) and [Policy Advisory Committee charter](#) are posted on the Council's website, as is a list of the [voting members](#). Members are appointed by the Council and include individuals experienced in conservation program planning, implementation and evaluation.

Retiring coal-fired power plants

The retirement of two coal-fired power plants in Washington and Oregon in 2020 and 2025 respectively will reduce the region's power supply by an amount equal to about twice the

power demand of Seattle, but this won't cause problems as long as current plans to add replacement generation and to continue improving energy efficiency are realized, according to an analysis by the Council.

Portland General Electric plans to shut down its Boardman, Oregon, plant in 2020 and TransAlta, a Canadian company that owns the two coal-fired units at Centralia, Washington, plans to shutter one of them in 2020 and the other in 2025.

The Council's analysis of the effect of closing the coal-fired plants follows a similar analysis that the Council and the Bonneville Power Administration conducted last fall with the Northwest Resource Adequacy Forum, a committee of electricity experts including utility planners, state utility commission staff and other interested parties. That analysis, which assessed regional power supply adequacy five years into the future, showed that the power system would remain adequate through 2017 as long as the electricity supply increases by an amount equal to the output of a medium-size, natural gas-fired power plant, or by an equivalent amount of improved energy efficiency. While the output of the coal-fired plants is much larger, about 1,330 average megawatts, the Council's analysis identified more than 3,000 average megawatts of resources planned for construction or implementation by 2020 -- more than enough to cover the output of the coal plants.

Power supply should remain adequate

Wind power and developments outside the Northwest are changing the character of the Northwest electricity system, but the power supply will remain adequate through 2017 with the addition of new generation and/or additional energy-efficiency equal to the output of a single, medium-size power plant, according to an analysis by the Northwest Resource Adequacy Forum.

The Forum is a committee of electricity experts including utility planners, state utility commission staff and other interested parties. It provides a way to monitor the power supply so potential issues can be identified early and addressed before they become serious problems. The Council and the Bonneville Power Administration created the Forum following the 2000-01 West Coast energy crisis, when a diminished power supply brought the region to the brink of blackouts during the winter and caused electricity prices to soar. The Forum developed a method to measure future power supply adequacy, which the Council has used annually since 2005 to look five years ahead.

Adequacy is measured by the risk that power resources will not meet electricity loads. The Council has set a maximum limit on that probability of 5 percent. The Forum's analysis shows that for 2017, the probability would be 6.6 percent if the region relies only on existing generating plants and new energy-efficiency savings outlined in the Council's Sixth Northwest Power Plan(2010). However, the analysis suggests that a number of actions by utilities -- new generation, new energy efficiency or a combination -- would bring adequacy to the minimum acceptable level by 2017. What's important is that the result is 350 megawatts of new capacity at times of peak load, according to the Forum. Demand response, in which customers agree to reduce their consumption during periods of high use, also may be an option but was not included in the analysis.

According to the analysis, one reason the Northwest will need additional resources is the uncertainty arising from changes in California's energy market. As that state attempts to meet more of its growing summer loads with solar energy and demand response, and as new environmental regulations lead to the retirement of some generating plants, there may be less power available for export to the Northwest in the future, particularly in winter.

Council Fish and Wildlife Overview

Fish and Wildlife Program amendment

The Council's current Columbia River Basin Fish and Wildlife Program dates to 2009. The Northwest Power Act requires the Council to review the Northwest Power Plan, of which the Fish and Wildlife Program is a component, at least every five years, beginning with the program.

The program, which is funded by the federal Bonneville Power Administration under authority of the Northwest Power Act of 1980, is designed to protect, mitigate, and enhance fish and wildlife, and related spawning grounds and habitat, of the basin that have been affected by hydropower dams. Bonneville's direct spending on projects that implement the program totaled \$248.9 million in Fiscal Year 2012; the 2013 amount had not been calculated at the time this draft report was issued for public comment.

Under the Power Act, the Council largely bases the program on recommendations of state and federal fish and wildlife agencies and Indian tribes in the Northwest, but anyone can submit recommendations. The Council anticipates issuing a draft program for public comment in February 2014 and adopting the new program in July.

In Fiscal Year 2013, the Council issued a call for recommendations to amend the program, following on work the Council did in 2012 to identify issues and gather information in preparation for the amendment rulemaking.

Key issues the Council will address include:

- Supplementation, or the use of hatchery-bred fish to rebuild naturally spawning populations
- Predation on juvenile salmon and steelhead by fish-eating birds including gulls, Caspian terns, and double-crested cormorants, and predation by marine mammals, primarily sea lions, on adult salmon, steelhead, and juvenile sturgeon.
- Habitat preservation and restoration activities, including the mainstem Columbia and Snake rivers and the Columbia River estuary
- The creation and adoption of biological objectives for the program
- Continuing to develop a research plan and monitoring and evaluation strategy for projects implemented through the program
- Updating the digital mapping of areas protected by the program from new hydroelectric dams

Independent review of the fish and wildlife program

In a review issued in Fiscal Year 2013, the Independent Scientific Advisory Board (ISAB), an 11-member panel that advises both the Council and NOAA Fisheries, said the Council's fish and wildlife program is "a useful framework for providing context for the complex issues facing the altered Columbia River Basin ecosystem" but needs a revised focus on sustainability of fish and wildlife populations. The review will be useful to the Council in the current program-amendment rulemaking.

Key findings of the ISAB include:

- Three fundamental issues warrant reconsideration in amending the program: 1) A review of the program's scientific foundation might lead to reassessment of long-term objectives and the strategies to achieve those objectives; 2) There is a need to move away from qualitative goals toward quantitative objectives with specified timelines; and 3) There is a

need for increased socioeconomic engagement as part of a landscape approach. The current program is intended to be habitat-based, but in reality relies heavily on artificial production according to the review. In contrast, the amended program should be ecosystem-based and should fully acknowledge social aspects of the program that can contribute to its success.

- Continuing to implement the program on its existing trajectory is highly uncertain to achieve the Council's biological objectives. The ISAB suggested a revised focus on sustainability with strategies to protect diversity and resilience of fish and wildlife populations, and to build adaptability to changing environmental conditions that may result from climate change.
- Artificial propagation of fish is a risky foundation for restoration. Adaptive management, long considered an integral component of the program, has not been conducted in the manner originally envisioned. A landscape perspective, drawing from broader community involvement, could help build consensus on program objectives and strategies, or if this is not possible, it could at least help the Council create strategies that keep options open, consistent with a diversity of visions for the future.

Bonneville Power Administration Fish and Wildlife Costs

The Council reports annually to the four Northwest governors on costs of the Bonneville Power Administration to implement the Council's fish and wildlife program. At the time this report was issued for public comment, in September 2013, Fiscal Year 2013 had not ended and so costs for that year could not be calculated. But as is the Council's practice in these annual reports to Congress, we include a synopsis of Bonneville's costs in the previous fiscal year -- the same information we report to the Governors. The Council issued its [*Report to the Governors on Bonneville's Fiscal Year 2012 Fish and Wildlife Costs*](#) in May 2013. From that report, here is a synopsis of Bonneville's costs in Fiscal Year 2012, which totaled approximately \$644.1 million:

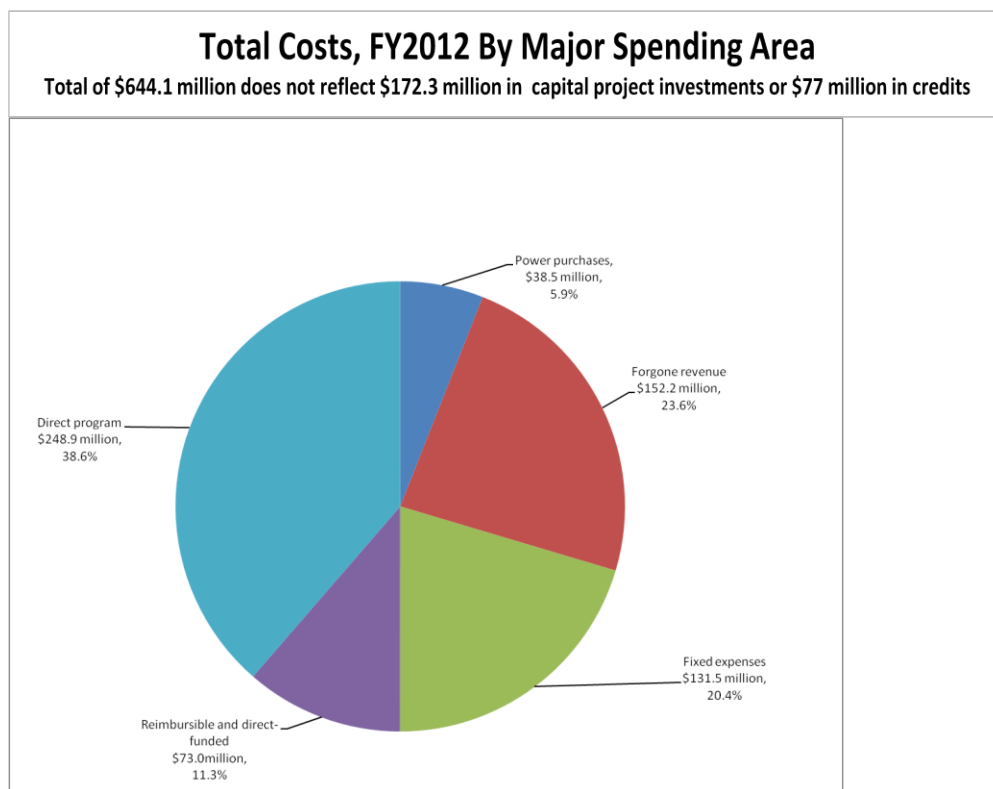
- \$248.9 million in direct (expense) costs
- \$73.0 million in direct costs and reimbursements to the federal Treasury for expenditures by the Corps of Engineers, Bureau of Reclamation, and U.S. Fish and Wildlife Service for investments in fish passage and fish production, including direct funding of operations and maintenance expenses of federal fish hatcheries; this category also includes one-half of the Council's annual approximately \$10 million budget (\$5 million in 2012; the other \$5 million is assigned to the Power Business Line budget)
- \$131.5 million in fixed costs (interest, amortization, and depreciation) of capital investments for facilities such as hatcheries, fish-passage facilities at dams, and some land purchases for fish and wildlife habitat
- \$152.2 million in forgone hydropower sales revenue that results from dam operations that benefit fish but reduce hydropower generation
- \$38.5 million in power purchases during periods when dam operations to protect migrating fish reduce hydropower generation, such as by spilling water over dams in the spring or storing it behind dams in winter months in anticipation of required spring spills

The \$644.1 million total does not include annual capital investments in 2012 totaling \$57.5 million for program-related projects, and \$114.5 million for associated federal projects, including capital investments at dams operated by the Corps of Engineers and Bureau of Reclamation. These investments are funded by congressional appropriations and repaid by Bonneville. Including them in the same total as fixed costs would double-count some of the

capital investment. The total also does not reflect a credit of \$77.0 million from the federal Treasury related to fish and wildlife costs in 2012. Adding the credit reduces the total fish and wildlife costs to \$567.1 million in fiscal year 2012.

The total of all fish and wildlife costs incurred by Bonneville in Fiscal Year 2012 (\$644.1 million) includes forgone revenue and power purchases. How large is this relative to Bonneville's other costs? In the same year, Bonneville's entire Power Business Line costs totaled approximately \$2,592,150,000. Adding the forgone revenue (\$152.2 million) to these costs brings the total to \$2,744,350,000. Bonneville's fish and wildlife costs comprised 23.4 percent of that total.

Fish and wildlife costs account for a major portion of the rate Bonneville charges its wholesale power customers. Approximately one-third of Bonneville's wholesale rate of \$30 per megawatt hour is estimated to be associated with its fish and wildlife program.



Effectiveness of actions taken under the fish and wildlife program

Section 4.(h)(12)(A) of the Northwest Power Act directs the Council to include in this annual report to Congress a description of the effectiveness of the fish and wildlife program.

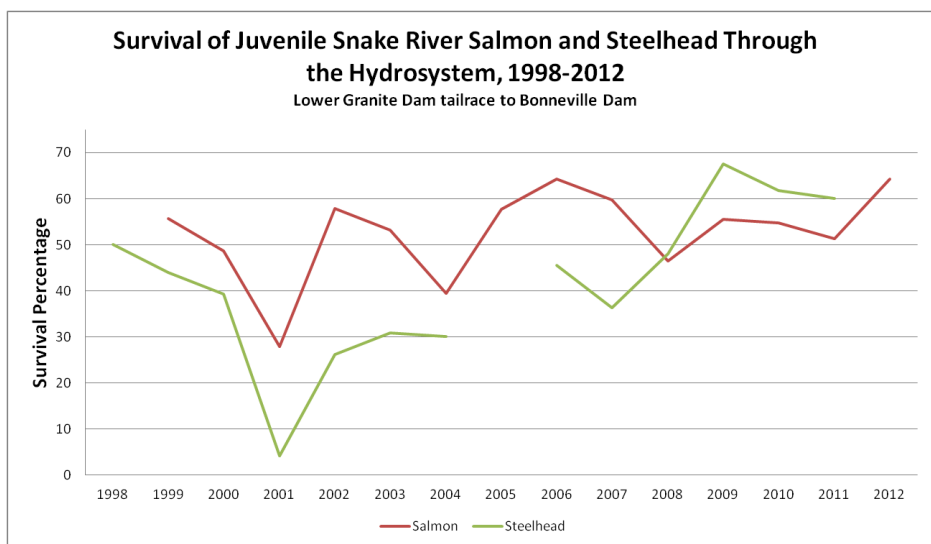
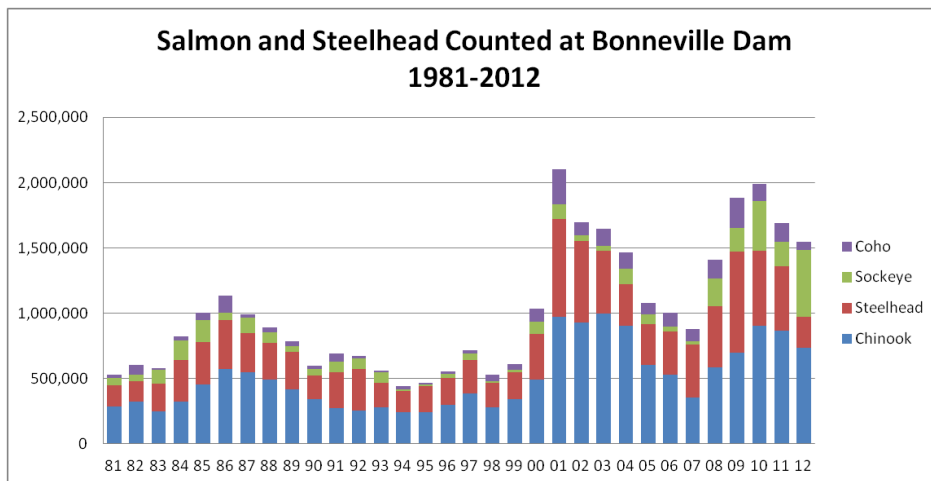
For the last several years, as improvements in storing, accessing, and reporting data gathered through monitoring and evaluation of fish and wildlife projects has improved, the Council began tracking progress of fish and wildlife efforts in the Columbia River Basin using three high-level indicators. Posed as questions, they are:

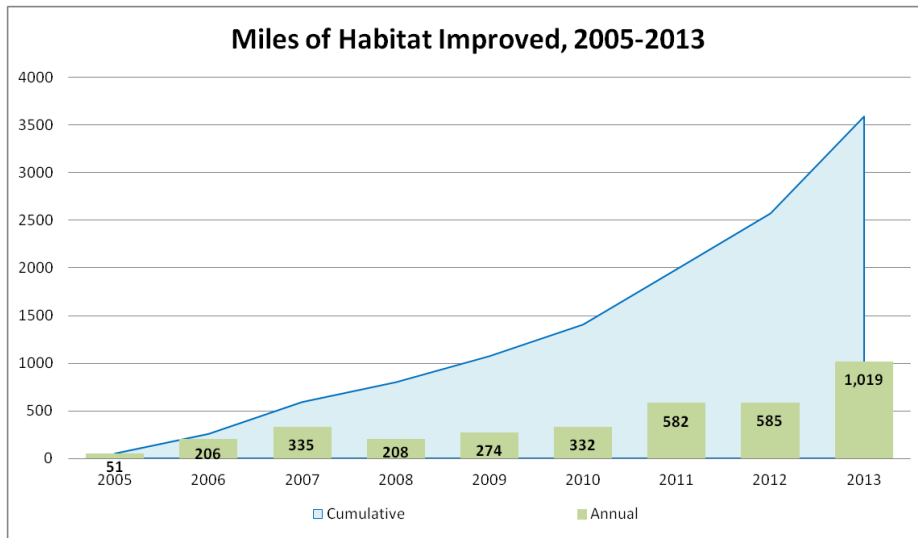
1. Are Columbia River Basin fish species abundant, diverse, productive, spatially distributed, and sustainable?

2. Are operations of the mainstem Columbia and Snake River hydropower dams meeting the fish-passage survival objectives of the Program?
3. What is being accomplished by projects that implement the Council's Fish and Wildlife Program?

Over time, the Council expects to augment and refine the initial indicators to provide a more comprehensive picture of fish and wildlife in the basin. For example, at this point most of the indicators for Council actions are related to habitat work. As more information becomes available, this indicator should be expanded to better reflect the breadth of actions that implement the program. The Council also anticipates providing better links to the underlying data, especially those related to fish populations. While this information stops short of providing evidence of the effectiveness of the Council's program or individual projects, the Council is separately pursuing additional approaches to shed light on this issue, as well.

Here are three figures that provide an indication of the status of salmon and steelhead runs and progress on habitat actions through the end of Fiscal Year 2012 (with one exception, data for 2013 still is being calculated).





Program Evaluation and Reporting Committee

In its July 2012 decision on data-management projects to recommend to Bonneville for funding, the Council committed to convene a regional discussion about management of fish and wildlife data. The Council then created the Program Evaluation and Reporting Committee (PERC) for this purpose.

The PERC conducted two meetings with fish and wildlife agencies, tribes, and others involved in gathering, storing, analyzing, and disseminating fish and wildlife data and then made recommendations to the Council. These recommendations, explained in a staff report posted on the Council’s website (<http://www.nwcouncil.org/media/42762/1.pdf>), regarding the Northwest Habitat Institute, StreamNet, the Pacific Northwest Aquatic Monitoring Partnership, the Status of the Resource Report, the Fish Screening Oversight Committee, and the future use of habitat evaluation procedures (HEP) by fish and wildlife agencies and tribes in the region.

The cost of tagging fish

The Fish Tagging Forum (FTF) was chartered in July 2011 to evaluate the cost-effectiveness of fish-tagging technologies and programs in the Columbia River Basin, which utilize seven primary tagging or marking technologies and cost \$50-\$60 million annually (\$61.4 million in 2012). Simultaneously, the Council’s Independent Economic Advisory Board (IEAB) worked with the Forum to evaluate the cost-effectiveness of fish tagging programs in the basin.

The Forum conducted 15 meetings between November 2011 and April 2013 and reported its recommendations to the Council’s Fish and Wildlife Committee in May 2013. In August, the Council approved the Forum’s recommendations, which will help inform the Council as it works to amend the fish and wildlife program.

The Forum recommended, among other things, that because there are potential risks to naturally spawned juvenile fish during the process of capture, sedation, handling, and tag insertion, NOAA Fisheries needs to provide guidance in coordination with state, tribal, and other researchers and experts regarding best practices for tagging ESA-listed salmon and steelhead. The Forum’s report and supporting documents are posted here: <http://www.nwcouncil.org/fw/tag/home/>.

In June, meanwhile, the IEAB reported the results of its cost-effectiveness evaluation, which utilized a mathematical programming model. The [IEAB report](#) is posted on the Council’s

website at this location: <http://www.nwcouncil.org/media/6865189/7.pdf>. The IEAB offered two broad conclusions:

- Because fish tagging in the Columbia River Basin is complex scientifically, technologically, administratively, and jurisdictionally, in order to achieve cost-effectiveness, and also to maximize program effectiveness, a more concerted and coordinated management program aimed squarely at achieving cost-effectiveness and program effectiveness is needed.
- It is nearly impossible to answer the “fair share” question -- who should pay for what share of fish tagging? This is because of 1) the complex spillovers and mutual benefits in tagging and detection actions; 2) the strong interdependencies for generating and using data indicators and addressing management questions; and 3) the complex legal, jurisdictional, and institutional dimensions of responsibility and accountability that characterize relationships between the Bonneville Power Administration, the Council, tribes, states, federal laws, and international agreements.

In August, the Council voted 6-2 to [approve](#) the Fish Tagging Forum’s 17 consensus recommendations and an alternative recommendation that maintains Bonneville’s current level of funding for coded-wire tags – but only until a more efficient and cost-effective system is developed, informed by recommendations of the IEAB. The Council’s approval also included nine principles for Bonneville to consider in deciding whether and how to fund fish-tagging efforts in the future.

Preventing an invasion of zebra and quagga mussels in the Columbia River Basin

The Council has been and remains concerned about the spread of aquatic nuisance species such as zebra and quagga mussels into the waters of the Columbia River Basin and the economic and ecological damage these invasive mussels would cause. Toward that end, the Council has been very active in Fiscal Year 2013 in a number of areas related to aquatic nuisance species prevention and protection.

- The Council supports Congressman Joe Heck’s legislation, H.R. 1823, which would add invasive quagga mussels to the list of injurious species under the Lacey Act (see attached letter to Congressman Doc Hastings).
- Other legislation of interest is section 5007 of the Senate Water Resources Development Act (S. 601), which includes a provision authorizing \$30 million for the establishment of watercraft inspection stations in the four Northwest states for the purpose of preventing the spread of aquatic invasive species, including quagga and zebra mussels. In June the Council sent a letter to Rep. Shuster requesting similar language to assist with Northwest states’ watercraft inspection station programs in the House WRDA bill.
- The Council recognizes there is a compelling need to define and implement a region-wide prevention and response strategy. Toward that end, on May 15, 2013, the Council partnered with The Pacific Northwest Economic Region (PNWER), Portland State University (PSU) and the Pacific States Marine Fisheries Commission (PSMFC) to jointly sponsor a regional workshop in Vancouver, WA entitled “Preventing an Invasion: Building a Regional Defense Against Quagga and Zebra Mussels.” As part of the workshop, Council staff also prepared a summary paper of the four Northwest states’ 2012 watercraft inspection programs and invasive mussel prevention.

- Council staff also assisted with regional coordination and information sharing among state, federal, provincial, and tribal entities by actively participating on the 100th Meridian Initiative-Columbia Basin Team efforts to prevent the spread of non-native species into the Pacific Northwest. http://www.100thmeridian.org/Columbia_RBT.asp
- The Council requested its Independent Economic Advisory Board (IEAB) to update its 2010 economic risk assessment associated with the establishment of quagga and zebra mussels in the Columbia Basin <http://www.nwcouncil.org/fw/ieab/ieab2010-1/>. The update was expected in the fall of 2013.

New sturgeon and sockeye salmon hatcheries in Idaho

The Council approved construction of a new sturgeon hatchery by the Kootenai Tribe of Idaho and a new sockeye salmon hatchery by the Idaho Department of Fish and Game. Kootenai River white sturgeon and Snake River sockeye are listed as endangered species.

The Council also approved upgrades to the existing sturgeon hatchery on the Kootenai River near Bonners Ferry. The new Twin Rivers Hatchery is under construction at the confluence of the Kootenai and Moyie rivers about 10 miles upstream from the existing facility.

The white sturgeon recovery program has been funded through the Council's fish and wildlife program since 1988. Both white sturgeon and burbot, or freshwater cod, once were abundant in the river. Over time, both species declined due to a combination of overharvest, habitat alteration and loss, and ecosystem degradation.

With funding recommended by the Council and provided by Bonneville, the tribe will make a number of improvements to the existing sturgeon hatchery to address the need for additional rearing capacity. The new hatchery is intended to further expand the capabilities of the sturgeon program, maximize program flexibility, and support implementation of a new burbot aquaculture program. Construction costs of the new hatchery, plus upgrades to the existing facility, will total about \$16.6 million.

The new sockeye facility is located in southeastern Idaho near the city of Springfield. The \$13.5 million facility will be funded by Bonneville as part of its obligation to mitigate the impact of hydropower dams on salmon. Construction began in the summer of 2012 and was completed in the summer of 2013. The new facility will be operated by the Idaho Department of Fish and Game (IDFG) and will be capable of producing up to 1 million juvenile sockeye annually for release in the Sawtooth Basin of central Idaho, the headwaters of the Salmon River.

Geographic review of fish and wildlife projects

The geographic review is part of the Council's ongoing review of fish and wildlife projects funded by Bonneville through the Council's fish and wildlife program. The 87 projects in the geographic review are habitat-based and are located in areas of the Columbia River Basin that support anadromous fish -- salmon, steelhead, sturgeon, and lamprey. Most of the projects have an association with the Federal Columbia River Power System Biological Opinion, and about half are included in Bonneville's 2008 Columbia River Fish Accords. Collectively the projects in the geographic review account for about 30 percent of Bonneville's annual fish and wildlife expense budget. The Council expects to complete the geographic review in November 2013 and recommend projects to Bonneville for funding.

Ocean science workshop

At a February 2013 workshop sponsored by the Council, experts said the Pacific Ocean environment is critical to survival of salmon and steelhead from the Columbia River Basin and must be understood better. But they added that task is made enormously difficult by the intense variability of the ocean environment, where water temperature, salinity, acidification, and production of food organisms change continuously. In fact, there is general agreement among scientists who study the ocean that these factors are shifting faster and varying wider than they have in centuries.

For some species, ocean survival of fish is low. For example, about 1 percent of the juvenile salmon that enter the ocean from the Columbia River will return as adults to spawn. That makes it all the more important to better understand the ocean environment and impacts on fish survival.

The Council's fish and wildlife program includes several strategies related to the ocean, the Columbia River estuary, and the freshwater plume, including identifying the effects on fish in order to adjust fish-production and harvest decisions in the freshwater environment. Two priority needs were identified at the workshop: 1) ongoing dialogue between ocean scientists and fish managers, and 2) a list of priority uncertainties to guide future ocean research.

The value and future of fish hatcheries

In 2013 the Council convened panels of experts representing tribes, states, and federal agencies to discuss various aspects of artificial production of fish, particularly supplementation, which is the use of hatchery-bred fish to rebuild naturally spawning populations of salmon and steelhead. Supplementation is controversial because the impacts of hatchery fish on fish that spawn in the wild are not clear and appear to vary among fish populations. The Council has followed the supplementation issue closely for many years, working with scientists, fish and wildlife agencies, and tribes to explore how wild and hatchery fish could be integrated with minimal adverse effects.

A report on what the Council learned from these sessions is posted on the Council's website at this location: <http://www.nwcouncil.org/media/6662856/f2.pdf>. Among the key findings are these:

- It appears that for the foreseeable future, hatcheries will play a vital role in mitigating for habitat loss, including operation of the hydropower system, and the implementation of treaty rights.
- Hatcheries provide mitigation for the loss of habitat quantity and quality caused by the construction and operation of dams and other development activities.
- It was clear from the differences in policies and programs that fish-management entities don't agree that supplementation will maintain the long-term fitness of target fish populations and keep ecological and genetic impacts on non-target populations within specified biological limits.
- Scientific evidence documents the negative impacts of traditional hatchery programs on natural populations of fish. Supplementation is not a proven or disproven management endeavor and holds risks, some of which are high and may be long term.

2013 salmon and steelhead returns

State fish and wildlife agencies predicted the total salmon and steelhead returns to the Columbia River Basin would be about average in 2013 compared to returns over the last 10 years.

The upriver (above Bonneville Dam) spring Chinook run proved disappointing, however, totaling just 88,345 fish compared to a preseason estimate of 141,000. The Willamette River spring Chinook run had been predicted at 60,000 fish -- slightly better than the 65,000-fish run in 2012. The upper Columbia summer Chinook run was expected to be about 73,500 fish, which would be an improvement over last year's 58,000 fish.

Another good sockeye year was predicted -- 180,500 expected at the mouth of the river, most of them destined for the Okanagan River. That's far less than the record-breaking run of 2012, however, when nearly 516,000 returned, beating the prediction of 462,000. About 1,250 Snake River sockeye were forecast for 2013, better than the 2012 return of 470 counted at Lower Granite Dam.

The fall Chinook run was expected to be much better than in 2012. The 2013 preseason forecast was for a return of 678,600 fish to the mouth of the Columbia, which would be 129 percent of the 2012 actual return (525,200) and 122 percent of the 2003-2012 average return (557,600).

Council Public Affairs Overview

The Northwest Power Act directs the Council to provide for the participation and consultation of the Pacific Northwest states, tribes, local governments, consumers, customers, users of the Columbia River System, and the public at large in developing regional plans and programs related to energy efficiency, renewable energy resources, other energy resources, and protecting, mitigating, and enhancing fish and wildlife resources. The Council's Public Affairs Division has the primary responsibility to implement this portion of the Act.

The Division uses a variety of communication tools to perform its mission, including printed and electronic publications, the Council's website, social media platforms, video, public meetings, and press releases.

The Council's website, www.nwcouncil.org, functions as the hub of its outreach efforts and public information strategy. The website, which was revised and given a new look in 2013, contains myriad documents, publications, data bases, and other forms of information. Included on the site are the current versions of the Northwest Power Plan (www.nwcouncil.org/energy/powerplan/6/default.htm) and the Columbia River Basin Fish and Wildlife Program (www.nwcouncil.org/library/2009/2009-09/Default.asp), as well as news stories, press releases, Council white papers, official public comment on Council products, PowerPoint presentations, videos, Council newsletters, and links to the Council's social media platforms.

Social media are used increasingly by the Council to communicate with the public. These include Facebook (www.facebook.com/nwcouncil), Twitter (@nwcouncil), and the Council's blog, which is posted to our Facebook page and the Council website.

The Public Affairs Division continues to write and produce four editions of the *Council Quarterly* every year (www.nwcouncil.org/library/cq/default.asp). The Division also produces and distributes a monthly electronic email newsletter, the *Council Spotlight* (www.nwcouncil.org/news/enews/current.asp), which reports on the highlights of each monthly Council meeting.

The Public Affairs Division also has the responsibility of advancing the Council's mission and accomplishments with members of Congress and their staffs. In August 2013 the Council conducted its annual congressional staff trip, this time to northwestern Montana with a focus on resident fish, habitat, and wildlife protection.

Canadian relations

The Columbia River and several of its major tributaries begin in Canada and flow across the international border. Consistent with direction in the Northwest Power Act to treat the entire Columbia River as one system for planning purposes, the Council maintains regular contact with planning entities in British Columbia. This contact primarily is through the Public Affairs and Legal divisions.

The Columbia Basin Trust (CBT), a Crown corporation of the province, is the Council's closest counterpart agency in the Canadian portion of the Columbia River Basin. Since 1996, Council members and staff have met at least annually with the Trust. In 2000, the two agencies formalized their relationship and designated official liaisons. The Trust and Council exchange visits once or twice a year to discuss Columbia River issues of mutual interest.

In 2013, the Council and CBT continued to work on several projects, including co-funding of a project to study burbot (freshwater ling cod) in Lake Koocanusa and co-sponsoring a Columbia River transboundary ecosystem management conference to be convened in the fall of 2014.

Council Administrative Overview

Council organization

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), 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 the 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 full-time-equivalent employees.

The central staff is organized into five divisions: Power; 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.

Council funding and budget

The Northwest Power Act of 1980 establishes a funding mechanism to enable the Council to carry out its functions and responsibilities. The Bonneville Power Administration provides this funding through ratepayer revenues.

The Act establishes a formula to determine a funding limitation threshold and authorizes the Council to determine its organization and prescribe practices and procedures to carry out its functions and responsibilities under the Act. The Act further provides that the funding limitation applicable to annual Council budgets will be calculated on a basis of 0.02 mill multiplied by the kilowatt hours of firm power forecast by Bonneville to be sold during the year to be funded. The limitation may be increased to .10 mill, provided the Council makes an annual showing that such limitation will not permit the Council to carry out its functions and responsibilities under the Act. The Council has made such a showing in recent years and explains the need for this adjustment in the [current budget document](#), which is posted on our website.

The Council is aware of the current economic challenges facing the four-state region and the need to maintain healthy financial conditions for Bonneville. In an effort to be responsive, the Council in Fiscal Year 2014 and Fiscal Year 2015 will continue to adhere to the budget constraints initiated in 1998.

To accomplish this, the Council will:

1. Continue to identify efficiencies in operations and administration in order to limit inflationary increases to below 3 percent during fiscal years 2009-2015.
2. Reallocate staffing where possible to absorb new workload without increasing FTEs.
3. Re-prioritize resources as necessary to respond to new requests for technical analysis. Reschedule or postpone work anticipated during the budget-development process in order to respond to the most essential requests for studies and analyses.

The Council's Fiscal Year 2014 revised budget of \$10,565,000 includes a \$206,000 increase from the previously submitted Fiscal Year 2014 budget request of \$10,359,000. The Council's budget for Fiscal Year 2015 and Revised Fiscal Year 2014 is based on current-year expenditure levels plus adjustments for shifting workloads, certain program improvements, and cost-of-living adjustment factors as provided by Bonneville and the Oregon Economic and Revenue Forecast. A number of cost-containment measures for personal services, travel, contracts, and services and supplies have been incorporated in the budget.

Selected News Articles That Mention the Council

Will be added for final version of report in January 2014

Council Meetings, Fiscal Year 2013

October 3, 2012, Fish and Wildlife Committee meeting, Portland, OR

October 9-10, 2012, committees and Council meeting, Whitefish, MT

November 6-7, 2012, committees and Council meeting, Coeur d'Alene, ID

December 4-5, 2012, committees and Council meeting, Portland, OR

January 15-16, 2013, committees and Council meeting, Portland, OR

February 12-13, 2013, committees and Council meeting, Portland, OR

March 12-13, 2013, committees and Council meeting, Portland, OR

April 9-10, 2013, committees and Council meeting, Spokane, WA

May 7-8, 2013, committees and Council meeting, Boardman, OR

June 11-12, 2013, committees and Council meeting, Missoula, MT

June 18, 2013, Fish and Wildlife Committee meeting, Portland, OR

June 21, 2013, Council meeting conference call (to extend the date for receiving recommendations to amend the Columbia River basin Fish and Wildlife Program)

July 9-10, 2013, committees and Council meeting, Seattle, WA

August 6-7, 2013, committees and Council meeting, Bend, OR

September 10-11, 2013, committees and Council meeting, Coeur d'Alene, ID

Background of the Council

The Council, known until 2003 as the Northwest Power Planning Council, is an agency of the states of Idaho, Montana, Oregon, and Washington and was created as an interstate compact agency by the legislatures of the four states under the authority of the Pacific Northwest Electric Power Planning and Conservation Act of 1980. 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 three key responsibilities.

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 outside (in southern Oregon), and one non-federal nuclear power plant), 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 Columbia River Basin dams (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 Council is an interstate compact. The eight-member Council consists of two members from each state, appointed by their respective governors. The Council headquarters are in Portland.

More Information

For additional information about the Northwest Power and Conservation Council's activities, budget, meetings, comment deadlines, policies, or bylaws, call 1-800-452-5161 or visit our website, www.nwccouncil.org. Copies of Council publications are available at the website or by calling the Council. All Council publications are free.

Council Members, Fiscal Year 2013

<p>Central Office 851 S.W. Sixth Avenue, Suite 1100 Portland, OR 97204-1348 503-222-5161 800-452-5161 regional toll-free FAX: 503-820-2370</p>	<p>Steve Crow – Executive Director Judi Hertz – Executive Assistant</p>		
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<p>Montana Vice Chair Jennifer Anders Capitol Station 1301 Lockey Helena, MT 59620-0805 406-444-3952 FAX: 444-4339 Kerry Berg -- Policy Analyst Brian DeKiep -- Energy Analyst Pam Tyree -- Administrative Secretary</p>	<p>Pat Smith Capitol Station 1301 Lockey Helena, MT 59620-0805 406-444-3952 FAX: 444-4339</p>		
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<p>Washington</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Phil Rockefeller Northwest Power and Conservation Council 924 Capitol Way S, Suite 105 Olympia, WA 98501 360-943-1439 Raquel Crosier – Policy Analyst Howard Schwartz – Sr. Energy Policy Specialist 1101 Plum St SE; PO Box 42525 Olympia, WA 98504-2525 360-725-3114</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Tom Karier Northwest Power and Conservation Council 501 Riverpoint Blvd., Suite 425 Spokane, WA 99202 509-359-2470, FAX: 509-455-7251 Kathy McElreath, Administrative Assistant Stacy Horton – Biologist N. 501 Riverpoint Blvd., Suite 425 Spokane, WA, 99202 509-359-2275</p> </td> </tr> </table>		<p>Phil Rockefeller Northwest Power and Conservation Council 924 Capitol Way S, Suite 105 Olympia, WA 98501 360-943-1439 Raquel Crosier – Policy Analyst Howard Schwartz – Sr. Energy Policy Specialist 1101 Plum St SE; PO Box 42525 Olympia, WA 98504-2525 360-725-3114</p>	<p>Tom Karier Northwest Power and Conservation Council 501 Riverpoint Blvd., Suite 425 Spokane, WA 99202 509-359-2470, FAX: 509-455-7251 Kathy McElreath, Administrative Assistant Stacy Horton – Biologist N. 501 Riverpoint Blvd., Suite 425 Spokane, WA, 99202 509-359-2275</p>
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Comments of the Bonneville Power Administration

Will be added for final version of report in January 2014

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