

The State of the Columbia River Basin

Fiscal Year 2014 ANNUAL REPORT



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Conservation Council

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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.

Contents

Energy, fish, wildlife: The state of the Columbia River Basin, 2014	5
Council energy overview	10
The Seventh Northwest Power Plan	10
Energy efficiency	11
The second-largest power resource.....	11
Impact on electricity rates	12
Federal codes and standards.....	13
Energy efficiency funding	13
Regional Technical Forum	14
Power planning	15
EPA's carbon-reduction rule	15
Regional load growth	16
Analysis of power shortage risk.....	16
Natural gas price forecast	17
Future cost of nuclear power.....	17
State renewable resource portfolio standards.....	18
Council fish and wildlife overview	19
The Columbia River Basin Fish and Wildlife Program	19
2014 Program amendment	19
Bonneville Power Administration fish and wildlife costs	20
Geographic review projects.....	21
Artificial production	21
Snake River sockeye	21
Lake Roosevelt kokanee.....	22
Walla Walla spring Chinook	22
Research	23
Review of proposed 10-year spill test	23
Ocean science forum	23

Kootenai River ecological assessment.....	24
Effectiveness of actions taken under the fish and wildlife program.....	24
Council Public Affairs overview	27
Outreach, information, and communication.....	27
Canadian relations	28
Council administrative overview	29
Funding	29
Fiscal Year 2016 budget and Fiscal Year 2015 revisions	29
Background of the Council	30
Organization.....	30
History	31
More information	31
Council meetings, Fiscal Year 2014.....	32
Selected news articles.....	33
Council members and offices, Fiscal Year 2014	34
Comments of the Bonneville Power Administration.....	36

Energy, fish, wildlife: The state of the Columbia River Basin, 2014

The Columbia River is one of the great rivers of the world.

Fourth-largest by volume in North America, the Columbia drains 259,000 square miles across portions of seven states and the Province of British Columbia, an area the size of France, and pours 192 million acre-feet of water into the Pacific Ocean on average every year. That's 57 cubic miles, or nearly half the volume of Lake Erie.

This wealth of water descends through the river's mostly deep and rocky canyon to the ocean at more than two feet per mile. The volume, geology, and descent make the Columbia one of the world's premier hydropower rivers, and the combination of clear, cold water, annual snowmelt-driven freshet, and broad geographic diversity of its many tributaries make the Columbia also one of the world's great salmon and steelhead rivers.

In all, 14 multipurpose hydroelectric dams 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, low-cost, renewable electricity to consumers in the Pacific Northwest states and as far south as Arizona and southern California. Expressed as power consumption, that's enough for about 13 cities the size of Seattle.

The Columbia supports ocean-going fish including six species of Pacific salmon plus sturgeon and lamprey, many species of cold-water and warm-water resident fish, and abundant species of wildlife. Dams on the Columbia and its tributaries support commercial and recreational navigation as far as 450 miles inland from the ocean, irrigation of more than 3 million acres, and flood control for some 2 million people.

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.

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.

Not only does the Northwest lead the nation in hydropower, the Northwest also is a leader in reducing demand for electricity through improvements in energy efficiency. Congress declared energy efficiency the primary resource to meet new demand for power in the Northwest Power Act of 1980, the law that authorized the states of Idaho, Montana, Oregon, and Washington to create the Power and Conservation Council. In

Fiscal Year 2014, the region is on track to meet or beat the Council's energy efficiency goal in its Sixth Northwest Power Plan to improve efficiency by saving 1,200 average megawatts in the five years between 2010 and 2014.

Energy efficiency is the second-largest energy resource in the Northwest. It now comprises about 17 percent of the region's electricity resources. The Council expects that percentage to increase over time.

Every year since 2005, the region has exceeded energy-efficiency targets in the Council's Fifth (2005) and Sixth (2010) Power Plans. In 2012, the region improved its electric energy efficiency by 253 average megawatts, or an amount equal to the annual electricity use of 170,000 Northwest homes. Accomplishments in 2013 are being calculated and will be announced by the Council in late 2014 or early 2015.

Renewable resources, mainly wind power, comprise a small but growing part of the region's generating resources. Wind power developed rapidly in the Northwest over the last 10 years and now totals about 9,000 megawatts of installed capacity. Of this amount, 80 percent (7,100 megawatts) is located in the states of Washington, Oregon, Idaho, and Montana. The remainder is primarily in Wyoming with small amounts in Utah and Nevada.

Northwest wind power capacity accounts for about 14 percent of the total regional power-generating capacity and about 8 percent of average annual electricity generation. About 2,100 megawatts of new wind power capacity came online in 2012 alone, but just 105 megawatts were added in 2013. Two projects, one in Montana and the other in Oregon, are planned to come online in 2014, totaling 18.4 megawatts of capacity.

The recent rapid development of wind power pushed topics such as generating resource integration, power system flexibility, and marketing and scheduling practices to the forefront of conversations in the region about the future of the electricity supply. The Council is addressing these issues as it works on the Seventh Northwest Power Plan, which we expect to complete in late 2015.

International power issues attracted public attention in the Northwest in 2014, as the United States and Canada continued considering the future of the 1964 Columbia River Treaty. Since the Treaty requires a minimum of 10 years' notice before termination, September 2014 is the last opportunity for either the U.S. or Canada to announce its intention to terminate the Columbia River Treaty at the earliest possible date of September 2024. In 2013, the United States Entity under the Treaty, comprising the Bonneville Power Administration and the U.S. Army Corps of Engineers, and the Province of British Columbia, issued recommendations to their respective federal governments on the future of the treaty following extensive public processes in both

countries. The Council is following this issue carefully, as the treaty affects how the Columbia River hydropower system is operated.

Meanwhile, in 2014 the Council planned to complete the latest revision of the Columbia River Basin Fish and Wildlife Program, which the Council first developed in 1982 and revises every five years. The 2014 revision updates the existing program by focusing on reducing threats from invasive species, predators, toxic substances, and climate change; protecting 'strongholds (areas of good habitat and the fish associated with them); enhancing conservation of wild fish; investigating restoration of salmon and steelhead into blocked areas, notably above Chief Joseph and Grand Coulee dams; and repairing aging structures and equipment related to projects that implement the program

The program is the largest regional effort of its kind in the nation, guiding more than \$250 million of Bonneville Power Administration expenditures annually to habitat improvements, hatchery operations, hydropower system fish-passage improvements, research, and related activities. Other costs related to implementation of the program, including forgone hydropower revenues and power purchases that result from spilling water over dams to assist juvenile salmon and steelhead passage, and fixed expenses related to capital investments, more than double that amount. In Fiscal Year 2013, for example, the total of all costs Bonneville attributes to fish and wildlife was \$682.4 million.

Meanwhile, there is good news about most Columbia River Basin salmon and steelhead runs.

Snake River fall Chinook salmon are making an amazing resurgence. The return of adult fish from the Pacific Ocean to Idaho rivers in 2013 was 75,846 fish. Of these, 20,222 were wild fish, a remarkable 26,000 percent increase from 1990, when just 78 wild fish were counted. The 2014 run is anticipated to be large, as well.

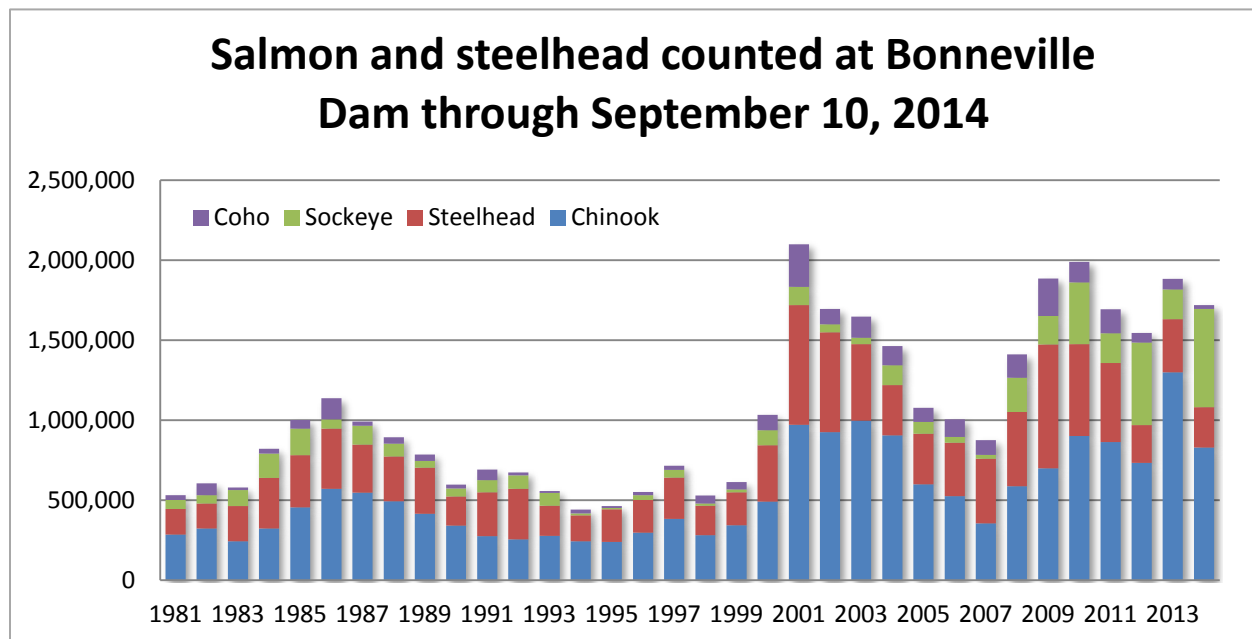
1990 was the year the Nez Perce Tribe and partners including the Idaho Department of Fish and Game, NOAA Fisheries, the Northwest Power and Conservation Council and many others began an effort to rebuild the stock.

The 2014 sockeye run in the Columbia River was the largest since fish-counting began at the dam in 1938. The Bonneville Dam count totaled more than 614,000 fish. The previous record count at Bonneville was 516,000 in 2012. By far, the largest share of the Columbia sockeye run originates in Lake Osoyoos on the Okanagan River in British Columbia. Of these, more than 85 percent are believed to be fish that spawn in the wild, as opposed to fish that return to hatcheries. The second-largest component returns to Lake Wenatchee -- expected to be about 64,000 fish in 2014 -- and the smallest component returns to Idaho's Redfish Lake. An endangered species, the Snake River component exceeded 2,200 fish at Lower Granite Dam this year, a number

that rivaled the big return of 2010 but otherwise has not been seen since the dam was completed in 1975. In 1990, the count was zero and for many years after, and before, the count was fewer than 100 fish.

NOAA Fisheries [reported to the Council](#) in 2014 that survival of juvenile spring/summer Chinook salmon in 2013 in the Columbia and Snake rivers was above average and survival of juvenile steelhead was about equal to the long-term average. As well, travel times for juvenile fish migrating down the two rivers past dams improved compared to recent years. NOAA scientists attribute the decreased travel time primarily to increased water spills and installation of new surface-passage structures at dams. Survival rates for 2014 were still being calculated in September 2014 when the Council released this draft annual report for public comment but will be included in the final version of the report in January 2015.

Here is a look at salmon and steelhead returns counted at Bonneville Dam since 1981:



We note a number of important accomplishments through the fish and wildlife program since it was first adopted by the Council in 1982. More than 2,400 river miles of habitat have been improved for fish, endangered Snake River sockeye are being recovered, fish hatcheries have been constructed to help recover threatened endangered species, more than 400,000 acres of habitat have been acquired for the benefit of wildlife affected by dams, and scientific research has contributed to steadily improving knowledge about fish, wildlife, and habitat in the basin.

We are proud to be part of the steadily improving supply of clean energy in the Pacific Northwest, and the ongoing efforts to protect and restore fish, wildlife and habitat in the Columbia River Basin including survival improvements for many ESA-listed fish species. The Council is not alone in these efforts, collaborating on a regular basis with state and federal fish and wildlife agencies, Indian tribes, the Bonneville Power Administration, environmental and electric utility organizations, and others. In short, and consistent with the mandates of the Northwest Power Act, 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

The Seventh Northwest Power Plan

As required by the Northwest Power Act, following completion of the latest revision of the Columbia River Basin Fish and Wildlife Program, the Council will begin revising the Northwest Power Plan. The next plan will be the seventh in the Council's history, as the Act requires the Council to review the plan at least every five years.

Under the law, the power plan incorporates the fish and wildlife program. The Council approved the first fish and wildlife program in 1982 and the first power plan in 1983.

The [draft schedule](#) for the [Seventh Northwest Power Plan](#) proposes its adoption near the end of 2015.

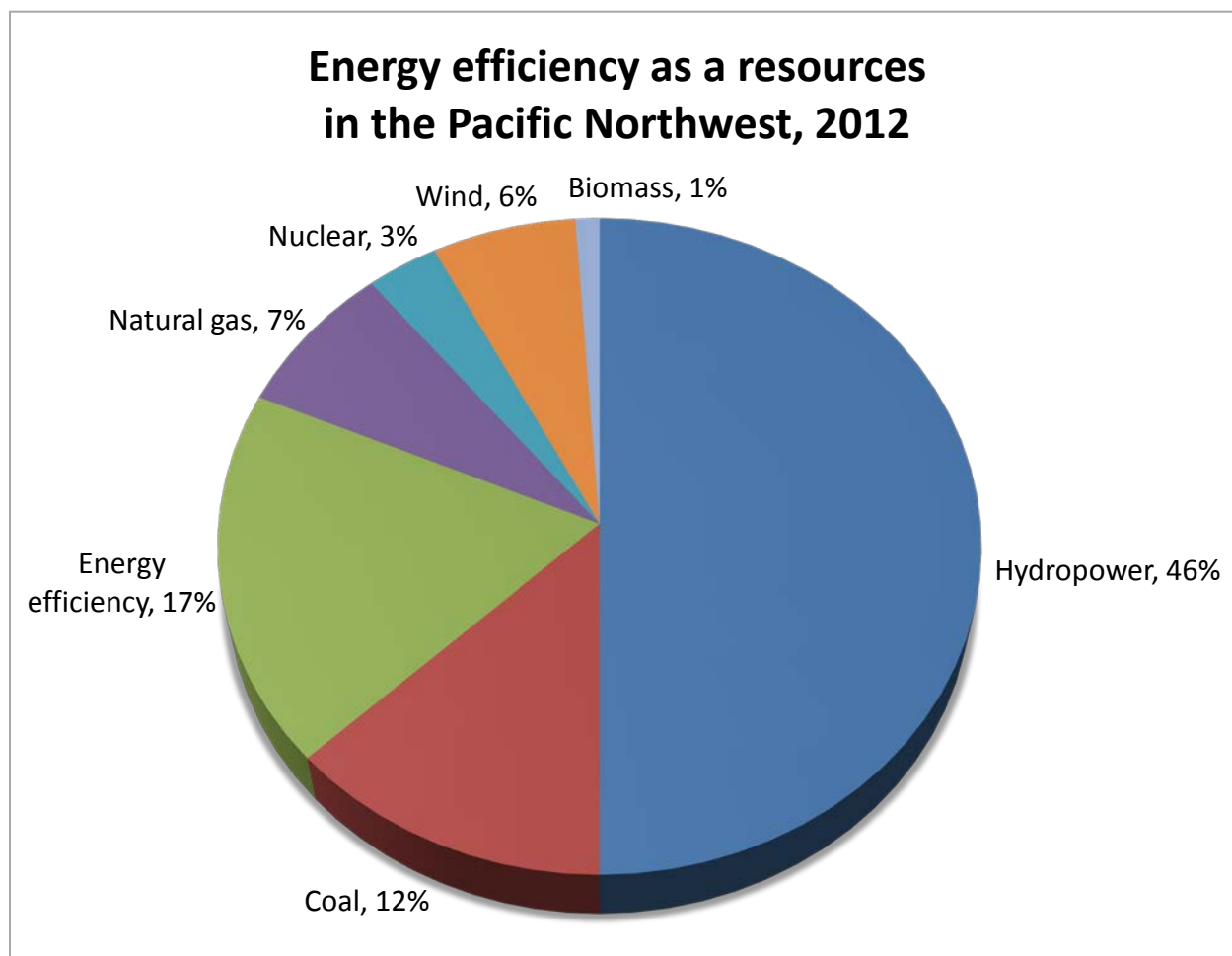
During 2013 and 2014, the Council staff worked to develop inputs for the Seventh Plan including load forecasts, generation assessments, energy efficiency analyses, analytical tools, and related research. Engaging the public and stakeholders in developing the plan is a Council priority. Stakeholder advisory committees met throughout the year to review analyses and approaches in developing the new plan. Along with the advisory committee work, staff has presented energy primers at Council meetings, and also held [symposiums](#) on plan-related topics like carbon emissions and California's energy markets.

Some of the issues we expect to address in the new power plan include 1) the impacts of load-forecast uncertainty; 2) the cost and pace of future energy efficiency improvements; 3) the cost and availability of new generating resources; 4) power system reliability and adequacy; 5) the effect of proposed federal regulations to reduce carbon emissions from power plants; 6) integration of variable-output resources like wind and solar power into the power grid; and 7) the ongoing transformation of the utility industry regarding issues such as the creation of energy imbalance markets and adaptation to lower load growth.

The coming year will include developing an environmental methodology, extensive public outreach, framing issues for analysis, and continued work on forecasts, assumptions, and inputs.

Energy efficiency

The second-largest power resource



Energy efficiency in the Pacific Northwest was the second-largest electricity resource in 2012, comprising 17 percent of the region's energy. Hydropower is the top resource, at 46 percent.

Regional energy efficiency savings increased by 253 average megawatts in 2012, an amount equal to the annual electricity use of about 170,000 Northwest homes. The savings exceeded the Council's target for the year by about 5 percent. Results for 2013 still were being calculated when the Council issued this draft annual report for comment in September 2014 and will be included in the final version of this report in January 2015.

The Council reports annually on energy efficiency improvements reported to the Regional Technical Forum by electric utilities, the Energy Trust of Oregon, the

Bonneville Power Administration, the Northwest Energy Efficiency Alliance, and others. The Forum is an advisory committee established by the Council in 1999 to develop standards to verify and evaluate energy efficiency savings.

In 2012, the latest year for which results are available, the average cost of the efficiency investments was about 1.8 cents per kilowatt-hour, which is about four times less expensive than the cost of power from any type of new generating plant. In 2012, as in other recent years, commercial and industrial savings grew the most -- faster than residential, agricultural, and other areas.

Northwest utilities, the Energy Trust of Oregon, and their partners have been acquiring energy efficiency resources since 1978. Annual savings from cumulative investments through 2012 stood at 5,300 average megawatts, the power equivalent of five cities the size of Seattle. Over those 34 years, energy efficiency met nearly 60 percent of the new demand for power.

The Northwest has relied on energy efficiency for longer and to a greater degree than most other regions of the United States. The total U.S. investment in improved energy efficiency in 2012 was just over \$5.35 billion; Northwest investments totaled \$375 million, or about 7 percent of the national total even though the Northwest represents about 4 percent of the U.S. population. The per-person average expenditure on energy efficiency improvements in the Northwest was \$28.02, nearly double the United States average of \$16.17, according to the Council's staff.

Impact on electricity rates

As we have reported, the efficiency of electricity use in the Northwest is improving rapidly – we are doing more with our power and using less to do it. But in addition, a [Council analysis](#) shows that investments in energy efficiency are not having a major effect on electricity rates.

Reports by electric utilities in the Northwest to the U.S. Department of Energy for the years 2007 through 2013 show that energy productivity, expressed as improvements in economic output per unit of energy, improved 6 percent in Oregon, 4 percent in Idaho, 3 percent in Washington, and 2 percent in Montana for an overall regional improvement of 4 percent during that period.

As part of its power planning, the Council tracks changes in the regional economy, as well as electricity sales and revenues. The current analysis shows that:

- Electricity use by residential and commercial users is decreasing while industrial use is increasing
- Regional residential electric bills are 16 percent lower than the national average

- Total revenues to Northwest electric utilities grew an inflation-adjusted 1.7 percent per year
- Gross state product, another measure of economic activity, increased 2.2 percent per year
- Employment is recovering, but is not back to pre-2008 (pre-recession) levels (approximately 6.32 million employed in 2008, 6.22 million employed in 2013)

Federal codes and standards

One of the primary ways energy efficiency is improved is through programs conducted by utilities and agencies like the [Energy Trust of Oregon](#). Another important means of building energy efficiency is through energy codes and standards. The Council staff [reported on efficiency accomplishments through federal standards](#) in 2014.

Federal standards for appliances and equipment have been in place since the mid-1970s, but in the last few years a host of new standards have come into play that will dampen long-term load growth and achieve the energy efficiency that otherwise would have been captured through programs. Going forward, programs will need to focus on efficiency opportunities not affected by federal standards.

The Council estimates that the cumulative savings from existing federal standards were just under 1,000 average megawatts in 2012, or almost 20 percent of the region's savings since 1978.

The Department of Energy is responsible for setting federal standards for more than 50 categories of appliances and equipment used in homes, commercial buildings, and industries according to a schedule mandated by Congress, but has had a pattern of failing to meet it. Only after several states and interest groups sued the agency in 2005, did it finally adopt a plan to address the backlog. Under federal energy legislation enacted in 2007, the DOE must now review each product standard every six years. As a result, federal rulemaking in the last couple of years has been brisk: 23 new or revised standards have been finalized since the Council's [Sixth Power Plan](#) was adopted, with a dozen more scheduled to be completed in 2014.

It is estimated that Northwest consumers saved \$10 billion in their electricity bills during 1986-2010 thanks to federal standards and state codes.

Energy efficiency funding

In 2014, the Bonneville Power Administration kicked-off two processes that will define its spending amounts going into its next two-year rate case: the [integrated program review](#) and the [capital investment review](#). In these two processes, the Council considers it important that Bonneville commit adequate financial resources to implement the Council's power plans, particularly to acquire energy efficiency.

Bonneville has surpassed the Council's five-year targets for acquiring energy efficiency since 2005. In reviewing the initial capital investment review proposal, however, the Council was concerned that the proposed funding levels would reduce Bonneville's ability to continue meeting increasing targets in the Council's Sixth Power Plan. The Council raised the issue early in the process so that Bonneville and others in the region could work together to resolve the issue. The Council sent a letter to Bonneville outlining its perspective.

Regional Technical Forum

In November, the Council [approved](#) the 2014 budget and workplan for the [Regional Technical Forum](#). The \$1.5 million budget will support the work of the Forum to update and develop efficiency measures that meet its [guidelines](#). Funding comes from contributions from the Bonneville Power Administration, the region's utilities, and in-kind contributions of staff-time by the Council and other organizations.

The Forum workplan is largely driven by requests from utilities, Bonneville, Energy Trust of Oregon, Northwest Energy Efficiency Alliance, and state energy agencies. During 2013 the Forum continued to improve its processes and the quality of its overall work products. The list of remaining measures that need to be brought into compliance with Forum guidelines is dwindling. The completion of this task will allow the Forum to focus more of its resources developing standard protocols, scoping the research needed for future measure updates, and seeking regional implementation of such research.

The organizational shift the Forum made in early 2013 is bearing fruit. The Forum's full-time contractors are now well integrated into Forum processes and understand Forum guidelines and work product expectations. The five contract staff bought on in early 2013 have been instrumental in allowing the Forum to dive deeper into analysis when needed and provide consistent work products meeting after meeting. This business model shift helped streamline many processes, and the contract staff are adding significant value to the Forum. Coupled with an external third-party review of all staff work products and a thorough knowledge of the guidelines, the Forum is now providing quality analyses at a level that was not possible before.

Another reason for the region's successes in improving energy efficiency is the unique, collaborative role that the Forum plays in providing a systematic way to validate energy efficiency savings for the region. Reliable savings estimates allow power system planners to incorporate efficiency into their resource-acquisition strategies. Validated savings also inform efficiency program planners.

NEEA's strategic and business plans

The Northwest Energy Efficiency Alliance (NEEA), which the Council helped create in 1997, continues to successfully promote the development of energy-efficient technologies and strategies to acquire all cost-effective energy efficiency in the Northwest.

NEEA's strategic plan identifies two major goals: filling the energy efficiency pipeline with new opportunities and creating market conditions to accelerate and sustain market adoption. In a [letter](#) to NEEA on its draft [2015-2019 strategic and business plans](#), the Council confirmed its support for both goals, especially the organization's focus on looking for new technologies and conducting strategic market analyses.

Also important to the Council is NEEA's regional approach in its work. The Council believes it is important that the Bonneville Power Administration, Energy Trust of Oregon, and Northwest utilities pool their resources to support NEEA's work. This collaborative approach is more cost-effective than utilities' funding individual efforts because it avoids duplication of effort, which would mean higher costs for both the region and utilities.

Power planning

EPA's carbon-reduction rule

In June 2014 the U.S. Environmental Protection Agency announced a proposed federal rule to limit emissions of carbon dioxide from power plants. The proposed rule would require power plant CO₂ emissions to be reduced by 30 percent from 2005 levels by 2030.

In the Pacific Northwest, carbon emissions from electricity production are below the national average because carbon-free hydropower provides more than half of the region's electricity. These emissions fluctuate widely based on the hydropower supply. Differences among utility resource portfolios are dramatic -- some utilities rely more on coal and natural gas than others. As well, the Northwest has been effectively reducing its carbon footprint through energy efficiency, renewable resource development, and retiring coal plants for more than 30 years.

As a region, the Northwest has a decided advantage in meeting the Environmental Protection Agency's proposed carbon emission rules for power plants: energy efficiency and our success in achieving it. Unlike most prior EPA air emissions regulations, this proposal sets limits on CO₂ emission rates (pounds per megawatt-hour of electricity generated) at the state level rather than for generating facilities themselves, but the EPA would allow states to join together to develop and implement carbon-reduction plans to comply as a region. Such collaboration could include a regional cap-

and-trade program or regional development of zero-carbon resources like energy efficiency and renewable resources.

If this sounds familiar, it's because the Northwest states have been collaborating on long-term [energy planning](#) for more than 30 years. Over that time, the region has saved more than 5,300 average megawatts. The Council's [Sixth Power Plan](#) predicted that more than 85 percent of the new demand for power over the 20-year planning horizon could be met with energy efficiency.

If the energy efficiency goals in the Council's Sixth Power Plan and state renewable portfolio standard goals are met, the Northwest is well positioned as a region to meet the EPA's proposed CO2 emission reductions. However, the ability to achieve emission reductions varies according to a state's generating resource portfolio. These issues will be addressed by the Council in its [Seventh Power Plan](#). Work on the new plan begins in late 2014.

Regional load growth

The conventional wisdom of the past few years has been that the region's peak loads are growing, but the data does not support this perception, according to a [review](#) by the Council.

According to the review of historical trends, since 1995 annual energy loads grew at an average rate of only 0.40 percent, and winter peak loads haven't grown at all. Slow or no load growth may signal the need for a change in traditional utility planning and regulatory practices. Utilities earn returns on investment in capital needed for system expansion.

One thing that has changed in the last 20-30 years is the rapid development of energy efficiency, which dampened load growth while helping the region grow economically without having to rely too heavily on adding new electricity-generating resources. The Council plans to address the load-growth issue in the Seventh Power Plan.

Analysis of power shortage risk

The likelihood of future power shortages in the Pacific Northwest has declined over the last year, a Council [analysis](#) shows.

The predicted likelihood of shortage, known by the shorthand "loss of load probability" or LOLP, declined from 7 percent for the year 2017 in a Council analysis in December 2012 to 6 percent for the year 2019 in the Council's current analysis. The Northwest power supply is deemed adequate if the likelihood of future shortages, LOLP, is less than 5 percent.

The LOLP declined in the most recent analysis because the amount of electricity from new power plants soon to come online in the Northwest is greater than the anticipated new demand for electricity in 2019. Important to this conclusion is the Council's anticipation that the Northwest will achieve the Council's energy efficiency savings target of about 350 average megawatts per year between 2017 and 2019. That achievement helps offset the need for more costly new power plants.

However, the risk, or LOLP, increases again by 2021 as the result of the planned retirements of coal-fired power plants in Boardman, Oregon, and Centralia, Washington. In response to those closures, the LOLP increases to 11 percent.

Actions to bring the LOLP down to the Council's 5-percent standard will vary. For example, utilities have plans for new power plants totaling 1,800 megawatts of capacity for construction through 2024. These were not included in the analysis because it only includes plants that are sited and licensed or under construction. Another possibility to reduce LOLP on a short-term, seasonal basis is that utilities in the Northwest could import excess power from the Southwest when it is needed here, and send excess power from the Northwest to the Southwest when it is needed there.

Natural gas price forecast

The Council monitors its [power planning](#) assumptions on a regular basis to identify any significant changes that would affect its power plan. In 2014 the Council revised its [forecast for fuel prices](#), which will be used to develop its [Seventh Power Plan](#).

The natural gas price forecast is the most important fuel forecast for the plan, and it's also the most widely used by others in the region for their analyses. The current projected price range for natural gas is broader than past Council forecasts, reflecting greater uncertainty about future supply and demand because of reliance on gas-fueled generation for future resources.

Low natural gas prices would mean lower wholesale electricity prices, while high prices would mean higher prices. A more complete picture of how these fuel prices would play out will be tested during the development of the Seventh Power Plan.

Future cost of nuclear power

To help the region better understand the cost of power from the region's only operating nuclear power plant, in May the Council hosted presentations by the authors of two reports that have opposite conclusions. The opposing conclusions result from different assumptions about future costs of the plant, called the Columbia Generating Station and operated by Energy Northwest.

One report, commissioned by the Oregon and Washington chapters of Physicians for Social Responsibility (PSR) and prepared by Portland-based energy consultant Robert McCullough, concluded that power from the Columbia Generating Station (CGS) is significantly more expensive than power from other sources and recommended that the facility be decommissioned in 2015. The other report, commissioned by Energy Northwest, which operates the plant, and prepared by Cambridge Energy Research Associates of Cambridge, Mass., concluded that the plant is economical to operate until the end of its anticipated life in 2043.

Uncertainties highlighted by the two reports include the future cost and performance of the nuclear plant, safety considerations of nuclear power, and costs of alternative power supplies. The Council was interested in the “dueling experts” reports because future resource costs are critical to making the best decisions about future sources of electricity.

State renewable resource portfolio standards

In October, the Council reported on progress in the three Northwest states that have renewable energy portfolio standards toward meeting those goals. Montana, Oregon, and Washington have state-mandated renewable resource portfolio standards; Idaho does not.

The three state portfolio standards all require a certain percentage of qualifying utilities’ electricity sales to be produced from renewable resources. While each state has a unique standard with varying factors (for example, eligible resources, technology minimums, resource banking provisions), they all have the same overall intentions that encourage the development and procurement of renewable resources in the Pacific Northwest over the next decade or so.

According to the Council’s [analysis](#), the region is in good shape to comply through 2019-2020. In a change from the last decade, the pace of wind development has dropped off significantly, partly as the result of the termination of the federal energy production tax credit at the end of 2012 and partly because development has reached the state standard levels.

Council fish and wildlife overview

The Columbia River Basin Fish and Wildlife Program

2014 Program amendment

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 \$239 million in Fiscal Year 2013 (in September 2014, when this draft report was issued for public comment, Fiscal Year 2014 had not ended; the 2014 amount will be included in the final version of the report in January 2015).

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. 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.

The Council issued a draft program for public comment in May 2014 and planned to approve the final version of the new program in October. Key aspects of the [Draft 2014 Program](#) include:

- Reducing threats from invasive species, predators, toxic substances, and climate change
- Protecting 'strongholds,' which are areas of good habitat and the fish associated with them
- Enhancing conservation of wild fish
- Investigating reintroduction of salmon and steelhead into blocked areas, notably above Chief Joseph and Grand Coulee dams, and
- Repairing aging structures and equipment related to projects that implement the program

The new program will be posted on the Council's website when it is completed.

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. As noted above, because this draft annual report was issued for comment at the end of the fiscal year, costs for the year had not been calculated. The 2014 costs will be included in the final version of the report in January 2015.

However, 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 annually to the Governors. The Council issued its [Report to the Governors on Bonneville's Fiscal Year 2013 Fish and Wildlife Costs](#) in September 2014. From that report, here is a synopsis of Bonneville's costs in Fiscal Year 2013, which totaled approximately \$682.4 million:

- \$239 million in direct (expense) costs
- \$79 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 2013; the other \$5 million is assigned to the Power Business Line budget)
- \$143.3 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
- \$135.5 million in forgone hydropower sales revenue that results from dam operations that benefit fish but reduce hydropower generation
- \$85.8 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 \$682.4 million total does not include obligations to capital investments, as those are annual commitments as opposed to annual costs. The annual costs of capital investments are captured in the "fixed costs" category. The total also does not reflect a credit of \$84 million from the federal Treasury related to fish and wildlife costs in 2013. Applying the credit reduces the total fish and wildlife costs paid by Bonneville customers to \$598.3 million in fiscal year 2013.

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.

Geographic review projects

In November, the Council recommended 75 projects in Idaho, Oregon, and Washington for funding by Bonneville to improve conditions for fish and wildlife, primarily salmon and steelhead.

Nearly all of the projects are ongoing, and the Council's recommendations follow a [review of the projects](#) by the Independent Scientific Review Panel. Projects in the geographic review were organized by freshwater areas where salmon and steelhead spawn. Most are intended to improve habitat.

Artificial production

Snake River sockeye

Completion of a new Snake River sockeye salmon hatchery in Idaho in December inaugurated changes in how the state and its partners are working to restore the iconic species to the headwaters lakes of the Salmon River, a Snake tributary.

Since the species was listed as endangered in 1991, the Idaho Department of Fish and Game, NOAA Fisheries, and the Shoshone Bannock Tribe have operated a [captive broodstock program](#) using a hatchery in Eagle, Idaho, primarily, to rescue genetic material from the few remaining fish and begin rebuilding the run by releasing hatchery-bred eggs, presmolts, and smolts into natal waters to encourage natural production. The near-term goal is to avoid extinction and maintain genetic diversity. The long-term goal is to rebuild naturally spawning populations to levels that could support tribal and sport harvest.

The new, \$13.5 million hatchery in Springfield, Idaho, near Pocatello, is an important step toward the long-term goal. Eggs produced at other hatcheries operated by IDFG and NOAA will be incubated and reared to the smolt stage at the Springfield facility and then released each spring at the outlet of Redfish Lake. The state expects that the additional smolt production -- up to 1 million annually -- will lead to higher numbers of returning adult sockeye, and these fish will help move the program from a focus on producing enough fish annually to avoid extinction to developing an integrated conservation hatchery program that results in sufficient numbers of adult sockeye returning from the ocean each year to support naturally spawning populations.

Lake Roosevelt kokanee

The Council approved a proposal by the Spokane Tribe of Indians to continue producing kokanee -- freshwater sockeye salmon -- and releasing the fish into Lake Roosevelt behind Grand Coulee Dam. Kokanee provide a culturally important fishery for tribal members.

The Council's Independent Scientific Review Panel earlier recommended against continued funding the kokanee production project because the panel considered the tribe's management plan insufficient and fish-rearing problems in the reservoir environment of Lake Roosevelt difficult if not impossible to overcome. But the tribe responded that it would work with co-managers, the Washington Department of Fish and Wildlife and the Colville Confederated Tribes to respond to the science panel's concerns and meet production goals. A key challenge is the fact that Lake Roosevelt fluctuates in both elevation and the velocity of water flow because of Grand Coulee Dam operations. The tribe's challenge is to raise fish in that difficult, complex environment.

The tribe chose to raise and release kokanee as mitigation for the impacts of Chief Joseph and Grand Coulee dams, which blocked salmon passage, so that tribal members would have access to a salmon species for subsistence and as a cultural resource. The annual budget for the ongoing kokanee production, which is funded by Bonneville through the Council's fish and wildlife program, is less than \$200,000 per year.

Walla Walla spring Chinook

In October, the Council approved a master plan developed by the Confederated Tribes of the Umatilla Indian Reservation to move ahead with a new, \$11.8 million spring Chinook salmon hatchery. It was a major step because the Tribes worked for more than two decades to secure agreements to leave water in the river for fish while also ensuring that agricultural businesses that also rely on Walla Walla River water remain viable.

The Tribes are proposing to add incubation, early-rearing, and final-rearing facilities to an existing adult-fish holding and spawning facility that is a component of the tribes' Umatilla Hatchery. The new facility would produce 500,000 yearling spring Chinook smolts annually for release into the Walla Walla River Basin -- 400,000 into the South Fork and 100,000 into the Touchet River. The Tribes' long-term goal is to provide in-basin harvest for treaty and non-treaty fisheries, and restore natural spawning. Spring Chinook were extirpated in the Walla Walla Basin over many decades as the result of altered habitat and water depletions from agricultural practices. Under the current

schedule, the new facility would be constructed in 2015 and the first fish would be released in 2017.

Research

Review of proposed 10-year spill test

In response to the Council's request, the ISAB reviewed an experiment proposed to the Council by the State of Oregon, the Nez Perce Tribe, and others to boost spill at Snake and Columbia river dams when juvenile salmon and steelhead are migrating to the ocean and then determine whether higher spill leads to higher smolt-to-adult survival rates. Proponents of the spill test recommended it as an amendment to the Council's fish and wildlife program in 2014.

The proposed test would increase spill to 125 percent of total dissolved gas level or biological constraints (at 125 percent, total dissolved gas exceeds water quality criterion, and criteria modifications through regulatory processes are required). Fish survival would be monitored and compared to survival under the current court-ordered spill program, which has lower spill levels.

The Council asked the ISAB to consider a number of questions, which the ISAB answered in its [report](#) submitted to the Council in April. The ISAB noted that the proponents claim increased spill could lead to smolt-to-adult survival ratios considered necessary to recover threatened and endangered species of salmon and steelhead but also that the proposal suffered from an inadequate experimental design and may lead to unintended consequences such as increased gas-bubble disease in juvenile fish and increased fallback of adult fish trying to cross the dams.

Informed by the ISAB report, comments on the report, the recommendations of proponents and opponents of the proposed test, and comments on the recommendations, the Council addressed spill experiments in its [Draft 2014 Fish and Wildlife Program](#). The draft program says such experiments must be 1) based on the best available science; 2) have appropriate study designs; 3) be subject to review by independent scientists; 4) address issues raised by independent scientific review and peer review; and 5) receive the necessary regulatory approvals consistent with all federal and state laws.

Ocean science forum

The Council's Ocean and Plume Science and Management Forum met for the first time in October, beginning the task of identifying fisheries management implications of ocean research and priorities for future research. The Forum is expected to produce a list of priority critical uncertainties with clear and measureable hypotheses that can be reflected in the Council's research plan and considered for future funding.

The forum includes scientists and fish managers from state and federal agencies, tribes, and the Canadian federal fisheries agency. Information about the forum is posted on a [dedicated page](#) on the Council's website.

Creating the forum as an advisory committee to the Council is an outcome of the Council's 2010 review of all research, monitoring, and evaluation projects in the fish and wildlife program. That review identified a need to develop a better understanding of research on the effects of the ocean environment on salmon and steelhead from the Columbia River Basin and led to a report by researchers that synthesized various ocean research efforts.

Kootenai River ecological assessment

In 2014, the Council authorized a first-of-its-kind ecological assessment that will form the basis of a fish-restoration plan. The Council approved a [proposal](#) by the Kootenai Tribe of Idaho to develop a plan to improve ecological functions in the Kootenai River valley in northern Idaho using an assessment of wildlife losses and habitat impacts caused by the operation of Libby Dam as the foundation. It's a big step because it represents the first time a mitigation plan will be developed using a set of indices that measure ecological integrity of specific reaches within the United States portion of the Kootenai River floodplain.

Others participating in developing the Kootenai plan include Montana Fish, Wildlife and Parks, Confederated Salish and Kootenai Tribes, Idaho Department of Fish and Game, U.S. Forest Service, Army Corps of Engineers, and U.S. Fish and Wildlife Service. The plan should be completed in early 2015.

The same loss-assessment tools that are being used in the Kootenai River also are being tested in the Flathead River to determine whether they could be used in the same manner to measure wildlife losses and ecological impacts from the operation of Hungry Horse Dam.

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:

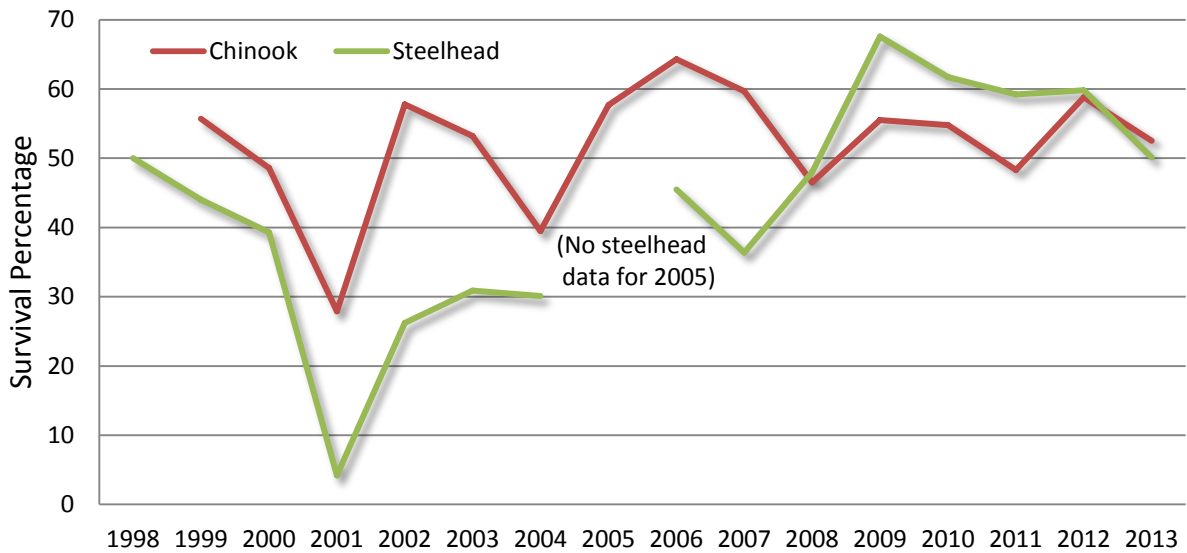
- Are Columbia River Basin fish species abundant, diverse, productive, spatially distributed, and sustainable?

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

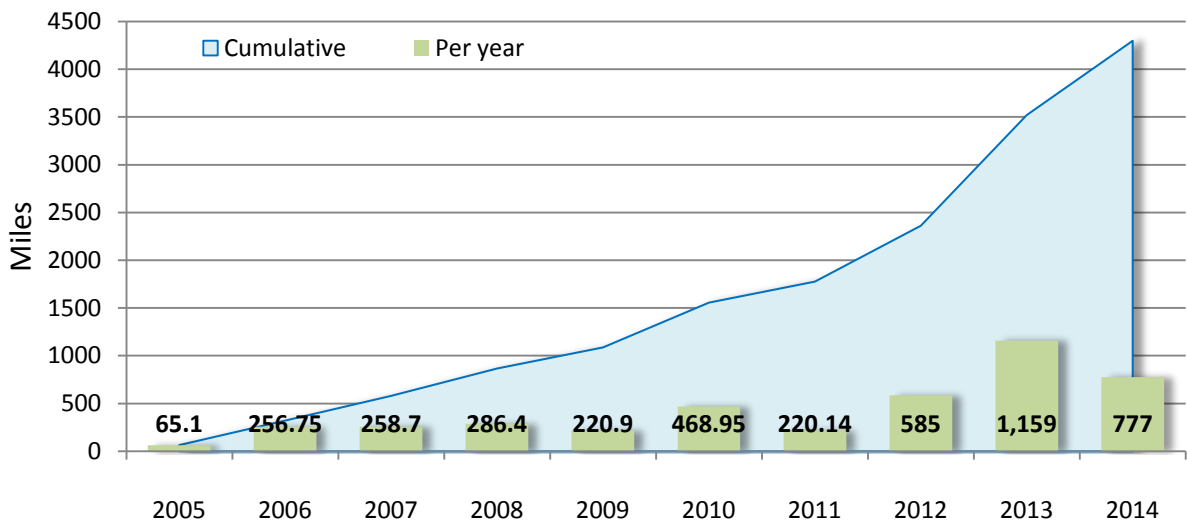
Over time, the Council expects to augment and refine the initial indicators to provide a more comprehensive picture of fish and wildlife in the basin. For example, at this point most of the indicators for Council actions are related to habitat work. As more information becomes available, this indicator 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 the issue.

With the figure showing salmon and steelhead counted at Bonneville Dam on Page 8 of this report, the next page shows two additional figures that provide an indication of the status of salmon and steelhead runs and progress on habitat actions.

Survival of juvenile Snake River salmon and steelhead through the hydrosystem, 1998-2014



Miles of habitat improved through channels, improved instream complexity, fencing, planting, and noxious weed removal, 2005-2014



Council Public Affairs overview

Outreach, information, and communication

The Northwest Power Act directs the Council to provide for the participation and consultation of the Pacific Northwest states, tribes, local governments, consumers, electricity 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.nwccouncil.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 and 2014, contains myriad documents, publications, data bases, and other forms of information. Included on the site are the current versions of the [Northwest Power Plan](#) and the Draft 2014 [Columbia River Basin Fish and Wildlife Program](#), 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](#), [Twitter](#), and the Council's [blog](#), which is posted to our Facebook page and the Council website.

In 2014, the Public Affairs Division transitioned away from a quarterly newsletter and expanded the monthly [Council Spotlight](#) to include news about the monthly Council meetings and links to posts on the Council blog.

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 2014 the Council conducted its annual congressional staff trip, this time to central Oregon. This year's tour included a panel discussion on the unique nature of the Northwest's power system, field inspections of the Pelton Round Butte hydroelectric project and the Whychus Creek fish restoration project, a tour of Facebook's data storage center in Prineville, and a visit to one of the U.S. Army Corps of Engineers' Willamette River Basin projects. The tour also included meetings with local electric utility leaders, representatives of the Confederated Tribes of the Warm Springs Reservation, Portland General Electric, the U.S. Army Corps of Engineers, the Oregon Department of

Fish and Wildlife, NOAA Fisheries, and the U.S. Fish and Wildlife Service. The purpose of these annual trips is to better acquaint House and Senate staff with the requirements of the Northwest Power Act, the work of the Council, and a sampling of priority issues relating to the Council's work.

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 to discuss Columbia River issues of mutual interest. In 2000, the two agencies formalized their relationship in a memorandum of understanding and designated official liaisons.

In 2014, the Council and the Trust worked extensively on an international Columbia River [conference](#) scheduled October 21-23, 2014, in Spokane. The conference will be co-chaired by the Council and the Trust, and 250-350 delegates are expected.

Council administrative overview

Funding

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](#).

The Council is aware of the current economic challenges facing the four-state region, and the need to maintain healthy financial conditions for the Bonneville Power Administration. In an effort to be responsive, the Council in Fiscal Year 2015 and Fiscal Year 2016 will continue to adhere to the budget constraints initiated in 1998.

To accomplish this, the Council will:

- Continue to identify efficiencies in operations and administration in order to limit inflationary increases to below 3 percent on average during fiscal years 2009-2016.
- Reallocate staffing where possible to absorb new workload without increasing FTEs.
- 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.

Fiscal Year 2016 budget and Fiscal Year 2015 revisions

Based on the major issues and levels of effort discussed in the budget document, the Council determined that the proposed budget expenditures are necessary and appropriate for the performance of its functions and responsibilities as authorized by the Northwest Power Act, Section 4(c)(10)(A). The Council further has determined that the 0.02 mill per kilowatt-hour limitation on expenses will not permit the Council to carry out

its functions and responsibilities under the Act, Section 4(c)(10)(A). (See Appendix C of the budget document for a detailed description of the Council's showing under the Act.) The Council proposes that the projected budget in the amount of \$11,236,000 for Fiscal Year 2016, equal to 0.089 mills per kilowatt-hour for the estimate of forecasted firm power sales, be included in the Bonneville administrator's Fiscal Year 2016 budget submittal.

The Council's Fiscal Year 2015 revised budget of \$10,784,000 includes a \$9,000 decrease from the previously submitted Fiscal Year 2015 budget request of \$10,793,000. The Council's budget for Fiscal Year 2016 and Revised Fiscal Year 2015 is based on current-year expenditure levels plus adjustments for shifting workloads, certain program improvements, and cost-of-living adjustment factors as provided by the U.S. Department of Energy (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.

Background of the 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 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.

History

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 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.nwcouncil.org. Copies of Council publications are available at the website or by calling the Council. All Council publications are free.

Council meetings, Fiscal Year 2014

[September 9, 2014](#)

[August 5, 2014](#)

[July 8, 2014 Portland](#)

[June 10, 2014 Missoula](#)

[May 6, 2014 Boise](#)

[May 1, 2014 Portland](#)

[April 30, 2014 Portland](#)

[April 21, 2014 Portland](#)

[April 18, 2014](#)

[April 14, 2014 Portland](#)

[April 8, 2014 Spokane](#)

[April 2, 2014 Portland](#)

[March 24, 2014 Portland](#)

[March 21, 2014 Portland](#)

[March 10, 2014 Portland](#)

[February 11, 2014 Portland](#)

[January 30, 2014 Portland](#)

[January 24, 2014 Portland](#)

[January 14, 2014 Portland](#)

[January 8, 2014 Portland](#)

[December 17, 2013 Portland](#)

[December 10, 2013 Portland](#)

[November 13, 2013 Portland](#)

[November 5, 2013 Boise](#)

[October 21, 2013](#)

[October 8, 2013 Helena](#)

[September 24, 2013 Portland](#)

[September 10, 2013 Coeur d'Alene](#)

Selected news articles

Will be added for the final version of the report in January 2015.

Council members and offices, Fiscal Year 2014

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Comments of the Bonneville Power Administration

Will be added for the final version of the report in January 2015.

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