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August 30, 2012

## MEMORANDUM

**TO:** Council members

**FROM:** John Harrison, Information Officer

**SUBJECT:** Draft 11<sup>th</sup> Annual Report to Northwest Governors on Fish and Wildlife Expenditures of the Bonneville Power Administration.

**PROPOSED ACTION:** Finalize the draft report and submit to the Governors

### BACKGROUND:

2012 is the eleventh year the Council has reported to the Northwest governors on Bonneville's expenditures to implement the Columbia River Basin Fish and Wildlife Program. The purpose of the reports is to provide information, not to assess the expenditures. Information in the reports is provided by Bonneville and not independently verified by the Council. At this meeting, staff requests that you finalize the Fiscal Year 2011 report and approve its submittal to the Governors. In your packet is a revision-marked version of the draft report representing the changes requested by Council members following the public comment period in June and your discussion at the August meeting.

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## Background

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 (16 USC 839; PL 96-501), the federal law that authorized the states of Idaho, Montana, Oregon, and Washington to form the Northwest Power and Conservation Council, directs the Council to prepare a program to protect, mitigate and enhance fish and wildlife, and related spawning grounds and habitat, of the Columbia River Basin that have been affected by hydroelectric development.

The Power Act requires the Bonneville Power Administration to fund the Council's fish and wildlife program. Bonneville is a federal power marketing authority within the U.S. Department of Energy that sells wholesale electricity from 31 federal hydropower dams and one non-federal nuclear power plant in the Pacific Northwest (**the Federal Columbia River Power System**).

Since 2001, in response to a request by the governors of the four Northwest states, the Council has reported annually on Bonneville's fish and wildlife **expenditurescosts**.

These **expenditures-costs** have four primary components:

1. The Council's Fish and Wildlife Program, including direct expenditures and capital investments (debt-funded) in facilities and some land purchases
2. Reimbursements to the federal Treasury to repay the power share of the congressional appropriations used for Federal Columbia River Power System fish and wildlife mitigation and also direct-funding payments to the other federal agencies for the power share of fish and wildlife mitigation they perform to address impacts of FCRPS hydropower dams they operate.
3. Forgone hydropower sales revenue that results from Columbia and Snake river dam operations to aid passage of juvenile and adult anadromous fish, such as spilling water that otherwise would be used to generate electricity
4. The cost of electricity purchased by Bonneville to make up for power that could not be generated at the dams because of the fish-passage operations

In this 11th annual report, the Council provides an update of Bonneville's **expendituresfish and wildlife-costs** through Fiscal Year 2011. Financial information was provided by Bonneville in response to requests from the Council staff and was not independently verified by the Council or its staff.

This report does not include information on Columbia River Basin fish runs and fisheries. Currently, the Council is 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 Columbia River Basin. For example, at this

point all 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 Council's Program. We also anticipate being able to provide 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. ~~The Council anticipates reporting annually on fish and wildlife expenditures and high-level indicators of fish and wildlife progress.~~

### Summary of 2011 ~~expenditures~~costs

In Fiscal Year 2011, Bonneville reported total ~~expenditures~~costs of its fish and wildlife actions of approximately \$650 million, as follows:

- \$221.1 million in direct (expense) expenditures
- \$69.8 million in 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 ~~cost~~ funding of operations and maintenance expenses of federal fish hatcheries
- \$4.5 million, which is one half of ~~the~~ annual budget of the Northwest Power and Conservation Council (Bonneville allocates the other half to its Power Business Line budget)
- \$127.2 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
- \$156.7 million in forgone hydropower sales revenue that results from dam operations that benefit fish but reduce hydropower generation<sup>i</sup>
- \$70.7 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 \$650 million total does not include ~~annual capital investments~~obligations for new capital investments in 2011 totaling \$90.2 million for program-related projects, and \$103 million for associated federal projects, a budget category that includes capital investments at dams operated by the Corps of Engineers and Bureau of Reclamation. ~~Including capital investments in the same total as fixed costs would double-count some of the capital investment.~~ The total also does not reflect a credit of \$85.3 million from the federal Treasury related to fish and wildlife ~~expenditures~~costs in 2011. Effectively, with the credit electricity ratepayers of Bonneville-customer utilities paid \$564.7 million in Fiscal Year 2011.

Bonneville's direct spending on the Council's program —\$221.1 million—accounted for 34 percent of the total ~~expenditures~~costs Bonneville attributed to fish and wildlife of \$650 million. The direct program ~~cost~~expenditures accounted for 8.4 percent of Bonneville's total 2011 Power Business Line ~~expenditures~~costs of approximately \$2,601,760,000. The total program-related ~~expenditures~~costs, including forgone revenue and power purchases (~~\$650~~649.9 -million)

were accounted for 24.9 percent **as large as** the total power ~~expenditures~~ **costs in 2011 (\$2.601 billion)**.

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Fish and wildlife ~~expenditures~~ **costs** account for a major portion of the rate Bonneville charges its wholesale power customers. Approximately one-third of Bonneville's wholesale rate of ~~\$3027~~ per megawatt hour is **estimated to be associated with its fish and wildlife program.**<sup>1</sup> ~~attributed to its fish and wildlife financial obligations.~~

#### **Total ~~expenditures~~ costs, 1978-2011**

The 2011 ~~expenditures~~ ~~costs~~ **costs** bring the grand total, from 1978 when the ~~expenditures~~ ~~costs~~ began, through 2011, to \$12.4 billion (the total does not include \$2.09 billion in capital investments, discussed above, such as the construction costs of facilities like fish hatcheries and fish-passage facilities at the dams, or \$1.71 billion in credits from the federal government that effectively reduce the total annual obligation by Bonneville).

Here, in descending order, is a breakdown of the major ~~direct spending~~ **cost** categories (total: \$12.4 billion):

- \$3.92 billion for power purchases to meet electricity-demand requirements in response to required river and dam operations that reduce hydropower generation.
- \$2.73 billion in forgone hydropower sales revenue. Bonneville calculates the value of hydropower that could not be generated (revenue that is forgone) because of required river operations to assist fish passage and improve fish survival, such as water spills at the dams when juvenile salmon and steelhead are migrating to the ocean.
- \$2.59 billion for the Council's direct program. This amount does not include annual investments for capital projects in the direct program, such as construction of fish hatcheries. Like a mortgage, an amount of capital is borrowed and invested in a project like construction of a hatchery in a particular year, but the actual annual payments of debt service are smaller. The actual work of fish production, habitat enhancement, and so on, is financed with annual expenditures from the direct-program budget. With capital investments (\$567 million) added, the total costs for the direct program for the period 1978-2011 is \$3.16 billion.
- \$1.99 billion in fixed expenses for interest, amortization, and depreciation on the capital investments.
- \$1.18 billion to: 1) directly fund fish and wildlife projects undertaken by the U.S. Army Corps of Engineers or the Bureau of Reclamation that predate the 1980 Northwest Power Act and for which Bonneville pays the hydropower share, consistent with the Power Act (these expenditures include, for example, operations and maintenance costs of certain fish-production facilities, fish-passage facilities at dams, and research activities); and 2)

<sup>1</sup> **The revenue requirement – the amount to be collected in rates during the rate period – is calculated based on estimates of future costs and revenues including, for example, secondary power sales, prices for electricity and natural gas, and water conditions that affect hydropower generation. The percentage of the revenue requirement collected in rates and associated with the Fish and Wildlife Program is relatively higher than the percentage of Power Business Line expenses associated with the Program because the amount of the revenue requirement that the rate needs to cover in any year is reduced by secondary power sales revenues, which are also generally lower because of hydropower operations for fish.**

reimburse the U.S. Treasury for the hydropower share of major dam modifications by the Corps of Engineers, such as installing spillway weirs, bypass systems, fish-deflection screens in front of turbine entrances, and spillway modifications to reduce dissolved gas.

### **Power system expenditures costs**

The Council's Program and the Biological Opinions on Federal Columbia River Power System operations issued by NOAA Fisheries and the U.S. Fish and Wildlife Service specify hydropower dam operations for fish that also affect power generation. These measures include river and dam operations to protect spawning and rearing areas for both anadromous and resident fish and to improve passage conditions at dams for juvenile salmon and steelhead. Sometimes these operations require Bonneville to purchase power to meet loads while at other times Bonneville simply forgoes a revenue-making opportunity. Regardless of how Bonneville handles the reduced generation, fish operations to comply with these federal requirements affect Bonneville rates for utility customers. Bonneville customers pay the cost of power Bonneville purchases to meet regional loads.

Also, compliance with these legal requirements, and others, limits the amount of revenue that would be possible from an unrestricted operation of the hydropower system. For reporting purposes, on an annual basis Bonneville calculates the value of both power purchases and forgone revenues attributable to fish operations and reports them as part of its **expenditures costs** to mitigate the impacts to fish and wildlife from operation of the hydropower system. The Council recognizes there is debate over the reporting of these power-system costs. Nevertheless, this report includes forgone revenues and power purchases as reported by Bonneville.

The amounts of forgone revenue and power purchases vary from year to year because the demand for power and the amount of water in the Columbia River system also vary. During some months of the year (most notably spring), the hydropower system generates sufficient power, even with fish operations, to both meet firm load and generate surplus power. During these months, the fish operations often reduce so-called "secondary" revenues from sales of surplus power. Bonneville calls these revenue reductions "forgone revenues." Among the many factors Bonneville considers in setting rates, one is the assumption of a lower amount of secondary revenue because of how the river and dams are operated for fish.

During other months of the year, and under low-water conditions, the hydropower system does not generate enough power to meet firm loads and Bonneville must supplement through purchasing electricity from other suppliers. When fish operations necessitate these additional power purchases to meet firm loads, Bonneville identifies this increment as "power purchases for fish enhancement" in its fish and wildlife budget.

To calculate the annual power-generation share of forgone revenue and power purchases attributable to fish operations at the dams, Bonneville conducts two studies of hydropower generation for the relevant fiscal year. One study includes all dam-operating requirements, including those for fish, and the other has no fish-protection requirements. The differences for each month are calculated and applied to the corresponding monthly actual Mid-Columbia Dow Jones wholesale electricity market prices. Combined with assumptions of the monthly power-demand load, this provides monthly estimates of the forgone revenue and power purchases resulting from the fish-enhancement operations.

In Fiscal Year 2011, the overall annual average difference between the two studies was 1,154 average-megawatts. Of this, about 900 average-megawatts contributed to the estimated \$156.7 million in forgone revenue, and about 254 average megawatts contributed to the estimated \$70.7 million in replacement power purchases.

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Bonneville receives a credit under Section 4(h)(10)(C) of the Northwest Power Act as reimbursement for the non-power share of fish and wildlife expenditures that Bonneville pays annually, including a portion of these power purchases and depreciation. Other costs are not factored into that 4(h)(10)(C) credit, such as foregone revenue, interest on Treasury borrowing, amortization and depreciation of capital projects, reimbursable expenditures and the Council budget. Non-power purposes such as irrigation, navigation, and flood control comprise 22.3 percent of the authorized purposes of the federal dams. The annual credit to Bonneville is based on this percentage. The 2011 credit was \$85.3 million.

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The effect of the credit is to reduce the share of fish and wildlife costs paid by electricity ratepayers. The grand total of program expenditures, forgone revenue costs, and power purchases in 2011 was approximately \$650 million. Applying the 4(h)(10)(C) credit effectively reduces the total program expenditures costs, meaning that ratepayers were responsible for \$564.7 million and the federal government was responsible for the non-power purposes share of \$85.3 million.

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### The Northwest Power Act and the Power and Conservation Council

The Council is a planning, policy-making, and reviewing body. Consistent with the Northwest Power Act, the Council develops the fish and wildlife program and solicits, reviews (along with the Independent Scientific Review Panel<sup>vi</sup>), and recommends projects to Bonneville to implement the program. The program is funded by Bonneville, which contracts with the many parties that implement the program. These include the region's fish and wildlife agencies and Indian tribes. In addition to Bonneville, other federal agencies that have responsibilities for dams in the Columbia River Basin, including the U.S. Army Corps of Engineers, Bureau of Reclamation, and Federal Energy Regulatory Commission, are required to take the Council's program into account when they make decisions.

The program addresses hydropower impacts on anadromous fish, resident fish, and wildlife. Anadromous fish are those that spawn in freshwater, migrate to the Pacific Ocean, and then return to their freshwater birthplaces to spawn. Resident fish are those that live and migrate within freshwater rivers, streams, and lakes.

The Fish and Wildlife Program includes flow and passage measures for anadromous fish, including salmon, steelhead, some sturgeon, and lamprey, that alter hydroelectric system operations and reduce power production. The power plan must take Program measures into account in its development of a resource strategy to provide the region an adequate, efficient, economical, and reliable power supply while also delivering the operations specified for fish and wildlife – in essence, helping to assure that operations for fish and wildlife are similarly reliable.

### Endnotes

<sup>i</sup> The Council’s program and the Biological Opinions on Federal Columbia River Power System operations issued by NOAA Fisheries and the U.S. Fish and Wildlife Service specify hydropower dam operations for fish that also affect power generation. Compliance with these legal requirements, and others, limits the amount of revenue that would be possible from an unrestricted operation of the hydropower system. For reporting purposes, on an annual basis Bonneville calculates the value of both power purchases and forgone revenues attributable to fish operations and reports them as part of its expenditures to mitigate the impacts to fish and wildlife from operation of the hydropower system. As noted earlier, this and other financial information was provided by Bonneville in response to requests from the Council and was not independently verified by the Council or its staff.

<sup>ii</sup> ~~Bonneville receives a credit under Section 4(h)(10)(C) of the Northwest Power Act as reimbursement for the non-power share of fish and wildlife expenditures that Bonneville pays annually, including a portion of these power purchases. Non-power purposes such as irrigation, navigation, and flood control comprise 22.3 percent of the authorized purposes of the federal dams. The annual credit to Bonneville is based on this percentage. The 2011 credit was \$85.3 million. The effect of the credit is to reduce the share of fish and wildlife costs paid by electricity ratepayers. The grand total of program expenditures, forgone revenue costs, and power purchases in 2011 was \$649.9 million. Applying the 4(h)(10)(C) credit effectively reduces the total program expenditures costs, meaning that ratepayers were responsible for \$564.6 million and the federal government was responsible for \$85.3 million in Fiscal Year 2011.~~

<sup>iii</sup> Direct program expenditures also can include supplemental mitigation expenses, which in the past included so-called “action-plan,” “high-priority,” and “fast-track” projects. For the period 2001-2004, direct program expenditures included a total of \$16 million in one-time expenditures for “high priority” and “action plan” projects. The “action-plan” projects were intended to bring immediate benefits to ESA-listed salmon and steelhead that were affected by altered hydropower dam operations in the spring and early summer of 2001, when the flow of the Columbia River was at a near-record low. The “high-priority” projects were intended to bring immediate benefits to all species listed for protection under the Endangered Species Act in advance of subbasin planning (the initial subbasin plans were submitted to the Council in 2004 and adopted into the fish and wildlife program in 2004 and 2005). The action-plan and high-priority expenditures were included in the calculation of 1978-2009 total spending. “Fast Track” projects were identified under the Columbia Basin Research, Monitoring, and Evaluation Collaboration process and workshops in 2009. The projects were intended to meet high-priority gaps in the Reasonable and Prudent Alternative of the 2008 Federal Columbia River Power System Biological Opinion for salmon and steelhead by being implemented as quickly as possible. The projects can be found in the AA/NOAA/NPCC BiOp RM&E Workgroup Recommendations Report, <http://bit.ly/aWn7PR>.

<sup>iv</sup> Capital projects are financed over time with appropriated debt. In the fish and wildlife budget, the amounts are called “obligations” as opposed to project expenditures through the direct-funded part of the program. Capital projects include construction of fish hatcheries, fish and wildlife habitat improvements, and land purchases for wildlife. Capital investments in Bonneville’s budget also include those for “associated federal projects,” which include Bonneville’s share of the cost of the projects in the U.S. Army Corps of Engineers’ Columbia River Fish Mitigation Program. These projects include, among others, fish-passage improvements at the federal dams, barge transportation of juvenile salmon and steelhead,

research in the Columbia River estuary, and the effort to relocate Caspian tern and double-crested cormorant nesting areas from the estuary to other locations in the Northwest.

<sup>v</sup> For projects such as fish ladders and bypass systems at the federal Columbia and Snake river dams, the Power Act obligates Bonneville to pay an amount equal to the amount that hydropower is an authorized purpose of the Federal Columbia River Power System dams. Currently, that amount averages 77.7 percent, and so Bonneville reimburses the federal Treasury 77.7 percent of the cost of those projects.

<sup>vi</sup> The Power Act directs the Council to oversee, with the assistance of the Independent Scientific Review Panel (ISRP), a process to review projects proposed for funding by Bonneville. The ISRP reviews proposed projects and makes recommendations to the Council as to whether these proposals are based on sound scientific principles, benefit fish and wildlife, have a clearly defined objective and outcome with provisions for monitoring and evaluation of results, and are consistent with the priorities in the program. The ISRP also reviews the results of prior-year expenditures. The Council allows for public review and comment on the ISRP's recommendations. The Council then makes final recommendations to Bonneville on projects to be funded. In doing so, the Council must fully consider the ISRP's recommendations, explain in writing its reasons for not accepting ISRP recommendations, consider the impact of ocean conditions on fish and wildlife populations, and determine whether the projects employ cost-effective measures to achieve program objectives.

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