Northwest Power and Conservation Council

June 4, 2013

MEMORANDUM

TO: Council Members

FROM: John Harrison, Information Officer

SUBJECT: Draft 12th Annual Report to Northwest Governors on Fish and Wildlife Costs of the Bonneville Power Administration. The draft report was sent to you by e-mail.

PROPOSED ACTION: Approve the final version of the report with changes based on comments received from Council members and the public.

BACKGROUND

2013 is the 12th year the Council has reported to the Northwest governors on Bonneville's fish and wildlife costs. The purpose of the report is to provide information, not to assess or comment on the costs. Information in the report is provided by Bonneville and is not independently verified by the Council.

At this meeting, staff requests that you approve releasing the report for submission to the Governors and posting on the Council's website. The version of the report in the meeting packet reflects public comments received through the packet deadline, June 4, 2013. The deadline for comments is June 7, and if further comments are received by then staff will report them to the Council at the meeting.

There are three things to note in the revision-marked version in your packet, based on public comments:

1. Several of the dollar amounts in the draft report were hold-overs from last year's report; these were updated to the current-year amounts.
2. Bonneville, Northwest Requirements Utilities, and the Public Power Council asked that the paragraph at the top of Page 3 (of the version in your packet) that begins "Bonneville sets its rates …" be replaced with the paragraph from last year's report, which begins "Fish and wildlife costs account for …"
3. In response to another comment, a footnote is proposed to accompany Table 3D (Direct Program Support, FY 2012) explaining the different amounts among several tables for the cost of program support. It is on page 6 of the version in your packet.

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This is a Word version of the text of the draft report posted as a .pdf for public comment on May 9, 2013

Changes made through Monday, June 3, 2013, are indicated in revision marks

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 Columbia River Basin 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 — FCRPS).

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 costs. These 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 congressional appropriations for Federal Columbia River Power System fish and wildlife mitigation. 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 12th annual report, the Council provides an update of Bonneville's fish and wildlife costs through Fiscal Year 2012. 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 about 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 that issue, as well.

Summary of 2012 costs

In Fiscal Year 2012, Bonneville reported total costs of its fish and wildlife actions of approximately $644.1 million, as follows:

- $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 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 in the credit reduces the total fish and wildlife costs to $567.1 million in fiscal year 2012 (the credit is explained in more detail in the "Power System Costs" section of this report).

Bonneville's total fish and wildlife costs 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 (See Figure and Table 1D). Adding the forgone revenue ($152.2 million) to these costs brings the total to $2,744,3**5**~~0~~0,000. 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. ~~Bonneville sets its rates at a level sufficient to recover its revenue requirement during the rate period, currently about $30 per megawatt hour. The revenue requirement is an estimate of future costs and revenues, including fish and wildlife expenses and anticipated secondary power sales, debt service and other costs. Fish and wildlife obligations account for about one-third of the revenue requirement that Bonneville collects in its power rates. This is different from the percentage of Bonneville's Power Business Line costs that are attributed to fish and wildlife activities, described above.~~

Total costs, 1978-2012

The 2012 costs bring the grand total, from 1978 when the costs began, through 2012, to ~~about~~ $13**.06** billion (the total does not include $2.27 billion in capital investments, discussed above, such as the construction costs of facilities like fish hatcheries and fish-passage facilities at the dams, or $1.79 billion in credits from the federal government**; the** ~~ that effectively~~**credits effectively** reduce the total annual obligation by Bonneville).

Here, in descending order, is a breakdown of the major cost categories (total: $13.0**6**~~7~~ billion):

- $3.9**6**~~9~~ billion for power purchases to meet electricity-demand requirements in response to required river and dam operations that reduce hydropower generation.
- $2.88 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.
- $2.8**4**~~3~~ billion for the Council's direct Program. This amount does not include annual investments
- $2.84 for capital projects in the direct program, such as construction of fish hatcheries. Like a mortgage, an amount of capital is borrowed and invested in a project like construction of a hatchery in a particular year, but the annual payments of debt service are smaller. The actual work of fish production, habitat enhancement, and so on, is paid from the direct Program budget. With capital investments ($**625**~~739~~ million) added, the total for the direct program for the period 1978-2012 is $3.**46**~~57~~ billion.
- $2.11 billion in fixed expenses for interest, amortization, and depreciation on the capital investments.
- $1.2**6**~~5~~ 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) 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 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 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 2012, the overall annual average difference between the two studies was 1,234 average-megawatts. Of this, about 1,062 average-megawatts contributed to the estimated $152.2 million in forgone revenue. About 172 average megawatts contributed to the estimated $38.5 million in replacement power purchases.

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 costs that Bonneville pays annually, including a portion of the power purchases. Other costs are not factored into that 4(h)(10)(C) credit, such as forgone 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 2012 credit was $77.0 million.

The credit reduces the share of fish and wildlife costs paid by electricity ratepayers. As noted earlier in this report, the grand total of Program costs, forgone revenue, and power purchases in 2012 was approximately $644.1 million. Applying the 4(h)(10)(C) credit effectively reduces total Program-related costs, meaning that ratepayers were responsible for $567.1 million and the federal government was responsible for the nonpower-purposes share of $77.0 million.

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), 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 Council's Northwest Power Plan accounts for Program measures in its 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.

Footnote for Table 3D, page 37:

1) Bonneville defines the Direct Program Support category in two sub-categories: Bonneville program support and non-Bonneville program support. Each project Bonneville funds is assigned to one sub-category or the other. The distinction is whether the support is provided directly by Bonneville or by contractors paid by Bonneville. Costs are assigned wholly to one sub-category or the other. This table (3D) captures all program support costs, Bonneville and non-Bonneville. The total of Bonneville program support in this table, $17,499,936, is different than the total of Bonneville Program support in Table 4 on page 38, Direct Program Costs by Province ($16,742,715) because 1) costs by province are analyzed at the work element level, not the project level, in order to provide a more accurate breakdown of costs (a work element is a standardized action identified in a contract; projects typically include multiple contracts, and contracts typically include multiple work elements), and 2) in Table 4 the "Program Support/Admin/Overhead/Other" category is composed of costs in contracts and other internal Bonneville costs, such as personnel, that do not have specified geographic locations. Similarly, the amount of Bonneville program support reported in Table 2A on Page 33, Direct Program Costs by Species ($21,172,811), is different because those costs also are analyzed at the work element level, not the project level.