2018 Columbia River Basin Fish and Wildlife Program Costs Report

18TH ANNUAL REPORT TO THE NORTHWEST GOVERNORS

Northwest **Power** and **Conservation** Council

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Overview

Since 2001, in response to a request from the governors of Idaho, Montana, Oregon, and Washington, the Northwest Power and Conservation Council has reported annually on all costs related to fish and wildlife incurred by the Bonneville Power Administration. This includes the cost of implementing the Council's Columbia River Basin Fish and Wildlife Program.

In this 18th annual report, the Council provides an update of Bonneville's fish and wildlife costs in Fiscal Year 2018 (October 1, 2017 – September 30, 2018). The information in this report was provided by Bonneville in response to requests from the Council staff. The Council prepares this report solely for informational purposes, not as a requirement of the Northwest Power Act.

Summary of 2018 costs

In Fiscal Year 2018, Bonneville reported total fish and wildlife costs of approximately $480.9 million, as follows:

- $258.7 million in direct (expense) costs for the direct-funded program, which pays for projects such as habitat improvements, research, and some fish hatchery costs.
- $89.9 million in reimbursements to the federal Treasury for expenditures of appropriated funds 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 $11 million budget in Fiscal Year 2018 (the other half is assigned to Bonneville's Power Business Line budget).
- $105.1 million for debt service (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.
- $2.9 million in forgone hydropower sales revenue that results from dam operations that benefit fish but reduce hydropower generation. Bonneville's Fish and Wildlife Division considers forgone revenue as the result of spill at dams to benefit fish passage a cost attributable to fish and wildlife mitigation.
- $24.3 million in power purchases. Bonneville buys power in the wholesale market during periods when dam operations to protect migrating fish reduce hydropower generation below firm loads, such as by spilling water over dams in the spring or storing it behind dams in winter months in anticipation of increasing flows to aid fish passage.

The $480.9 million total does not include the amount Bonneville borrowed from the U.S. Treasury in 2018 totaling $83.2 million – $30.7 million for program-related (capital) projects, $800,000 for software development costs, and $51.8 million appropriated by Congress for associated federal projects as part of the Columbia River Fish Mitigation Program. These investments are all repaid by Bonneville. Including them in the same total as debt service on capital investments in the list above would double-count some of the costs.

The total also does not reflect a credit of $70.1 million from the federal Treasury related to fish and wildlife costs in 2018 that Bonneville is required to take under Section 4(h)(10)(C) of the Northwest Power Act. The annual credit comprises the obligations of other federal agencies for dam purposes other than hydropower, such as navigation, and which Bonneville pays in full. The credit is applied to Bonneville's federal Treasury debt. Subtracting the credit reduces the total fish and wildlife costs to $410.8 million in fiscal year 2018 (the credit is explained in more detail in the "Power System Costs" section of this report).

The total of all fish and wildlife costs reported by Bonneville's Fish and Wildlife Division for Fiscal Year 2018 ($480.9 million) comprises 19.6 percent of Bonneville's entire Power Business Line costs of $2.450 billion. This amount includes forgone revenue and power purchases that result from lost hydropower sales as the result of court-ordered spill to assist juvenile fish migration past Columbia and Snake river dams. Because forgone revenue is an estimate of lost revenue and not an actual cost, Bonneville's Power Business Line does not include forgone revenue, estimated at $2.9 million by the Fish and Wildlife Division in 2018, in its calculation of annual fish and wildlife costs (the Power Division total is $478 million in Fiscal Year 2018). Without forgone revenue, fish and wildlife costs comprise 19.6 percent of Bonneville's $2.450 billion in total power-related costs.

Fish and wildlife costs account for a significant portion of the rate Bonneville charges its wholesale power customers. Approximately one third of Bonneville's 2017-2019 wholesale rate of $35.57 per megawatt hour is estimated to be associated with its fish and wildlife program. In setting rates, Bonneville estimates direct fish and wildlife costs and forgone revenues attributable to fish and wildlife for the rate period. Actual costs during a fiscal year will differ from forecasts. This is because the amounts included in rates are estimates of future costs often made in a rate case several years in advance. Actual costs are determined by market price, streamflow, and other operational conditions during the operating year, and these can vary significantly from forecasts. This report only includes actual fish and wildlife costs, as reported by Bonneville, not the estimated costs in rates.

The Council understands the impact fish and wildlife costs have on rates and is working on measures to keep its program as efficient and effective as possible. Accordingly, the Council formed a cost-savings workgroup with Bonneville that identifies and reviews on a regular basis fish and wildlife projects for potential close-out or significant cost reductions (greater than $50,000). The cost-savings work began in 2015, when $182,746 in savings were identified and reprogrammed in Fiscal Year 2016 to other projects. In 2016, savings totaling $560,000 were identified, and in Fiscal Year 2017, Bonneville and Council staff identified additional projects and the savings grew to roughly $651,000. Cost savings identified for Fiscal Year 2018 totaled about $1.1 million, and for 2019, about $1.4 million.

Cost savings allow new projects to be funded by shifting money among projects without increasing the total fish and wildlife budget. Most of the projects identified for savings are in the process of a "smart closeout," meaning that their funding will decline by approximately one third each year for three years. Due to this process, the cost-savings increase each year until the projects completely close out.

2018 spill surcharge and allocation of overhead costs

In Fiscal Year 2018, Bonneville's surplus power sales were lower than usual as the result of court-ordered spill to assist juvenile fish passing Columbia and Snake river dams. To make up for projected lost revenue, Bonneville reduced the annual fish and wildlife budget $20 million.

The spill surcharge, an appendix to the 2018 power rate schedules, is a formula rate adjustment that approximates the additional amount that customers would have been charged if Bonneville had known planned spill operations when establishing the 2018 rate case. In fact, the 2018 spill operations were not known at that time.

The spill surcharge is calculated independently for each year of the Fiscal Years 2018–2019 rate period based on planned spill operations for each year. For Fiscal Year 2018 the estimated cost for court ordered spill was $38.6 million. To address this cost, in addition to secondary revenues and a $10.1 million spill surcharge to customers, the fish and wildlife budget was reduced by $20 million when compared to the rate case forecast, from $277 million to $256 million for Fiscal Year 2018. Actual direct spending in Fiscal Year 2018 was $248 million. BPA has proposed there will be no spill surcharge for Fiscal Year 2019. The additional cost of spill will be offset through fish and wildlife program reductions in Fiscal Year 2019 compared to those assumed for setting rates.

In addition to the $20 million annual budget reduction, Bonneville changed the allocation methodology for agency-wide overhead costs in Fiscal Year 2018 and assigned $10 million of internal costs to the fish and wildlife program, a net increase of approximately $6 million in overhead costs but which is also partially offset by an increase in the 4(h)(10)(C) credit calculation. This cost was included in the calculation of the 4(h)(10)(C) credit, which is discussed elsewhere in this report. As a result, the total of direct fish and

wildlife spending appears in Tables 1 and 5 of this report as $258.7 million – expense only, not including capital commitments (with $30.7 million in capital, the total is $289.4 million, and this is the total in Tables 2, 6, 8, 9, and 10). The tables are posted with the online version of the report; see Page 9.

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 (forgone revenue).

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 federal hydropower system. While the Council recognizes there is debate over the reporting of these power-system costs, a principle of the Act requires the Council to consider the "monetary costs and electric power losses resulting from implementation of the program" (Section 4(h)(8)(D)) which are allocated by the Administrator. Accordingly, this report includes forgone revenues and power purchases as reported by Bonneville.

The amounts of forgone revenue and power purchases can vary widely from year to year due to differences in streamflows, power prices, and fish operations. Bonneville expects the annual total forgone revenue and power purchases amount to be roughly $200 million, but the variation around that expected value is quite large. For example, the results from the 80 individual water years modeled have an annual total range of approximately $21 million to $314 million. Also, extreme events can result in values outside the modeled range as happened in 2001 when the total forgone revenue and power purchases exceeded $1.5 billion. During some months of the year (most notably spring), the hydropower system typically generates sufficient power, even with fish operations, to both meet firm load and generate surplus power. But at times during these months, fish operations reduce electrical generation at the dams, thereby lowering 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 an assumption that surplus power sales will be lowered 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 may 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 costs.

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 dam-operating requirements for fish protection, and the other has no fish-protection requirements. The differences for each month are calculated and the corresponding monthly actual Mid-Columbia wholesale electricity market prices (as reported by the Intercontinental Exchange, or ICE) are applied. 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 2018, the overall annual average difference between the two studies (fish protection and no-fish

protection) was 532 average-megawatts. Of this, about 380 average-megawatts contributed to the estimated $2.9 million in forgone revenue. About 152 average megawatts contributed to the estimated $24.3 million in replacement power purchases.

As noted above, 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 in full 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 a weighted, system-wide average of 22.3 percent of the authorized purposes of the federal dams. The annual credit to Bonneville is based on this percentage and is applied against Bonneville's Treasury payment at the end of the year.

The 2018 credit was $70.1 million – approximately 22.3 percent of $313.7 million, the total of fish and wildlife capital costs ($30.7 million), direct program costs ($258.7 million), and power purchases ($24.3 million) for fish enhancement. In effect, the credit reduces the fish and wildlife costs paid by electricity ratepayers. As noted earlier in this report, the grand total of all fish and wildlife costs incurred by Bonneville in 2018 was approximately $480.9 million (including forgone revenue and power purchases). Applying the 4(h)(10)(C) credit reduces Bonneville's total fish and wildlife-related costs, meaning that ratepayers were responsible for $410.8 million and the federal government credited Bonneville $70.1 million.

Background

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 (16 USC 839; Public Law 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 Bonneville Power Administration satisfies its Power Act responsibilities for fish and wildlife mitigation through funding of 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).

In addition to this annual report on Bonneville's fish and wildlife costs, the Council also tracks progress of fish and wildlife efforts in the Columbia River Basin using three high-level indicators (HLI). 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 these indicators to provide a more comprehensive picture of fish and wildlife in the Columbia River Basin. Columbia River basinwide HLI information is reported in graphics that are posted on the Council's High-Level Indicator report webpage. Subbasin-specific information is posted on the Council's subbasin dashboard webpage. The indicators, questions, and graphics are developed and refined in collaboration with fish and wildlife agencies and tribes. Information used to populate the indicator graphics is provided by 1) sponsors of projects funded through the fish and wildlife program, and 2) fish and wildlife agencies and tribes that report on projects not funded through the program. The current reporting status of the three high-level indicators can be viewed in the Table of Indicators on the Council's website.

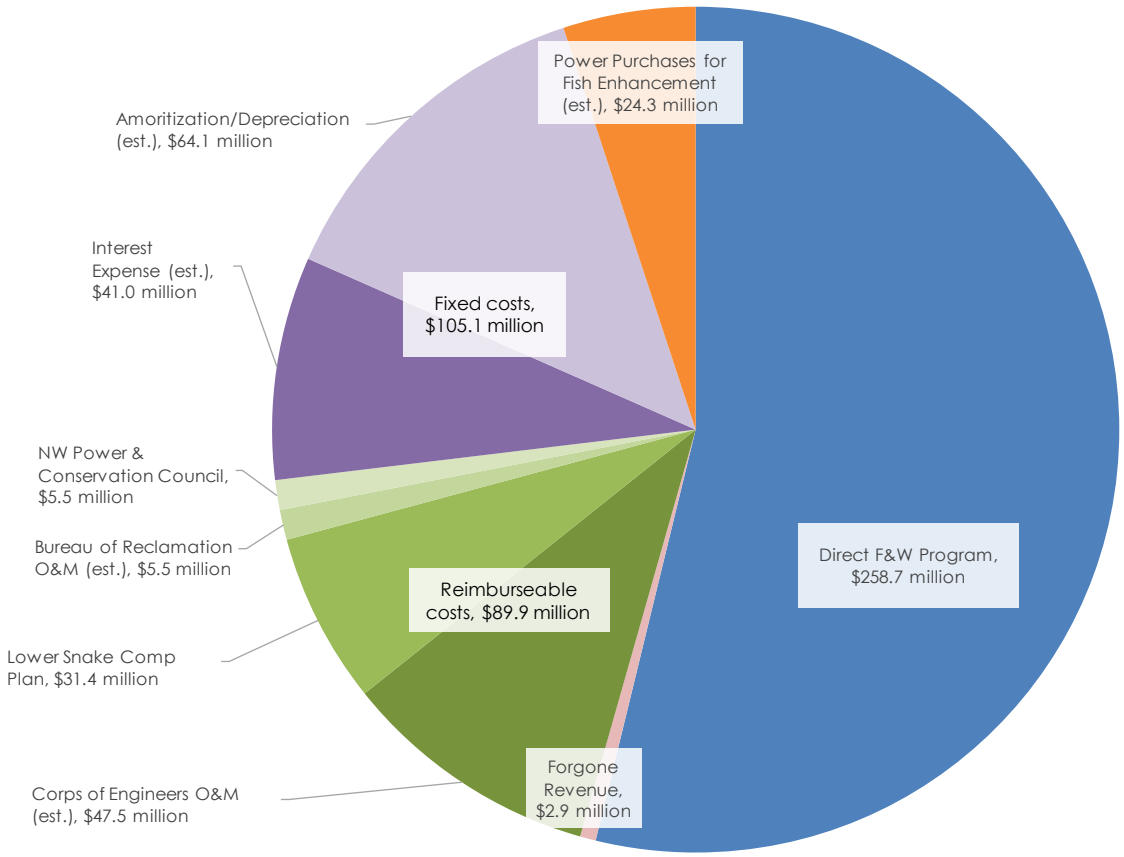
The Council also is building a number of tools and maps to report fish and wildlife costs and information about projects that implement the program. See the Council's Resource Tools and Maps page.

Figures

Data tables for all figures at www.nwcouncil.org/reports/financial-reports/2019-5

Figure 1: Costs by Major Area, FY2018

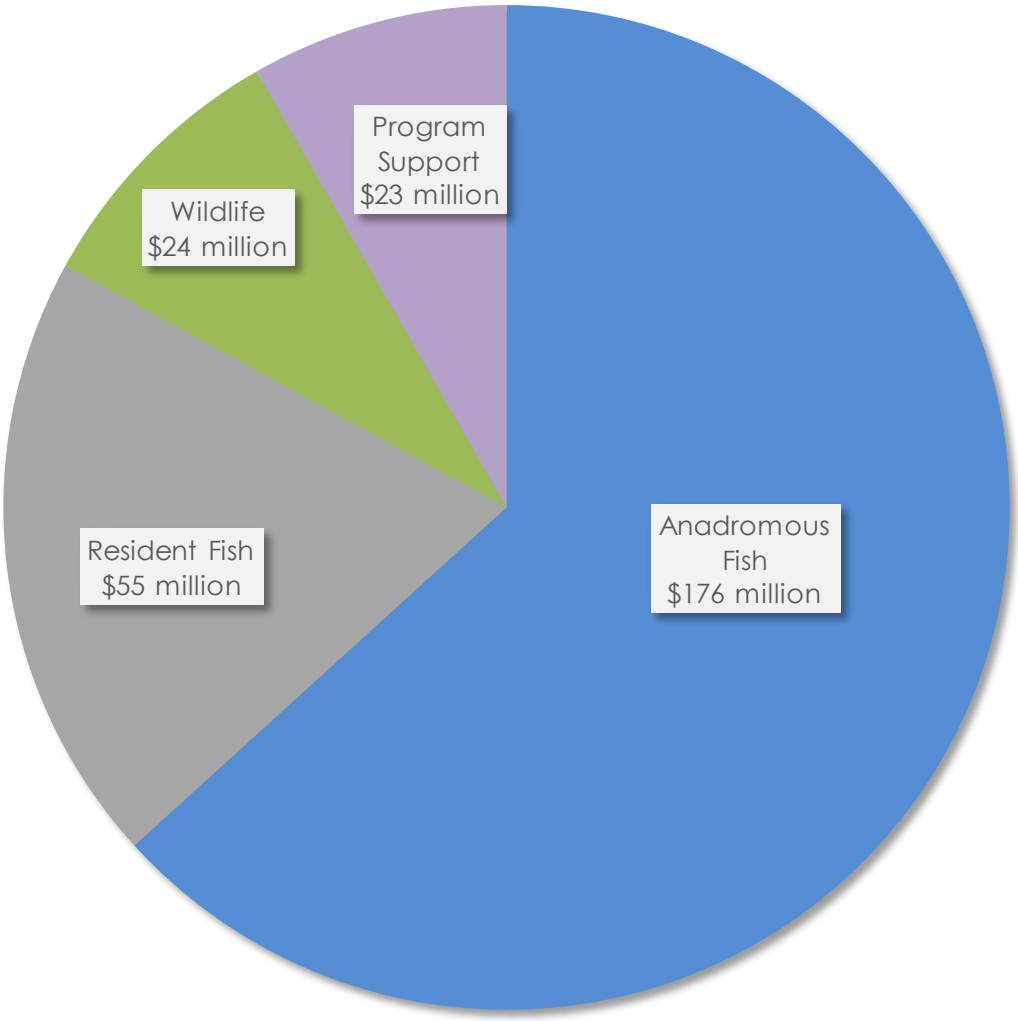
Total of $480.9 million does not reflect $83.2 million in obligations to capital projects for fish and wildlife projects, software development, and structures at dams, or $70.1 million federal credits Bonneville received from the U.S. Treasury



This information has been made publicly available by BPA on 1/18/2019. The figures shown are consistent with audited actuals that contain Agency approved financial information, except for forgone revenues and power purchases which are estimates and do not contain Agency approved financial information

Figure 2: Costs by Types of Species, FY2018

Total: $289.4 million includes $30.7 million in obligations to capital projects



1) Starting in 2008, Spending can be tracked back to a work element where the contractor explicitly identified the "Primary Focal Species" benefiting from the work.

2) Program Support includes includes contracts that contain only administrative work elements or program level spending that could not be mapped to a specific project, as well as BPA internal overhead such as personnel costs.

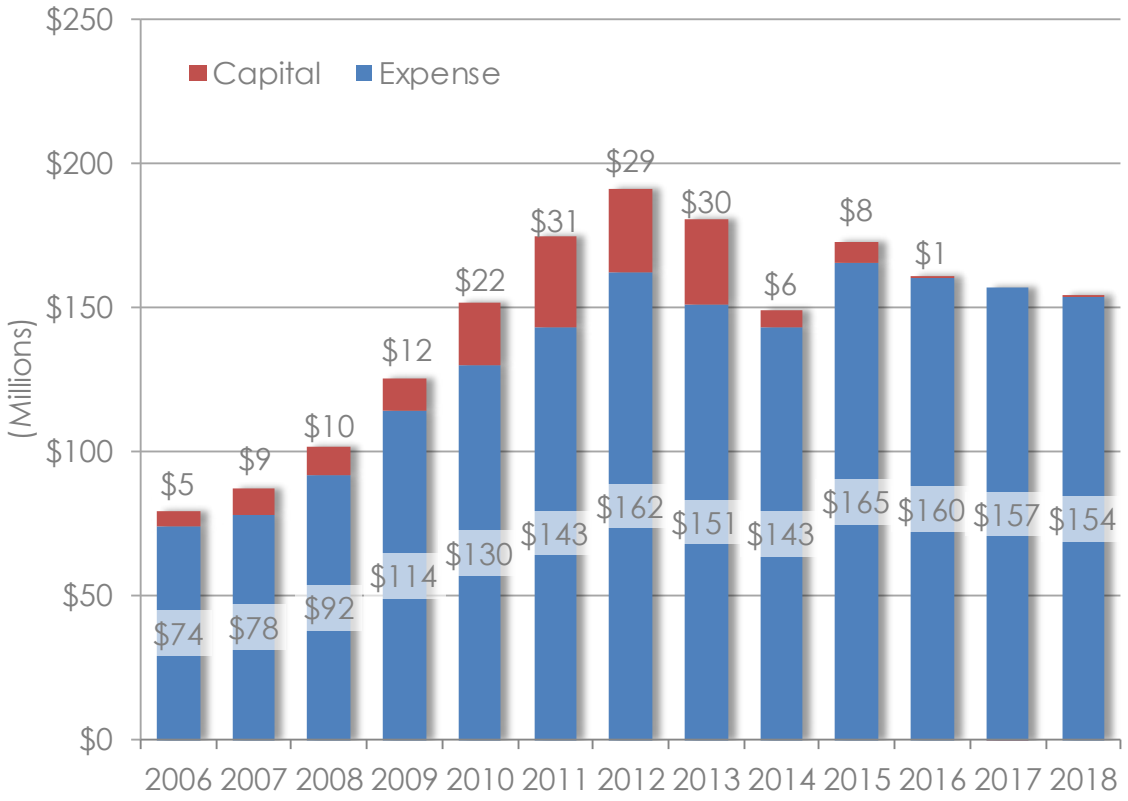
3) FY2017 revised as of February 12, 2019.

4) In prior years, a portion of BPA agency general and administrative (G&A) costs was allocated to fish and wildlife (F&W) overhead. Starting in FY2018, the agency G&A was calculated using a revised methodology and recognized as a distinct charge from the F&W program overhead. However, those charges are included in the 4h10c crediting as part of total F&W costs.

Similar to G&A, the CRSO EIS also has a portion included in the F&W total costs, but it is not directly part of the Integrated F&W program.

Source: Bonneville Power Administration

Figure 3: Costs of FCRPS BiOp Projects, 2006-2018



1) Estimated spending is based at the project level. Therefore, if a project partially supports the FCRPS BiOp, all expenditures for the project are included.

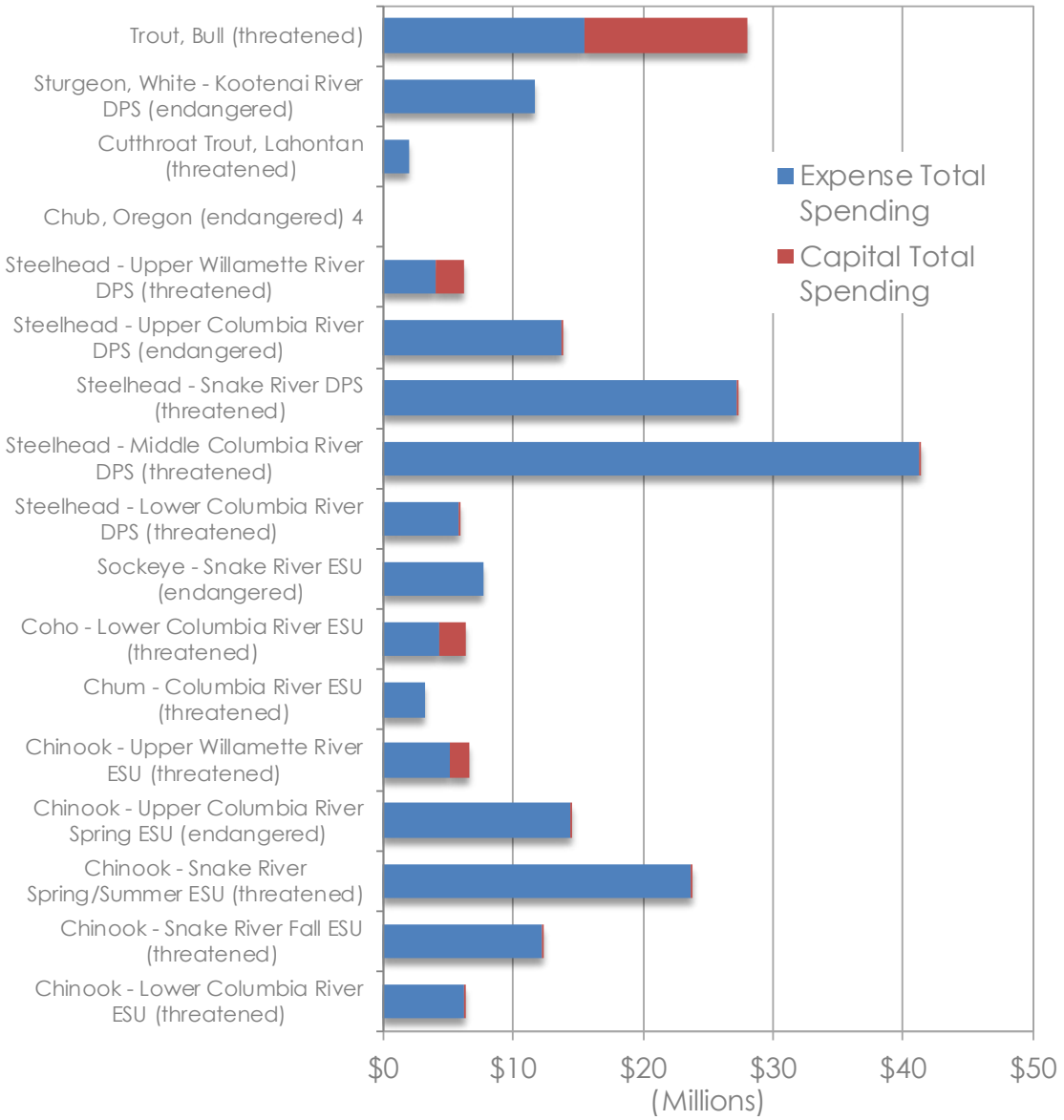
2) Passage projects were moved from Capital to Expense funding starting with FY16 contracts.

3) FY2017 reviewed as of February 12, 2019; no changes.

Source: Bonneville Power Administration

Figure 4: Costs Associated with ESA-Listed Fish, FY2018

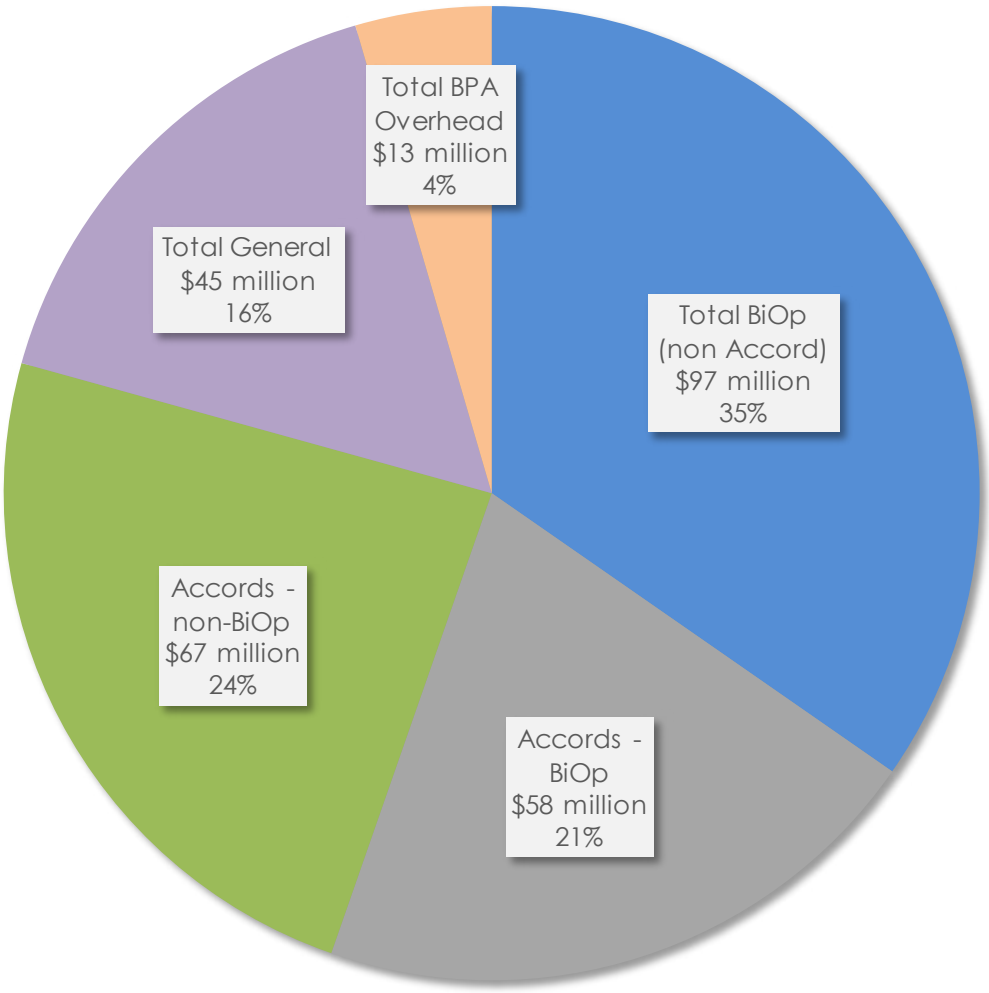
Total: $216.4 million (Expense: $198.1 million, Capital: $18.3 million)



Source: Bonneville Power Administration

Figure 5: Costs by Fund, FY2018

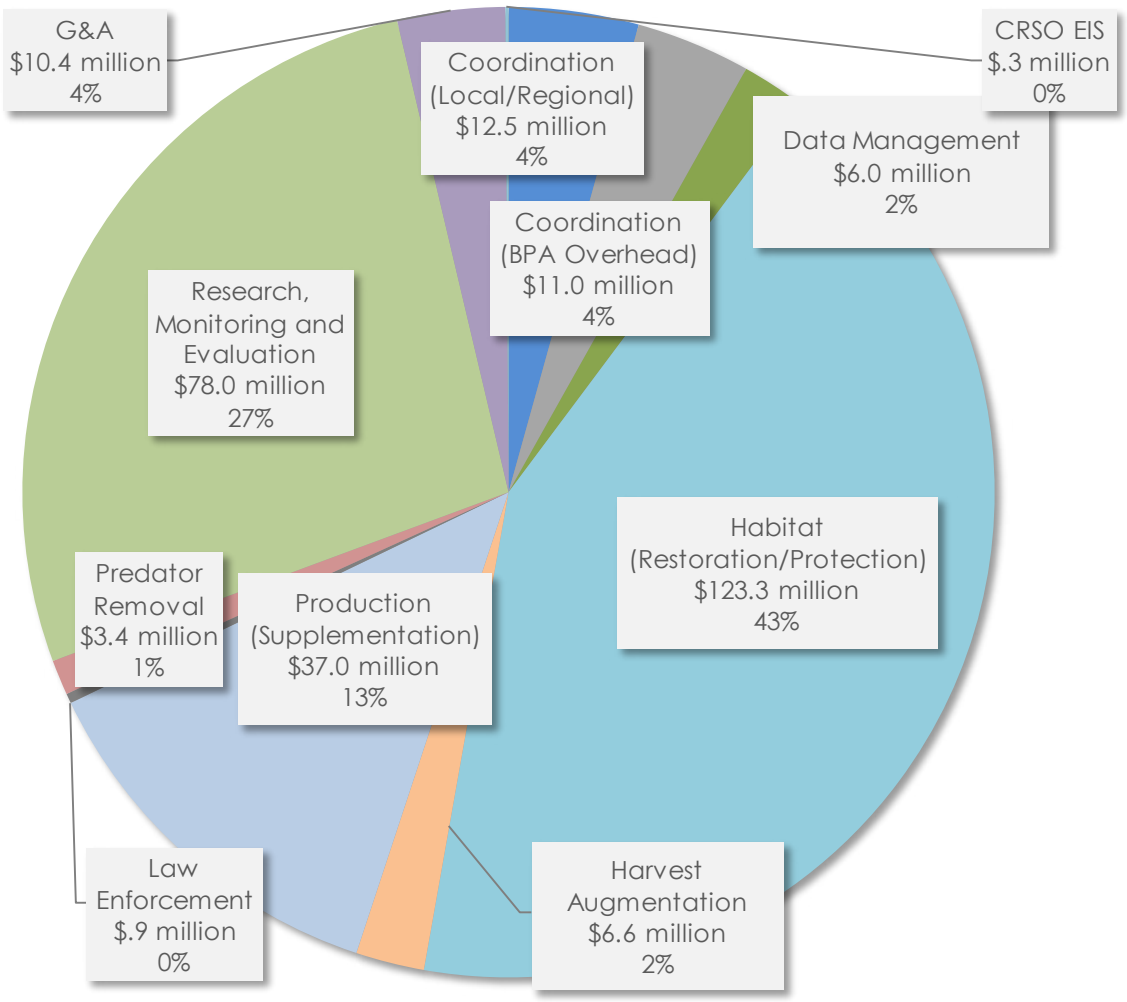
Total: $289.4 million includes $30.7 million in obligations to capital projects



Source: Bonneville Power Administration

Figure 6A: Costs by Category, FY2018

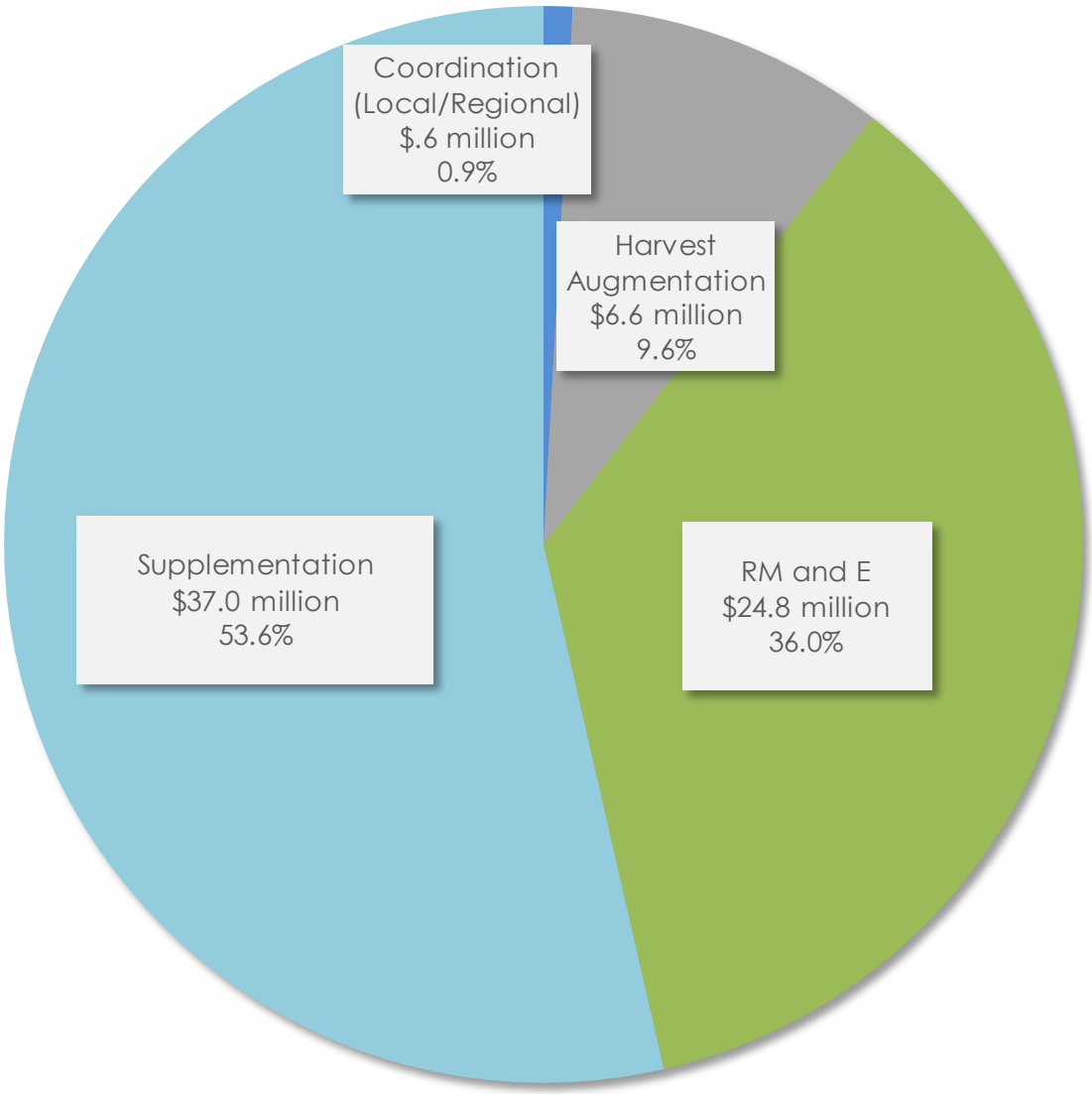
Total: $289.4 million includes $30.7 million in obligations to capital projects



Source: Bonneville Power Administration

Figure 6B: Costs of Artificial Production by Category, FY2018

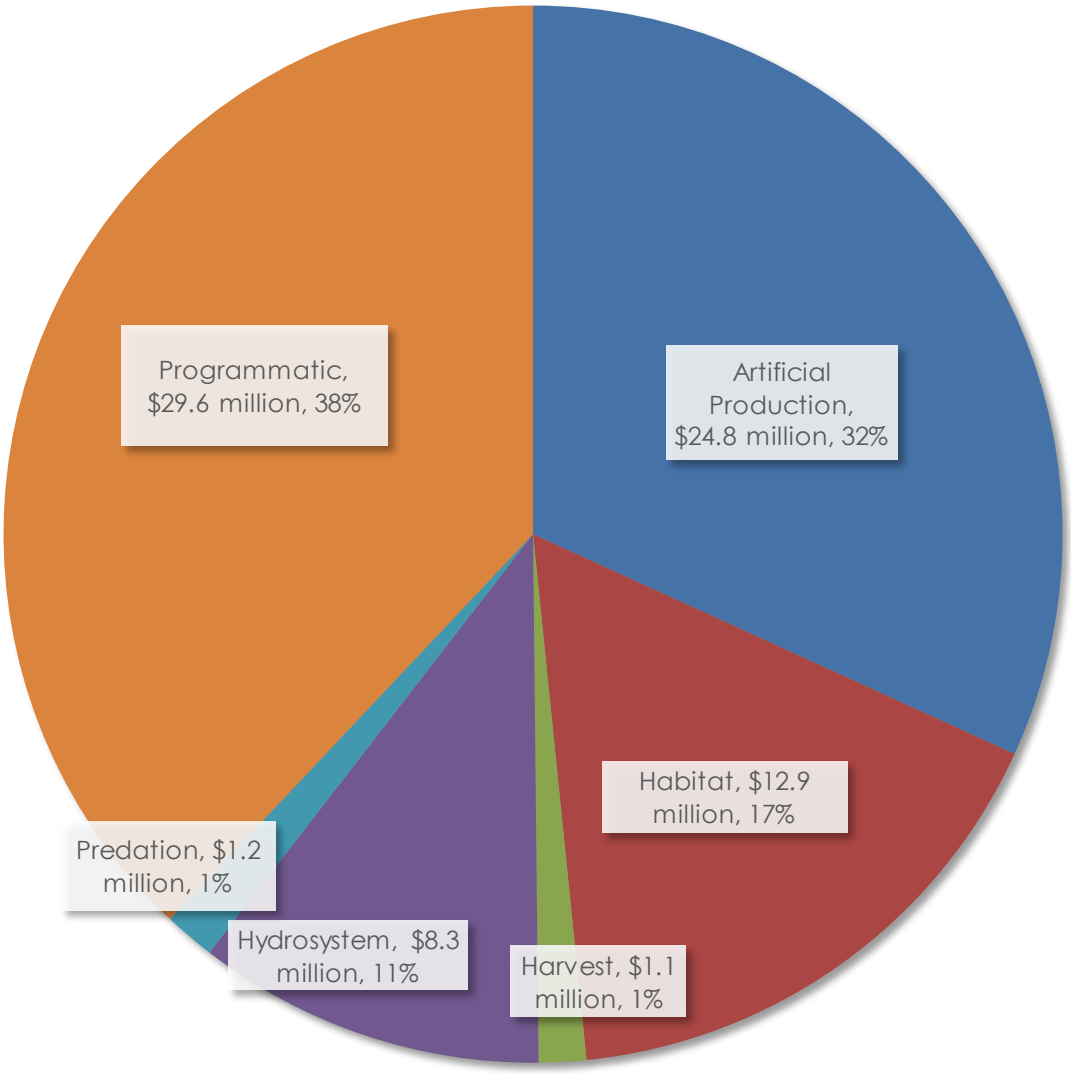
Total: $69 million does not include obligations to capital projects



Source: Bonneville Power Administration

Figure 7: Costs of Research, Monitoring and Evaluation (RM&E), FY2018

Total: $78 million does not include obligations to capital projects



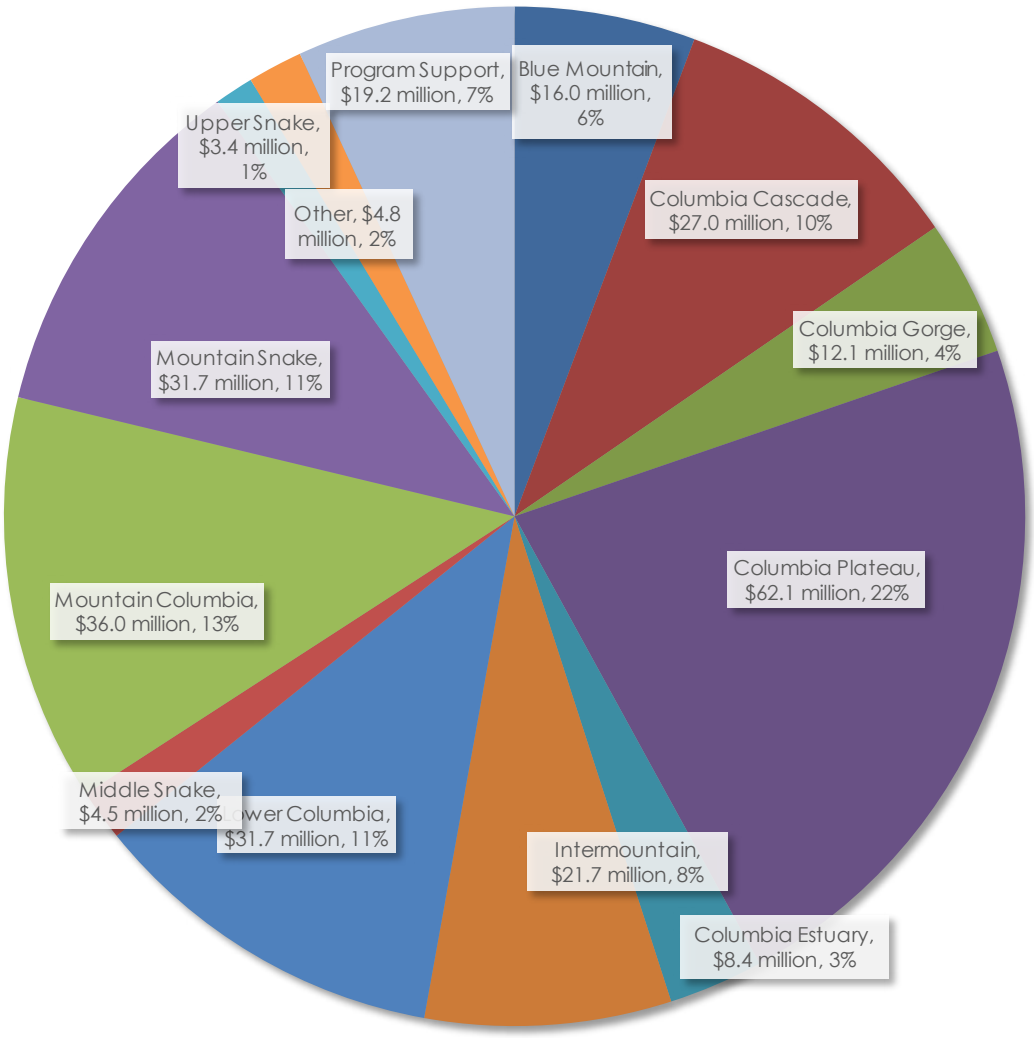
1) Estimated spending is based at the project level. Therefore if a project is labeled Artificial Production, but also supports Habitat, the expenditures are counted as Artificial Production.

2) The term "Programmatic" is used to describe projects whose purpose is broader than a specific project or region, but falls under the larger umbrella of the overall Fish and Wildlife Program. Examples include projects such as Coded Wire Tags, Climate Change Impacts, the Integrated Status and Effectiveness Monitoring Program, the Comparative Survival Study, and the Fish Passage Center.

Source: Bonneville Power Administration

Figure 8: Costs by Province, FY2018

Total: $289.4 million includes $30.7 million in obligations to capital projects



1) Starting in 2008, spending by province is tracked in Pisces based on where the contractor explicitly identified work location.

2) Other includes "Undetermined" locations such as Ocean, Canada; and provinces not recognized by NPCC.

3) Program Support/Admin includes spending that cannot be traced back to a contract that has at least one work element requiring location; contracts without any work elements at all; program level spending not mapped to a specific project; and BPA Overhead.

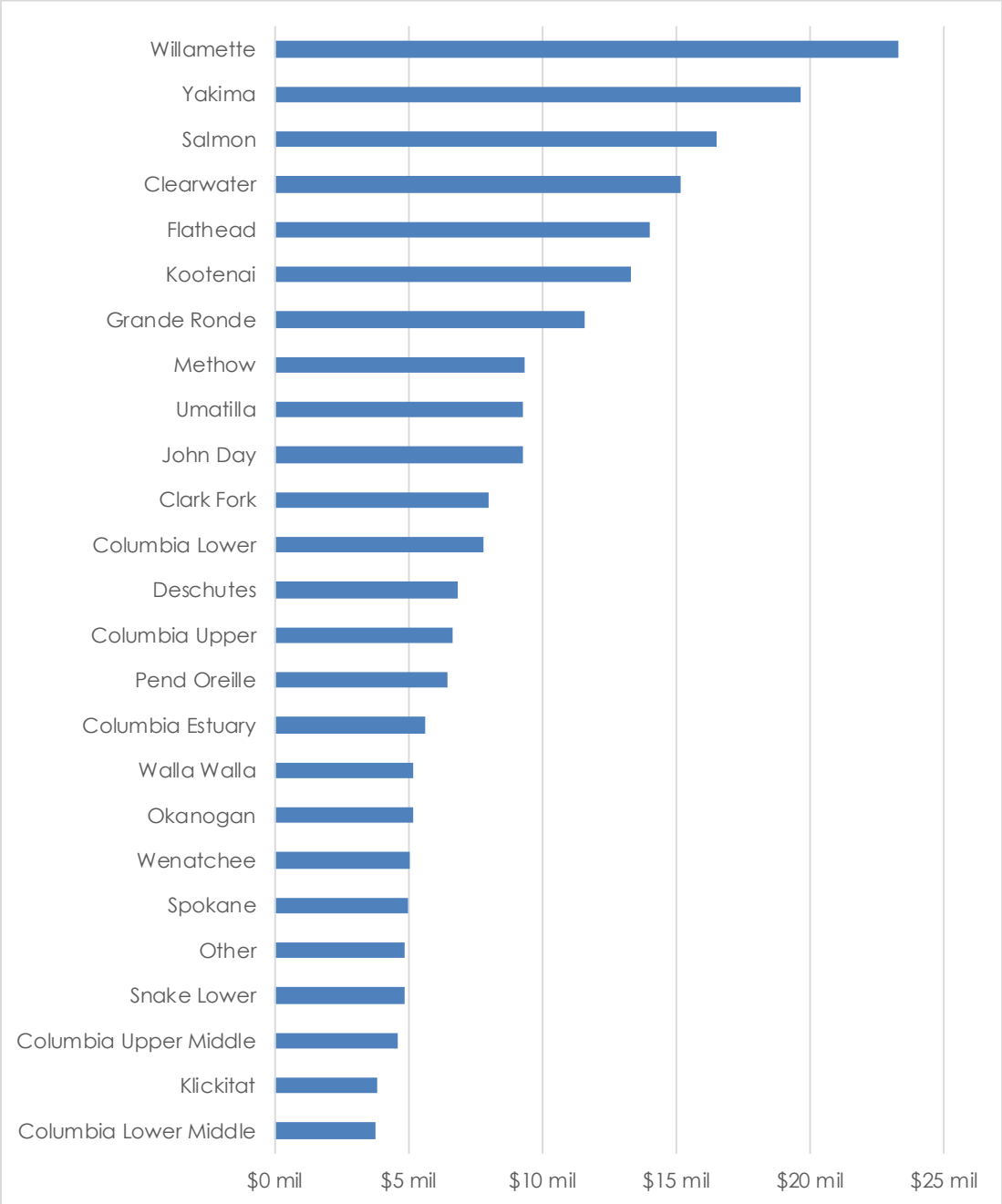
4) In prior years, a portion of BPA agency general and administrative (G&A) costs was allocated to fish and wildlife (F&W) overhead. Starting in FY2018, the agency G&A was calculated using a revised methodology and recognized as a distinct charge from the F&W program overhead. However, those charges are included in the 4h10c crediting as part of total F&W costs.

Similar to G&A, the CRSO EIS also has a portion included in the F&W total costs, but it is not directly part of the Integrated F&W program.

Source: Bonneville Power Administration

Figure 8a: Costs by Subbasin, FY2018

Total: $289.4 million includes $30.7 million in obligations to capital projects

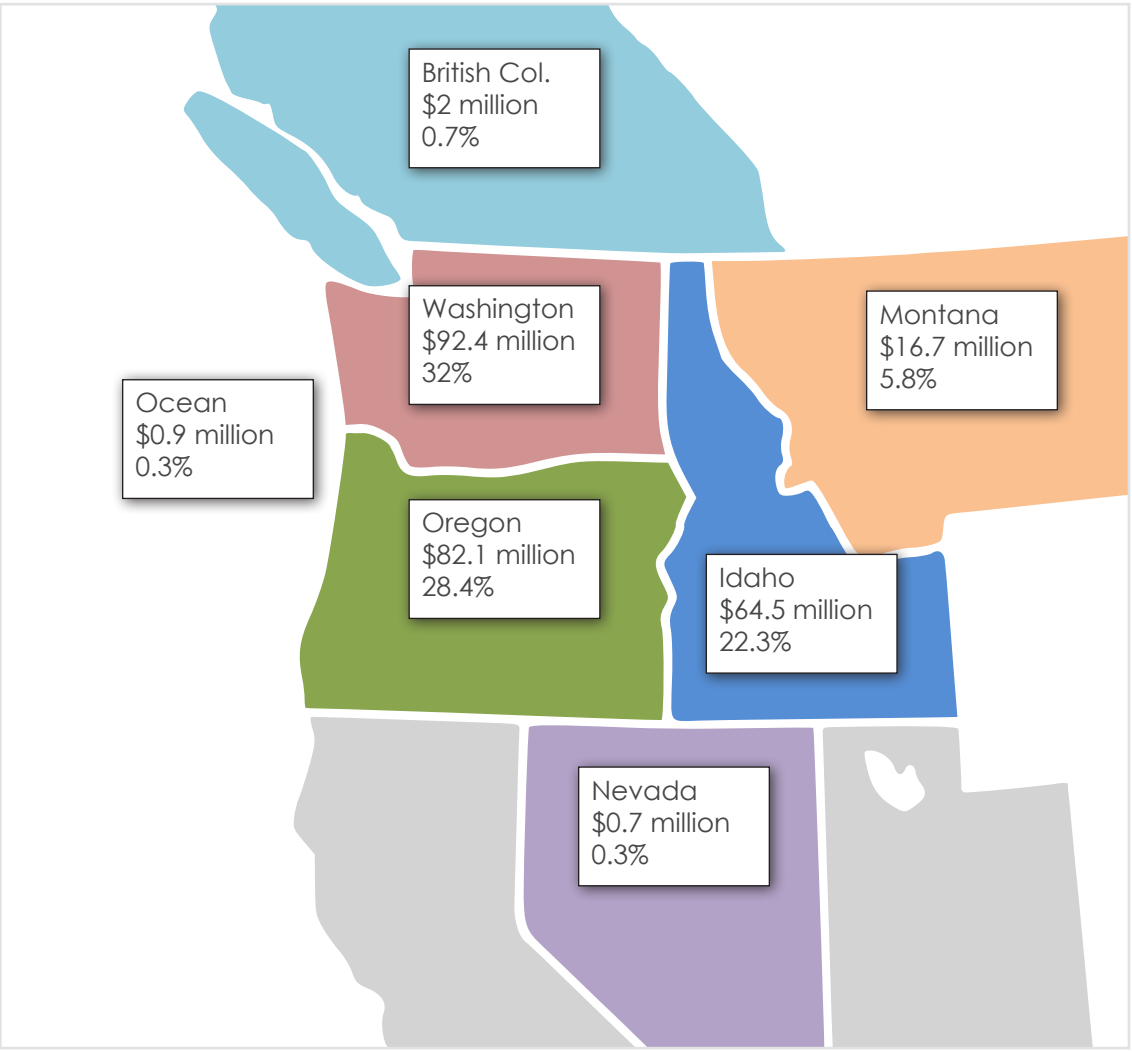


Top 25 subbasins listed here, others available in the Excel file. Other includes "Undetermined" locations such as Ocean, Canada; and provinces not recognized by NPCC.

Source: Bonneville Power Administration

Figure 9: Costs by Work Element Location, FY2018

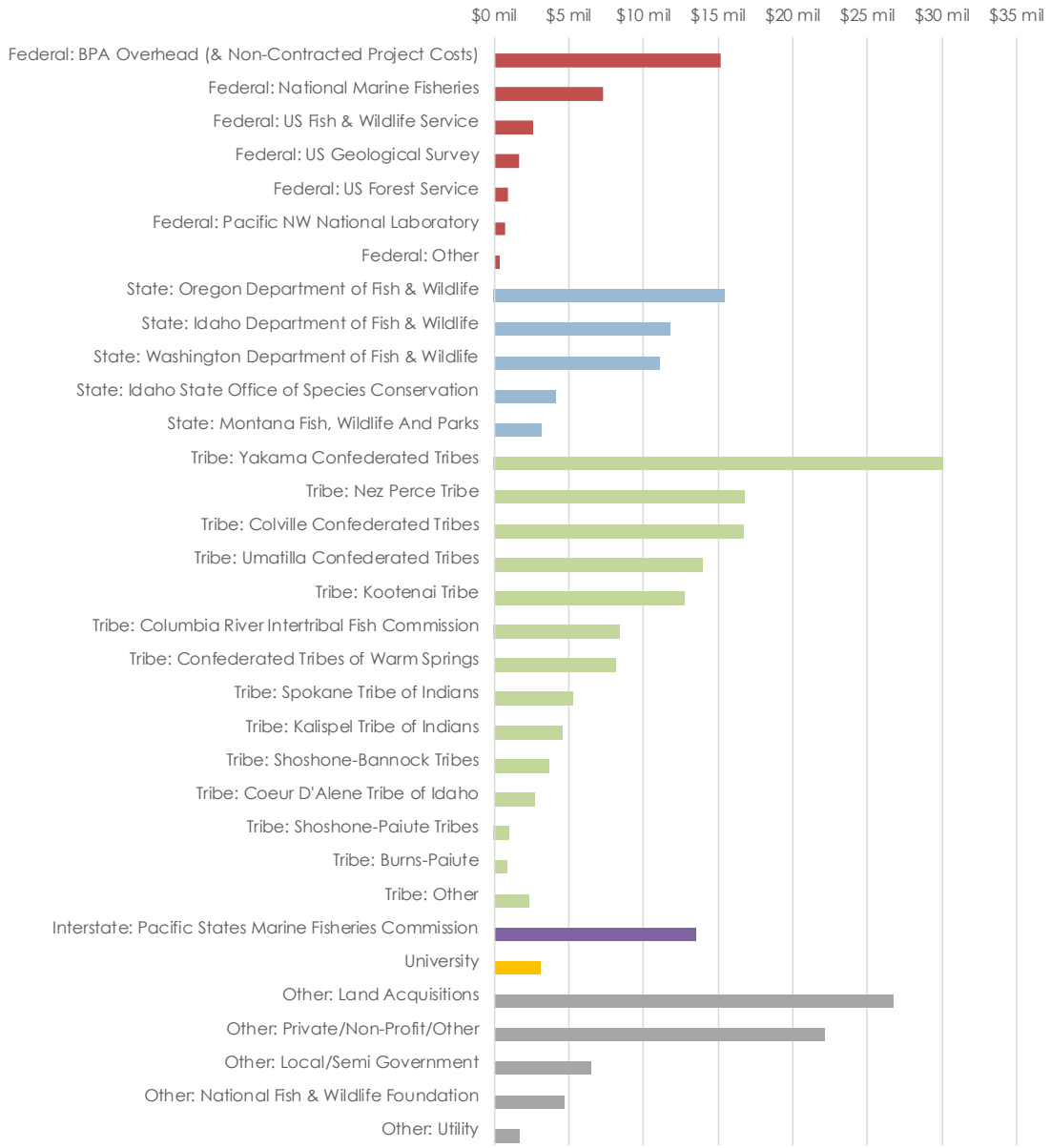
Total: $289.4 million includes $30.7 million in obligations to capital projects



Source: Bonneville Power Administration

Figure 10: Costs by Contractor Types, FY2018

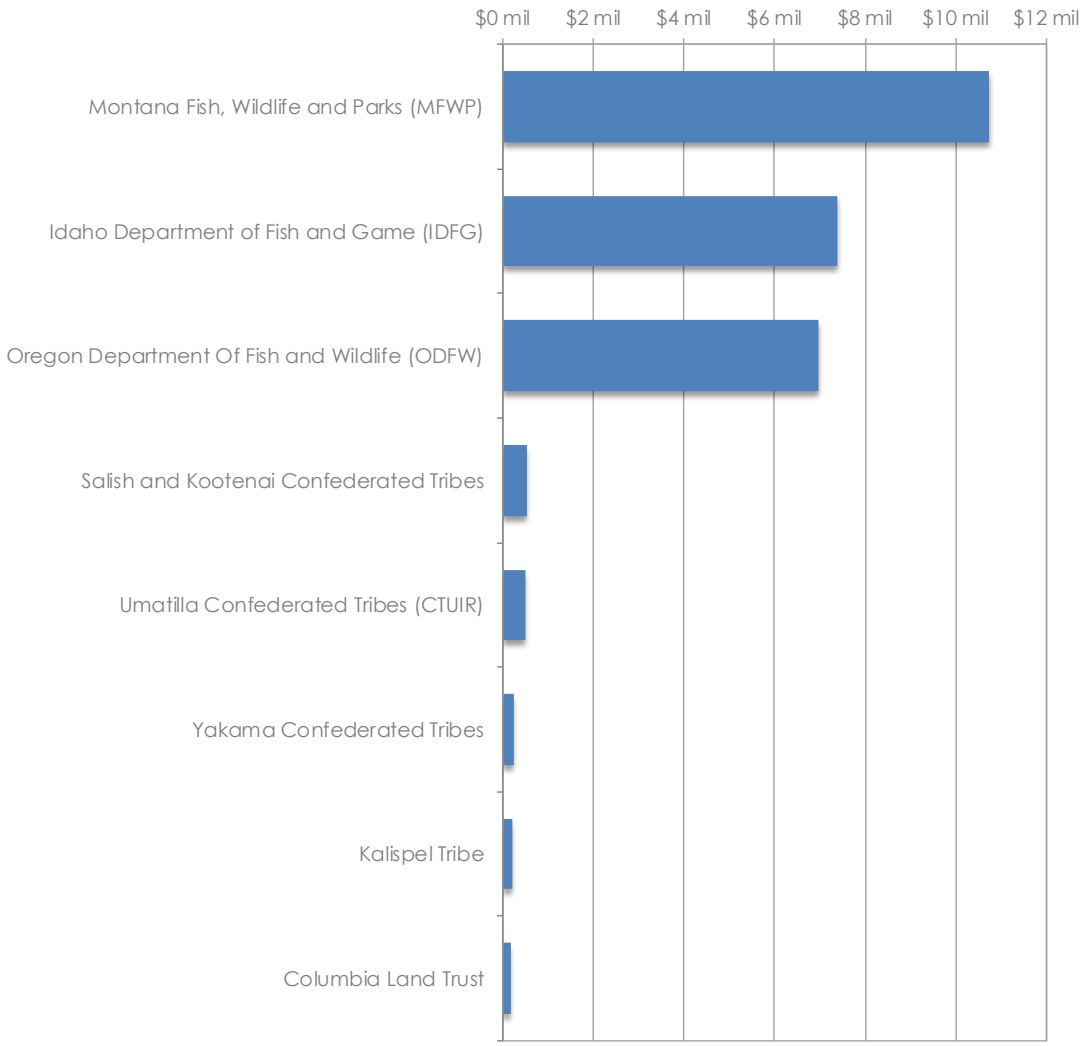
Total: $260.0 million includes $5.4 million in obligations to capital projects



Source: Bonneville Power Administration

Figure 11: Costs of Land Purchases for Fish and Wildlife Habitat, FY2018

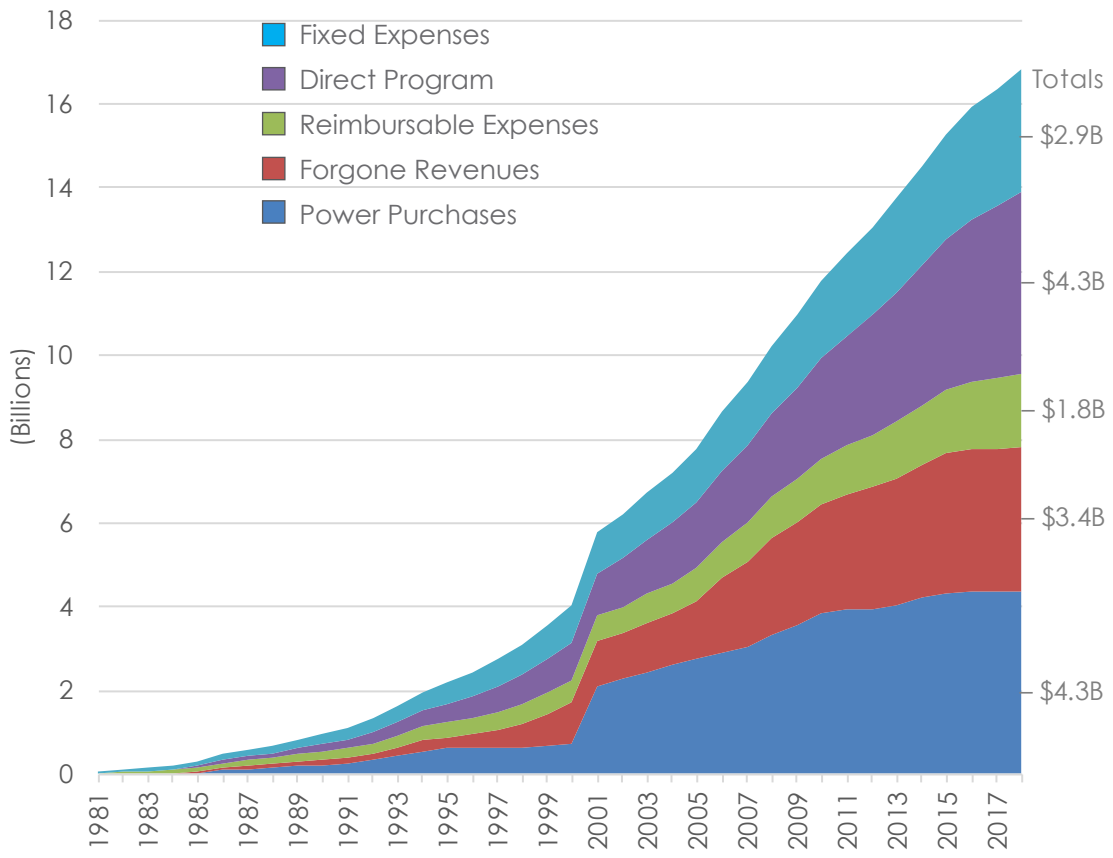
Total: $26.7 million



Source: Bonneville Power Administration

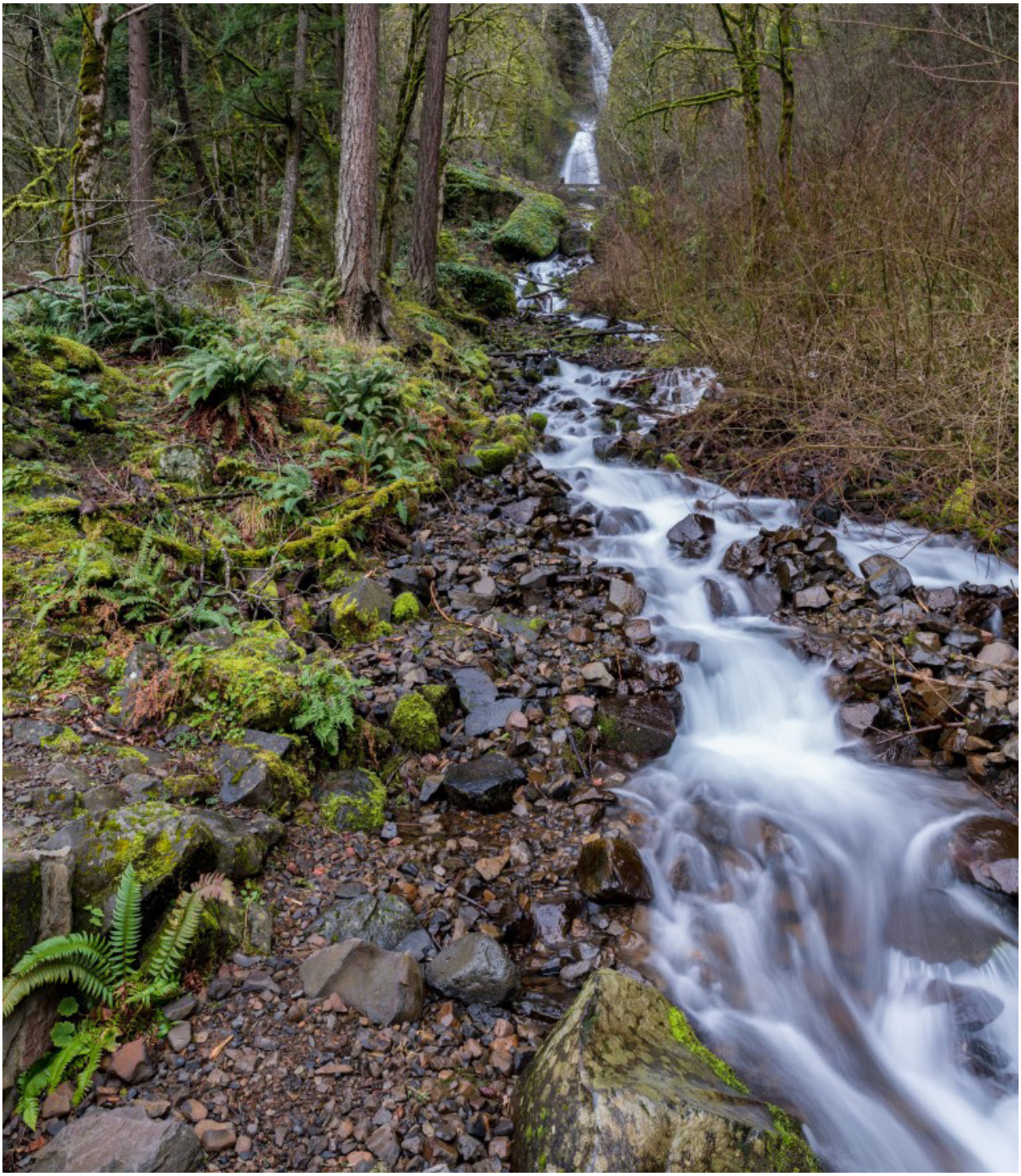
Figure 12: Cumulative Costs 1981-2018, by Major Spending Area

Total: $16.8 billion does not reflect $2.87 billion in obligations to capital projects or $2.26 billion in credits



Source: Bonneville Power Administration

Province/Subbasin Map (Reference for Figures 8 and 8a)



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Northwest **Power** and **Conservation** Council

851 SW SIXTH AVE, SUITE 1100 | PORTLAND, OR 97204-1348
WWW.NWCOUNCIL.ORG | 503-222-5161 | 800-452-5161
STEVE CROW, EXECUTIVE DIRECTOR
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