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March 17, 2020

MEMORANDUM

TO: Council members

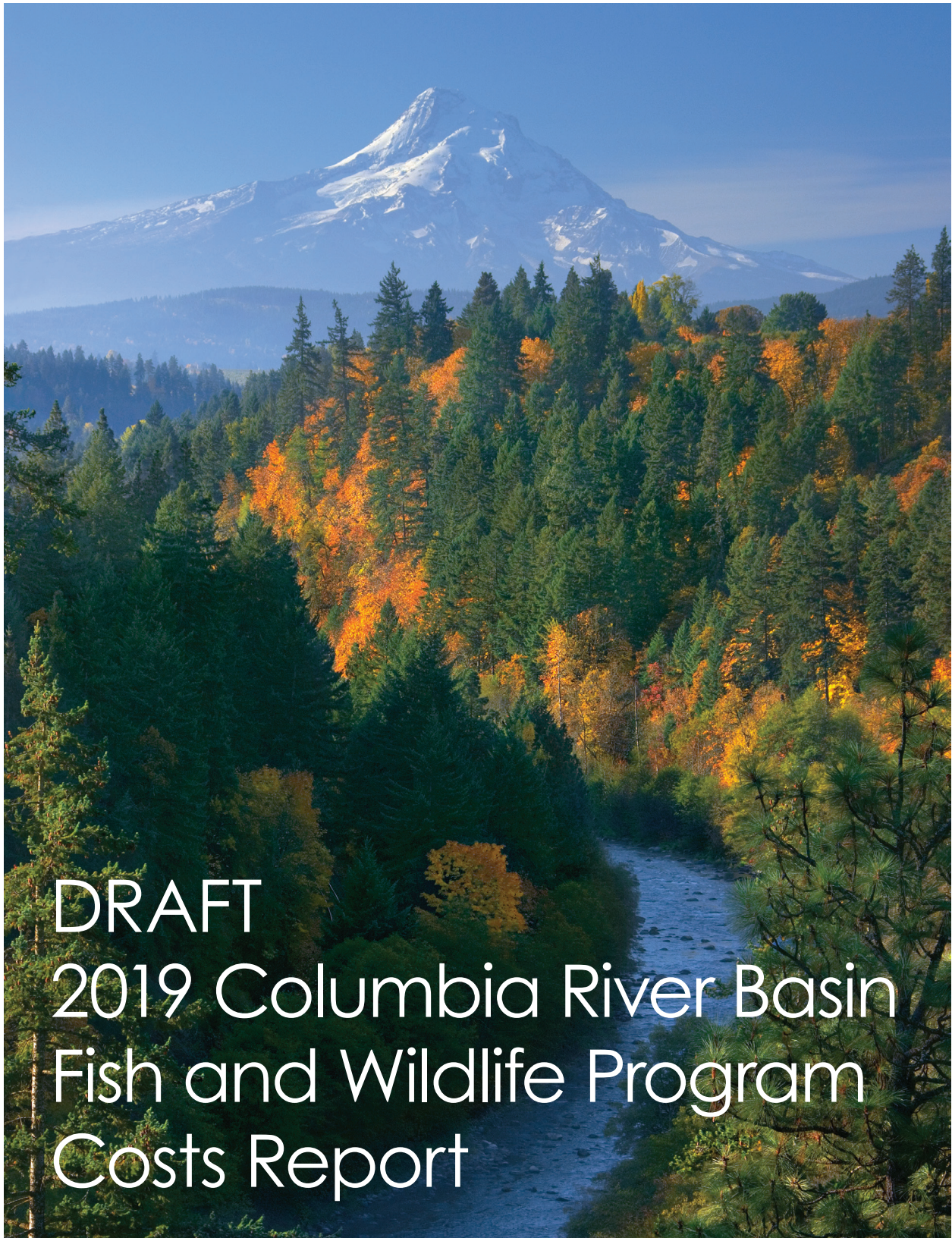
FROM: John Harrison, Information Officer

SUBJECT: Release draft Fiscal Year 2019 report to the Governors on Bonneville's fish and wildlife costs

BACKGROUND:

In your packet for this meeting is the 2020 report on Bonneville's fish and wildlife costs for Fiscal Year 2019. Staff asks that you approve the release of the report for 30 days of public comment, Friday, March 20 through the close of business Friday, April 24.

This is the Council's 19th annual report on Bonneville's fish and wildlife costs.



DRAFT
2019 Columbia River Basin
Fish and Wildlife Program
Costs Report

19TH ANNUAL REPORT TO THE
NORTHWEST GOVERNORS

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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 19th annual report, the Council provides an update of Bonneville's fish and wildlife costs in Fiscal Year 2019 (October 1, 2018 – September 30, 2019). 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 2019 costs

In Fiscal Year 2019, Bonneville reported total fish and wildlife costs of approximately \$788.1 million, as follows:

- 240.4 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; although not a cost reimbursed to the Treasury, this category also includes one-half of the Council's \$11.2 million budget in Fiscal Year 2019 (the other half is assigned to Bonneville's Power Business Line budget).

- \$105.8 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.
- \$174.4 million in forgone hydropower sales revenue that results from dam operations that benefit fish but reduce hydropower generation, such as spill to assist downstream juvenile fish passage. Bonneville's Fish and Wildlife Division considers forgone revenue as the result of spill a cost attributable to fish and wildlife mitigation.
- \$177.6 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 \$788.1 million total does not include the amount Bonneville borrowed from the U.S. Treasury in 2019 – \$22.3 million for program-related (capital) projects, and \$55.5 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 \$98.2 million from the federal Treasury related to fish and wildlife costs in 2019 that Bonneville is authorized to receive 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 \$689.9 million in fiscal year 2019 (the credit is explained in more detail in the “Power System Costs” section of this report).

The total of all fish and wildlife costs, as reported by Bonneville’s Fish and Wildlife Division, for Fiscal Year 2019 (\$788.1 million) comprises 30.7 percent of Bonneville’s entire Power Business Line costs of \$2.56 billion. The \$788.1 million total includes estimated forgone revenue (\$174.4 million) and power purchases (\$177.6 million) that result from lost hydropower sales as the result of court-ordered spill to assist juvenile fish migration past Columbia and Snake river dams, or when fish operations necessitate additional power purchases to meet firm load. Because forgone revenue is an estimate of lost revenue and not an actual cost, Bonneville’s Power Business Line does not include it in reporting the agency’s actual expenses for the fiscal year. Excluding forgone revenue, the Power Business Line reported fish and wildlife costs in Fiscal Year 2019 of \$613 million, a total that includes the direct fish and wildlife program (\$240 million); the Lower Snake River Compensation Plan (\$27 million); reimbursement of operations and maintenance (O&M) costs of the Corps of Engineers

for its dams (\$49 million); reimbursement of O&M costs to the Bureau of Reclamation (\$9 million); half of the Council budget (\$6 million); estimated interest expenses on capital borrowing (\$40 million); estimated amortization and depreciation costs on fish/wildlife-related facilities (\$66 million); and the power purchases to make up for lost hydropower and enhanced flows for fish (\$178 million). The \$613 million total reported by the Power Business Line comprises 23.94 percent of the \$2.56 billion in total costs for Fiscal Year 2019. The difference is the estimated forgone revenue reported by the Fish and Wildlife Division.

Fish and wildlife costs account for a significant portion of the rate Bonneville charges its wholesale power customers. Approximately 25 percent 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 will be 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 \$1,111,358, and for Fiscal Year 2019, \$1,112,553.

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.

Power system costs

The Council’s program and the biological opinions on Federal Columbia River Power System operations issued by federal agencies 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 combined, annual total of forgone revenue and power purchases to vary from about \$27 million to \$595 million. These values represent the results from the 80 individual water years Bonneville uses in its power system modeling. Of course, 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. Forgone revenue and power purchases in 2019 were much higher than in 2018, primarily as the result of water and power-market conditions. During most of the fiscal year (October 1 to September 30), river flows measured at The Dalles, Oregon, were much lower in 2019 than in 2018 (April, August and September 2019 were the only exceptions).

These lower flows reduced the amount of hydropower that could be generated, which both reduced the amount of surplus power Bonneville had to sell and caused an increase in power purchases to make up for power that could not be generated. Additionally, wholesale power purchases at the Mid-Columbia trading hub were higher than in 2018 (July and August were the only exceptions). The interaction of these factors led to higher forgone revenues and power purchases in 2019, compared to 2018.

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 2019, the overall annual average difference between the two studies (fish protection and no-fish protection) was 1,096 average-megawatts. Of this, about 607 average-megawatts contributed to the estimated \$174.4 million in forgone revenue. About 489 average megawatts contributed to the estimated \$177.6 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 the Bonneville administrator allocates among the various hydroelectric projects of the Federal Columbia River Power System. Rather than charge each federal agency for its share, Bonneville pays those costs 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, systemwide 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 2019 credit was \$98.2 million – approximately 22.3 percent of \$440.3 million, which is the total of fish and wildlife capital costs (\$22.3 million), direct program costs (\$240.4 million), and power purchases (\$177.6 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 2019 was approximately \$788.1 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 \$689.9 million and the federal government credited Bonneville \$98.2 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:

- 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 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 [Program Performance & Progress](#) webpage. Subbasin-specific information is posted on the Council's [My Basin](#) 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.

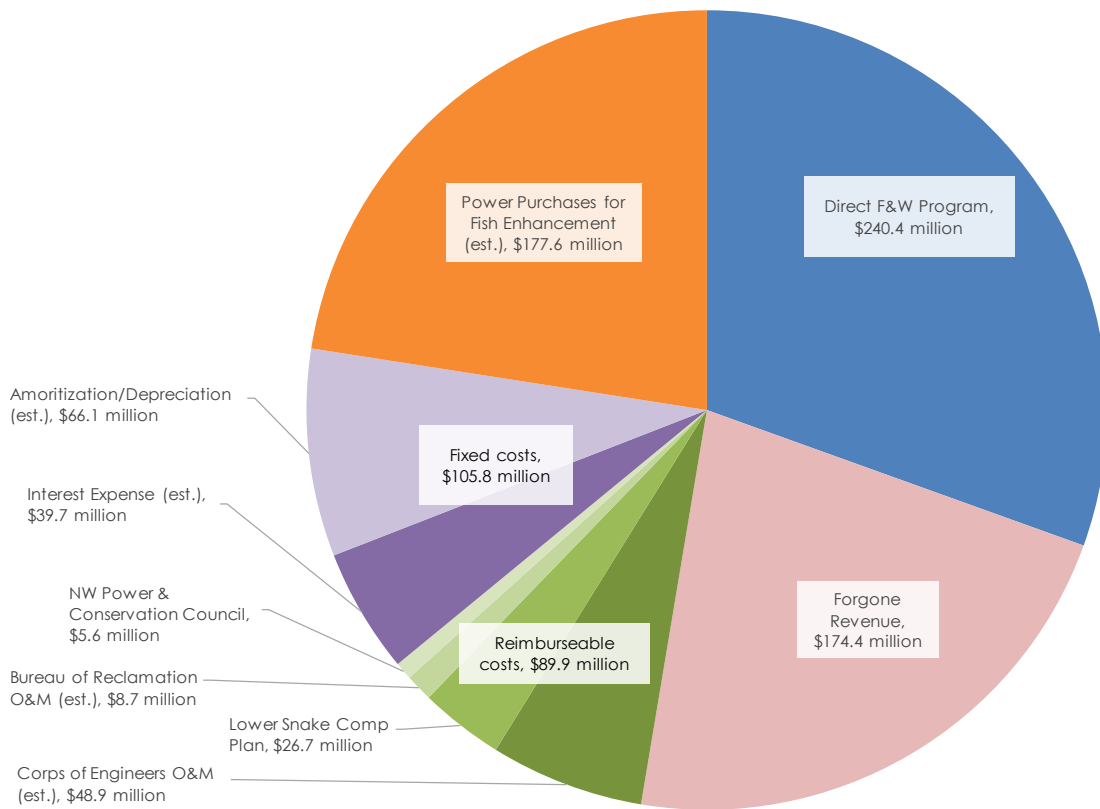
The Council also is building a number of tools and maps to report fish and wildlife costs and information about projects that implement the program. See the Council's [Resource Tools and Maps](#) page.

Figures

Data tables for all figures at www.nwcouncil.org/reports/2020-2

Figure 1A: Costs by Major Area, FY2019

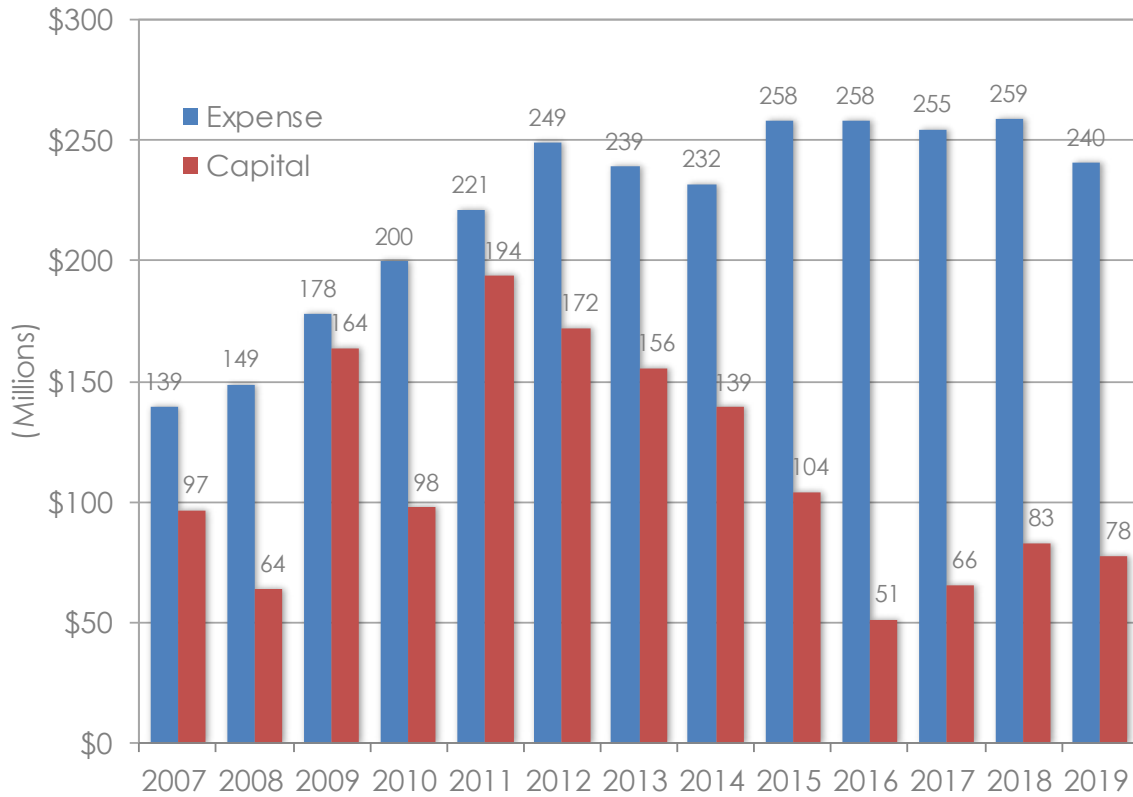
Total of \$788.1 million does not reflect \$77.9 million in obligations to capital projects for fish and wildlife projects, software development, and structures at dams, or \$98.2 million federal credits Bonneville receives from the U.S. Treasury



This information has been made publicly available by BPA in January 2020. 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 1B: Combined Direct Program Costs and Capital Borrowing, 2007-2019

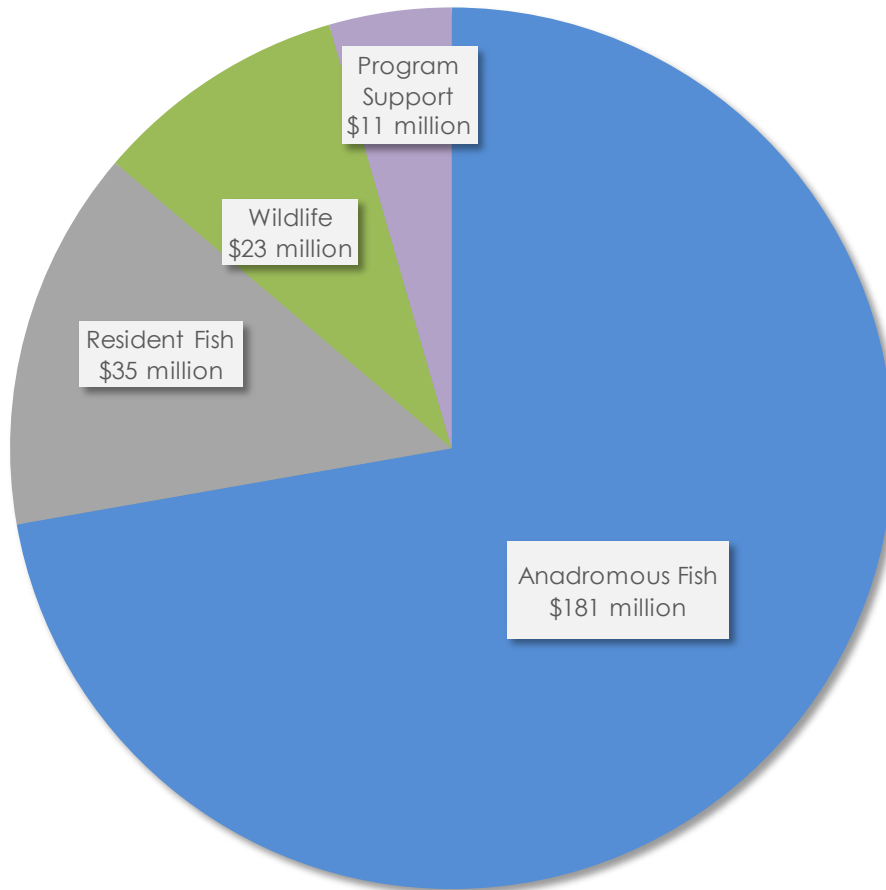


In each year, Expense is the amount that was actually spent, and Capital is the amount that Bonneville borrowed from the U.S. Treasury. The two are not the same, and should not be added to create a total, as Capital is an obligation, not an actual cost. Capital borrowing is paid off in increments each year. This annual amount is expressed as Fixed Costs (See Figure 1A).

Source: Bonneville Power Administration

Figure 2: Costs by Types of Species, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects plus General and Administrative (G&A) costs (\$11.6 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$255,000)



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.

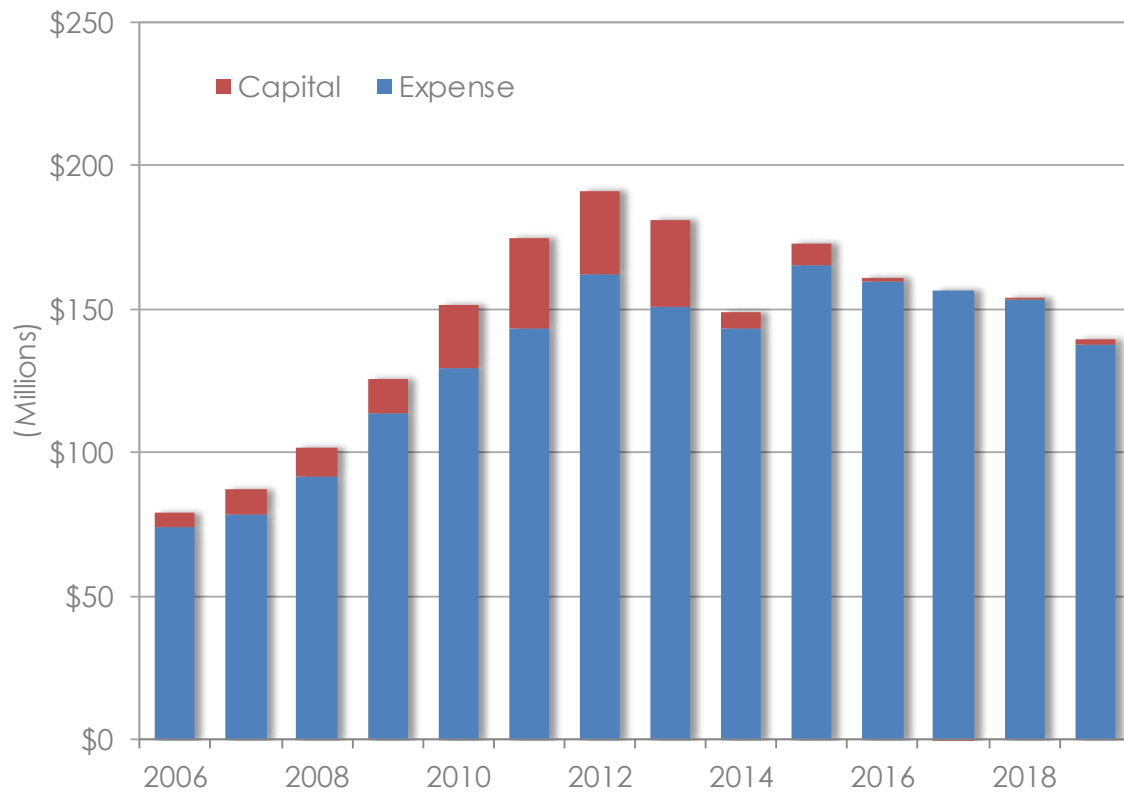
3) FY2018 revised as of January 3, 2020

4) In prior years, a portion of BPA agency general and administrative (G&A) overhead was allocated to fish and wildlife program overhead. Starting in FY2018, the agency G&A was calculated using a revised methodology and recognized as a distinct charge from the fish and wildlife program overhead. However, those charges are included in the 4.h.10.c crediting as part of total fish and wildlife program costs. Also, BPA costs related to developing the Columbia River System Operations Environmental Impact Statement also have a portion included in the fish and wildlife program costs, but it is not directly part of the program.

Source: Bonneville Power Administration



Figure 3: Costs of FCRPS BiOp Projects, 2006-2019



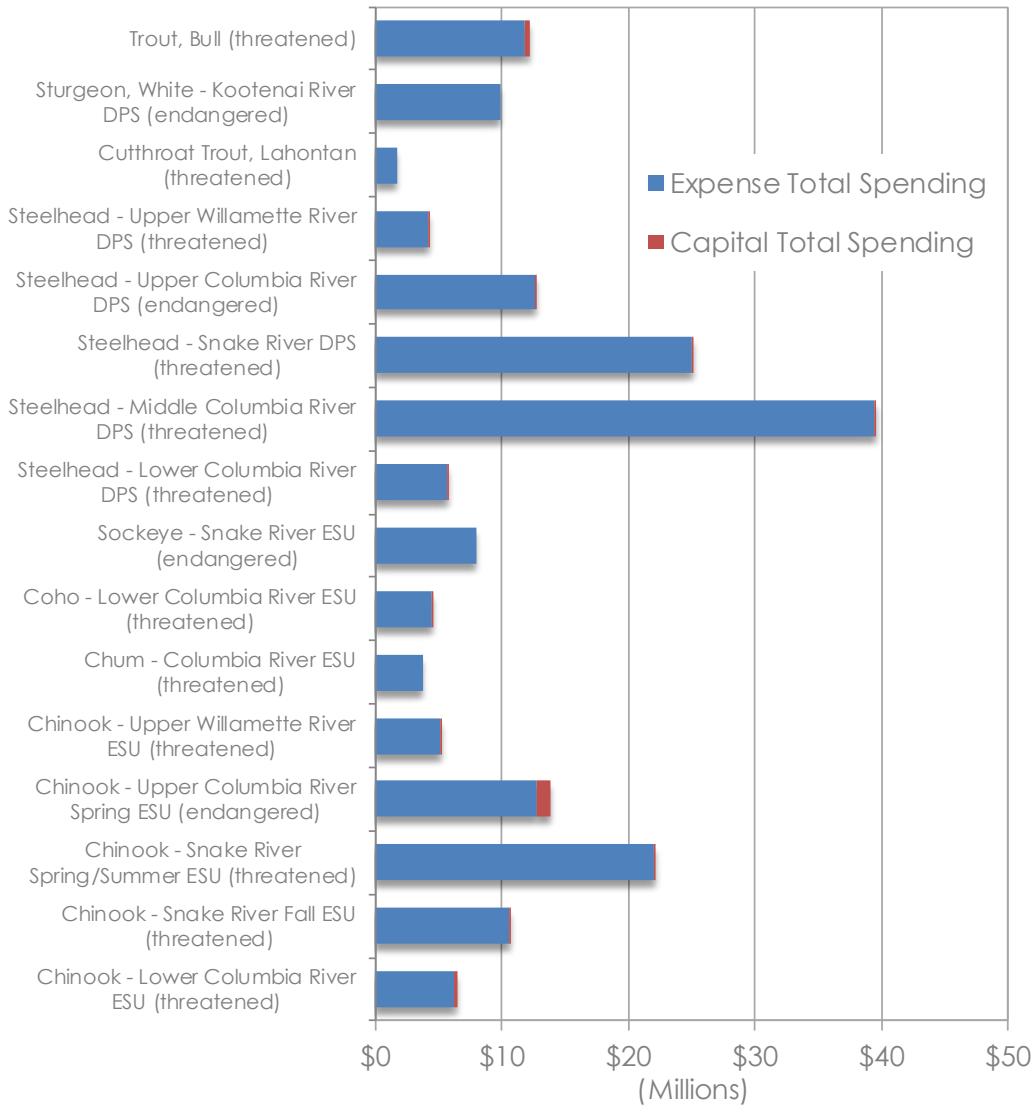
1) Estimated spending is based at the project level. Therefore, if a project partially supports the FCRPS BiOp, all expenditures for the project are included.

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

Source: Bonneville Power Administration

Figure 4: Costs Associated with ESA-Listed Fish, FY2019

Total: \$184.7 million (Expense: \$182.8 million, Capital: \$1.9 million)



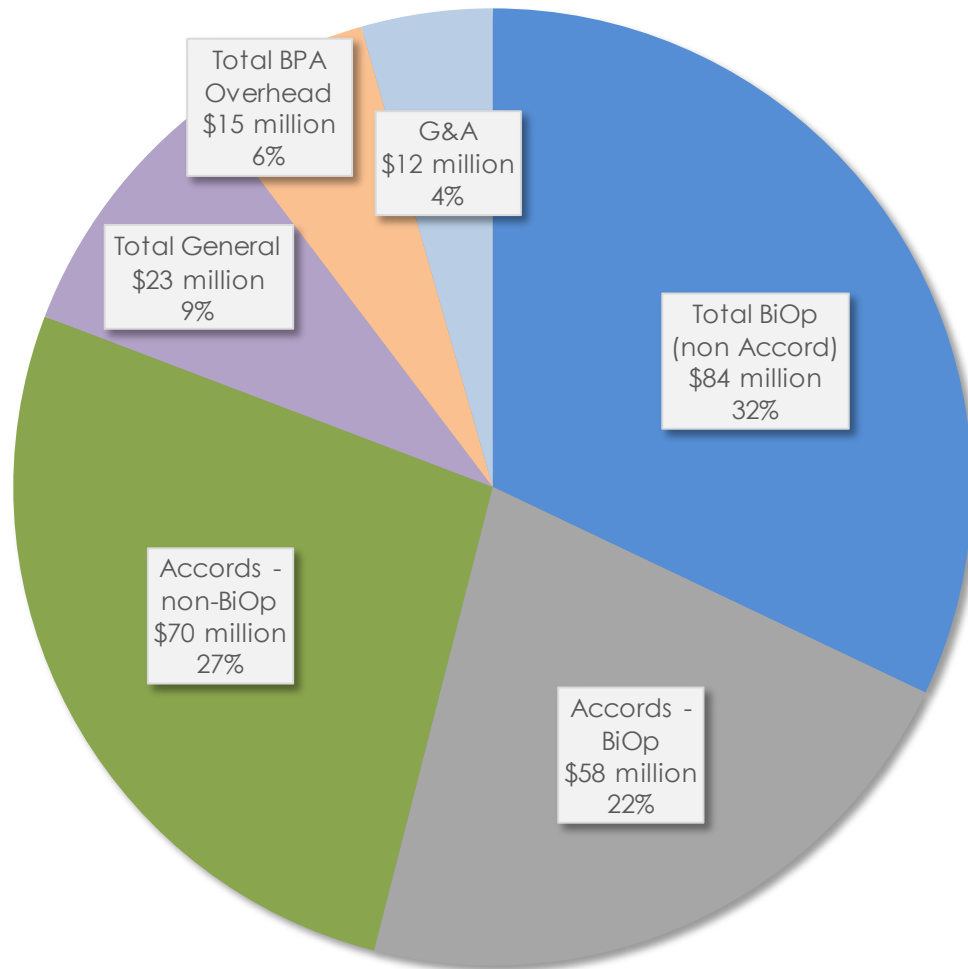
- 1) Direct spending can be tracked back to a work element where the contractor explicitly identified the “Primary Focal Species” benefiting from the work.
- 2) Contract Administration spending can be tracked back to a work element that did not require the contractor to identify the “Primary Focal Species” benefiting from the work.
- 3) Negative values for Capital Spending are a result of over-accruing costs in the previous year.

Source: Bonneville Power Administration



Figure 5: Costs by Fund, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects, plus General and Administrative (G&A) costs (\$11.6 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$255,000)

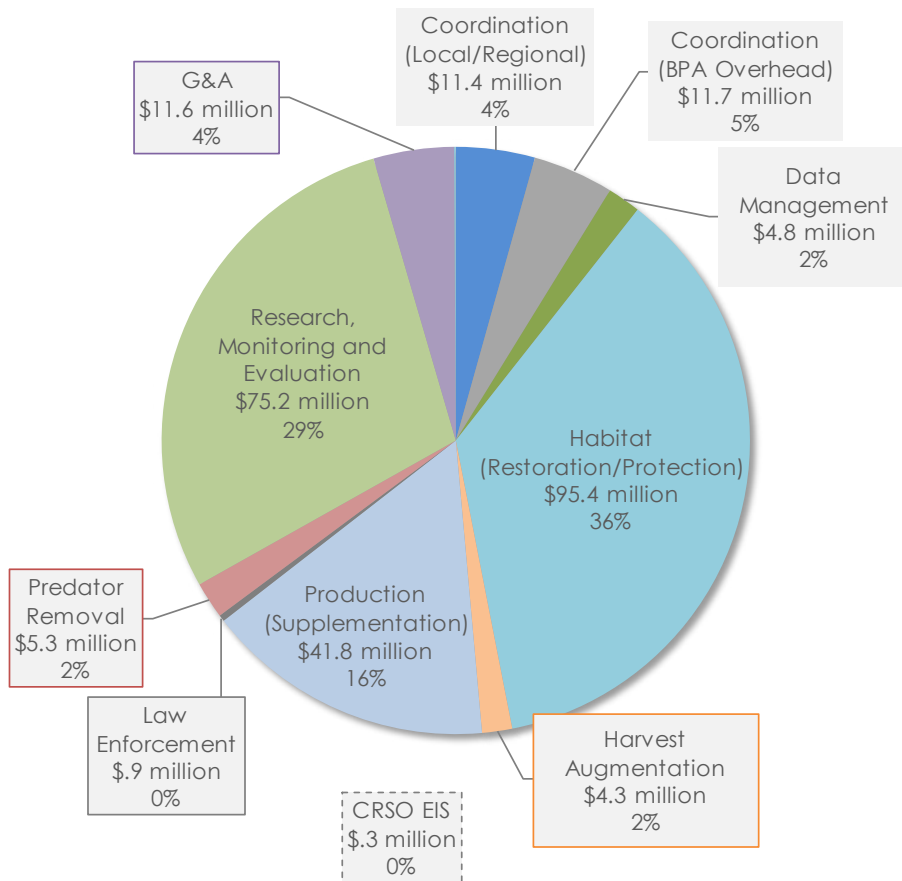


- 1) BiOp tracking at fund level began in 2009; Accords began in 2008.
- 2) Spending is estimated based on the % of funding towards a project. For example, if a project budget is 70% BiOp and 30% General, the project expenditures will be prorated 70% towards BiOp and 30% General.
- 3) FY2017 revised as of February 12, 2019.
- 4) In prior years, a portion of BPA agency general and administrative (G&A) overhead was allocated to fish and wildlife program overhead. Starting in FY2018, the agency G&A was calculated using a revised methodology and recognized as a distinct charge from the fish and wildlife program overhead. However, those charges are included in the 4.h.10.c crediting as part of total fish and wildlife program costs. Also, BPA costs related to developing the Columbia River System Operations Environmental Impact Statement also have a portion included in the fish and wildlife program costs, but it is not directly part of the program.
- 5) BPA overhead includes all BPA costs for staff, travel/training, NEPA, Cultural Resources, as well as Technical Service contracts.

Source: Bonneville Power Administration

Figure 6A: Costs by Category, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects, plus General and Administrative (G&A) costs (\$11.6 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$255,000)



1) BPA's database identifies projects by their "Purpose" (general goal) and "Emphasis" (primary type of work, e.g., habitat restoration.) BPA does not track its project management overhead against individual projects or contracts, so there is no easy or accurate way to allocate BPA overhead to specific purposes or emphases. Thus, in the above report, BPA includes its staffing to manage the 600-plus contracts in its fish and wildlife program in the category identified as Coordination (BPA Overhead), and its direct technical services contracts for Data Management and RM&E in those respective categories.

2) Estimated spending is based at the project level. Therefore if a project is assigned an emphasis of Habitat, but also does RME, all expenditures for the project are included under Habitat.

3) Starting in Fiscal Year 2015 (and revised for FY2014), Costs by Category will now separate Coordination costs between Regional/Local Coordination and BPA Overhead (project 2003-048-00 only).

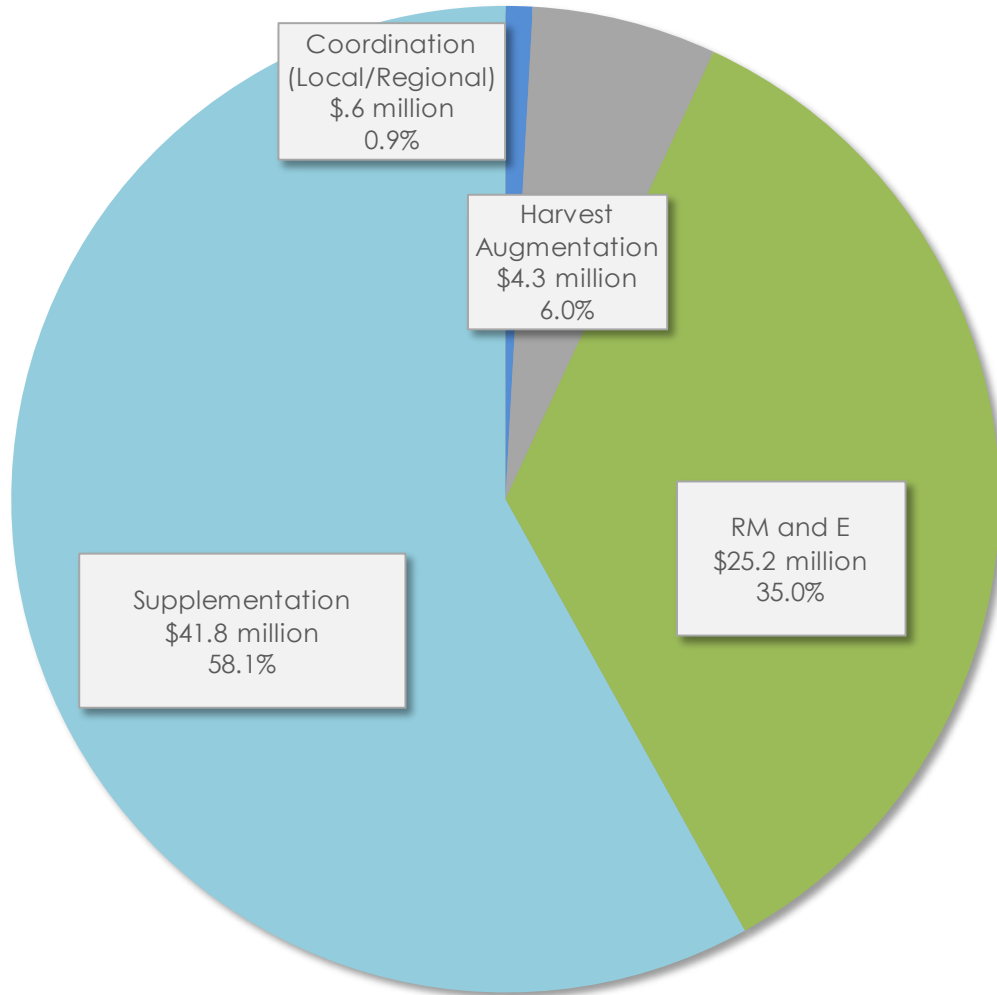
4) In prior years, a portion of BPA agency general and administrative (G&A) overhead was allocated to fish and wildlife program overhead. Starting in FY2018, the agency G&A was calculated using a revised methodology and recognized as a distinct charge from the fish and wildlife program overhead. However, those charges are included in the 4.h.10.c crediting as part of total fish and wildlife program costs. Also, BPA costs related to developing the Columbia River System Operations Environmental Impact Statement also have a portion included in the fish and wildlife program costs, but it is not directly part of the program.

Source: Bonneville Power Administration



Figure 6B: Costs of Artificial Production by Category, FY2019

Total: \$75.2 million does not include obligations to capital projects

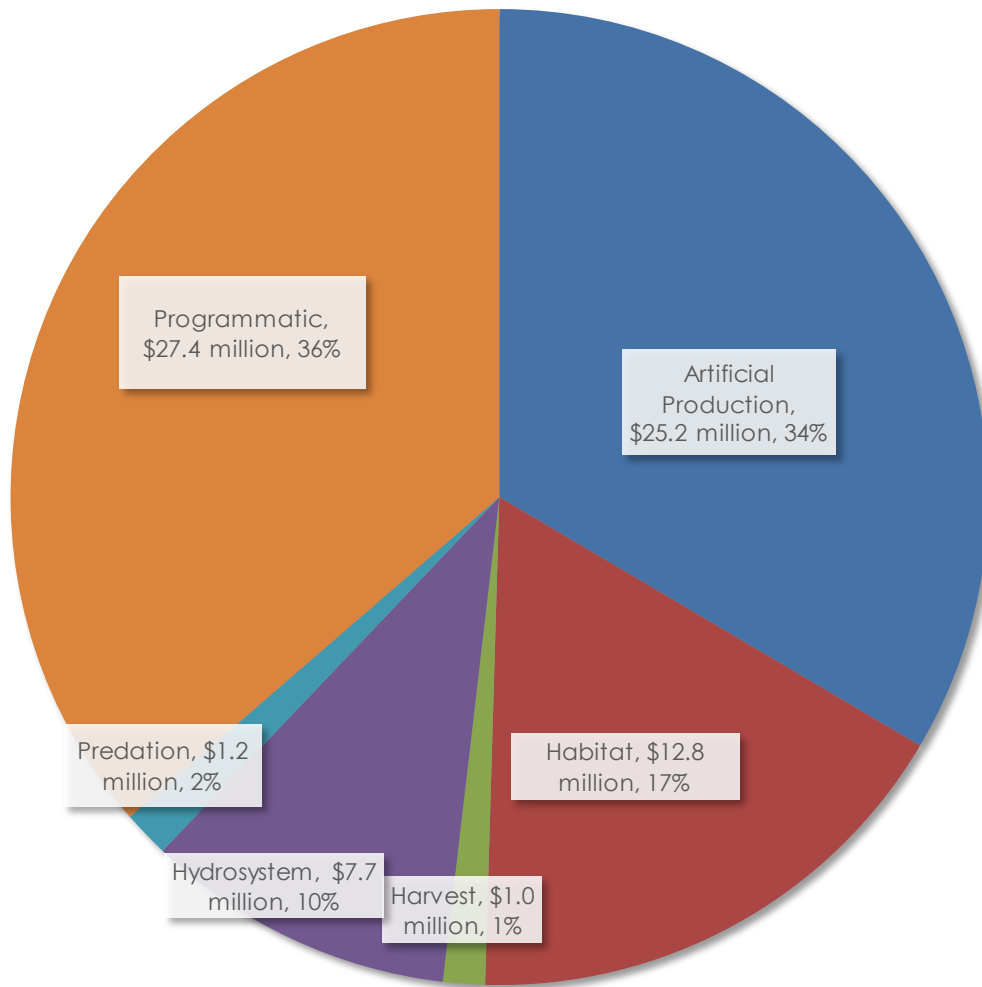


1) Estimated spending is based at the project level. Therefore if a project is assigned an purpose of Habitat, but also does Harvest, all expenditures for the project are included under Habitat.

Source: Bonneville Power Administration

Figure 7: Costs of Research, Monitoring and Evaluation (RM&E), FY2019

Total: \$75.2 million does not include obligations to capital projects



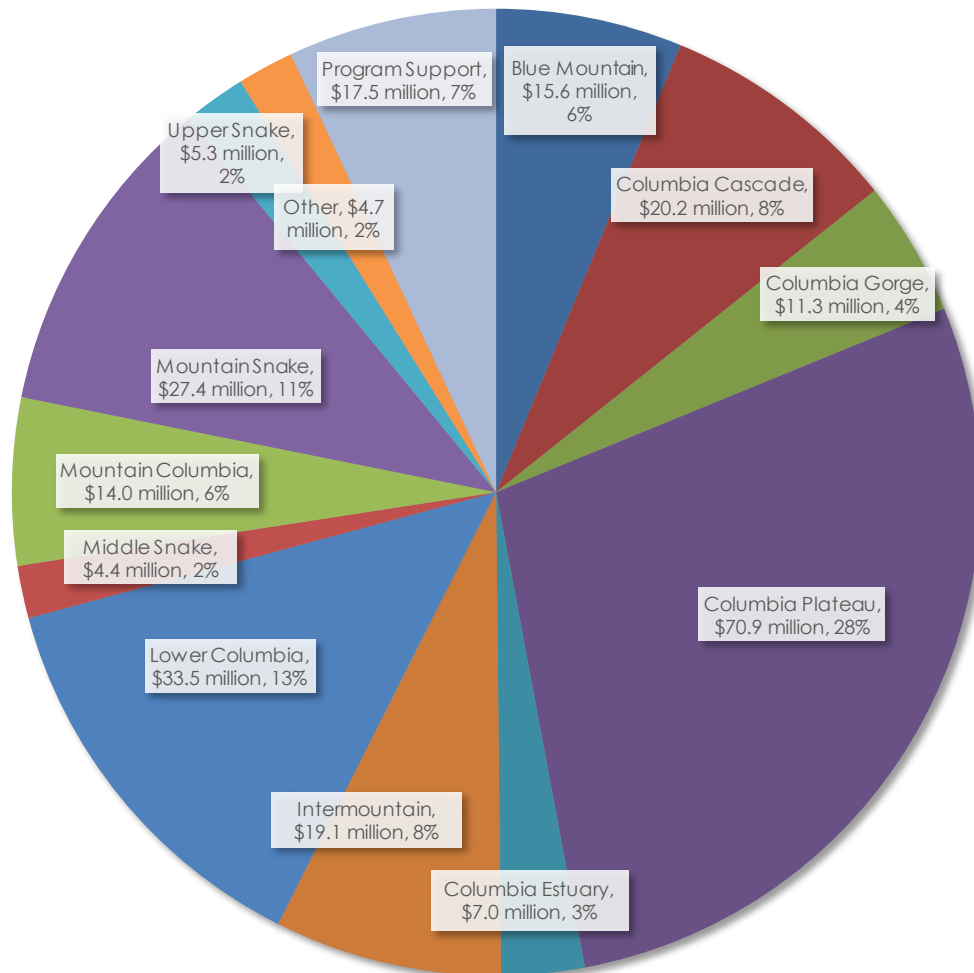
1) Estimated spending is based at the project level. Therefore if a project is labeled Artificial Production, but also supports Habitat, the expenditures are counted as Artificial Production.

Source: Bonneville Power Administration



Figure 8A: Costs by Province, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects ,plus General and Administrative (G&A) costs (\$11.6 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$255,000). Also see map on page 22.

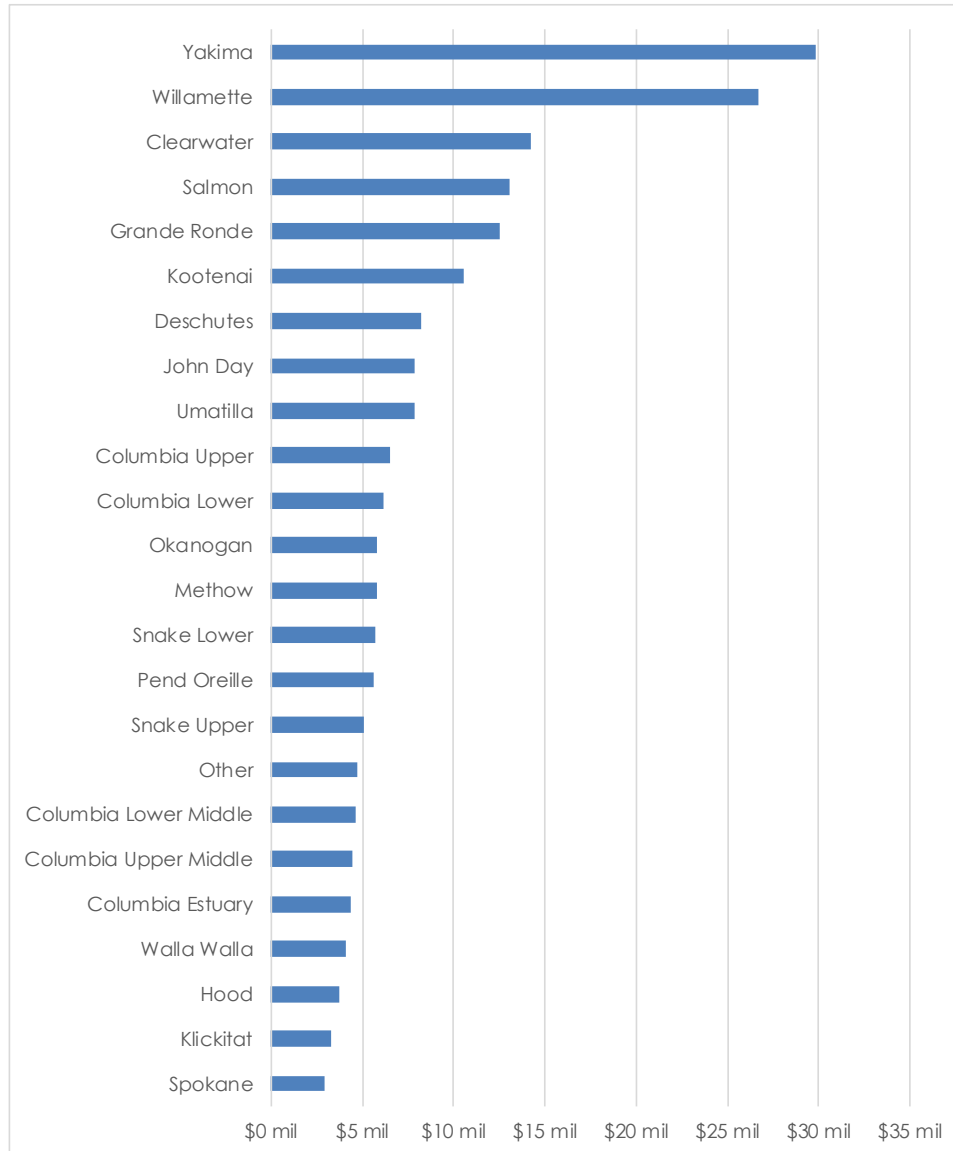


- 1) Starting in 2008, spending by province is tracked in Pisces based on where the contractor explicitly identified work location.
- 2) Other includes “Undetermined” locations such as Ocean, Canada; and provinces not recognized by NPCC.
- 3) Program Support/Admin includes spending that cannot be traced 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.
- 4) FY2018 revised as of January, 2020.
- 5) In prior years, a portion of BPA agency general and administrative (G&A) overhead was allocated to fish and wildlife program overhead. Starting in FY2018, the agency G&A was calculated using a revised methodology and recognized as a distinct charge from the fish and wildlife program overhead. However, those charges are included in the 4.h.10.c crediting as part of total fish and wildlife program costs. Also, BPA costs related to developing the Columbia River System Operations Environmental Impact Statement also have a portion included in the fish and wildlife program costs, but it is not directly part of the program.

Source: Bonneville Power Administration

Figure 8B: Costs by Subbasin, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects, plus General and Administrative (G&A) costs (\$11.6 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$255,000). Also see map on page 22.



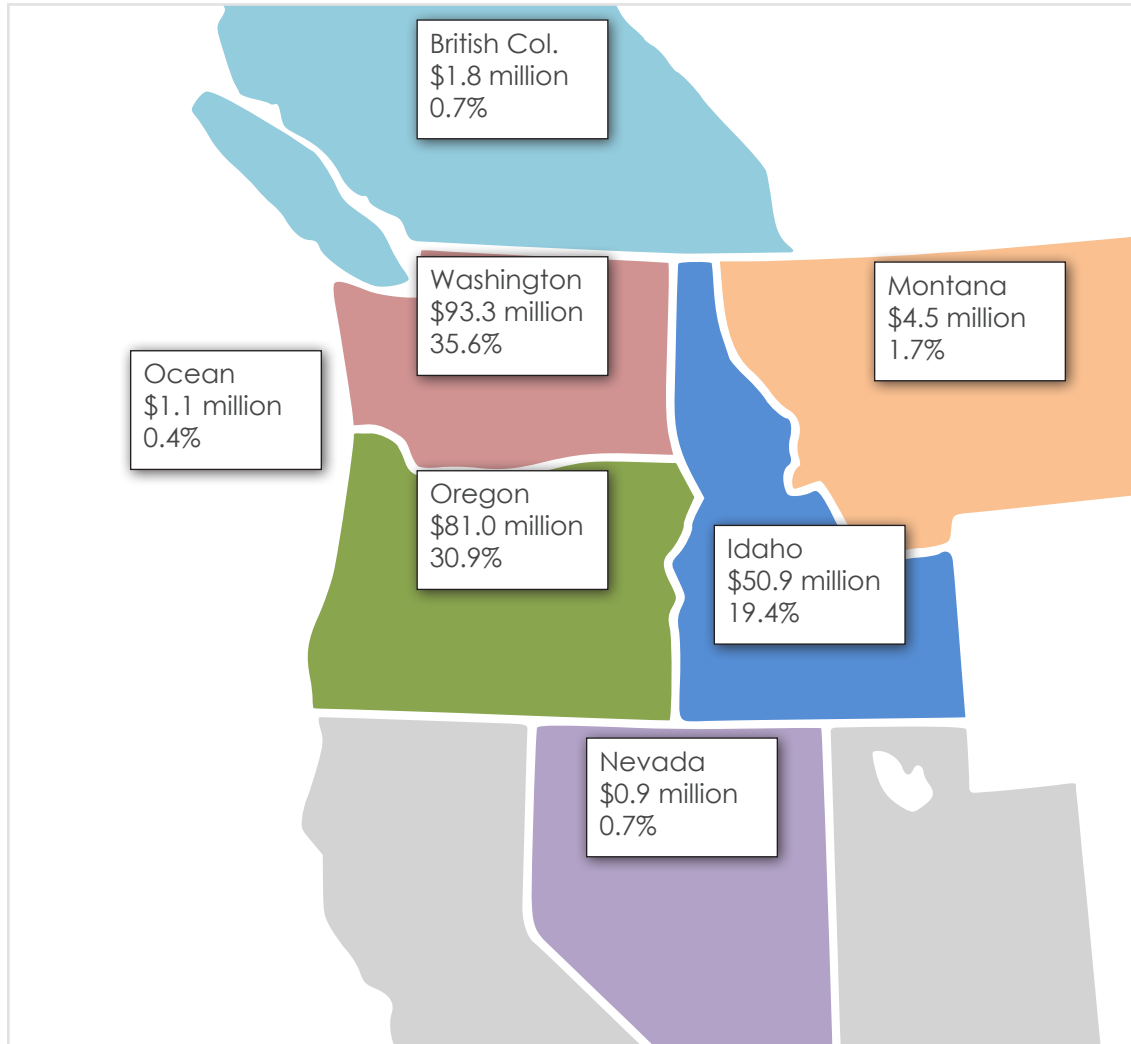
- 1) Starting in 2008, spending by province is tracked in Pisces based on where the contractor explicitly identified work location.
- 2) Other includes “Undetermined” locations such as Ocean, Canada; and provinces not recognized by NPCC.
- 3) Program Support/Admin includes spending that cannot be traced 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) G&A / CRSO EIS note: 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 9: Costs by Work Element Location, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects, plus General and Administrative (G&A) costs (\$11.6 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$255,000).

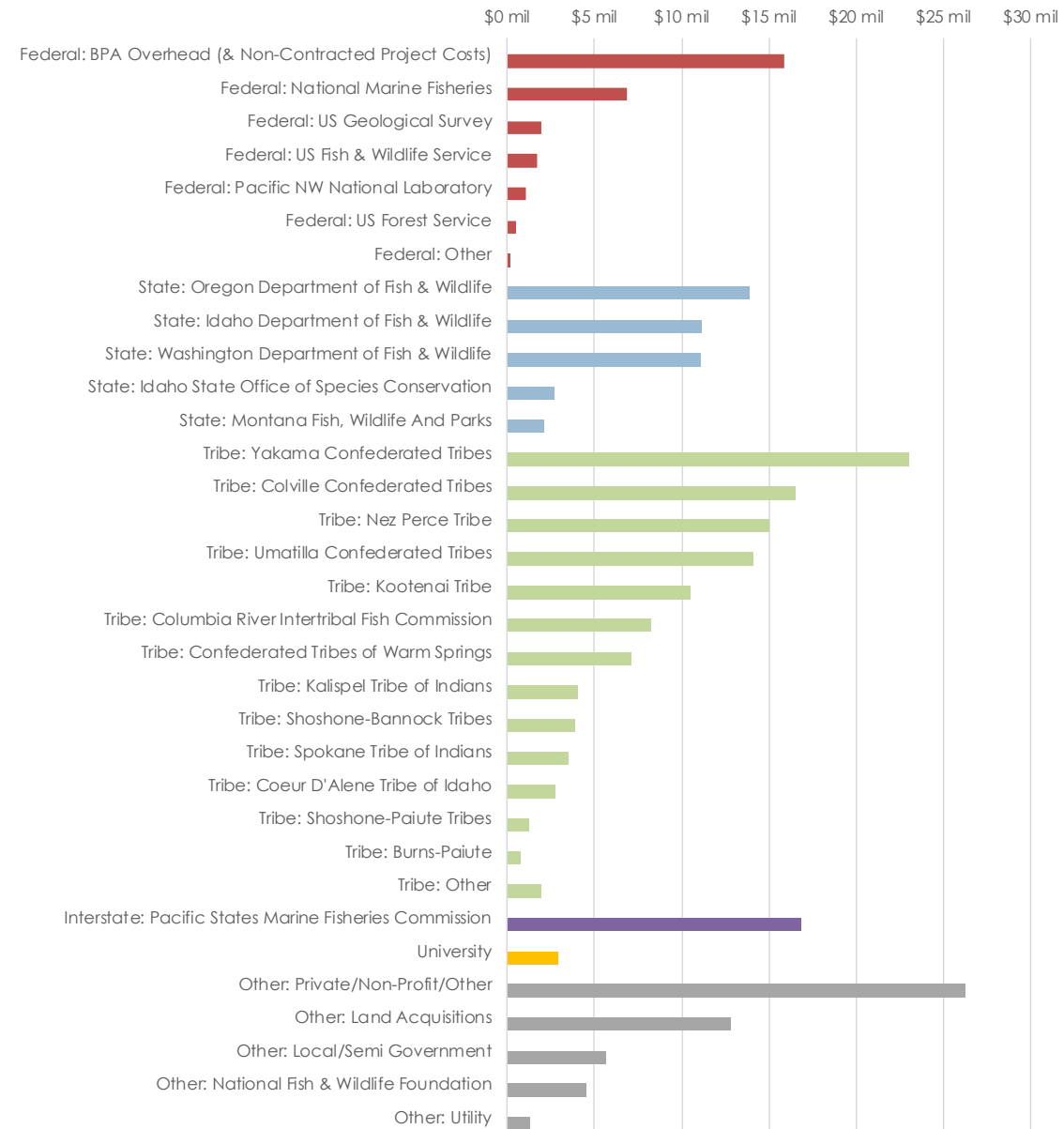


- 1) Starting in 2008, spending by state is tracked in Pisces based on where the contractor explicitly identified work location.
- 2) Program Support/Admin/Other includes spending that cannot be traced back to a contract that has at least one work element requiring location; contracts without any work elements; program level spending not mapped to a specific project or NPCC province; and BPA Overhead.
- 3) FY2018 revised as of January, 2020.
- 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 10: Costs by Contractor Types, FY2019

Total: \$262.7 million includes \$22.3 million in obligations to capital projects

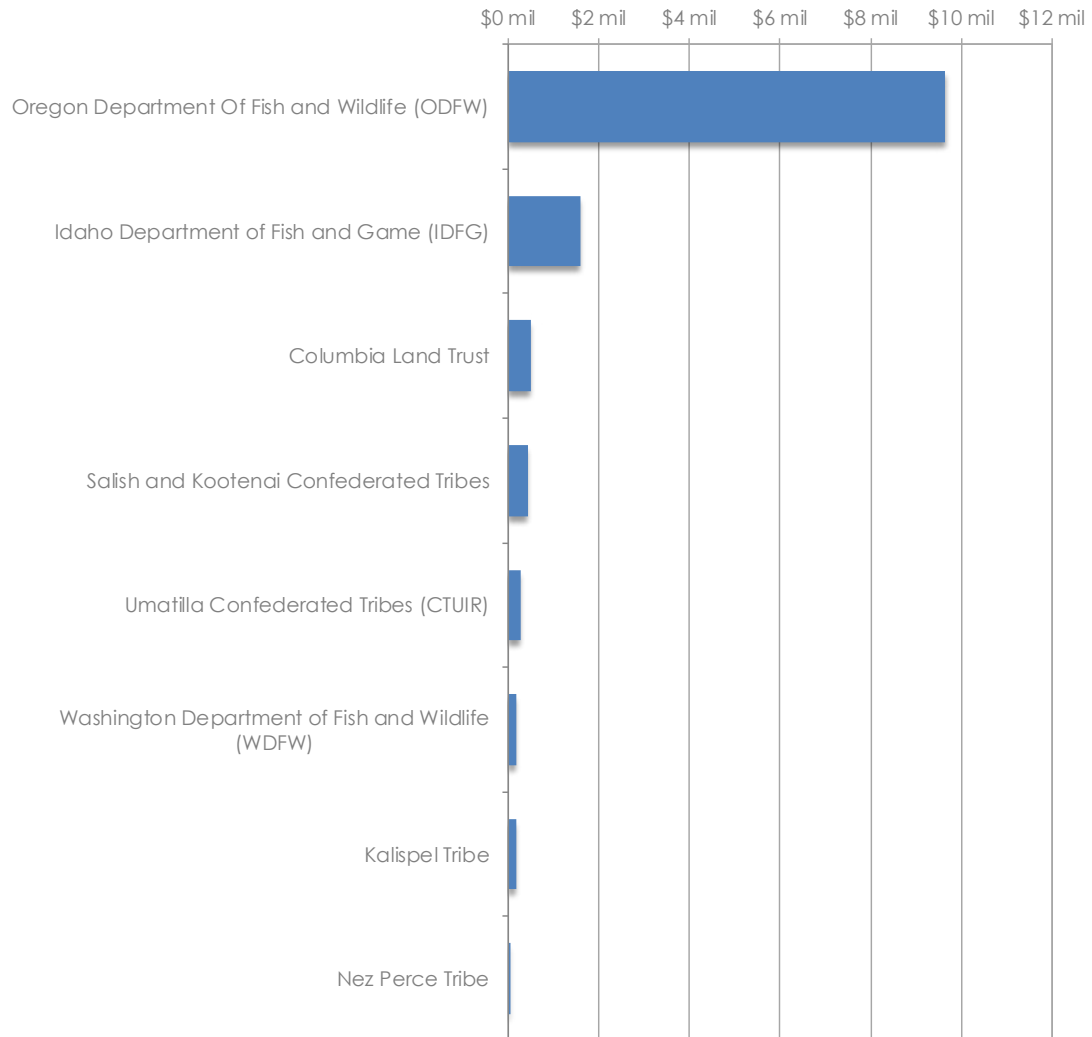


Source: Bonneville Power Administration



Figure 11: Costs of Land Purchases for Fish and Wildlife Habitat, FY2019

Total: \$12.8 million



Source: Bonneville Power Administration

Province/Subbasin Map (Reference for Figures 8A and 8B)





PHOTOS FROM [FLICKR.COM/NWCOUNCIL](https://www.flickr.com/photos/nwcouncil/), [FLICKR.COM/BONNEVILLEPOWER](https://www.flickr.com/photos/bonnevillepower/), DAVID JENSEN, AND COUNCIL STAFF



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