

2021 COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM COSTS REPORT



21ST ANNUAL REPORT TO THE
NORTHWEST GOVERNORS

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May 18, 2022

The Honorable Brad Little, Governor of Idaho
The Honorable Kate Brown, Governor of Oregon
The Honorable Greg Gianforte, Governor of Montana
The Honorable Jay Inslee, Governor of Washington

Dear Governors:

The document that accompanies this letter is the Council's annual report to you on all costs related to fish and wildlife incurred by the Bonneville Power Administration in Fiscal Year 2021.

Since 2001, in response to a request from your predecessor governors, the Council has reported annually on costs incurred by Bonneville to implement the Council's Columbia River Basin Fish and Wildlife Program.

In this 21st annual report, the Council provides a summary of Bonneville's fish and wildlife costs in Fiscal Year 2021 (October 1, 2020 - September 30, 2021). The information in this report was provided by Bonneville in response to requests from Council staff. The Council prepares this report solely for informational purposes, not as an analysis of Bonneville's fish and wildlife spending, nor as a requirement of the Northwest Power Act.

In Fiscal Year 2021, Bonneville reported total fish and wildlife costs of approximately \$744.5 million. Of this amount, \$253.6 million was for direct expenditures by Bonneville under the Northwest Power Act to pay for fish and wildlife program mitigation projects such as habitat improvements, research, monitoring, and some fish hatchery costs.

The report also identifies other cost categories, including debt service on capital expenditures, operations and maintenance, and indirect costs associated with fish operations at the mainstem federally owned dams on the Columbia and Snake rivers.

Thank you for your interest in the work of the Council.

Sincerely,

Bill Edmonds, Executive Director

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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 21st annual report, the Council provides an update of Bonneville's fish and wildlife costs in Fiscal Year 2021 (October 1, 2020 – September 30, 2021). 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 2021 costs

In Fiscal Year 2021, Bonneville reported total fish and wildlife costs of approximately \$744.5 million, as follows:

- \$253.6 million in direct expenditures (expense), which pays for fish and wildlife program mitigation projects such as habitat improvements, research, monitoring, and some fish hatchery costs.
- \$91 million to reimburse the power share of expenditures by other federal agencies for fish and wildlife purposes, including reimbursements to the federal Treasury for expenditures of appropriated funds by the Corps of Engineers and Bureau of Reclamation, and direct funding to the Corps, Bureau, and U.S. Fish and Wildlife Service for the power share of the cost to operate and maintain fish passage improvements and certain hatcheries. Additionally, this includes one-half (\$5.5 million) of the Council's budget in Fiscal Year 2021 (the other half is assigned to Bonneville's Power Business Line budget).

- \$98.7 million for the fixed cost of debt service (interest, amortization, and depreciation) for capital investments in facilities such as hatcheries, fish passage facilities at dams, and some land purchases for fish and wildlife habitat.
- \$190.6 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.
- \$110.6 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 spring flows to aid fish passage.

The \$744.5 million total does not include the amount Bonneville borrowed from the U.S. Treasury in 2021 totaling \$108.6 million – \$41.9 million for program-related (capital) projects, and \$66.7 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.

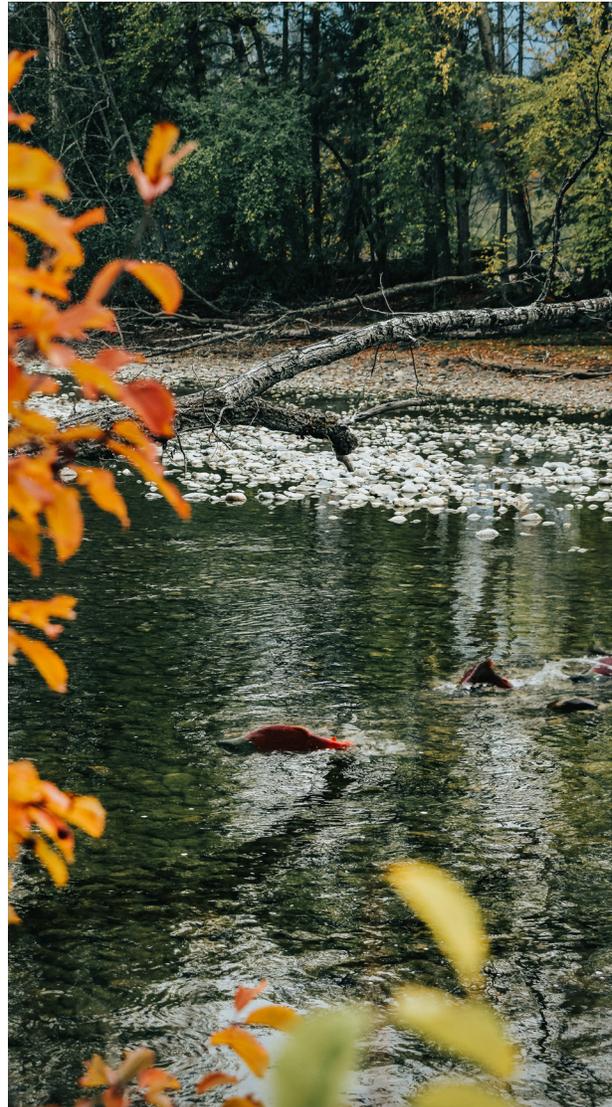
The total also does not reflect a credit of \$90.6 million from the federal Treasury related to fish and wildlife expenditures in 2021 that Bonneville takes under Section 4(h)(10)(C) of the Northwest Power Act. The annual credit ensures that the portion of Bonneville's fish and wildlife mitigation expenditures that are attributable to various project purposes other than hydropower generation, such as navigation, irrigation, and flood control, are not borne by the Bonneville power

ratepayers. The credit is applied to Bonneville's federal Treasury debt.

While the 2021 fish and wildlife costs reported by Bonneville's Fish and Wildlife Division total \$744.5 million, the total fish and wildlife costs reported by Bonneville's Power Business Line is \$555 million. The difference is because the Fish and Wildlife Division reports estimated forgone revenue from power sales (\$190.6 million in Fiscal Year 2021) as a cost. Forgone revenue results from lost hydropower sales because water is spilled over dams to assist juvenile fish migration in the spring and summer. Water that is spilled cannot be used to generate hydropower. In addition to creating forgone revenue, these fish operations at dams sometimes necessitate additional power purchases to meet firm load (\$110.6 million in Fiscal Year 2021). Because forgone revenue is an estimate of lost revenue and not an actual expenditure, 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 the following fish and wildlife-related expenditures for Fiscal Year 2021: direct program, \$254 million; Lower Snake River Compensation Plan \$31 million; reimbursement of operations and maintenance (O&M) costs of the Corps of Engineers for its dams, \$48 million (an estimate); reimbursement of O&M costs to the Bureau of Reclamation, \$7 million (an estimate); one-half of the Council's budget, rounded to \$6 million; estimated interest expenses on capital borrowing, \$29 million (an estimate); amortization and depreciation costs on fish/wildlife-related facilities, \$69 million (an estimate); and power purchases to make up for lost hydropower and enhance flows for fish, rounded to \$111 million (an estimate). The \$555 million total comprises 22.4 percent of the \$2.476 billion in total costs for Fiscal Year 2021.

Fish and wildlife costs account for a significant portion of the rate Bonneville charges its wholesale power customers. Approximately 25 percent of Bonneville's average 2021 wholesale rate of \$35.62 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. Thus, the amounts included in rates are estimates of future costs that make up part of the rate case's revenue requirement, not actual spending.

Actual expenditures during a fiscal year will differ from these forecasts, and in many cases, actual spending for fish and wildlife is less than the cost projections used for the rate case. Also, forgone revenue amounts included in the rate case projections are planning estimates. Actual forgone revenue in any year will be determined by market prices, streamflows, and other operational conditions during the operating year, and these can vary

significantly from forecasts. This report only includes actual fish and wildlife expenditures, 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 to keep its program as efficient and effective as possible.

Power system costs

The Council's program and the proposed action reviewed and evaluated in 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, Bonneville maintains that reporting of these costs is necessary pursuant to Section 4(h)(8)(D) of the Act, which states: Monetary costs and electric power losses resulting from the implementation of the program shall be allocated by the Administrator consistent with individual project impacts and system wide objectives of this subsection. 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 annual forgone revenue and power purchases to total roughly \$288 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 \$65 million to \$452 million. In Fiscal Year 2021, forgone revenue totaled \$190.9 million and power purchases were \$110.6 million (\$301.5 million total). In Fiscal Year 2020, in contrast, forgone revenue was \$33.4 million and power purchases totaled \$150 million (\$183.4 million total).

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 2021, the overall annual average difference between the two studies (fish protection and no-fish protection) was 1,093 average-megawatts. Of this, about 720 average-megawatts contributed to the estimated \$190.6 million in forgone revenue. About 373 average megawatts contributed to the estimated \$110.6 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 Bonneville's fish and wildlife expenditures that the Bonneville administrator allocates among the various hydroelectric projects of the Federal Columbia River Power System. Foregone revenue is not factored into that 4(h)(10)(C) credit. Non-power purposes such as irrigation, navigation, and flood control are 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 2021 credit was \$90.6 million – approximately 22.3 percent of \$406.1 million, which includes Bonneville's fish and wildlife expenditures and replacement power purchases. In effect, the credit reduces the fish and wildlife costs paid by electricity ratepayers..



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 projects implemented through the Columbia River Basin Fish and Wildlife Program. The Council's Fish and Wildlife Program contains a set of goals and objectives related to mitigating for effects of the hydrosystem on fish and wildlife in the Columbia Basin. Over the last year, the Council has been continuing to develop a new tool to track indicators of program performance. This tool, [Program Tracker](#), will contain a detailed assessment of a multitude of indicators, along with providing improved context around the datasets and their interpretation, and a clear linkage between each indicator and the objectives and goals of the program. We anticipate that this information, along with improved methods to understand fish and wildlife costs and information about projects that implement the program will be available prior to developing our next report on Bonneville's fish and wildlife costs. During this transition, the Council elected to continue to report information in a manner consistent with prior reports.

Endnote

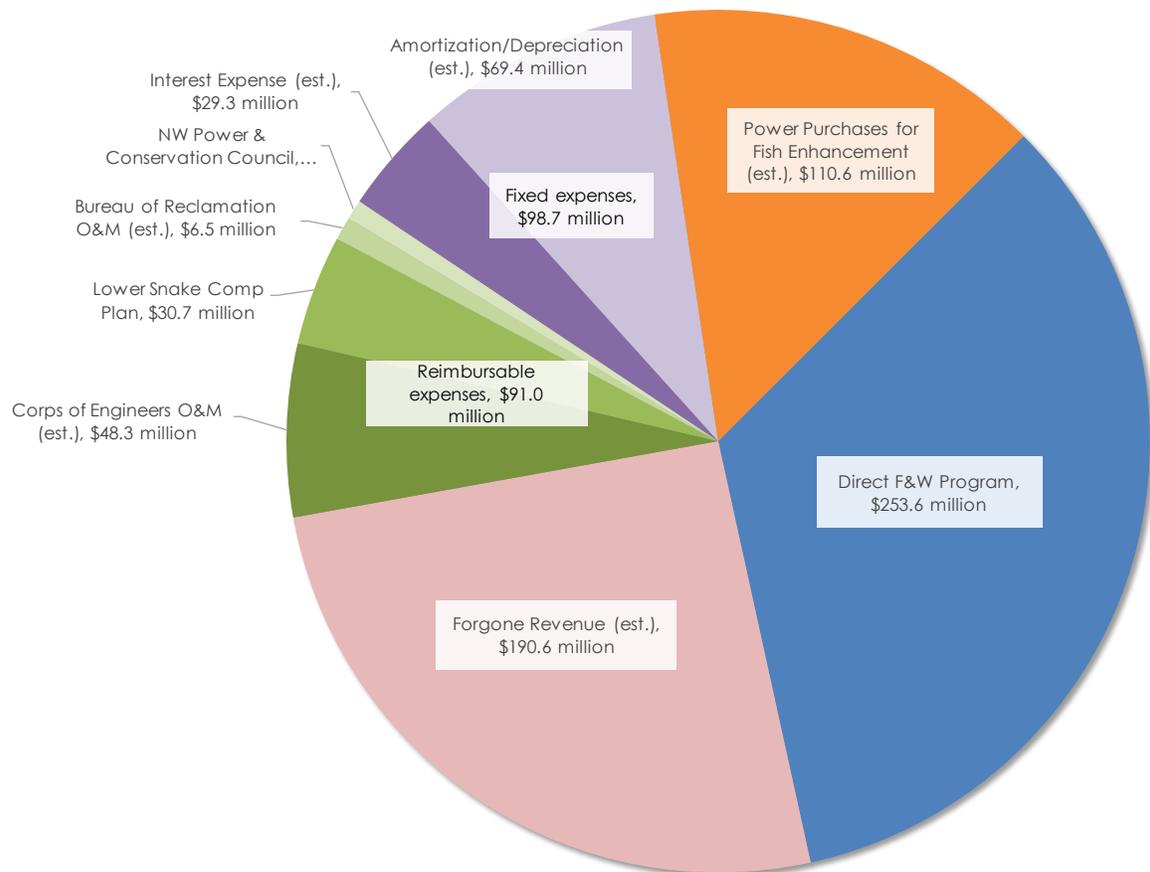
¹ Amortization expense is based on Bonneville's capital spending on the direct fish and wildlife program. Amortization also includes about half of the Columbia River Fish Mitigation (CRFM) program annual costs for items that don't result in a physical asset. Depreciation costs are for the rest of the annual CRFM costs, and estimates of spending by the Corps of Engineers and Bureau of Reclamation on physical fish and wildlife assets. This is an estimate because Bonneville does not depreciate individual physical assets independently, but as a total annual value of capital spending from which fish and wildlife assets are calculated. Interest expense uses an allocation methodology. Bonneville manages its debt as a single portfolio and repays debt as it makes financial sense to do so. Bonneville allocates interest expense based on the net book value of outstanding plant or investment (i.e. the original value net of any accumulated depreciation or amortization). In effect, any interest savings from early retirement of debt will be shared across all asset classes. As a result, interest expense has gone down over time. (Referenced on Page 4.)

Figures

Data tables for all figures at www.nwcouncil.org/reports/2022-1

Figure 1A: Costs by Major Area, FY2021

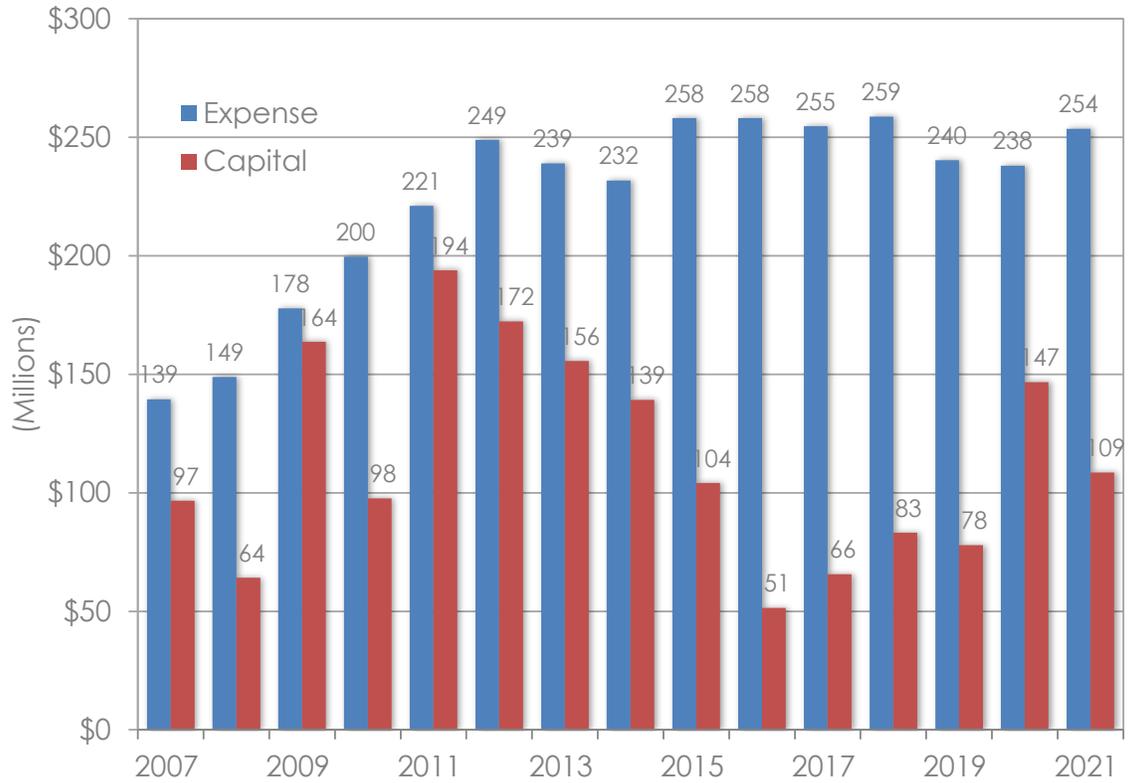
Total of \$744.5 million does not reflect \$108.6 million in obligations to capital projects for fish and wildlife projects, software development, and structures at dams, or \$90.6 million federal credits Bonneville receives from the U.S. Treasury



This information has been made publicly available by BPA in January 2022. 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, FY2007-2021

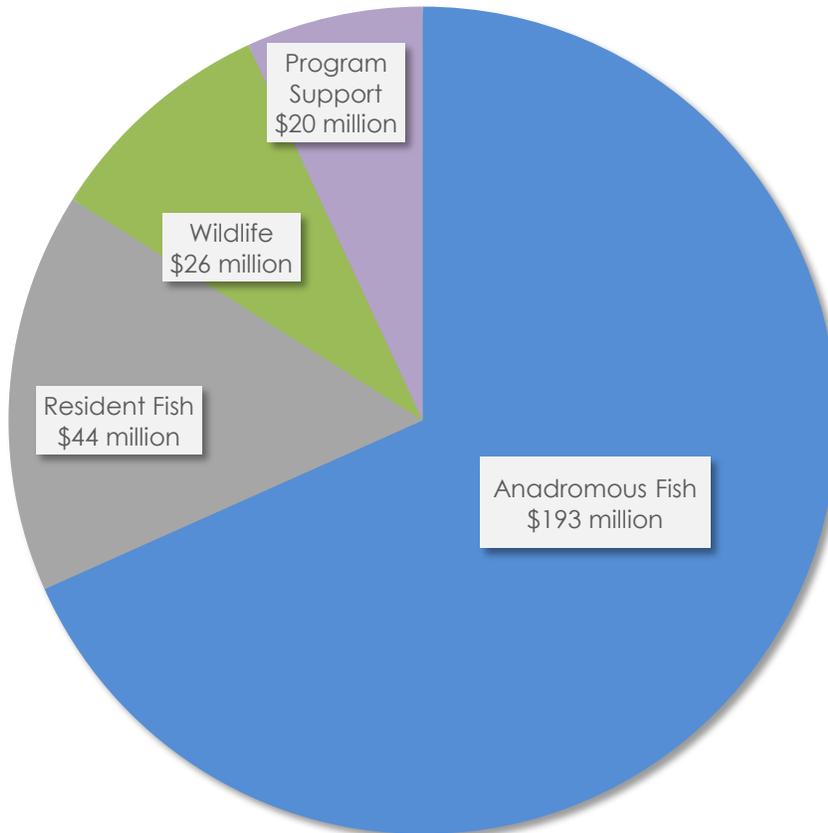


In each year, Expense is the amount that was actually spent, and Capital is the amount that Bonneville borrowed from the U.S. Treasury. The two are not the same, and should not be added to create a total, as Capital is an obligation, not an actual cost. Capital borrowing is paid off in increments each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

Source: Bonneville Power Administration

Figure 2: Costs by Types of Species, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) expenses (\$12.3 million, not included), and Columbia River System Operations Review/Environmental Impact Statement expenses (\$0.2 million, not included)



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) In prior years, a portion of BPA agency G&A was allocated to 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.

3) Program Support includes contracts that contain only administrative work elements or program level spending that could not be mapped to a specific project.

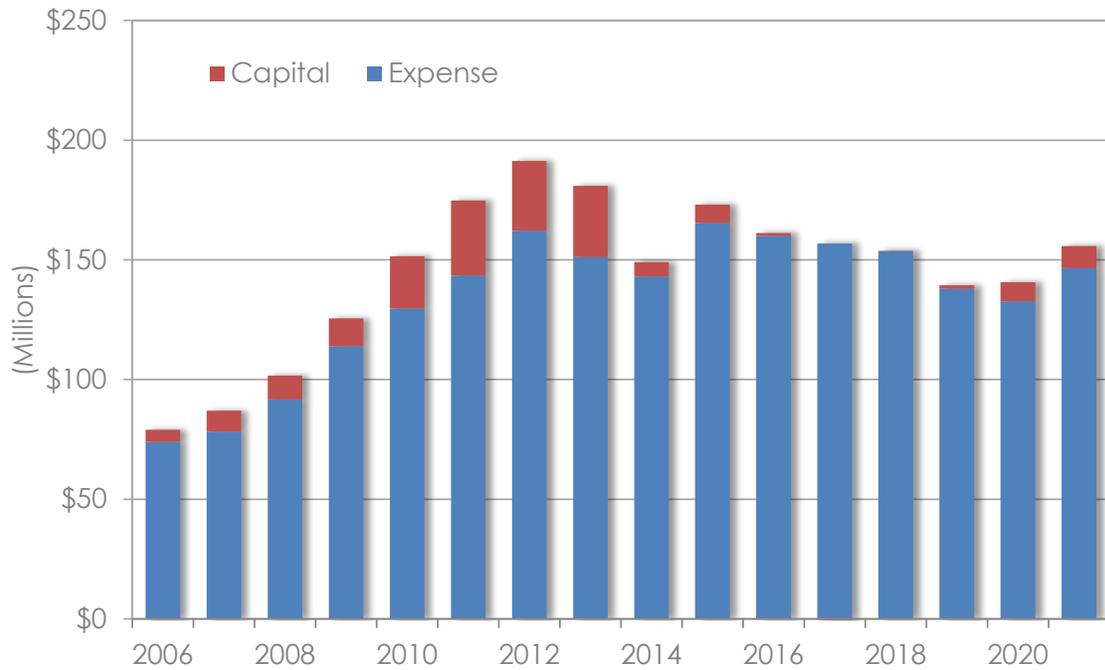
4) Some work elements do not map to a specific focal species, such as coordination and administration projects, so are identified as Program Support.

5) FY2020 revised as of January 24, 2022

Source: Bonneville Power Administration



Figure 3: FCRPS BiOp Project Costs, FY2006-2021



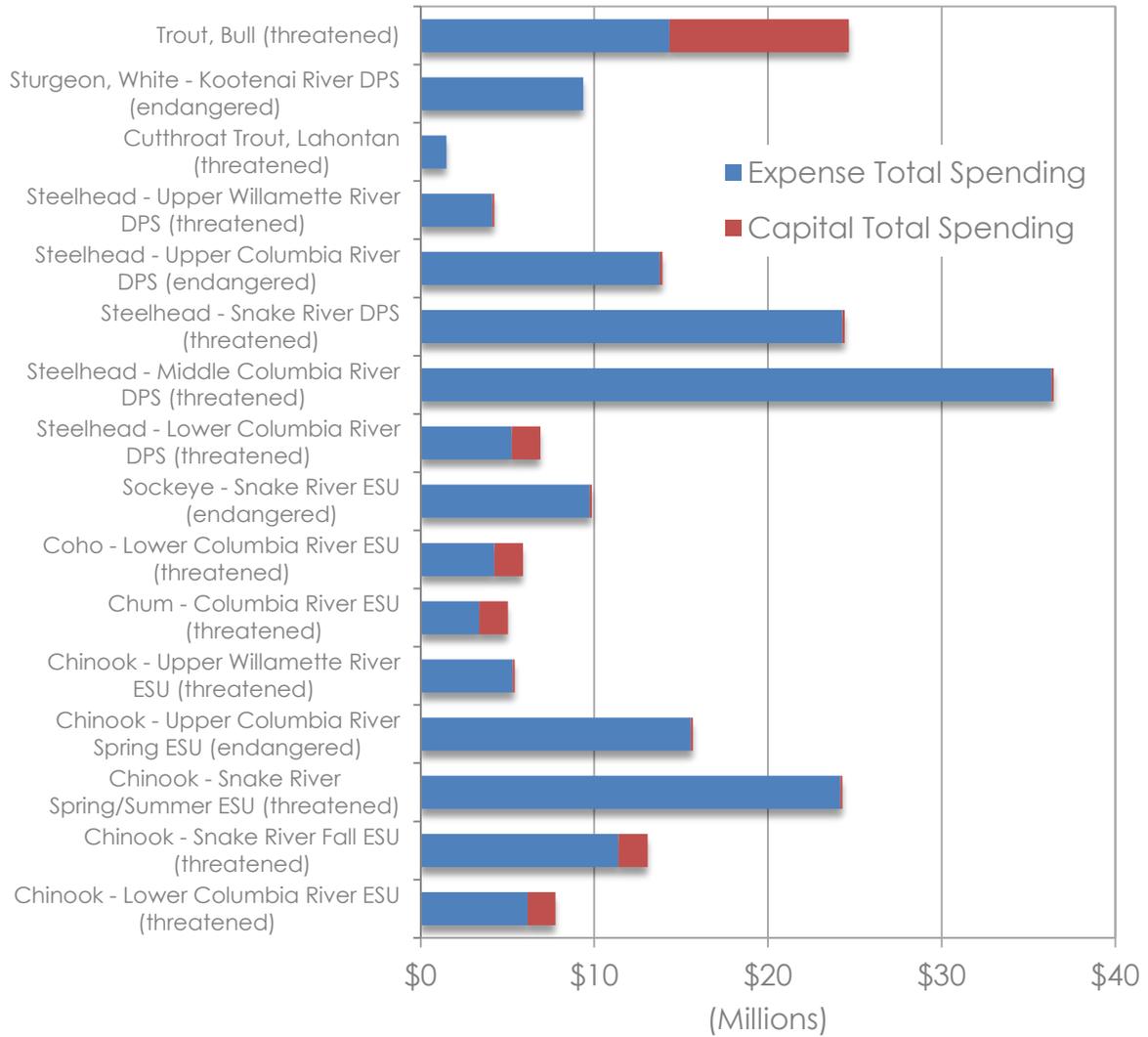
1) Estimated spending is based at the project level. Therefore, if a project partially supports the FCRPS BiOp, all expenditures for the project are included.

2) Passage projects were moved from Capital to Expense funding starting with FY2016 contracts.

Source: Bonneville Power Administration

Figure 4: ESA-Listed Fish Costs, FY2021

Total: \$208.4 million (Expense: \$188.9 million, Capital: \$19.6 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.

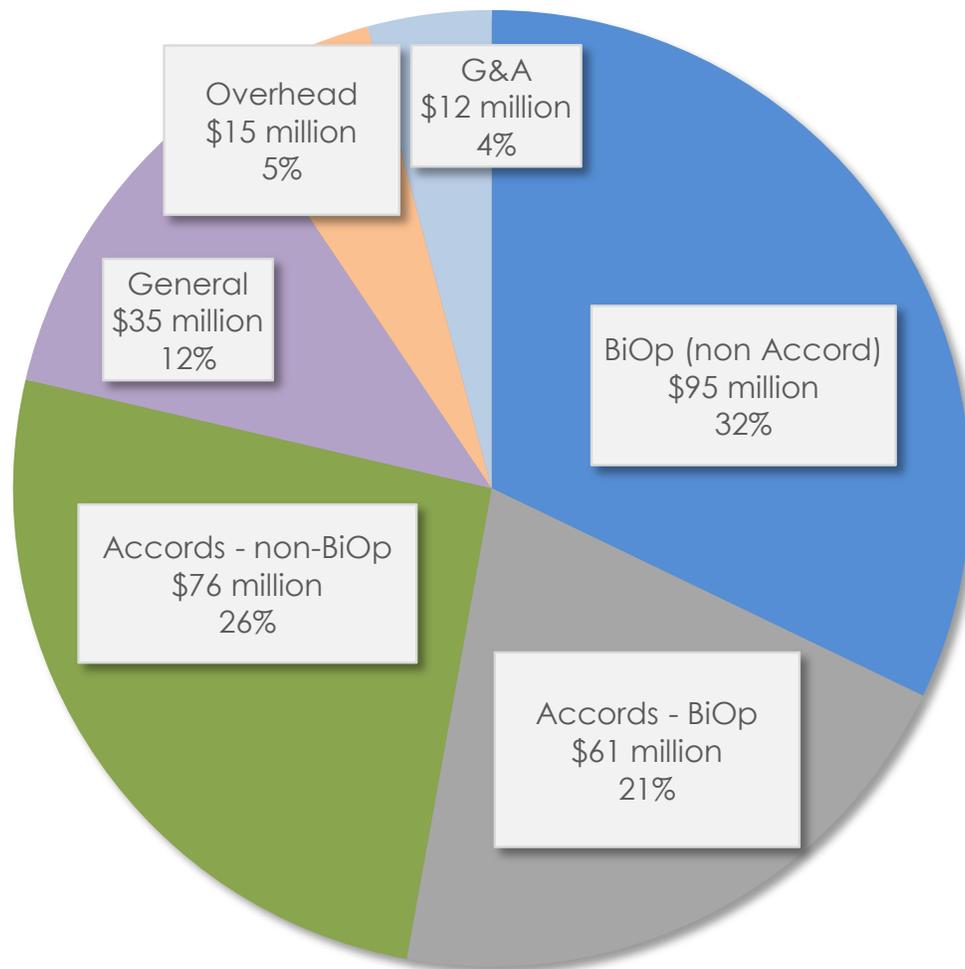
2) Contract Administration spending can be tracked back to a work element that did not require the contractor to identify the “Primary Focal Species” benefiting from the work.

Source: Bonneville Power Administration



Figure 5: Costs by Fund, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) costs (\$12.3 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$0.2 million)

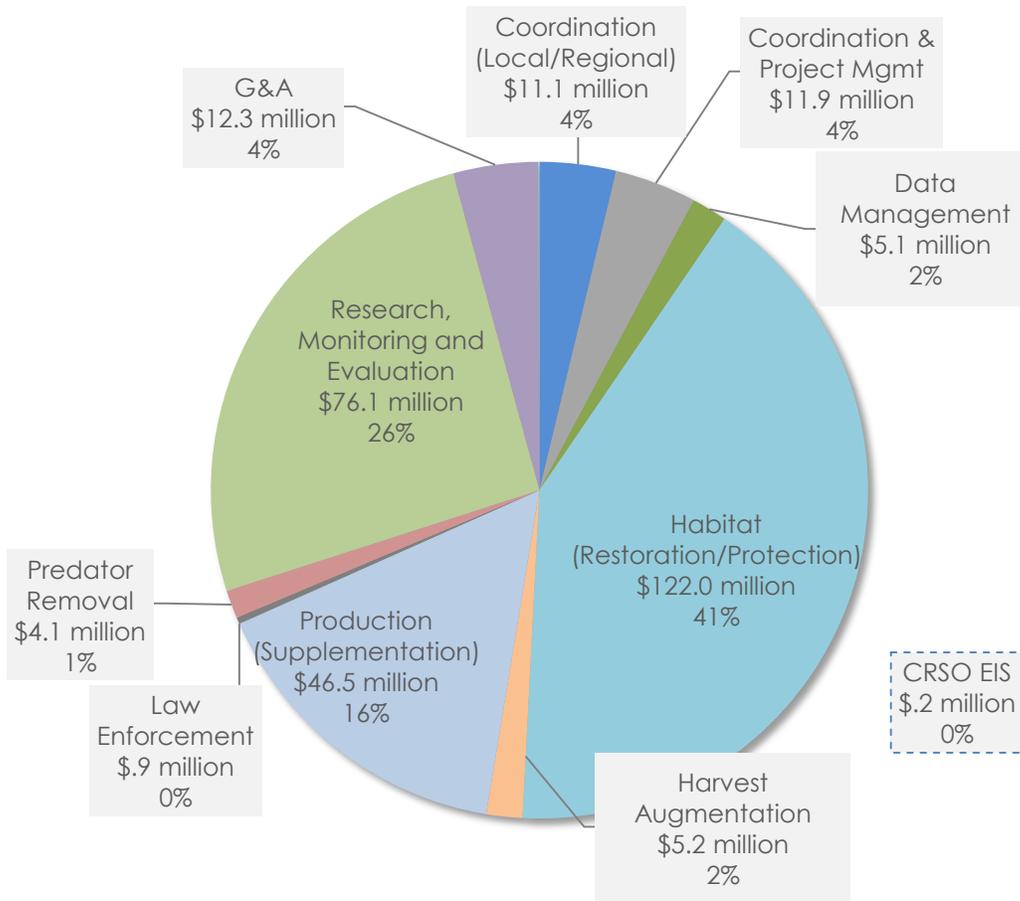


- 1) BiOp tracking at fund level began in 2009; Accords began in 2008.
- 2) Spending is estimated based on the percent of funding towards a project. For example, if a project budget is 70% BiOp and 30% General, the project expenditures will be prorated 70% towards BiOp and 30% General.
- 3) "Overhead" includes all BPA costs for staff, travel/training, NEPA, Cultural Resources, as well as Technical Service contracts.
- 4) "General" reflects non-BiOp work implemented by non-accord partners.
- 5) See Figure 2, note 2

Source: Bonneville Power Administration

Figure 6A: Costs by Category, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) costs (\$12.3 million), and Columbia River System Operations Review/ Environmental Impact Statement costs (\$0.2 million)



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 RM&E, 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).

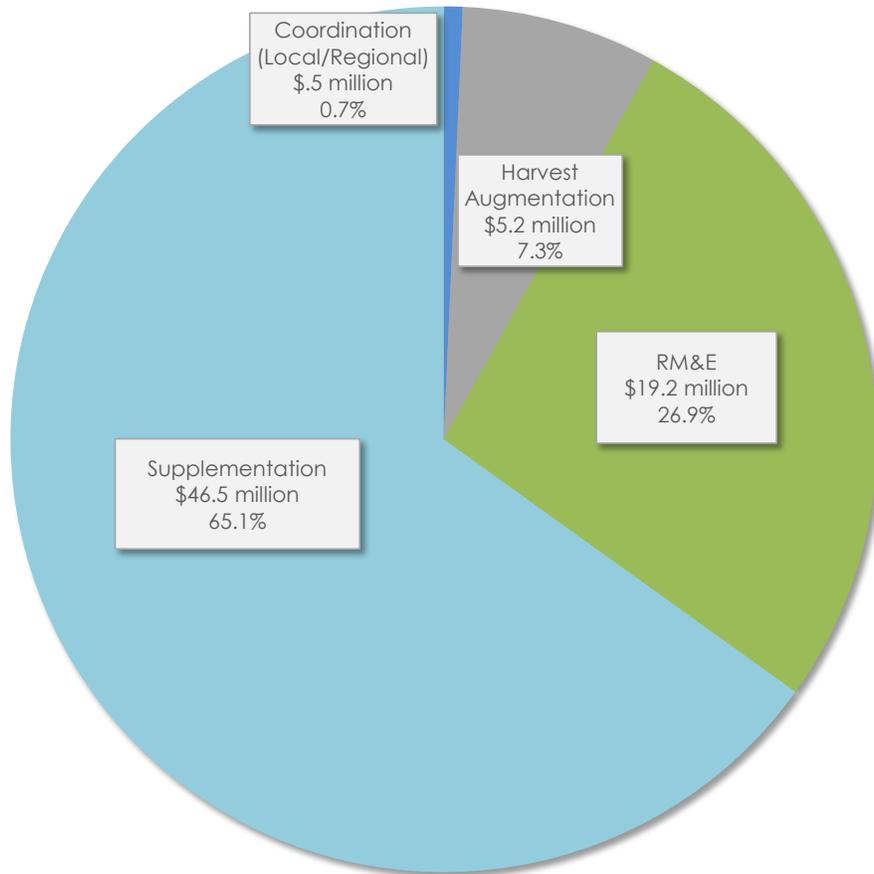
4) See Figure 2, note 2

Source: Bonneville Power Administration



Figure 6B: Artificial Production Costs by Category, FY2021

Total: \$71.4 million does not include obligations to capital projects

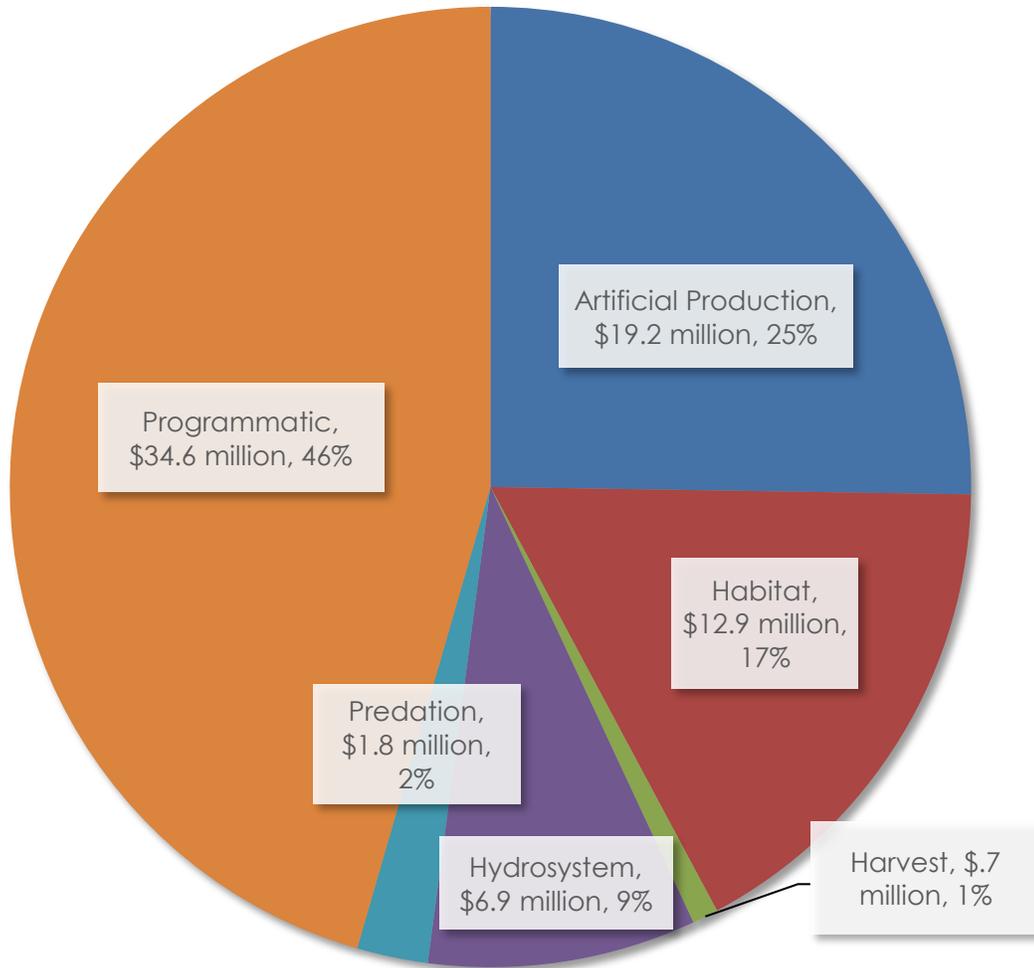


1) Estimated spending is based at the project level. Therefore if a project is assigned a purpose of Artificial Production, but also does Harvest, all expenditures for the project are included under Artificial Production.

Source: Bonneville Power Administration

Figure 6C: Research, Monitoring and Evaluation (RM&E) Costs, FY2021

Total: \$76.1 million does not include obligations to capital projects



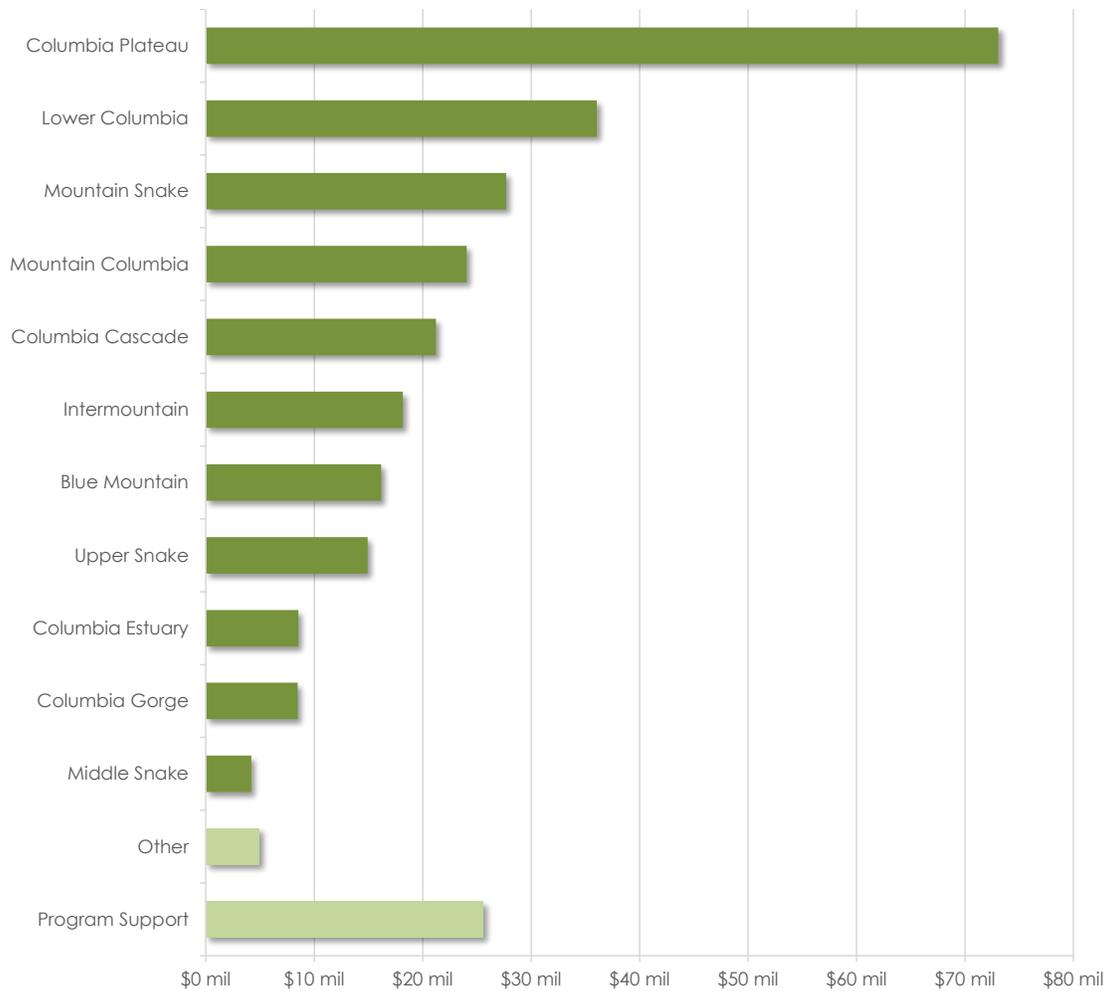
1) Estimated spending is based at the project level. Therefore if a project is assigned a purpose of Artificial Production, but also does Harvest, all expenditures for the project are included under Artificial Production.

Source: Bonneville Power Administration



Figure 7A: Costs by Province, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) expenses (\$12.3 million, not included), and Columbia River System Operations Review/Environmental Impact Statement expenses (\$0.2 million, not included)

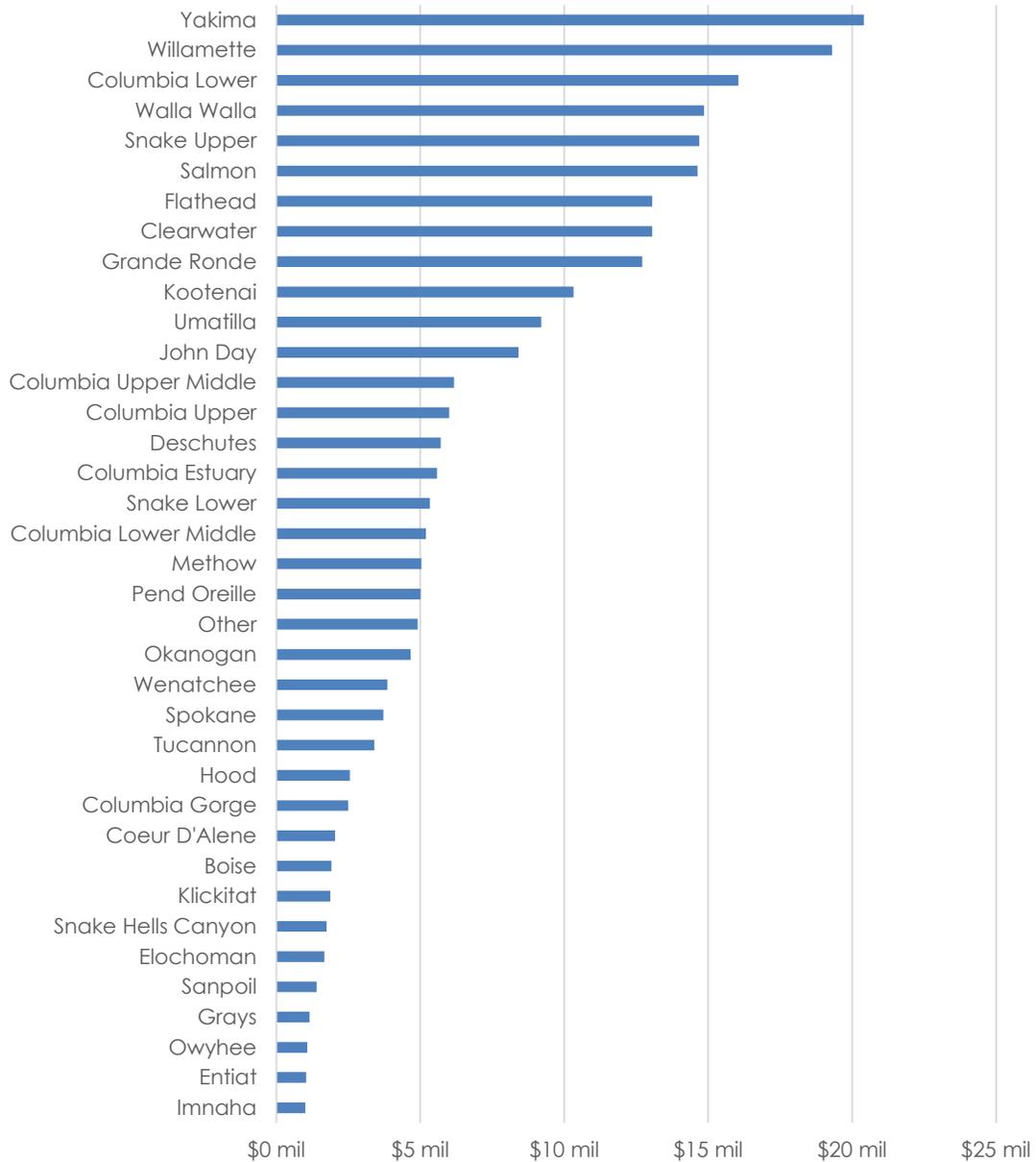


- 1) Starting in 2008, spending by province is tracked in Pisces based on where the contractor explicitly identified work location
- 2) Other includes Northern Oregon Coastal, Oregon Closed Basins, Puget Sound, SW Washington Coastal and “undetermined”, such as work in Canada for the Kootenai River white sturgeon
- 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) FY2020 revised as of January 2022
- 5) See Figure 2, note 2

Source: Bonneville Power Administration

Figure 7B: Costs by Subbasin, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) expenses (\$12.3 million, not included), and Columbia River System Operations Review/Environmental Impact Statement expenses (\$0.2 million, not included)



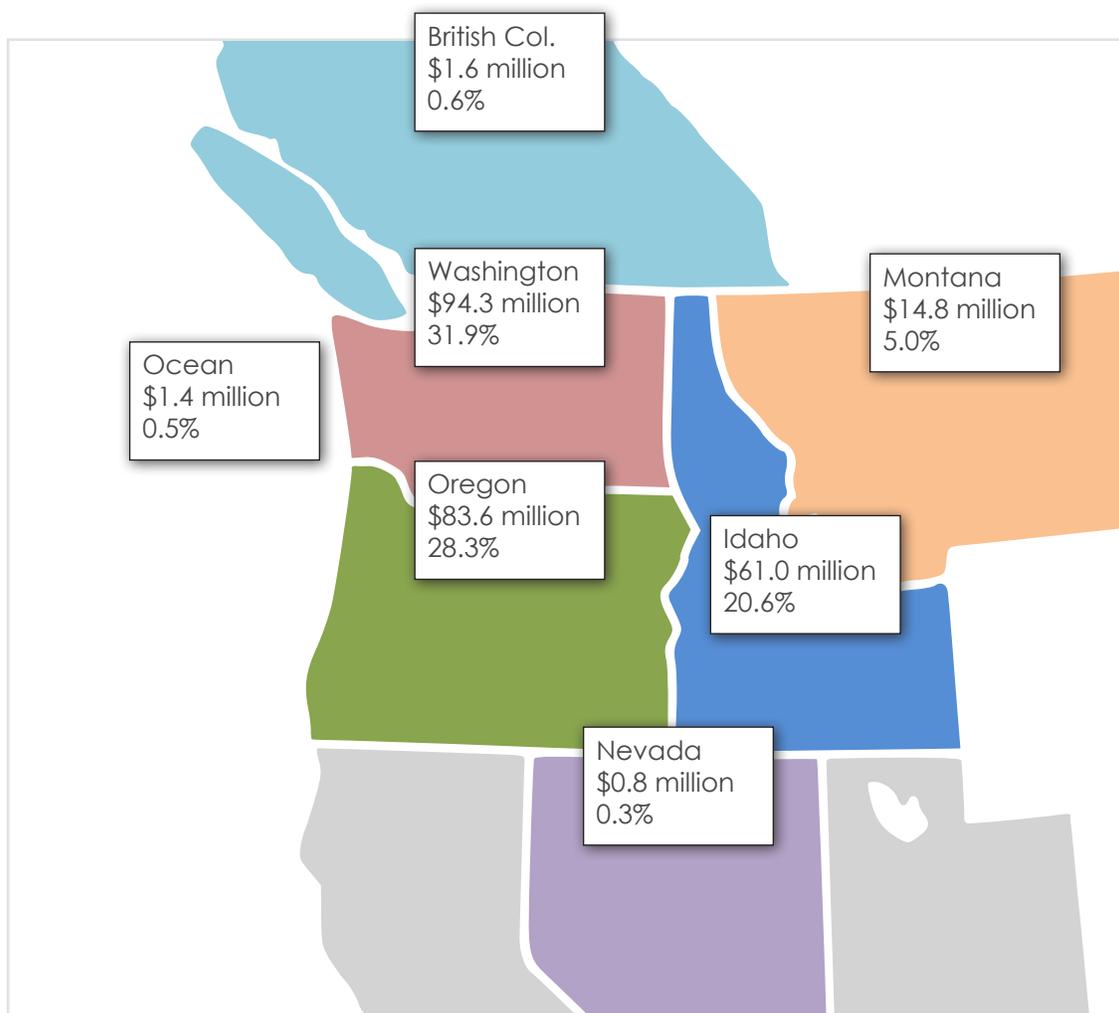
- 1) Starting in 2008, spending by province is tracked in Pisces based on where the contractor explicitly identified work location
- 2) Other includes "Undetermined" locations such as Ocean, Canada; and provinces not recognized by NPCC
- 3) Program Support/Admin includes spending that cannot be traced 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) See Figure 2, note 2

Source: Bonneville Power Administration



Figure 8: Costs by Work Element Location, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) expenses (\$12.3 million, not included), and Columbia River System Operations Review/Environmental Impact Statement expenses (\$0.2 million, not included) and Program Support (\$25.6 million, not included)

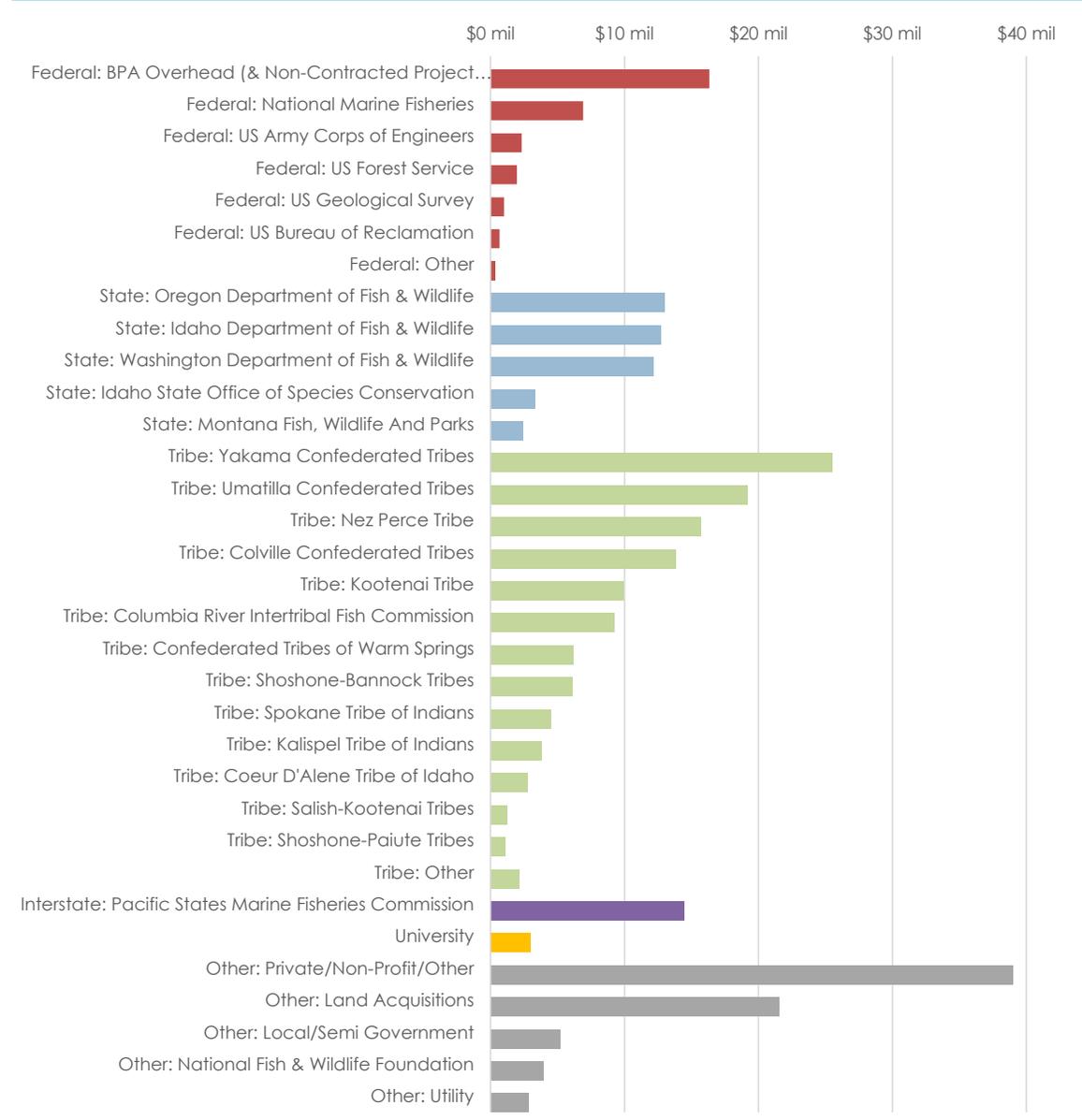


- 1) Some work outside of Council subbasins include work with Kootenai Tribe in BC and Shoshone-Paiute Tribe in Nevada
- 2) Starting in 2008, spending by state is tracked in Pisces based on where the contractor explicitly identified work location.
- 3) Program Support/Admin/Other includes spending that 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. Program support, G&A and CRSO/EIS costs are not shown in this graphic.
- 4) FY2020 revised as of January 2022
- 5) See Figure 2, note 4

Source: Bonneville Power Administration

Figure 9: Costs by Contractor Types, FY2021

Total: \$295.5 million includes \$41.9 million in obligations to capital projects, plus General and Administrative (G&A) expenses (\$12.3 million, not included), and Columbia River System Operations Review/Environmental Impact Statement expenses (\$0.2 million, not included), Chief Joseph Cost Share (not included)



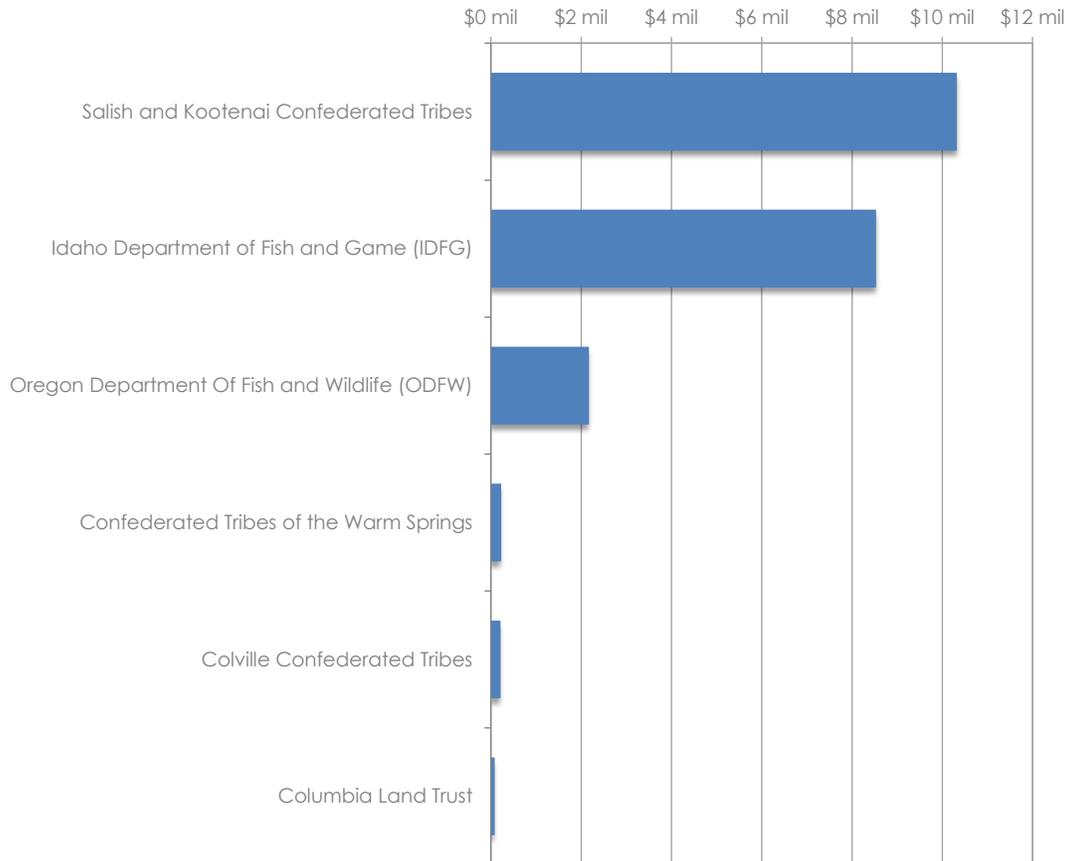
1) Values above include accruals
 2) Land acquisitions may include wildlife settlements, fish restoration, and resident fish. Starting in FY 2013, land acquisition values may include stewardship costs for long-term operations and maintenance (O&M).
 3) "Other: Private/Non-Profit/Other" includes direct contracts with organizations such as, but not exclusive to, consulting and construction firms, non-profits, foundations, the NPCC, or non-governmental organizations. part of the NPCC budget, various consulting firms, hatchery construction firms, non-profits, NGO's, and foundations.
 4) See Figure 2, note 2

Source: Bonneville Power Administration



Figure 10: Land Purchase Costs for Fish and Wildlife Habitat, FY2021

Total: \$21.6 million



- 1) Values above include bank fees, permits, etc.
- 2) Starting in FY2013, land acquisition values may include stewardship costs for long-term operations and maintenance (O&M)
- 3) Expenditures are reported for the project proponent under which the acquisition was funded (may/may not be the land manager)
- 4) Stewardship costs represent a one-time payment for O&M in perpetuity

Source: Bonneville Power Administration

Province/Subbasin Map (Reference for Figures 7A and 7B)





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