

Bonneville Power Administration (Bonneville, BPA)

Proposed Appropriations Language

Expenditures from the Bonneville Power Administration Fund, established pursuant to Public Law 93–454, are approved for the Umatilla Hatchery Facility project and, in addition, for official reception and representation expenses in an amount not to exceed \$5,000: Provided, That during fiscal year 2022, no new direct loan obligations may be made.

Provided further, that the Corps and Bureau and Administrator shall jointly conduct an updated cost allocation study, based solely on benefits and without regard to alternate costs, for any FCRPS Project identified by the Administrator and such study shall be completed within three years. The Corps and Bureau shall postpone any planned investments at the Project during the study, unless agreed to by the Administrator, if any portion of the costs tied to the investment are allocated to power. In no event shall the Administrator be responsible for payment of costs other than those specifically allocated to power; any additional costs that may shift to the irrigation purpose shall be considered non-reimbursable.

Provided further, that for the purposes of providing funds to assist in the financing the construction, acquisition, and replacement of the transmission system of the Bonneville Power Administration under the Pacific Northwest Electric Power Planning and Conservation Act (16 U.S.C. 839 et seq.), an additional \$10,000,000,000 in borrowing authority is made available under the Federal Columbia River Transmission System Act (16 U.S.C. 838 et seq.), to remain outstanding at any one time: Provided further, that the obligation of such additional borrowing authority not exceed \$0 in fiscal year 2022.

Provided further, that 16 U.S.C. (839b(h)(10)(c)) is amended by adding, “including electric power losses and value of lost power sales,” after the word “Administrator” in the first instance and before the words “for each activity pursuant...”: Provided further, that the application of such credits for electric power losses and value of lost power sales shall not exceed \$0 during fiscal year 2022. (Energy and Water Development and Related Agencies Appropriations Act, 2021.)

Explanation of Changes

Language is included to allow expenditures from the Bonneville Power Administration Fund for the Umatilla Hatchery Facility Project.

The proposed appropriations language restricts new direct loans in FY 2022 as in FY 2021. This bill language is drafted consistent with the Credit Reform Act of 1990.

The FY 2020 Energy and Water Development Appropriations Act included House subcommittee report language addressing the allocation of costs for multi-purpose projects of the Federal Columbia River Power System. Noting that the allocations of cost sharing among the authorized project purposes can be decades old, the subcommittee report requested that Bonneville, the Corps of Engineers, and Reclamation return an outline of how cost allocations may be updated. The three agencies provided the subcommittee with an outline of cost allocation methods and authorities in June 2020. To address differences in interpretation of Bonneville’s role and conditions for initiating reallocation studies, Bonneville seeks legislative language in the Administration’s submission to Congress.

Enactment of the additional Treasury borrowing authority for the Bonneville Power Administration (BPA) will assure, through the next 20 years, that the BPA will be able to continue to operate as a reliable, cost-effective, low-carbon, climate-resilient, self-financed wholesale electric utility business partner with its rate-paying power and transmission customers, and also maintain the value of the Federal Columbia River Power System (FCRPS) assets. FCRPS power and transmission assets are aging and require significant capital investment to allow them to continue to provide reliable and low-cost service and to enhance their operations into the future. BPA will continue to operate on a “pay-as-you go” basis, utilizing market priced bonds, notes and evidences of indebtedness, sold by BPA to the U.S. Treasury on a business-like repayment basis for BPA to continue to have the flexibility to obtain the financing that is considered necessary for carrying out its electric utility mission and functions.

Enactment of the clarifying fish crediting language will assure the proper alignment of credits due to BPA ratepayers.

Please Note - The FY 2022 Bonneville Power Administration Congressional Budget submission includes FY 2021 budget estimates.

Bonneville operates under a business-type budget under the Government Corporation Control Act, 31 U.S.C 9101-10 and on the basis of the self-financing authority provided by the Federal Columbia River Transmission System Act of 1974 (Transmission Act) (Public Law 93-454). Bonneville has authority to borrow from the U.S. Treasury under the Transmission Act, and the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act) (Public Law 96-501) for acquisition of energy conservation, renewable and other power resources, investment in fish facilities, and other purposes, the American Recovery and Reinvestment Act of 2009 (Public Law 111-5), and other legislation. Authority to borrow from the U.S. Treasury is available to Bonneville on a permanent, revolving basis. The principal amount of U.S. Treasury borrowing outstanding at any time may not exceed \$7.70 billion¹. Bonneville finances its approximate \$4.4 billion annual cost of operations and investments by primarily using its power and transmission revenues, and proceeds of borrowing from the U.S. Treasury.

This budget has been prepared in accordance with the Statutory Pay-As-You-Go Act (PAYGO) of 2010. Under PAYGO, all Bonneville budget estimates are treated as mandatory and are not subject to the discretionary caps included in the Budget Control Act of 2011. These estimates support activities that are separate from discretionary activities and accounts. Thus, any changes to Bonneville estimates cannot be used to affect any other budget categories, which have their own dollar caps. Because Bonneville's obligations are and will be incurred under pre-existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

¹ The outstanding principal amount of bonds issued by Bonneville to the U.S. Treasury can be found in tables BP-4A–4D in the Additional Tables section.

Bonneville Power Administration

Funding Profile by Subprogram ^{1/}

(Accrued Expenditures in Thousands of Dollars)

	Fiscal Year			
	2020 Actual	2021 Original ^{2/}	2021 Revised ^{2/}	2022 Proposed
Capital Investment Obligations				
Associated Project Costs ^{3/}	178,264	256,000	272,493	264,120
Fish & Wildlife	40,185	47,266	47,266	43,000
Subtotal, Power Services	218,449	303,266	319,759	307,120
Transmission Services	280,263	474,305	484,469	497,086
Capital Equipment & Bond Premium	21,144	22,131	21,744	22,002
Total, Capital Obligations ^{3/}	519,856	799,703	825,972	826,208
Expensed and Other Obligations				
Expensed	3,075,657	2,978,229	2,785,321	2,733,825
Projects Funded in Advance ^{5/}	89,450	66,179	70,107	55,775
Total, Obligations	3,684,963	3,844,110	3,681,400	3,615,807
Capital Transfers (cash)	471,310	401,721	724,000	696,000
Bonneville Total (Obligations & Capital Transfers)	4,156,273	4,245,831	4,405,400	4,311,807
Bonneville Net Outlays	44,000	(110,068)	(161,707)	(324,967)
Full-time Equivalents (FTEs) ^{4/}	2,743	3,000	3,000	3,000

Public Law Authorizations include:

Bonneville Project Act of 1937, Public Law No. 75-329

Federal Columbia River Transmission System Act of 1974, Public Law No. 93-454

Regional Preference Act of 1964, Public Law No. 88-552

Flood Control Act of 1944, Public Law No. 78-543

Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act), Public Law No. 96-501

Outyear Funding Profile by Subprogram ^{1/}

(Accrued Expenditures in Thousands of Dollars)

	Fiscal Year			
	2023	2024	2025	2026
Capital Investment Obligations				
Associated Project Costs ^{3/}	281,260	300,000	306,850	313,647
Fish & Wildlife	43,000	30,000	25,000	15,000
Subtotal, Power Services	324,260	330,000	331,850	328,647
Transmission Services	529,506	585,979	666,327	649,747
Capital Equipment & Bond Premium	21,052	19,721	19,056	17,386
Total, Capital Obligations ^{3/}	874,818	935,700	1,017,233	995,780
Expensed and Other Obligations				
Expensed	2,794,650	2,863,211	2,933,961	3,012,460
Projects Funded in Advance ^{5/}	61,384	47,682	35,221	35,474
Total, Obligations	3,730,852	3,846,593	3,986,415	4,043,715
Capital Transfers (cash)	726,000	678,000	689,000	701,000
Bonneville Total (Oligations & Capital Transfers)	4,456,852	4,524,593	4,675,415	4,744,715
Bonneville Net Outlays	(258,532)	(143,089)	(14,806)	19,240
Full-time Equivalentents (FTEs) ^{4/}	3,000	3,000	3,000	3,000

These notes are an integral part of this table.

- ^{1/} This budget has been prepared in accordance with PAYGO. Under PAYGO all Bonneville budget estimates are treated as mandatory and are not subject to the discretionary caps included in the Budget Control Act of 2011. These estimates support activities that are separate from discretionary activities and accounts. Thus, any changes to Bonneville estimates cannot be used to affect any other budget categories which have their own dollar caps. Because Bonneville's obligations are and will be incurred under pre-existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.
- ^{2/} Original estimates reflect Bonneville's FY 2021 Congressional Budget Submission. Revised estimates, consistent with Bonneville's annual near-term funding review process, provide notification to the Administration and Congress of updated capital and expense funding levels for FY 2021. The BPA estimates in this budget are consistent with the 2020 initial IPR. Please see <https://www.bpa.gov/Finance/RateCases/BP-22-Rate-Case/Pages/Meetings-and-Workshops.aspx> for further information.
- ^{3/} Includes infrastructure investments to address the long-term electric power related needs of the Northwest and significant changes affecting Bonneville's power and transmission markets.
- ^{4/} As of 10/21/2020, DOE HR staff has reported FY 2020 BPA's FTE usage at 2,743.
- ^{5/} In this instance, Projects Funded in Advance represents prepayment of Power customers' bills reimbursed by future credits and third party non-federal financing for Conservation initiatives. Also this category includes those facilities and/or equipment where Bonneville retains control or ownership but which are funded or financed by a third party, revenue, or with reserves, either in total or in part.

Additional Notes

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

Cumulative advance amortization payments as of the end of FY 2020 are \$5,819 million.

Refer to 16 USC Chapters 12B, 12G, 12H, and Bonneville's other organic laws, including P.L. 100-371, Title III, Sec. 300, 102 Stat. 869, July 19, 1988, regarding Bonneville's ability to obligate funds.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

Net Outlay estimates are based on current cost savings to date and anticipated cash management goals. They are expected to follow anticipated management decisions throughout the rate period that, along with actual market conditions, will impact revenues and expenses. Actual Net Outlays are volatile and are reported in Report on Budget Execution and Budgetary Resources (SF-133). Actual Net Outlays could differ from estimates due to changing market conditions, streamflow variability, continued restructuring of the electric industry, and other reasons.

Revenues, included in the Net Outlay formulation, are calculated consistent with cash management goals and assume a combination of adjustments. Assumed adjustments include the use of a combination of tools, including upcoming rate adjustment mechanisms, a net revenue risk adjustment, debt service refinancing strategies and/or short-term financial tools to manage net revenues and cash. Some of these potential tools will reduce costs rather than generate revenue, causing the same Net Outlay result. Adjustments for depreciation and 4(h)(10)(C) credits of the Northwest Power Act are also assumed.

FY 2020 Net Outlays are calculated using Bonneville's audited actual revenue. FYs 2021 to 2026 Net Outlays are based on FY 2020 initial IPR assumptions and an escalation factor from using the FY 2018 White Book Loads and Resources Report.

FTE outyear data are estimates and may change. Bonneville is facing a dynamic and changing energy marketplace and operations while, at the same time, many of its employees are eligible to retire in the near future. It is important that Bonneville continue to attract and retain skilled individuals to meet the growing demands of a competitive and rapidly changing industry. Accordingly, FTE estimates may need to be adjusted in the future.

Amounts in tables and schedules may not add to totals due to rounding.

Major Outyear Considerations

Bonneville's outyear estimates reflect ongoing efforts to achieve its long-term mission and strategic direction. The outyear estimates are developed with consideration and support of Bonneville's multi-year performance targets that lay out the course for achieving Bonneville's long-term objectives. Outyear capital investment levels support Bonneville's infrastructure program, hydro efficiency program, and its fish and wildlife mitigation projects.

Bonneville continues to incorporate the various aspects of the Energy Policy Act of 2005 related to its business, in particular the energy supply, conservation, and new energy technologies for the future that are highlighted in the legislation.

Bonneville provides electric power services, transmission services, and acquires energy efficiency throughout the Pacific Northwest. Bonneville serves a 300,000 square mile area including Oregon, Washington, Idaho, western Montana, and small parts of eastern Montana, California, Nevada, Utah, and Wyoming with a population of about 14 million people. Bonneville markets the electric power produced from 31 federal hydro projects in the Pacific Northwest owned by the U.S. Army Corps of Engineers (Corps) and the U.S. Department of Interior, Bureau of Reclamation (Reclamation). In addition, Bonneville also acquires power from non-federal generating resources, including the power from a nuclear power plant, the Columbia Generating Station (CGS). Bonneville uses the power from its non-federal purchases and the federal projects, collectively the Federal Columbia River Power System (FCRPS), primarily to meet the Administrator's long term firm power sales contract obligations. Bonneville currently maintains and operates 15,197 circuit miles of transmission lines, 262 substations, and associated power system control and communications facilities over which this electric power is delivered. Bonneville has capital and similar leases for certain transmission facilities. Bonneville also supports the protection and enhancement of fish and wildlife, and encourages the development of conservation and energy efficiency, as part of meeting its obligations to supply power and balance the economic and environmental benefits of the FCRPS.

The organization of Bonneville's FY 2022 Budget reflects Bonneville's business services basis for utility enterprise activities. Bonneville's two major areas of activity on a consolidated budget and accounting basis are Power Services and Transmission Services and include their related administrative costs. Power Service's costs include line items for Fish and Wildlife, Energy Efficiency, Residential Exchange Program, Federal Projects Operations & Maintenance (O&M) Costs, and the Northwest Power and Conservation Council (Planning Council or Council). Transmission Service's costs include line items for engineering, operations, and maintenance for Bonneville's electric transmission system.

Bonneville's mission as a public service organization is to create and deliver federal power and transmission services at cost as it acts to assure its customers in the Pacific Northwest have the following: (1) an adequate, efficient, economical, and reliable power supply; (2) an open access transmission system that is adequate for integrating and transmitting power from federal and non-federal generating units, providing service to Bonneville's customers, providing interregional interconnections, and maintaining electrical reliability and stability; and (3) mitigation of the impacts on fish and wildlife from the federally owned hydroelectric projects from which BPA markets power.

Bonneville's vision is to be an engine of the Northwest's economic prosperity and environmental sustainability by advancing a Northwest power and transmission system that is a national leader in providing high reliability, low rates consistent with sound business principles, responsible environmental stewardship, and accountability to the region, all through a commercially successful business. Bonneville pursues this vision consistent with its four core values of safety, trustworthy stewardship, collaborative relationships, and operational excellence.

Legislative History

The Bonneville Project Act of 1937 provides the statutory basis for Bonneville's power marketing responsibilities and authorities. In 1974, passage of the Federal Columbia River Transmission System Act (Transmission Act) applied provisions of the Government Corporation Control Act (31 U.S.C. §§ 9101-9110) to Bonneville. The Transmission Act provides Bonneville with "self-financing" authority, establishes the Bonneville Fund (a permanent, indefinite appropriation) allowing Bonneville to use its revenues from electric power and transmission ratepayers to fund all programs without further appropriation, and authorizes Bonneville to sell bonds to the U.S. Treasury. As of the end of FY 2020, Bonneville has revolving U.S. Treasury borrowing authority of \$7.7 billion of which approximately \$2.1 billion remains available to be drawn.

The 1980 enactment of the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) expanded Bonneville's authorities, obligations, and responsibilities. The purposes of the act include encouraging development of electric energy conservation to meet regional electric power loads placed on Bonneville; the development of renewable energy resources within the Pacific Northwest; to assure the Northwest an adequate, efficient, economical, and reliable power supply; to promote regional participation and planning; and to protect, mitigate, and enhance the fish and wildlife of the Columbia River and its tributaries. The Northwest Power Act also established a revised statutory framework for Bonneville's administrative rate-setting process and established judicial review of Bonneville's final actions in the U.S. Court of Appeals for the Ninth Circuit.

Strategic Direction

In early 2018, Bonneville released its 2018-2023 Strategic Plan which describes how it will operate in a commercially successful manner while meeting its statutory obligations. Bonneville developed this strategic plan after listening to customers and constituents express their interests in Bonneville's commercial viability and ability to meet those obligations. The strategic plan was developed at the point when Bonneville was midway through 20-year firm power sales contracts with its preference power customers. Those customers continue to evaluate how Bonneville will be positioned to meet their needs beyond the terms of their current contracts. The strategic plan is framed by these goals:

- Strengthen financial health
- Modernize assets and system operations
- Provide competitive power products and services
- Meet transmission customer needs efficiently and responsively

In 2020, Bonneville reassessed and reconfirmed its strategic goals and objectives. In its Strategic Plan Update, Bonneville added a fifth goal, "Value people and deliver results," which captures the agency's commitment to its workforce and the people it serves.

Financial Plan

In 2018, Bonneville also completed its Financial Plan. The Financial Plan responds to the objective in the strategic plan to strengthen Bonneville's financial health. The 2018 Financial Plan establishes a guiding framework for decision-making by defining the financial constraints within which Bonneville operates, and outlines objectives to establish Bonneville's financial health. The plan contains Bonneville's statutory obligations and authorities, financial policies and established practices, and financial health objectives.

Pursuant to the Financial Plan, Bonneville adopted two specific policies. The Financial Reserves Policy (FRP) defines the level of financial reserves Bonneville and each business line should hold; how to build financial reserves when they fall below a prescribed level; and a process to consider repurposing financial reserves when they exceed a prescribed level. The policy provides a framework to help ensure Bonneville maintains a minimum of 60 days cash on hand for each business line and 90 days for the Agency.

The Leverage Policy creates a strategy to reduce Bonneville's total debt compared to its assets in an effort to strengthen financial health and flexibility. Reducing debt will help Bonneville lower its interest costs, support its strong credit rating, maintain access to borrowing from the U.S. Treasury, and improve financial strength and flexibility.

Fiscal Year 2020 and 2021 Rates

BPA adopted its power and transmission rates for Fiscal Years 2020 and 2021 in July 2019. FERC granted final approval to the rates on April 17, 2020. The average base power rate was the same as for the previous rate period before a rate surcharge of up to 1.5 percent that was triggered in November 2019, based on the provision of Bonneville's Financial Reserve Policy (FRP). For transmission rates, the weighted average increase is 3.6 percent for the two-year rate period, consistent with the settlement agreed upon during the rate proceeding. The transmission and power rates will be in effect through September 30, 2021.

In June, 2020, Bonneville responded to power customers who anticipated uncertain financial conditions resulting from the COVID-19 pandemic. Bonneville completed an expedited rate proceeding to suspend the FRP surcharge for the remainder of FY 2020 and for FY 2021.

Financial Mechanisms

Bonneville's program is treated as mandatory and nondiscretionary. Bonneville is "self-financed" from its own revenues and does not rely on annual appropriations from Congress. Under the Transmission Act, Bonneville funds the expense portion of its budget and repays the federal investment with revenues from electric power and transmission sales. Bonneville's revenues fluctuate for a variety of reasons, including in response to variations in market prices for fuels and stream flow in the Columbia River System caused by variations in weather conditions and fish mitigation needs.

In the FY 2022 Budget, the term Bonneville “bonds” refers to the debt instruments under which Bonneville receives advances of funds from the U.S. Treasury. This reference is consistent with section 13(a) of the Transmission Act, which defines “bonds” as all bonds, notes, and other evidences of indebtedness issued and sold by Bonneville to the U.S. Treasury.

As of June 2020, debt instruments issued by non-federal entities but secured by payment and other financial commitments provided by Bonneville received the following credit ratings: Moody’s at Aa2 with a stable outlook, Standard & Poor’s at AA- with a stable outlook, and Fitch at AA with a stable outlook.

Bonneville and the U.S. Treasury have a comprehensive banking arrangement that covers Bonneville’s short- and long-term federal borrowings. This provides Bonneville with the ability to borrow from the U.S. Treasury to finance capital investments and, on a short-term basis, to cover Northwest Power Act-related operating expenses. This latter ability provides Bonneville with much needed liquidity to help manage within-year cash flow needs and mitigate risk. Access to this use of U.S. Treasury borrowing authority has been incorporated into and relied upon in Bonneville’s rate-setting process.

U.S. Treasury Payments and Budget Overview

Bonneville’s FY 2020 payment to the U.S. Treasury was approximately \$736 million. This was the 37th consecutive year that Bonneville made its scheduled payments to the U.S. Treasury on time and in full. The payment included \$471.3 million in principal, which included \$20 million in early retirement of higher interest rate U.S. Treasury debt, \$208 million for interest, \$24.1 million in irrigation assistance payments, and \$29.5 million in pension and post-retirement benefits. Total credits associated with fish mitigation and recovery that are applied toward Bonneville’s U.S. Treasury payment were about \$95.2 million for FY 2020. These credits are established and applied under section 4(h)(10)(C) of the Northwest Power Act. The FYs 2021 and 2022 U.S. Treasury payments are currently estimated at \$1,007 million and \$963 million, respectively. The FY 2021 and 2022 4(h)(10)(C) credits are estimated to be \$80.3 million and \$92.8 million, respectively.

Estimates of interest and amortization levels for outyear U.S. Treasury payments are included in the FY 2020-2021 final transmission and power rates. Bond and Appropriations Interest will continue to be revised based on upcoming capital investments and debt management actions. These estimates may change due to revised capital investment plans and actual U.S. Treasury borrowing. In recent years, Bonneville has made amortization payments in excess of those scheduled in its FERC-approved rate filings resulting in a balance of advance repayment. The cumulative balance of advance amortization payments as of the end of FY 2020 was in excess of \$5.8 Billion.

Bonneville has direct funding arrangements to fund the power-related portion of O&M and capital investments at the Corps and Reclamation facilities as well as the O&M costs of the U.S. Fish and Wildlife Service Lower Snake River Compensation Plan facilities. Direct funded FCRPS capital costs, which had been funded exclusively through appropriations to the Corps and Reclamation prior to the initiation of direct funding, are now funded primarily from the proceeds of bonds issued by Bonneville to the U.S. Treasury. Certain power prepayments have also been a source of funds for direct funding. Bonneville’s aggregate direct funding provided for capital and O&M was \$595.8 million in FY 2020.

Starting in FY 2014, Bonneville and Energy Northwest, the Washington state joint operating agency that owns and operates the Columbia Generating Station nuclear plant, have been working together to implement a new phase of integrated debt management for their combined total debt portfolios. The debt service of these portfolios is borne by Bonneville and recovered from Bonneville ratepayers through Bonneville’s rates. Energy Northwest-related debt, as refinanced under this effort, is called Regional Cooperation Debt.

Bonneville manages its overall debt portfolio, which includes both debt that is issued by non-federal entities and secured by Bonneville’s financial commitments (“Non-Federal Debt”), and Bonneville’s repayment obligations to the United States Treasury, to meet the objectives of: (i) minimizing the cost to Bonneville’s ratepayers, (ii) maximizing Bonneville’s access to its lowest cost capital sources to meet future capital needs, and (iii) maintaining sufficient financial flexibility to meet Bonneville’s financial requirements.

The most recent efforts have included the issuance of Net Billed Bonds to refund outstanding Net Billed Bonds in Fiscal Year 2014 through Fiscal Year 2020. These refinancings were known as the initial phase of “Regional Cooperation Debt” which have enabled Bonneville to repay, earlier than would otherwise occur, Federal Appropriations Repayment Obligations. The

initial phase of Regional Cooperation Debt refinancings achieved significant interest rate savings that has and will result in total debt service savings of approximately \$2.8 billion.

Similar to the initial phase, the second phase of Regional Cooperation Debt refinancings would have the effect of freeing up amounts in the Bonneville Fund which otherwise would have been used to fund the repayment of the principal of the refunded Net Billed Bonds, which will instead be used to make payments to reduce the outstanding principal amount of bonds issued by Bonneville to the United States Treasury. Bonneville estimates that the aggregate potential principal amount of refinancing Net Billed Bonds that could be issued in Fiscal Year 2021 through Fiscal Year 2030 could approach \$3.5 billion.

Power Prepayment Program

Bonneville undertook a Power Prepayment Program in FY 2013 under which all Bonneville preference customers had an opportunity to submit formal offers to provide lump-sum payments to Bonneville as prepayments of a portion of their power purchases through September 30, 2028, the termination date of their current Long-Term Regional Dialogue Power Sales Contracts. Bonneville accepted power prepayments from four preference customers, as described below.

Upon Bonneville's receipt of the agreed-to, lump-sum prepayments, the selected preference customers became entitled to future portions of their electricity from Bonneville without further payment. The power prepayments are and will be recognized in the customers' future power bills from Bonneville as fixed, equal monthly prepayment credits. In effect, the amount of electricity that is prepaid may vary by month, depending on Bonneville's power rates and rate schedules that apply to electricity purchases by the prepaying customers in the related month. Because this is structured as a variable amount of prepayment and not as a fixed-price/fixed-amount type of prepayment, Bonneville maintains flexibility to establish rates for the electric power that is prepaid.

As a result of the FY 2013 Prepayment solicitation, Bonneville received \$340 million in prepayments, which Bonneville is using to fund needed FCRPS investments. The aggregate prepayment credits are set at \$2.55 million per month through FY 2028.

Depending on a variety of factors it is possible that Bonneville may seek to implement later phases of the Power Prepayment Program in connection with future FCRPS hydroelectric investment needs.

Asset Management

The foundation of Bonneville's value is the base of the generating resources from which it markets electricity, and Federal transmission assets it owns and operates. Bonneville utilizes an Asset Management Program based on The Institute of Asset Management (IAM's) conceptual model that aligns with the International Organization of Standardization (ISO) 55000 Series and Publicly Available Specification (PAS) 55 standards. Investments are created, selected, and executed based on a strategy to apply best-practice industry standards to manage the lifecycle costs of Federal assets. This is central to maintaining the long-term value and reliability of the power and transmission systems. Achieving these objectives for power requires collaborative, long-term planning with Bonneville's Federal partners, the Corps and Reclamation. Through the Asset Investment Excellence Initiative, the three agencies are establishing a long term asset investment plan, applying prioritization tools to inform investment decisions to ensure the long term affordability and reliability of the hydropower assets.

Bonneville Power Administration operates within a complex environment that requires asset management tradeoffs. Bonneville's business decisions consider five dimensions of risk: financial, reliability, compliance, safety and environmental. Reliability and safety remain Transmission priorities. Transmission's asset management capability is continually maturing to maximize the value of its assets and help BPA maintain competitive advantage in the marketplace, enable industry change and deliver on public responsibilities; as well as strengthen financial health through the management of lifecycle cost.

Infrastructure Investments

The FCRPS is one of the nation's largest nearly carbon-free power systems, and preserving and enhancing the value of the FCRPS for the future continues to be a major Bonneville focus. Bonneville's ongoing prioritization and execution of capital investment in transmission and FCRPS generation assets is the foundation for delivering clean, low cost power to support the communities and economies of the region well into the future.

Bonneville continues to assess needed infrastructure investments in the Pacific Northwest to meet transmission capacity and reliability needs and continues to support a competitive wholesale market in the Western Interconnection, which encompasses 14 western states, two Canadian provinces, and one Mexican state.

Bonneville signed two agreements to participate with two investor-owned utilities in the environmental work and permitting for a transmission project, the proposed Boardman-to-Hemingway 500kV line; the initial agreements were executed in FY 2012 and subsequently amended in FY 2018. Participation in this preliminary review keeps Bonneville's options open for serving its six southeast Idaho preference customers following the termination of legacy transmission service agreements. Bonneville has not made a decision to co-develop or purchase capacity in this project. On January 17, 2014, Public Law 113-76 was enacted, which provided Bonneville with expenditure authority approval to construct or participate in the construction of a transmission line to southeast Idaho, should Bonneville decide to continue pursuing that service arrangement.

Bonneville continues to evaluate additional transmission investments and alternative non-wire solutions across the Pacific Northwest to improve reliability and support both load and renewable generation needs. Bonneville makes use of certain alternative capital financing mechanisms, in addition to or in lieu of the use of its U.S. Treasury borrowing authority, to sustain funding for its infrastructure investment requirements. These approaches include revenue and financial reserves financing some amount of either or both power and transmission investments, or seeking, when feasible, third party financing sources. See the BP-5 Potential Third Party Financing Transparency table in the budget schedules section of this document.

In 2019, Bonneville and a partner customer utility completed another innovative addition to system transmission capabilities that reflected Bonneville's strategic objective to meet transmission customer needs more efficiently and responsively. The customer utility, Lower Valley Energy, approached Bonneville with a proposal to finance and complete the Hooper Springs Transmission Project, planned for construction by Bonneville to continue service to the utility. Bonneville had completed project design and siting processes. With Lower Valley's assumption for the costs and final construction of the project, Bonneville was able to preserve Treasury borrowing authority and lease operating rights for service over the project.

Bonneville plays a key role in advancing energy efficiency across the region consistent with its statutes, including developing and promoting related technologies, and exploring demand-side management opportunities.

Bonneville is making disciplined technology innovation investments and looking to apply new operational and market mechanisms that enhance the reliability, efficiency, and flexibility of system operations.

Revised Transmission Tariff

In 2018, Bonneville engaged in settlement discussions with transmission customers to reach consensus on terms and conditions for a new Bonneville transmission tariff as well as gain agreement from those customers to convert their current contracts to the new tariff when it becomes effective. Bonneville presented its need for a modernized tariff that can be modified over time so that the region can take advantage of opportunities in the rapidly changing industry as well as further its objectives for improving the agency's commercial performance. This resulted in a settlement package that includes a TC-20 Settlement Agreement on the tariff terms and conditions and a BP-20 Partial Transmission Rates Settlement Agreement that settles transmission and ancillary and control area services rates. Bonneville's Fiscal Year 2020 and 2021 rate decision included the transmission, and ancillary and control area services rates agreed upon in the settlement.

Grid Modernization

Bonneville continues a cross-agency grid modernization initiative. Bonneville's reliance on legacy systems and non-standard commercial practices are costly to maintain and have led to being conservative in its power and transmission operations, planning, and marketing. Bonneville's strategic objective is to modernize federal power and transmission systems and their supporting technology.

Grid modernization involves improving transmission and generation system visibility and controls, and increasing the electricity market skills of Bonneville employees. The grid modernization initiative focuses on five areas of effort:

- Operational modernization
- Commercial modernization
- Energy Imbalance Market implementation
- Mission critical information technology improvements
- Improvements to core business practices

Part of the grid modernization scope is Bonneville's evaluation of joining the Western Energy Imbalance Market (EIM) and enabling Federal and non-federal resources in its service area to access that market. Bonneville expects that joining the EIM will optimize the day-to-day operation of the power system and leverage hydropower in a market increasingly driven by intermittent renewable resources. As part of its evaluation, Bonneville conducted monthly public meetings to include its customers and regional constituents in assessing the EIM and its impacts on Bonneville's operational and commercial processes as well as its statutory obligations. In September 2019, Bonneville signed a Western EIM Implementation Agreement with the California Independent System Operator to begin work on projects that need to be completed to allow BPA to start EIM operations.

Bonneville continues to engage its customers and constituents in the implementation of its plan to join the EIM in 2022 through regular public workshops. The workshops consider the rate, tariff and operational issues of participating in the EIM and preparation for BPA's FY 2022-2023 rates processes.

Bonneville is also reviewing the California ISO (CALISO) proposal to extend the EIM to day-ahead markets. The CALISO has opened a stakeholder process to consider designs for an extended day-ahead market (EDAM). The possible addition of market functions presents a significant opportunity to build off the success of the EIM and to pursue additional economic and environmental benefits for market participants and their respective customers in regions across the West. If Bonneville were to consider whether and how to join an EDAM, it would likely undertake a separate public process that could include a record of decision.

Integrating Regional Transmission Planning

Bonneville now participates in the newly formed NorthernGrid regional planning organization. Bonneville's 2018-2023 Strategic Direction included the objective of pursuing a single entity to consolidate regional planning efforts and reduce duplication. In support of that objective, Bonneville worked together with other entities to scope and develop a new, single regional planning organization. The result of that effort is NorthernGrid. NorthernGrid's formation will facilitate Bonneville's efforts to meet transmission customer needs efficiently and responsibly across a broad spectrum of participants and a larger footprint. It includes participation by both FERC-jurisdictional and non-jurisdictional entities.

Regional Resource Adequacy

Recent regional forecasts have shown that the Pacific Northwest as a whole is nearing periods of times of the year when regional power supplies may not be adequate to meet demand. Bonneville is joining other regional utilities through the Northwest Power Pool on an initiative to develop a voluntary, but enforceable, program to ensure that the region maintain a balance of supplies and demand in a very high percentage of likely conditions. Development of a regional resource adequacy program will continue into 2021. Bonneville will continue to consult its customers and regional leaders about the business case and principles for its participation.

The Columbia River System Operations

In 2020, the U.S. Army Corps of Engineers, Bureau of Reclamation and Bonneville Power Administration completed the public process to prepare an updated environmental impact statement (EIS) on the Columbia River System operations (CRSO) and configurations for 14 federal projects in the interior Columbia Basin. The last comprehensive system EIS was completed in 1997. In the updated CRSO EIS, the three agencies prepared a reasonable range of alternatives for long-term system operations and evaluated the potential environmental and socioeconomic impacts on a number of resources, including flood risk management, irrigation, power generation, navigation, fish and wildlife, cultural resources and recreation.

The on-going action that requires evaluation under NEPA is the long-term coordinated management of the System projects. An underlying need to which the co-lead agencies are responding is reviewing and updating the management of the

System, including evaluating measures to avoid, offset, or minimize impacts to resources affected by the management of the System in the context of new information and changed conditions in the Columbia River basin. In addition, the co-lead agencies are responding to the Opinion and Order issued by the U.S. District Court for the District of Oregon such that this EIS will evaluate how to insure that the prospective management of the System is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat, including evaluating mitigation measures to address impacts to listed species.

The co-lead agencies released a draft EIS in February 2020, beginning a 45-day public comment period. Due to state and Federal measures to prevent the spread of the COVID-19 virus, public workshops that had been scheduled for comment were conducted by conference calls in March and April. The public comment period closed on April 13 and the co-lead agencies began analysis and response to over 58,000 comments received in that period. The co-lead agencies released a final record of decision in September 2020.

Fish and Wildlife Program Overview

Bonneville remains committed to funding its share of the region's efforts to protect and mitigate Columbia River Basin fish and wildlife affected by the construction and operations of the FCRPS. To the extent possible, Bonneville integrates actions to protect species listed for protection under the Endangered Species Act (ESA) in response to relevant FCRPS Biological Opinions with the Fish and Wildlife Program of the Northwest Power and Conservation Council. Implementation of these efforts involve significant collaboration with Pacific Northwest states, Indian tribes, local communities and other Federal agencies.

Included with the budget schedules section of this document is the current tabulation of Bonneville's fish and wildlife costs from FY 2011 through FY 2020.

The Columbia River Treaty

The U.S. Government reached consensus on a high level position for negotiations of the post-2024 future of the Columbia River Treaty in June 2015, and received authorization to negotiate with Canada on the Columbia River Treaty in October 2016. Government Affairs Canada notified the United States State Department in December 2017 of Canada's mandate to negotiate the Columbia River Treaty with the United States. Negotiations began in spring 2018 and continue to date. Both the U.S. Department of State and Canadian negotiators have discussed shared objectives and exchanged information on flood risk management, hydropower and ecosystem considerations.

Radio Spectrum Communications

Bonneville's wireless communication system is used to operate and control critical national transmission grid infrastructure in a reliable, secure, and safe manner. Bonneville's communication systems are designed to meet strict reliability/availability objectives required by the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) standards. Concerning proper spectrum stewardship, Bonneville designs highly efficient radio systems that use minimal radio frequency (RF) channel bandwidths to meet critical mission needs. However, in certain circumstances, efficiently designed spectrum radio systems will require broad RF channels and/or lower state RF modulation schemes to meet existing and future requirements in order to meet operational and reliability/availability objectives.

In order to meet Bonneville's mission/operational requirements, RF communication equipment approved for system use goes through a rigorous evaluation and testing process. RF spectrum efficiency factors are considered during the evaluation/testing period. RF terminal equipment approved for use is normally purchased directly from vendors and is not typically supplied through a Request for Proposal process.

Bonneville's operational telecommunications and other capital equipment and systems are acquired using Bonneville's self-financing and procurement authorities. The Bonneville budget includes a system-wide electric reliability performance indicator, consistent with NERC rules, to track and evaluate performance.

Bonneville may share temporarily-available spare capacity on its RF communication system with other government agencies (both Federal and State), and with other electric utilities in the region whose power systems interconnect with Bonneville. Non-critical administrative traffic is typically supported by commercial carrier enterprises. However, to meet the

NERC and WECC electrical bulk transmission requirements, Bonneville exclusively operates highly critical transmission control traffic over its private telecommunication system as Bonneville has no control over the reliability/availability of the commercial enterprise or on how quickly critical operational control circuits are restored to active service during an interruption.

For high capacity communication system applications, Bonneville considers and operates non-spectrum dependent alternatives such as fiber optic cable infrastructure systems.

During FY 2014, Bonneville began upgrading the Very High Frequency (VHF) land mobile system and installing a number of digital Synchronous Optical Network (SONET) rings typically consisting of fiber segments in combination with point-to-point microwave hops operating in the 4 GHz and 7/8 GHz bands. These various telecommunication systems operate within Bonneville's approximate 300,000 square mile regional utility service territory (Oregon, Washington, Idaho, western Montana) with the majority of the RF infrastructure located in low population-rural areas.

The FCRPS hydroelectric projects, owned by the Corps and Reclamation, also utilize federal radio spectrum to preserve very high operational telecommunications and power system reliability.

In FY 2014, Bonneville completed work costing approximately \$40 million, funded through the Spectrum Relocation Fund, to relocate its operational telecommunication systems from the 1710-55 MHz radio spectrum bands to alternative federal radio spectrum bands, part of the AWS-1 Federal Spectrum Relocation. In accordance with Federal law, Bonneville plans to return the approximately \$8.2 million of excess funds to the U.S. Treasury, via the Spectrum Relocation Fund, as soon as the National Telecommunications and Information Administration (NTIA) officially notifies the Federal Communications Commission (FCC) that the DOE relocation effort is complete.

Bonneville began participating in a new spectrum relocation effort in FY 2015 to relocate its operational telecommunication systems from the 1755-80 MHz radio spectrum bands. The NTIA has approved and, in July 2014, web-posted federal agency relocation plans, including the Bonneville relocation plan. The FCC held an auction of this spectrum on November 13, 2014. Bonneville received an additional \$5.2 million from the Spectrum Relocation Fund on July 29, 2015 to fully pay for this new relocation effort, including, as in the prior relocation, the purchase and installation of new digital radio equipment. Bonneville received obligational authority to proceed with this relocation effort by a apportionment on July 24, 2015.

Bonneville has worked to complete its move off of 1755-80 MHz in two stages. First, Bonneville moved off of the old federal frequencies and "retuned" to new alternate federal frequencies in the band segment of 1780-1850 MHz which is above the highest frequency that is involved in the auction. Three hops federal frequency moves/retuning were completed as of June 7, 2017. The last remaining path, Happy Camp to Hilltop in northern California near the Oregon California Border, was moved/retuned, and as of July 31, 2018, Bonneville was off of the AWS-3 radio frequencies, meeting the commitment date promised to the NTIA. Bonneville still has additional work remaining to finish the construction related to the AWS-3 relocations. Bonneville will use the SRF relocation funds until the AWS-3 relocation work is completed and closed out. Second, Bonneville will complete its move of these four microwave hops to 7GHz-8GHz. This will take additional time because two of four hops require building construction to complete the work. AWS-3 funds will need to be retained by Bonneville at least through FY 2023 to complete construction of two communications buildings. This will accommodate the adjusted construction schedule with contingency for minor access issues due to weather or fire. Construction at the Glass Butte site may not occur until FY 2021. The construction of the new control house at Richland Substation is on a similar timeline as the Glass Butte project. The building construction will likely occur in FY 2021 with cutovers to the new radio equipment and retirement of old radio equipment likely concluding in FY 2022. Bonneville will assure that "comparable capability" has been achieved for these four AWS-3 relocated Bonneville operational telecommunication hops.

Educational Activities

Bonneville is a supporter of science, technology, engineering, and math (collectively known as "STEM") education programs. These programs provide support and encouragement to middle and high school students to study the sciences in school and to pursue careers in these fields. As a regional leader in STEM education, Bonneville proudly supports and organizes an award-winning Science Bowl. Bonneville also sponsors Science Fair competitions for students in Washington State, as well as a First Robotics tournament championship. Bonneville employees also serve as volunteer ambassadors,

providing presentations, curricula, and activities to K-12 schools that enhance the learning experience for students and teachers, and extend awareness of the role of the region's hydroelectric system.

Budget Estimates and Planning

This FY 2022 Budget proposes estimated accrued expenditures of \$2,734 million for operating expenses, \$56 million for Projects Funded in Advance (PFIA), \$826 million for capital investments, and \$696 million for capital transfers in FY 2022.

The estimated spending levels in this budget are still subject to change to accommodate competitive dynamics in the region's energy markets, debt management strategies, continuing changes in the electric industry, and other factors.

This FY 2022 Budget includes capital and expense estimates based on initial approved spending proposals from Bonneville's BP-22 Integrated Program Review (IPR). Capital investment levels reflect Bonneville's capital asset management process and external factors such as changes affecting the West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region and national energy security goals.

Bonneville utilizes a structured capital project selection process requiring submission of a standardized business case for review. Each business case consists of a description of the project, a clear statement of objectives, description and mitigation of risks, and a rigorous analysis of project costs and benefits including a status quo assumption and preferred alternatives. In addition, both annual and end-of-project targets are set for each project covering cost, scope, and schedule. Progress reports on these targets are provided to Bonneville's senior executives at least quarterly.

The FYs 2021-2026 revenue estimates in this budget, included in the Net Outlay formulation, are calculated consistent with cash management goals. The revenue estimates reflect assumed adjustments, which include the use of a combination of tools, including upcoming rate adjustment mechanisms, reduced cost estimates, a net revenue risk adjustment, debt management strategies, and/or short-term financial tools to manage net revenues and cash. The revenue estimates also include depreciation and U.S. Treasury repayment credit assumptions. These U.S. Treasury repayment credits offset, among other things, Bonneville's fish and wildlife program costs allocable to the non-power project purposes of the FCRPS, as provided under section 4(h)(10)(C) of the Northwest Power Act.

Overview of Detailed Justifications

In Bonneville's Detailed Justification Summaries, accrued expenditure is the basis of presenting Bonneville's program funding levels in the power and transmission rate making processes and the basis upon which Bonneville managers control their resources to provide products and services. Accrued expenditures relate period costs to period performance. Traditional budget obligation requirements for Bonneville's budget are assumed on the Program and Financing Summary Schedule prepared in accordance with Office of Management & Budget Circular A-11.

The organization of Bonneville's FY 2022 Budget and these performance summaries reflect Bonneville's business services basis for its utility enterprise activities. Bonneville's major areas of activity on a consolidated budget and accounting basis include power and transmission, with administrative costs included. Power Services includes line items for Fish and Wildlife, Energy Efficiency, Residential Exchange Program, Associated Projects O&M Costs, and the Northwest Power Council. Environmental activities are shown in the relevant Power Services and Transmission Services sections, as are reimbursable costs. Bonneville's interest expense, pension and post-retirement benefits, and capital transfers to the U.S. Treasury are shown by program.

The first section of performance summaries, Capital Investments, includes accrued expenditures for investments in electric utility and general plant associated with the FCRPS generation and transmission services, fish and wildlife, and capital equipment. These capital investments are estimated to require budget obligations and expected use of \$826 million in bonds to be issued and sold to the U.S. Treasury in FY 2022.

The near-term forecast of capital funding levels has undergone an extensive internal review as a result of Bonneville's development of asset management plans. These plans encompass project cost management initiatives, capital investment assessments, and categorization of capital projects to be funded based on risk and other factors. Consistent with Bonneville's near-term asset planning process and Bonneville's standard operating budget process, this FY 2022 Budget includes updated capital investment levels for FY 2021. Utilizing this review process helps Bonneville in its efforts as a

participant in wholesale energy markets. Bonneville will continue to work with the Corps and Reclamation to optimize the mix of projects.

The second section of Bonneville's performance summaries, entitled Annual Operating Expenses, includes accrued expenditures for services and program activities financed by power sales revenues, transmission sales revenues, and projects funded in advance. For FY 2022, budget expense obligations are estimated at \$3,616 million. The total program requirements of all Bonneville programs include estimated budget obligations of \$4,312 million in FY 2022.

Evidence and Analysis in the Budget

Bonneville has undertaken several initiatives and processes to determine appropriate budget expenditures.

Bonneville's Integrated Program Review (IPR) process allows the public to see all relevant FCRPS expense and capital spending level estimates in the same forum. In addition, Bonneville's IPR process allows the public to review and comment on Bonneville's 10-year capital forecasts. The IPR occurs every two years, prior to each Bonneville rate case, and provides the public an opportunity to review and comment on Bonneville's program level cost estimates prior to being set for inclusion in rate cases. BPA conducted the BP-22 IPR, which reviewed spending plans for the FY 2022 and FY 2023 rate period during the summer of 2020. Bonneville initiated the BP-22 IPR with the objective to be consistent with the 2018 Strategic Direction, which included holding costs at or below the level of inflation through 2028. Bonneville issued the closeout report for the BP-22 IPR in September 2020.

The final spending levels in the BP-22 IPR reflect shifts in how BPA views and plans its work, using program plans to show how all of the organizations in BPA support the critical commercial, operations and asset management functions and performance objectives.

As it began the BP-22 IPR, Bonneville stated its recognition that the COVID-19 pandemic has created uncertainty for its customers. Bonneville presented its initial proposal as a baseline of costs for the BP-22 rates, recognizing the need to remain flexible and adaptable to changing conditions. Those conditions may warrant revisiting some proposed spending levels in an IPR-2 in the early part of 2021. Even if the outlook improves, an IPR-2 may still be warranted to factor in any impacts that may arise related to the Columbia River System Operations review or other changing conditions.

Bonneville is focused on institutionalizing operational excellence – continuous improvement that produces more efficient and effective ways to deliver on Bonneville's mission and vision. Bonneville's Business Transformation Office (BTO) ensures that Bonneville's transformational initiatives, including its Key Strategic Initiatives (KSIs), are executed in the most efficient manner from a time, cost and resource perspective. Bonneville currently focuses on Grid Modernization as its single KSI. Grid Modernization will advance the way BPA markets and operates the federal power and transmission systems, so that Bonneville can benefit from new technology and emerging market opportunities. This work is critical to ensuring BPA's long-term commercial success and competitiveness.

Judicial and Regulatory Activity

The Energy Policy Act of 2005 authorized the Federal Energy Regulatory Commission (FERC) to approve and enforce mandatory electric reliability standards with which users, owners, and operators of the bulk electric power system, including Bonneville, are required to comply. These standards became enforceable on June 18, 2007, and compliance is monitored by the North American Electric Regulatory Corporation (NERC) and the regional reliability organizations.

COVID-19 Impacts

Beginning in March, 2020, Bonneville responded to the expanding COVID-19 pandemic by instructing all non-mission critical operating personnel to telework for an indefinite period of time. Bonneville implemented the suspension of transmission construction projects and limited field operations to critical work.

Through the fall of 2020, most Bonneville employees remained in telework status and will remain so through the end of the calendar year. As local health conditions permitted, Bonneville resumed work on prioritized construction projects and system maintenance activities. Bonneville continued the functions of its Incident Management Team to monitor the

pandemic situation across Bonneville's service territory and advise Bonneville's leadership on conditions affecting employees and operations.

Even with the majority of Bonneville employees teleworking, business lines and work teams moved forward on major organizational initiatives. As discussed earlier, Bonneville announced in June 2020 a significant action to provide rate relief to customer utilities potentially impacted by economic conditions related to the pandemic. Bonneville completed an expedited rate proceeding to suspend its Financial Reserve Policy power rate surcharge. Suspending the surcharge provided power customers rate relief of \$9 million in FY 2020 and avoided any possibility of a surcharge triggering for FY 2021.

FCRPS Cost Allocations

The FY 2020 Energy and Water Development Appropriations Act included House subcommittee report language addressing the allocation of costs for multi-purpose projects of the Federal Columbia River Power System. Noting that the allocations of cost sharing among the authorized project purposes can be decades old, the subcommittee report requested that Bonneville, the Corps of Engineers, and Reclamation return an outline of how cost allocations may be updated. The three agencies provided the subcommittee with an outline of cost allocation methods and authorities in June 2020. To address differences in interpretation of Bonneville's role and conditions for initiating reallocation studies, Bonneville seeks legislative language in the Administration's submission to Congress.

**Power Services - Capital
Funding Schedule by Activity**

Funding (\$K)

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2022 vs FY 2021	
				\$	%
Power Services – Capital					
Associated Project Costs	178,264	272,493	264,120	-8,373	-3.1%
Fish & Wildlife	40,185	47,266	43,000	-4,266	-9.0%
Total, Power Services – Capital	218,449	319,759	307,120	-12,639	-4.0%

Outyears (\$K)

	FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
Power Services – Capital					
Associated Project Costs	264,120	281,260	300,000	306,850	313,647
Fish & Wildlife	43,000	43,000	30,000	25,000	15,000
Total, Power Services - Capital	307,120	324,260	330,000	331,850	328,647

Program Overview

Associated Project Costs provide for direct funding of additions, improvements, and replacements of existing Reclamation and Corps hydroelectric projects in the Pacific Northwest. The FCRPS hydro projects produce a large portion of the electric power that is marketed by Bonneville.

Maintaining the availability and increasing the efficiency of the FCRPS is critical to ensuring that the region has an adequate, efficient, economic, and reliable power supply. The FCRPS represents about 80 percent of Bonneville's firm power supply and includes 31 operating federal hydroelectric projects with over 200 generating units. These projects have an average age of about 50 years, with some that exceed 60 years of age. Through direct funding and the cooperation of the Corps and Reclamation, Bonneville uses its U.S. Treasury borrowing authority and other sources to make investments needed to restore generation availability and improve efficiency, reducing demand on Corps and Reclamation appropriations for power-related investments.

Since the beginning of Direct Funding in 1997, BPA has invested over \$2 Billion in Direct Capital in the Federal Columbia River Power System with the goal of maximizing system value for the region and its stakeholders. Ongoing analysis with its operating partners, the Army Corps of Engineers and the Bureau of Reclamation, has identified ongoing investment needs for the foreseeable future in order to maintain the health of the hydro system.

These planned investments, included in the FY 2021 Budget estimates, will maintain the generation performance of the FCRPS. Moving forward with the cost-effective opportunities to expand the generation and to preserve and enhance the capability of the FCRPS is a smart, economic, and environmentally beneficial decision when compared to purchasing power from the wholesale power market to serve growing Pacific Northwest electricity needs of BPA customers.

Fish and wildlife capital costs incurred by Bonneville are directed at activities that mitigate Columbia River Basin fish and wildlife resources. Bonneville uses capital to fund projects designed to increase juvenile and adult fish passage through the federal hydrosystem, to increase fish production and survival through construction of hatchery, acclimation and fish monitoring facilities, and to increase wildlife and resident fish populations through land acquisitions and associated habitat maintenance. These capital projects support both Northwest Power Act and ESA priorities and are integrated with the Pacific Northwest Electric Power Planning Council's (Council) Columbia Basin Fish and Wildlife Program (Council's Program) in order to efficiently meet Bonneville's responsibilities under the Northwest Power Act and other statutes to mitigate federal hydrosystem impacts to Columbia River Basin fish and wildlife.

Bonneville implements such projects consistent with the Council's Program and the purposes of the Northwest Power Act. Under the Northwest Power Act, the Council must develop a program that protects, mitigates, and enhances Columbia River Basin fish and wildlife affected by the federal and non-federal hydroelectric projects in the basin while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply. The Program, the Columbia River System BiOps, other BiOps, and Bonneville's long-term agreements include prioritized strategies for mitigation actions and projects to meet Bonneville's responsibilities under the Northwest Power Act, the ESA, the Federal Clean Water Act, and other laws. When issues arise that potentially trigger the *in lieu* provision of the Northwest Power Act, which prohibits Bonneville from funding mitigation that other entities are authorized or required to undertake, Bonneville works with the Council and the regional fish and wildlife managers, customers, and tribes, as appropriate, to ensure ratepayers fund only appropriate mitigation.

Most projects recommended by the Council also undergo independent scientific review as directed by the 1996 Energy and Water Appropriations Act, which added section 4(h)(10)(D) to the Northwest Power Act. As a result, the Council appoints an Independent Scientific Review Panel (ISRP) "to review a sufficient number of projects" proposed to be funded through Bonneville's annual fish and wildlife budget "to adequately ensure that the list of prioritized projects recommended is consistent with the Program." The Northwest Power Act further states that "in making its recommendations to Bonneville, the Planning Council shall consider the impact of ocean conditions on fish and wildlife populations; and shall determine whether the projects employ cost effective measures to achieve program objectives." Today, most mitigation projects funded by Bonneville receive ISRP review as part of the Council recommendation process. The Council uses a multi-year project review cycle during which the ISRP reviews categories of projects grouped together.

To comply with the ESA, Bonneville funds capital investment actions to avoid jeopardizing listed species. Guidance for those actions is found in the current Bi Ops issued by NOAA and the USFWS.

Under these collective Bi Ops, the Action Agencies have committed to implement hydro, habitat, hatchery, and other actions throughout the Columbia River Basin to address impacts stemming from the operation of the federal hydro-electric dams on ESA-listed fish, and to ensure that operations of the federal dams do not jeopardize the continued existence of the ESA listed species or adversely modify their designated critical habitat.

The Action Agencies also signed the 2008 Columbia Basin Fish Accords (Fish Accords or Accords) with five Northwest Tribes and the states of Idaho and Montana. In 2009, an agreement was signed with the state of Washington and federal agencies (the state of Washington Estuary agreement). And in 2012, the Action Agencies signed an agreement with the Kalispel Tribe of Indians covering Albeni Falls Dam and FCRPS operations. Wildlife settlement agreements have been signed with the states of Oregon and Idaho to help complete mitigation for the flooding and inundation caused by the construction of FCRPS dams operating in those states. These Fish Accords and settlements complement the Bi Ops and provide firm commitments to prioritize mitigation actions and secure funding over the life of the agreements.

In October 2018, Bonneville and its federal partners Corps and Reclamation signed extension agreements with current Accords partners, namely certain states and tribes, to extend the Columbia Basin Fish Accords (2018 Fish Accord extensions). The 2018 Fish Accord extensions expire with the issuance of the agencies' record of decision on the CRSO EIS in September 2020. The agencies and Accord partners are in discussions to amend the 2018 Fish Accord extensions through 2022. The extension agreements commit nearly \$450 million for fish and wildlife protection and mitigation, which is likely to result in future expenses or regulatory assets.

As noted above, Bi Ops, 2018 Fish Accord extensions, and wildlife settlement commitments are integrated along with other projects and implemented through the Council Program under the Northwest Power Act. They provide the basis for the Bonneville's planned capital investment for fish and wildlife.

Accomplishments

- The BP-20 - Rate Case final record of decision was released July 25, 2019. FERC granted final approval to the rates on April 17, 2020.
- Completed the McNary 4160V/480V Station Service Upgrade
- Completed Attic Safety Improvements at Bonneville Dam
- Completed emergency gantry crane replacement and 500kV disconnect replacement John Day Dam
- Completed arc flash hazard reduction, fish unit breaker replacements and SCC breaker replacement at The Dalles Dam
- Completed GDACS installation across the Willamette Valley, digital governors at Lookout Point and Big Cliff intake gantry crane replacement at Willamette Plants
- Completed Spillway Gate Lifecycle Maintenance at Chief Joseph Dam
- Completed exciter replacements at Dworshak Dam
- Completed Main Unit Cooling Water Replacement, Spare Main Unit Bearing purchase, and 4160-480V station service rehabilitation at McNary Dam
- Completed station service transformer replacements at Ice Harbor Dam
- Completed drainage system oil water separator installation at Little Goose Dam
- Completed purchase of spare main unit bearing at Lower Granite Dam
- Completed microwave system backbone modernization at Palisades Dam
- Completed arc flash mitigation and governor system replacement at Minidoka Dam

Explanation of Changes

Bonneville's budget includes \$307.1 million in FY 2022 for Power Services capital, which is a 4.0 percent decrease from the FY 2021 forecasted level. The FY 2022 level reflects additional cost management efforts while continuing to align with BPA's strategic asset management plans which focus on the need for investment in the hydroelectric system assets and

investments necessary to implement the BiOps, 2018 Fish Accord extensions, and other Columbia Basin Fish and Wildlife activities.

The FY 2022 budget decreases the levels for Associated Projects (-\$8.4 million) and the funding level for Fish & Wildlife (-\$4.3 million), relative to FY 2021.

Strategic Management

Bonneville markets available electric power to meet requested load while supporting the achievement of its vital responsibilities for fish and wildlife, energy efficiency, renewable resources, and low-cost power in the Pacific Northwest region. Bonneville will continue to implement the following strategies to serve the region:

1. Bonneville coordinates its power operational activities with the Corps, Reclamation, NERC, regional electric reliability councils, its customers, and other stakeholders to provide the most efficient use of federal assets.
2. Ongoing work with the Corps and Reclamation is focused on improving the reliability of the FCRPS, increasing its generation efficiency, and optimizing hydro facility operation.
3. Bonneville is committed to funding efforts to protect listed fish and wildlife species in the Columbia Basin under the ESA and working closely with the Council, regional fisheries managers, and other federal agencies to prioritize and manage projects to mitigate fish and wildlife affected by the FCRPS.
4. Bonneville's utility customers have been, and continue to be, a critical part of Bonneville's collaborative efforts to promote and foster the efficient use of energy.
5. Bonneville has assisted with a DOE Wind Power crosscutting initiative to strengthen energy security.

The following external factors present the most significant risk and impact to overall achievement of the strategies listed above:

1. Continually changing regional economic and institutional conditions;
2. Competitive dynamics; and
3. Ongoing changes in the electric industry.

Associated Projects

Overview

Bonneville will work with both the Corps and the Reclamation to reach mutual agreement on budgeting and scheduling capital improvement projects that are cost-effective and provide system or site-specific enhancements, increase system reliability, or provide generation efficiencies.

The work is focused on improving the reliability of the FCRPS and on increasing its generation efficiency or capacity through turbine runner replacements, optimizing hydro facility operation, and new unit construction. Also, limited investments may be made in joint-use facilities that are beneficial to both the FCRPS operations and to other Corps and Reclamation project purposes.

Corps of Engineers Projects

	(\$K)	
FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
144,716	128,271	216,296

Bonneville Dam:

- FY 2020. Completed Attic Safety Improvements. Continued GSU transformer instrumentation, main unit breaker and station service reconfiguration, control room fire protection upgrades, oil water separator improvements, tailrace gantry crane rehabilitation, and generator fire protection projects. Began oil storage room fire protection and SU and CQ Feeder Boards replacement.
- FY 2021. Complete control room fire protection upgrades, GSU transformer instrumentation and oil water separator improvements. Continue main unit breaker and station service reconfiguration, tailrace gantry crane rehabilitation, oil storage room fire protection, and generator fire protection projects. Continue SU and CQ Feeder Board replacement. Begin headgate repair pit rehabilitation, trashracks replacement and preferred AC/DC improvement.
- FY 2022. Begin digital governor replacement, Bradford Island Service Building PRQ Switchgear replacement and spillway cranes replacement. Continue main unit breaker and station service reconfiguration.

John Day Dam:

- FY 2020. Completed emergency gantry crane replacement and 500kV disconnect replacement. Continued heating, ventilating, air conditioning (HVAC) system upgrade, SQ board replacement, powerhouse roof replacement, BLH Turbine Hub Upgrades and fixed blade conversions and trash rack crane replacement.
- FY 2021. Complete trash rack crane replacement and powerhouse roof replacement. Continue HVAC system upgrade, BLH Turbine Hub Upgrades and fixed blade conversions, and SQ board replacement.
- FY 2022. Continue HVAC system upgrade, BLH Turbine Hub Upgrades and fixed blade conversions, and SQ board replacement.

The Dalles Dam:

- FY 2020. Completed arc flash hazard reduction, fish unit breaker replacements and SCC breaker replacement. Continued transformer replacements and gate repair pit upgrades. Began emergency gantry crane rehabilitation and intake and crane rails replacement.
- FY 2021. Complete transformer replacements. Continue emergency gantry crane rehabilitation, intake and crane rails replacement and gate repair pit upgrades.
- FY 2022. Continue emergency gantry crane rehabilitation, intake and crane rails replacement and gate repair pit upgrades.

Willamette Plants:

- FY 2020. Completed GDACS installation across the Willamette Valley, digital governors at Lookout Point and Big Cliff intake gantry crane replacement. Continued electrical reliability upgrades at Foster, and fire detection, HVAC and life

- safety improvements at Dexter and oil water separators at Hills Creek. Began intake gantry crane at Dexter, transformer replacements and spillway gate replacements at Detroit, and spillway gate rehabilitation at Hills Creek.
- FY 2021. Continue electrical reliability upgrades at Foster, intake gantry crane at Dexter, spillway gate replacements at Detroit, and fire detection, HVAC and life safety improvements at Dexter. Continue transformer replacements at Detroit and oil water separators at Hills Creek. Begin turbine and generator rehabilitation at Foster, powerhouse and transformer oil water separators at Foster and main unit breakers and electric reliability upgrades at Green Peter and Hills Creek.
 - FY 2022. Continue electrical reliability upgrades at Foster, intake gantry crane at Dexter, and fire detection, HVAC and life safety improvements at Dexter. Continue transformer replacements and spillway gate replacements at Detroit, turbine and generator rehabilitation at Foster, powerhouse and transformer oil water separators at Foster and Hills Creek, and main unit breakers and electric reliability upgrades at Green Peter and Hills Creek.

Albeni Falls Dam:

- FY 2020. Continued spillway gate modifications and installation of main unit transformers. Began fire suppression upgrades.
- FY 2021. Complete spillway gate modifications. Continue installation of main unit transformers and fire suppression upgrades.
- FY 2022. Continue installation of main unit transformers and fire suppression upgrades.

Libby Dam:

- FY 2020. Continued system control console replacement. Began powerhouse gantry crane rehabilitation, DC boards and breakers system replacement, and security system upgrades.
- FY 2021. Complete security system upgrades and powerhouse gantry crane rehabilitation. Continue system control console replacement, and DC boards and breakers system replacement. Begin left abutment rock slide stabilization.
- FY 2022. Continue system control console replacement, left abutment rock slide stabilization and DC boards and breakers system replacement.

Chief Joseph Dam:

- FY 2020. Completed Spillway Gate Lifecycle Maintenance at Chief Joseph. Continued CO2 system replacement, upgrades for station service units and intake gantry crane rehabilitation. Began powerbus replacement, exciter replacements, fire suppression upgrades, and intake gantry crane rehabilitation.
- FY 2021. Complete intake gantry crane rehabilitation and CO2 system replacement. Continue upgrades for station service units, powerbus replacement, exciter replacements, and fire suppression upgrades. Begin generator rewinds and cooling.
- FY 2022. Continue upgrades for station service units, powerbus replacement, exciter replacements and fire suppression upgrades. Begin spillway sump pump and controls replacement.

Dworshak Dam

- FY 2020. Completed exciter replacements. Continued tailrace crane rehabilitation. Began RO valve upgrade.
- FY 2021. Complete RO valve upgrade and tailrace crane rehabilitation.
- FY 2022. No planned capital projects.

McNary Dam

- FY 2020. Completed Main Unit Cooling Water Replacement, Spare Main Unit Bearing purchase, and 4160-480V station service rehabilitation. Continued exciters upgrade, governor systems upgrade, levee drainage pump station upgrades, turbine design and replacement, spillway gate rehabilitation, powerhouse control system upgrade, and station service units rehabilitation. Began intake gantry crane replacement and rehabilitation of spillway gates.
- FY 2021. Complete intake gantry crane replacement. Continue exciters upgrade, governor systems upgrade, levee drainage pump station upgrades, turbine design and replacement, spillway gate rehabilitation, powerhouse control system upgrade, and station service units rehabilitation. Begin headgate system rehabilitation and levee drainage pump station upgrades.

- FY 2022. Continue exciters upgrade, governor systems upgrade, levee drainage pump station upgrades, turbine design and replacement, spillway gate rehabilitation, powerhouse control system upgrade, station service units rehabilitation, headgate system rehabilitation, and levee drainage pump station upgrades.

Ice Harbor Dam

- FY 2020. Completed station service transformer replacements. Continued drainage system oil water separator installation, units 1-3 turbine runner replacements and stator winding replacements. Began intake gantry crane controls upgrade.
- FY 2021. Continue units 1-3 turbine runner replacements, stator winding replacements and intake gantry crane controls upgrade. Begin intake gate hydraulic system upgrades and HVAC system upgrade.
- FY 2022. Continue units 1-3 turbine runner replacements, stator winding replacements, intake gantry crane controls upgrade, intake gate hydraulic system upgrades and HVAC system upgrade.

Little Goose Dam

- FY 2020. Completed drainage system oil water separator installation. Continued isophase bus replacement, headgate repair pit upgrade and drainage and unwatering pump replacement. Began DC system and LV switchgear upgrade and powerhouse roof replacement.
- FY 2021. Complete headgate repair pit upgrade and powerhouse roof replacement. Continue isophase bus replacement, DC system and LV switchgear upgrade. Begin intake gate rehabilitation.
- FY 2022. Complete isophase bus replacement. Continued DC system and LV switchgear upgrade and intake gate rehabilitation.

Lower Granite Dam

- FY 2020. Completed purchase of spare main unit bearing. Continued DC system and LV switchgear upgrade, isophase bus and housing upgrade, and intake gate rehabilitation.
- FY 2021. Complete isophase bus and housing upgrade. Continue DC system and LV switchgear upgrade. Begin trashrake crane and rake replacement.
- FY 2022. Continue isophase bus and housing upgrade, DC system and LV switchgear upgrade, trashrake crane and rake replacement. Begin restoration of Lindsay Creek and 380 drainage lines.

Lower Monumental Dam

- FY 2020. Continued DC and LV switchgear upgrades and intake gate rehabilitation. Began headgate repair pit upgrades and isophase bus upgrades.
- FY 2021. Continue DC system and LV switchgear upgrades, intake gate rehabilitation and headgate repair pit upgrades.
- FY 2022. Complete isophase bus upgrades. Continue DC system and LV switchgear upgrades, intake gate rehabilitation and headgate repair pit upgrades. Begin Bridge Crane Wheel and Drive System Upgrade.

Bureau of Reclamation Projects

(\$K)

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
33,548	144,222	47,824

Grand Coulee Dam

- FY 2020. Continued SCADA replacement, Block 31 elevator replacement, Third Powerplant roof replacement, G22-G24 wear ring replacements, firehouse construction and G1-G18 penstocks stoplogs, left and right powerhouse bridge crane replacements, and crane control upgrades. Began fire alarm system upgrades.
- FY 2021. Complete crane control upgrades, SCADA replacement and new firehouse construction. Continue Block 31 elevator replacement, left and right powerhouse bridge crane replacements, and fire alarm system upgrades. Begin 230kV switchyard modernization and 230kV Switchyard current limiting reactor, radio system modernization and G11-G18 transformer replacements.
- FY 2022. Continue Block 31 elevator replacement, left and right powerhouse bridge crane replacements, fire alarm system upgrades, 230kV switchyard modernization and 230kV Switchyard current limiting reactor, radio system modernization and G11-G18 transformers replacement. Begin inclined elevator rehabilitation.

Keys Pump Generating Plant

- FY 2020. Continued P5 and P6 impeller and core replacement and rewinds. Continued P1-P6 exciters, relays and unit controls, PG7-12 governors, exciters, relays and unit controls and phase reversal switch replacement.
- FY 2021. Complete P5 and P6 impeller and core replacement and rewinds. Continue P1-P6 exciters, relays and unit controls, PG7-12 governors, exciters, relays and unit controls and phase reversal switch replacement.
- FY 2022. Continue P1-P6 exciters, relays and unit controls, PG7-12 governors, exciters, relays and unit controls and phase reversal switch replacement.

Hungry Horse Dam

- FY 2020. Continued SCADA replacement and control room panel revisions. Continue powerplant crane controls, and main unit transformer fire protection system replacement.
- FY 2021. Complete SCADA replacement. Continue powerplant crane controls and main unit transformer fire protection system replacement. Begin radio system modernization.
- FY 2022. Continue powerplant crane controls, radio system modernization and main unit transformer fire protection system replacement. Begin static exciters replacement.

Chandler Dam

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Palisades Dam

- FY 2020. Completed microwave system backbone modernization. Began switchyard modernization.
- FY 2021. Continue switchyard modernization.
- FY 2022. Continue switchyard modernization.

Green Springs Dam

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Black Canyon Dam

- FY 2020. Continued station service arc flash mitigation and Units 1 & 2 Life Safety modernization.
- FY 2021. Continue station service arc flash mitigation and units 1 & 2 life safety modernization.
- FY 2022. Continue station service arc flash mitigation and units 1 & 2 life safety modernization.

Anderson Ranch Dam

- FY 2020. No capital projects.
- FY 2021. Begin turbine runner replacement.
- FY 2022. Continue turbine runner replacement.

Roza Dam

- FY 2020. Continued switchyard rehabilitation and breaker upgrade.
- FY 2021. Continue switchyard rehabilitation and breaker upgrade.
- FY 2022. Complete switchyard rehabilitation and breaker upgrade.

Minidoka Dam

- FY 2020. Completed arc flash mitigation and governor system replacement. Continued microwave system backbone modernization and switchyard modernization.
- FY 2021. Complete microwave system backbone modernization and switchyard modernization.
- FY 2022. No planned capital projects.

**Fish & Wildlife
(\$K)**

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
40,185	47,266	43,000

Overview

Bonneville continues to develop budgets for the suite of fish and wildlife mitigation projects originally adopted in FY 2007 based on recommendations from the Council. Bonneville reaffirmed and expanded many project-specific commitments in subsequent agreements and processes, including BiOps and 2018 Fish Accord extensions, and since then, virtually all these projects received independent science review through the Council and its project review processes. Bonneville’s funding decisions embrace many of the management objectives and priorities in the Program and continue to integrate ESA compliance as described in the NOAA Fisheries’ and USFWS’s FCRPS BiOps. Coordination continues among Bonneville, Council, federal resource management agencies, states, tribes, and others to support the projects that satisfy Bonneville’s mitigation responsibilities.

Bonneville intends to continue implementing the kinds of capital projects listed below. These projects are based upon the best available science and are regionally important in that they provide high priority mitigation and protection actions for fish and wildlife populations affected by the construction and operation of the FCRPS dams. Projects and facilities listed below deliver direct on-the-ground benefits to both ESA listed and non-listed fish and wildlife throughout the Columbia River Basin and have been evaluated and coordinated with the Council, state, federal and tribal fish and wildlife resource managers, local governments, watershed and environmental groups, and other interested parties. Specifically, as capital construction projects, hatchery facilities typically go through the Council’s three-step process, which includes development of a Master Plan, environmental compliance, ESA consultation, value engineering analysis, and review by the Independent Science Review Panel.

The three types of fish and wildlife projects that Bonneville capitalizes are as follows:

- 1) Fish passage structures – Structures funded with capital that enhance fish access to habitat in the Columbia River Basin include but not limited to wells, ladders, screens, pumping, culverts, diversion (irrigation) consolidation, piping to reduce water loss, irrigation efficiencies (drip irrigation), lining of ditches (seepage reduction), removal of objects impeding fish passage or pushup dams, and construction-related habitat restoration.
- 2) Hatchery facility construction – Projects and activities relating to the construction, improvement, and replacement of fish hatcheries, including related satellite facilities (acclimation ponds and collection weirs). This may also include construction-related habitat restoration.
- 3) Land acquisition and stewardship – Land acquisition projects protect, enhance, and maintain fish and wildlife habitat and provide credit to Bonneville, such as acres for wildlife or instream miles for resident fish, to fulfill the legal obligation of Bonneville to mitigate the impacts from construction and operation of the FCRPS.

New Project listing:

- Umatilla Hatchery Facility: The Northwest Power and Conservation Council in 1990 recommended that Bonneville construct the Umatilla Hatchery, just east of the town of Irrigon, Oregon, to mitigate for the loss of salmon and steelhead habitat and migration blockage resulting from the Columbia River System dams. Umatilla River anadromous fish had been largely extirpated in the early 1900s by irrigation dams, prior to construction of the Columbia River System dams. Current hatchery production includes 800,000 spring Chinook, 600,000 fall Chinook, and 150,000 summer steel head. Construction of the Umatilla Hatchery cost \$14 million and was complete in 1991. Bonneville funds the Oregon Department of Fish and Wildlife to operate the hatchery and the Confederated Tribes of the Umatilla Indian Reservation to operate acclimation facilities supporting the hatchery. The available water supply at the hatchery never met expected production levels, and water supply has continued to deteriorate over time. To preserve and improve fish production at the Umatilla Hatchery, Bonneville is exploring options to address the water supply issue and is in the early evaluation phase. It appears costs will exceed the statutory threshold of \$2,500,000 and have an estimated life of 15 years or more, thus triggering the need to obtain expenditure authority from Congress, prior to commencing construction, as required by 16 U.S.C. 839b(h)(10)(B),

which was amended by section 307 of the 2012 Consolidated Appropriations, P.L. 112–74 125 STAT. 877. (Dec. 23, 2011). Congress originally authorized construction of the Umatilla Hatchery under P.L. 98-360, 98 STAT. 403, 415 (July 16, 1984).

New construction-related habitat restoration projects that may require capital funds in FY 2021 include the following:

- Svensen Island: The Svensen Island Restoration Project will reconnect the 320 acre island, east of Astoria, Oregon, directly to the mainstream Columbia River to increase ecological function and provide refuge and rearing capacity for out-migrating juvenile salmon and steel head. Specifically, the project will remove and lower approximately 1.5 miles of existing levee; remove approximately 100 pile dikes on the northern side of the island, to provide unobstructed access to 40 acres of reconnected and newly excavated floodplain and tributary habitats for salmonids and lamprey. The Columbia Restoration Group is leading the project, in partnership with the Columbia Land Trust. This estuary project ranks high on the list of priorities in the estuary and will help to meet the responsibilities of the new NMFS Biological Opinion that will release concurrently with the Columbia River System EIS. Capital construction is scheduled to begin in FY 2021 and will last one year.

- Catherine Creek/Hall Ranch: Project is intended to improve off channel rearing habitat complexity for Chinook, steel head, and bull trout by restoring dynamic channel geomorphology and habitat forming processes in Catherine Creek and Milk Creek. It will improve floodplain connectivity through removal and relocation of one mile of State Highway 203 and reconnecting 50 acres of historic Catherine Creek floodplain and channel network. The request is for a project-funding match of \$3,294,616 from Bonneville against additional project investment from other Federal and State partners for a total projected project cost of \$5,994,616. This project has multiple coordination points, requires an environmental impact statement and the environmental compliance process may impact to implementation timeframes where the project is currently expected to start construction in FY 2021.

The Further Consolidated Appropriations Act, 2019 (Public Law 116-94) provided Expenditure Authority for the following project:

- Steigerwald Project: The Steigerwald Floodplain Restoration Project is a collaborative project that will reconfigure the Port of Camas-Washougal's (Port) existing Columbia River levee system to reduce flood risk, reconnect 960 acres of Columbia River floodplain, and increase ecological function at the Steigerwald Lake National Wildlife Refuge. Specifically, the project will construct 1.6 miles of setback levee; completely remove 2.2 miles of existing levee; provide unobstructed access to floodplain and tributary habitats for salmonids and lamprey; and greatly reduce flood risk to the Port's Industrial Park and City of Washougal's wastewater treatment plant, which serves 15,000 residents. Bonneville is working with the lower Columbia Estuary Partnership, which is leading the project. The project will provide seven survival benefit units (~15% of the Action Agencies' total goal in the estuary). Other partners include the Port, USFWS, Washington State Department of Transportation, City of Washougal, and several private landowners. Capital construction is scheduled to begin in FY 2020 and will last three years.

The Consolidated Appropriations Act, 2016 (Public Law 114-113) provided Expenditure Authority for the following projects:

- Shoshone Paiute Trout Hatchery: The Shoshone Paiute Tribes of the Duck Valley Reservation, Idaho, have proposed that Bonneville fund the purchase or construction of a trout hatchery. The Tribes would own and operate the hatchery to produce trout to stock the Duck Valley Reservation reservoirs. The hatchery would meet contemporary aquaculture standards and achieve fish production goals. The Tribes believe they can reduce federal reservoir stocking costs, some of which Bonneville currently pays on an annual basis.

- Spokane Tribal Hatchery: Bonneville funded construction of the Spokane Tribal Hatchery in 1989 as partial mitigation for the impacts of the FCRPS. The facility is near Wellpinit, Washington and owned and operated by the Spokane Tribe of Indians. The facility serves as a spawning, rearing, and incubation site for Kokanee salmon and rainbow trout. In June 2015, the Tribe and Bonneville signed a 20-year agreement renewing commitments to operate and maintain the facility. The renewed agreement also plans to upgrade aging infrastructure, including groundwater pumps and rearing containers. Contracting for this work began in FY 2017 and all capital work is complete.

- Snake River Sockeye Weirs: Bonneville funds efforts implemented by the Idaho Department of Fish and Game and the Shoshone Bannock Tribes to repopulate Snake River sockeye throughout the species' historic range. The combination of increased numbers of returning adults and the increased production at the Springfield Sockeye Hatchery, has created the need for the construction, operation, and maintenance of weirs to further sockeye management objectives.

The FY 2014 Omnibus Appropriations Act (Public Law No. 113-76) provided Expenditure Authority for the following projects:

- John Day Reprogramming and Construction: The Columbia River Inter-Tribal Fish Commission (CRITFC) has proposed this project in order to balance the upriver and downriver salmon hatchery production that mitigates for the effects of John Day and The Dalles Dams. The Tribes, the Corps, and Bonneville are still analyzing the final reprogramming facilities and locations. The project area encompasses the mainstream Columbia River from the base of McNary Dam downstream to The Dalles Dam. Capital dollars for this project will integrate with the Corps funds for the construction of new or existing FCRPS hatchery facilities to accommodate the reprogramming of hatchery fish.

- Columbia River Basin White Sturgeon Hatchery: This project, proposed by the CRITFC, will mitigate for the decline of the white sturgeon population caused by consistently poor recruitment upstream of Bonneville Dam. Bonneville would fund the construction of a new facility, or the acquisition of an existing facility, to produce 15,000 - 30,000 yearling white sturgeons per year. The final project may include the collection, holding and spawning of broodstock, the rearing of wild-spawned juveniles, and the acclimation of juveniles prior to release. The site of the Yakama Nation's existing Marion Drain Sturgeon Hatchery near Toppenish, Washington has been proposed as a location. The project team is working on additional analyses to respond to Council comments and to begin the environmental review process.

- Kelt Reconditioning and Reproductive Success Evaluation Research: CRITFC is proposing a facility to recondition female steelhead (kelts) after they have spawned. The fish will be held and fed until they have re-matured and then be released into the Snake River where they will contribute to the spawning run. The capital portion of the project is expected to be constructed in the Snake River Basin, potentially at the Nez Perce Tribal Hatchery in Idaho. Pursuant to the 2008 FCRPS BiOp and Supplemental FCRPS BiOps issued in 2010 and 2014, Bonneville will implement the kelt reconditioning plan to improve the productivity of Snake River basin B-run steelhead populations that are listed for protection under the ESA. NOAA's analysis of Prospective Actions indicates that a combination of transportation, kelt reconditioning, and in-stream passage improvements (e.g., spill-flow modifications) could increase kelt returns enough to achieve a targeted six-percent increase in the number of returning Snake River B-run steelhead spawners to Lower Granite Dam. The Master Plan for the facility is currently in the second of the Council's amended, shortened, Artificial Production Three-Step Review Process.

Ongoing Projects (Expenditure Authority previously received):

- Crystal Springs Hatchery Facilities: The Crystal Springs proposal originally included production of spring/summer Chinook and Yellowstone cutthroat trout, a resident fish, at the Crystal Springs location near the American Falls Reservoir in southern Idaho. In 2019, water quality limitations were confirmed rendering the location unsuitable for anadromous production and an alternative planning approach was initiated. In an effort to maintain production goals, the Crystal Springs location remains the proposed site for a rearing and out-planting facility for up to 30,000 trout to be produced annually for a put and take Tribal fishery. The anadromous facility will likely be sited in the Panther Creek watershed with the goal of increasing the abundance of spring/summer Chinook returns to this drainage. The facilities are sponsored by the Shoshone-Bannock Tribes, who are expected to operate and manage them once complete.

- Klickitat Production Expansion: In 2008, the Klickitat River Master Plan was submitted by the Yakama Nation, reviewed by the Independent Science Review Panel, recommended with comments by the Council, and conditionally approved by Bonneville. The plan's original goals were to protect and increase naturally producing populations of spring Chinook and steelhead, localize brood collection of harvest stocks (fall chinook and coho), while protecting the biological integrity and the genetic diversity of indigenous fish stocks in the sub-basin. A component of the Master Plan was implemented in 2009, including the completion of upgrades to Lyle Falls Fishway and Castile Falls Fishway, and the construction of a new bridge at the Klickitat Hatchery. In July 2009, a new Klickitat Hatchery Complex EIS was initiated to examine options for the

development and operation of new production and supplementation facilities, acclimation alternatives, and additional upgrades to the existing hatchery facility. The Yakama Nation issued a revised Master Plan in July, 2012 that provided updates to their fish management plans. Bonneville suspended the NEPA process while the Yakama Nation refined its proposal in response to site and budgetary limitations and comments on the draft EIS. Since that time, the National Marine Fisheries Service (NMFS) has completed its Mitchell Act EIS and BiOp, helping inform its funding responsibilities in the sub-basin. Bonneville negotiated a new scope of work with the Yakama Nation, and a revised Master Plan was submitted to the Council in 2017 and approved in 2018. The new scope of work targets design and construction activities for the expansion of the current spring Chinook program only, from 600,000 to 800,000 smolt, and converting to a wild broodstock collection program, as well as general water supply and water abatement upgrades. Bonneville has initiated a new EIS process and construction will occur after Bonneville issues a NEPA ROD and alongside a three-way operations and maintenance agreement which affirms that NMFS will remain responsible for providing funding post-construction.

- Hood River Production Facility: This project has been ongoing since the early 1990s. It currently produces 150,000 spring Chinook salmon smolts and 50,000 winter steelhead smolts annually. The Powerdale Dam Fish Trap formerly provided the foundation for many of the activities associated with implementation of the Hood River Production Program. These include monitoring escapement, collecting life history characteristics, and broodstock acquisition. PacifiCorps' 2010 demolition of its Powerdale Dam and the associated fish trapping facility necessitated the development of alternative adult broodstock trapping sites. One permanent fish trap on the West Fork of the Hood River was completed in 2013, and a temporary trapping site is operational on the East Fork of the Hood River. A permanent trap site on the East Fork is currently being evaluated. The Hood River Production Program has four primary goals: 1) re-establish naturally sustaining runs of spring chinook in the Hood River; 2) re-build naturally sustaining runs of winter steelhead in the Hood River; 3) maintain genetic characteristics of Hood River fish populations; and 4) provide fish for sustainable harvest by both sport and tribal fishers.

- Mid-Columbia Coho Restoration: This Yakama Accord project is intended to re-establish naturally reproducing coho salmon populations in the Wenatchee River and Methow River sub-basins at biologically sustainable levels that also provide significant harvests. This program will construct a facility on the Wenatchee River for holding and spawning broodstock, incubating eggs, and rearing juveniles. Additional semi-natural ponds will also be constructed in the Wenatchee and Methow sub-basins for acclimating smolts prior to their release. The phased approach, including associated facilities, incorporates development of a mid-Columbia hatchery broodstock, local adaptation to tributaries in the Wenatchee and Methow Basins, and habitat restoration that will benefit coho as well as ESA-listed spring chinook, steelhead, and bull trout.

- Walla Walla Hatchery: The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) proposed the construction of the Walla Walla Hatchery. The Tribes will own and operate the hatchery, which will produce up to 500,000 spring Chinook smolts annually for release into the Walla Walla River. A 30 percent design was completed in June 2015, and a draft EIS was completed in September 2016. However, due to budget overruns, the project was reconfigured. Design and construction was successfully rebid, and construction has been on hold awaiting issuance of a NPDES permit by the state water authority. Construction started in fall 2019 and is still ongoing. The facility will hold, spawn, incubate, and rear spring Chinook on the South Fork Walla Walla River near Milton-Freewater, Oregon.

- Yakima Melvin R. Sampson Coho Facility: This hatchery was proposed by the Confederated Tribes and Bands of the Yakama Nation, and is presented in the Yakima River Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan. The Yakama Nation will own and operate the hatchery which will produce up to 700,000 coho smolts using broodstock collected at Roza and Sunnyside dams. Bonneville holds the design and construction contract on behalf of the Yakama Nation. Bonneville published a final EIS on November 6, 2017, and a Record of Decision April 9, 2018, with construction beginning August 2018. Facility construction is expected to continue through FY2020.

Potential non-construction capital Wildlife and Resident Fish Habitat Acquisitions (including Conservation Easements) eligible for capitalization are:

- Albeni Falls Wildlife Mitigation
- Willamette Wildlife Habitat Acquisitions
- Libby and Hungry Horse Reservoirs Resident Fish Acquisitions

- Southern Idaho Habitat Acquisitions

Activities and Explanation of Changes (\$K)

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Power Services – Capital \$319,759	\$307,120	\$-12,639/-4.0%
Associated Projects \$272,493	\$264,120	\$-8,373/-3.1%
<p>Milestones:</p> <ul style="list-style-type: none"> • Complete control room fire protection upgrades, GSU transformer instrumentation and oil water separator improvements at Bonneville Dam. • Complete trash rack crane replacement and powerhouse roof replacement at John Day Dam. • Complete transformer replacements at The Dalles Dam. • Complete spillway gate modifications at Albeni Falls Dam. • Complete security system upgrades and powerhouse gantry crane rehabilitation at Libby Dam. • Complete intake gantry crane rehabilitation and CO2 system replacement at Chief Joseph Dam. • Complete RO valve upgrade and tailrace crane rehabilitation at Dworshak Dam. • Complete intake gantry crane replacement at McNarry Dam. • Complete headgate repair pit upgrade and powerhouse roof replacement at Little Goose Dam. • Complete isophase bus and housing upgrade at Lower Granite Dam. • Complete isophase bus upgrades at Lower Monumental Dam. • Complete crane control upgrades, SCADA replacement and new firehouse construction at Grand Coulee Dam. • Complete P5 and P6 impeller and core 	<ul style="list-style-type: none"> • Complete isophase bus replacement at Little Goose Dam. • Complete isophase bus upgrades at Lower Monumental Dam. • Complete switchyard rehabilitation and breaker upgrade at Roza Dam. 	<ul style="list-style-type: none"> • The decrease reflects a reshaping of funding needs for investment in the hydroelectric system assets.

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
replacement and rewinds at Keys Pump Generating Plants. <ul style="list-style-type: none"> • Complete SCADA replacement at Hungry Horse Dam. • Complete Complete microwave system backbone modernization and switchyard modernization at Minidoka Dam. 		
Fish & Wildlife \$47,266 Milestones: <ul style="list-style-type: none"> • Continue implementation of the Program, Bi Ops and 2018 Fish Accord extension. 	\$43,000 Milestones: <ul style="list-style-type: none"> • Continue implementation of the Program, Bi Ops and 2018 Fish Accord extension. 	\$-4,266/-9.0% <ul style="list-style-type: none"> • Fish & Wildlife will continue long-term, planned effort to reshape funding necessary to implement the Bi Ops, 2018 Fish Accord extension, Columbia River Basin Fish and Wildlife activities.

**Transmission Services – Capital
Funding Schedule by Activity
Funding (\$K)**

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2022 vs FY 2021	
				\$	%
Transmission Services – Capital					
Main Grid	4,816	26,122	12,592	-13,530	-51.8%
Area & Customer Services	28,221	88,584	48,590	-39,993	-45.1%
Upgrades & Additions	54,482	50,850	102,014	51,164	100.6%
System Replacements	192,743	318,912	333,889	14,977	4.7%
Projects Funded in Advance	89,450	70,107	55,775	-14,332	-20.4%
Total, Transmission Services - Capital	369,713	554,576	552,861	-1,715	-0.3%

Outyears (\$K)

	FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
Transmission Services - Capital					
Main Grid	12,592	6,224	11,924	14,092	9,462
Area & Customer Services	48,590	71,562	59,622	46,972	47,312
Upgrades & Additions	102,014	147,015	150,129	75,156	85,161
System Replacements	333,889	304,705	364,304	530,108	507,812
Projects Funded in Advance	55,775	61,384	47,682	35,221	35,474
Total, Transmission Services - Capital	552,861	590,890	633,661	701,548	685,222

Transmission Services – Capital

Overview

Transmission Services (TS) is responsible for about 75 percent of the Pacific Northwest’s high-voltage transmission. TS provides funding for all additions and upgrades (Expansion Investments), and replacements (Sustain Investments) to the Bonneville transmission system, resulting in reliable service to Northwest generators and transmission customers. The Bonneville transmission system also facilitates the delivery of power under sales and exchange agreements to and from the Pacific Northwest Region. The TS Capital Program is structured with a balanced focus on Expansion and Sustain investments.

In addition to replacing aging and obsolete equipment, TS continues to make significant infrastructure improvements and additions to the system to assure reliable transmission in the Northwest. These improvements and additions will help the Bonneville transmission system continue to comply with national reliability standards and remove constraints that limit economic trade or the ability to maintain the system. Some of the proposed TS projects may be funded through Bonneville lease-purchase agreements. The lease-purchases obligate Bonneville to make expenditures to acquire the use of the related facilities and are identified on an as needed basis. Bonneville may also make related expenditures to facilitate lease-purchase opportunities.

Expansion Investments

Expansion investments continue to make significant infrastructure improvements and additions to the Bonneville transmission system to assure reliable transmission operations in the Northwest and fall into two categories:

Internally driven Expansion requests, which are derived from system engineering studies, technology innovation research, system operations and maintenance functions, and system event analysis.

Externally driven Expansion Investment requests, which are derived from governmental initiatives and regulations, consumer demand, and the integration of customer load service and generation needs.

These investments are categorized into:

1. Main Grid – System investments affecting the major interties or internal paths and flowgates that transfer bulk power across the system.
2. Area & Customer Service – System investments related to geographical load service areas.
3. Upgrades & Additions – Upgrades are system investments that replace existing assets to increase capacity, reliability, or functionality and Additions are net new assets added to the system.
4. Projects Funded in Advance – System investments that are requested, and funded in advance, by customers.

Congressionally-approved Production Tax Credits (PTC) for renewable energy enacted in 2005 were extended through 2023. The PTC begins to phase out after 2023. The incentives created by these credits, along with Renewable Portfolio Standards (RPS) mandates implemented by the states of Oregon, Washington, and California, have spurred a large number of renewable projects interconnection requests to the Bonneville transmission system grid. As of September 30, 2020, Bonneville has interconnected a total of 5,554 MW of renewable qualified generation projects. Bonneville has more than 20,000 MW in additional renewable (wind, solar, biomass, geothermal, etc.) interconnection requests still remaining in the study queue. Solar project interconnection requests are currently making up the majority of the new requests in Bonneville’s queue. The current projections are possibly 9,000 MW of renewable generation projects interconnected by 2025. Much of the remaining generation project transmission demand is the result of the Renewable Portfolio Standards and other legislations enacted by Oregon and Washington that require retail utilities to acquire more than 8,000 MW of renewable energy in the Northwest by 2025. Exports of power from the Northwest to California are limited by California laws and are expected to remain at 2,000 MW to 2,500 MW during the same period. Also in the BPA transmission interconnection request queue is approximately 1,500 MW of natural gas fired generation. Efficiency improvements to the FCRRS hydro units that qualify as renewable are also proposed between 2018 and 2024.

In June 2008, Bonneville’s first Network Open Season (NOS) received 153 requests from 28 customers for 6,410 MW of new service, about three-fourths for wind energy integration. Bonneville subsequently offered 1,782 MW of new transmission service on its existing system. Bonneville identified four new Main Grid capital projects from the 2008 NOS: (1) McNary-John Day 500 kV transmission line (part of West of McNary Reinforcements Group 1); (2) Big Eddy-Knight 500 kV transmission line and substation (part of West of McNary Reinforcements Group 2); (3) Central Ferry- Lower Monumental 500 kV Reinforcement (formerly Little Goose Area Reinforcement); and (4) I-5 Corridor 500 kV Reinforcement. Construction

of the McNary-John Day 500 kV transmission line is complete and Bonneville has completed construction of the Big Eddy-Knight project and the Central Ferry-Lower Monumental 500 kV Reinforcement project. On May 18, 2017, Bonneville announced its decision to not build the I-5 Corridor Reinforcement Project. Bonneville continues to work with constituents and stakeholders to study more cost effective options to mitigate the current limitations along this path. Public meetings began in July 2017 to address alternatives to building. An update to Bonneville's Available Transfer Capability (ATC) methodology increased the available transmission service on the Westside paths by a few hundred MW. Other alternatives, such as energy storage devices, are still being evaluated.

Bonneville's 2009, 2010, 2013, 2016, 2019, and 2020 study processes for new Transmission Service Requests (TSR) total 18,363 MW, including 5,840 MW of wind project interconnection and 1,555 MW of solar project interconnection. The 2010 study process identified the Montana to Washington project, for which environmental review was begun, however, the original requests to support this project have been subsequently withdrawn and so all work on the project was terminated. Subsequent TSRs also require this project, and BPA is now undertaking Preliminary Engineering Activities on it again to move wind generation in Montana to the Northwest. The 2016 and 2019 study processes re-identified the Montana to Washington and Garrison to Ashe projects to move new wind generation in Montana to the Northwest. The requests to support the Garrison to Ashe project have been subsequently withdrawn so that project was terminated. The 2013 study process identified upgrades to the Monroe-Novelt Hill 230-kV transmission line which were re-identified for additional new requests in the 2016 study process. The 2016 study process identified network upgrades in Central Oregon, Walla Walla, Washington and across the Raver-Paul flowgate. The 2019 study process identified additional reinforcements across the Raver-Paul flowgate, the same Central Oregon and Walla Walla projects, and some significant impacts to third parties, specifically Portland General Electric and Puget Sound Energy. The 2020 study process identified an additional Schultz-Raver Series Capacitor project. Efforts are currently underway to provide required studies capacity to requesting customers.

Sustain Investments

Sustain investments are made to maintain the health of the existing infrastructure to assure reliable transmission in the Pacific Northwest. These replacements enable continued compliance with national reliability standards, replace aging and obsolete equipment, and remove constraints that limit economic trade or the ability to maintain the transmission system.

In 2009, Bonneville Transmission Services (TS) began implementing best practice frameworks that provide a standardized structure and approach to Asset Management. As a result, TS's Asset Management Strategies, derived from the Agency's Strategic Plan, drive Bonneville's Asset Plans, which determine its capital and expense investment priorities. Sustain investments are forecasted, prioritized within asset programs, and optimized across the asset base for asset planning and approval. BPA now bundles both sustain and expand capital projects in an effort to improve execution and to lower risks and costs. TS's capital program does remain somewhat fluid and subject to changes as the complexity of the transmission system produces unexpected needs resulting from equipment failure, climate/weather incidents, changes in performance and/or operation of connected systems, outage schedules and conflicts, updated regulations, customer interconnection requests, etc. For these and other reasons, specificity with Sustain investments in the transmission system is somewhat limited.

The TS Sustain Program Asset Programs include:

1. Steel Lines – Transmission lines with steel structures including footings, insulators assemblies, vibration dampers, grounding systems, conductor, ground wire.
2. Wood Lines – Transmission lines with wood structures including cross arm systems, insulator assemblies, vibration dampers, grounding systems, conductor, ground wire.
3. Rights-of-Way – Real property including land parcels, easements, use right, access roads.
4. AC Substations – Substations managing AC current including transformers, reactors, shunt capacitors, power circuit breakers, circuit switchers, series capacitors, disconnect switches.
5. Power System Controls and System Telecommunications – Control and communication equipment including SCADA, transfer trips, fiber, communications, SONET, Telephone, RAS.
6. System Protection and Control – Control equipment including relays, Control Houses, meters.
7. DC Substations – Celilo DC converter station, Static VAR Compensators, DC control systems.
8. Control Centers – Various control equipment and software.
9. Tools and Equipment Acquisition Program (TEAP) – Tools, equipment, fleet.
10. Facilities – Non-electric facilities including warehouses, operational structures, hangar, and maintenance centers.

Notwithstanding that the capital program for TS is subject to change, Bonneville has identified several general areas where capital investments will occur.

Bonneville will continue to fund fiber optic communications facilities needed to meet Bonneville's projected operational needs. To the extent that these investments create temporary periods of excess fiber optic capacity, such dark fiber capacity can be made available to telecommunications providers and to non-profits to meet public benefit internet access needs for rural areas and other needs in Bonneville's service area. Bonneville's investments in fiber optics, including the role of the private sector in building fiber optic networks, is consistent with the "Fiber Optic Cable Plan" submitted to Congress on May 24, 2000, accompanying the FY 2000 Energy and Water Development Appropriations Act. In accordance with this plan, when possible, Bonneville will establish partnerships with fiber optic facility and service providers to meet its needs.

In December 2004, Congress passed and the President signed the Commercial Spectrum Enhancement Act (CSEA, Title II of P.L. 108-494), creating the Spectrum Relocation Fund (SRF) to streamline the relocation of federal systems from certain spectrum bands to accommodate commercial use by facilitating reimbursement to affected agencies of relocation costs. The Federal Communications Commission has auctioned licenses for reallocated federal spectrum, which will facilitate the provision of Advanced Wireless Services to consumers. Funds were made available to agencies in FY 2007 for relocation of communications systems operating on the affected spectrum. These funds are mandatory and will remain available until expended, and agencies will return to the SRF any amounts received in excess of actual relocation costs. The estimated Bonneville cost of this relocation was \$48.7 million. The project was completed in November 2013 with a cost of approximately \$40 million and the operational system performance was being observed during FY 2014 and early FY 2015 to determine that it has achieved comparable capability as defined under the CSEA. Bonneville determined in December 2014 that comparable capability had been achieved.

Bonneville began participating in a new spectrum relocation effort in FY 2015. The NTIA has approved and, in July 2014, web-posted federal agency relocation plans, including the Bonneville relocation plan. The FCC held an auction of this spectrum on November 13, 2014. Bonneville received an additional \$5.2 million from the Spectrum Relocation Fund on July 29, 2015, to fully pay for this new relocation effort, including, as in the prior relocation, the purchase and installation of new digital radio equipment.

As part of the Homeland Security Presidential Directives, Bonneville has completed a physical security assessment of all critical facilities and is implementing security enhancements at these facilities. These security enhancements increase controlled access to Bonneville's facilities and provide video surveillance and monitoring capabilities.

Accomplishments

- The BP-20 - Rate Case final record of decision was released July 25, 2019. FERC granted final approval to proposed rates on April 17, 2020.
- Integrated 5,554 MW of renewable energy through September 2020 on Bonneville's transmission system
- Completed the Morrow Flat customer interconnection
- Completed construction of the Lower Valley Reinforcement Project
- Completed construction of the Vantage and Vitesse Projects for PacifiCorp
- Completed construction of Monroe Line Re-termination
- Completed construction of VHF Radio System Upgrade
- Completed construction of Umatilla Electrical Cooperative - Phase 2
- Completed construction of Avangrid Montague 1 Wind Project

Explanation of Changes

Bonneville's budget includes \$553 million in FY 2022 for TS Capital which is a 1.8 percent decrease from the FY 2021 forecasted level. The FY 2022 budget decreases the levels for Main Grid (-\$13.5 million), Area & Customer Services (-\$40.0 million), and PFIA (-\$14.3 million). The budget increases levels for Upgrade & Addition (+\$51.2 million) and System Replacements (+\$15.0 million).

Strategic Asset Management

Transmission Services provides transmission and energy services while integrating renewable resources across the Pacific Northwest. This effort is coordinated throughout Bonneville in conjunction with the newly developed Strategic Asset Management Plan (SAMP). TS continues to implement integrated detailed Asset Plans to serve the region:

1. To improve system adequacy, reliability, and availability, Bonneville has embarked on major transmission infrastructure projects. The identified projects reinforce the transmission system and help meet the region's future power needs. These projects address multiple challenges, such as integration of renewable energy, the need to relieve a number of congested transmission paths, the challenge to keep up with growing energy demands, and the need to meet changing regulatory and customer requirements.
2. Open access policy in support of competitive markets for load and generation.
3. The replacement of aging assets is vital to the reliability of the existing transmission system. To that end, TS has developed specific long-term strategies for the following asset categories:
 - a. Substations AC
 - b. Power System Control/System Telecommunications
 - c. Wood Lines
 - d. Steel Lines
 - e. Rights of Way (ROW), (Land Rights, Access Roads, and Vegetation Management)
 - f. System Protection and Control
 - g. Control Centers
 - h. Non-Electric Facilities

The following external factors present the strongest impact to overall achievement of the program's strategic goal:

- Continually changing economic and institutional conditions
- Competitive dynamics
- Ongoing changes in the electric industry
- Siting issues

Main Grid (\$K)		
FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
4,816	26,122	12,592

Overview

Bonneville’s strategic objectives for Main Grid projects are to assure compliance with the NERC and WECC reliability criteria, provide voltage support, provide a reliable transmission system for open access, and provide for relief of transmission system congestion. During this budgeting period, projects are planned that will provide transmission reinforcement and voltage support to major load areas that are primarily west of the Cascade Mountains.

Continued investments in Main Grid assets include:

Monroe Line Re-termination

- FY 2020. Complete construction.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Schultz-Wautoma 500KV Series Capacitors

- FY 2020. Begin construction.
- FY 2021. Continue construction.
- FY 2022. Complete construction

Montana-Washington

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY2022. Begin Scoping.

Continue Planning Studies to: (all years)

- Identify infrastructure additions.
- Identify projects driven by NERC and WECC reliability criteria.
- Identify system reactive needs to mitigate unacceptable low or high voltage problems and other system additions.
- Relieve transmission system congestion and integrate new generation facilities.

Area & Customer Service

(\$K)

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
28,221	88,584	48,590

Overview

Bonneville’s strategic objective for Area and Customer Service projects is to assure that Bonneville meets reliability standards and contractual obligations to its load service areas.

Continued investments in Area & Customer Service assets include:

Hooper Springs Substation

- This project was completed in FY 2020 and is owned by Lower Valley Energy.

Midway-Grandview 115 kV Line upgrade

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Puget Sound Area Northern Intertie (PSANI)

- FY 2020. Continue construction.
- FY 2021. Complete construction.
- FY 2022. No planned capital projects.

McNary Substation 500/230 kV Bank Addition

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Paul Substation 500 kV Shunt Reactor Addition

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Big Eddy Breaker Additions

- FY 2020. Begin design.
- FY 2021. Begin construction.
- FY 2022. Continue construction.

Drummond 115kV Breaker Additions

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Midway –Ashe Double Circuit 230kV Line

- FY 2020. Begin design.
- FY 2021. Begin construction
- FY 2022. Continue construction.

Carlton Substation Upgrade

- FY 2020. Begin design.

- FY 2021. Begin construction.
- FY 2022. Continue construction.

Conkelley Substation Retirement

- FY 2020. Complete design.
- FY 2021. Begin construction.
- FY 2022. Continue construction.

South Tri-Cities Reinforcement

- FY2020. No planned capital projects.
- FY2021. Begin design.
- FY2022. Begin construction.

LaPine Substation Upgrade TSEP – 2016

- FY2020. No planned capital projects.
- FY2021. Begin design.
- FY2022. Begin construction.

Longview Transformer Addition

- FY2020. Begin design.
- FY2021. Begin construction.
- FY 2022. Continue construction.

Continuous Activities (all years)

Continue preliminary engineering and design for miscellaneous facilities required to meet contractual obligations and maintain reliable service for Bonneville's service area.

**Upgrades & Additions
(\$K)**

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
54,482	50,850	102,014

Overview

Bonneville’s strategic objectives for Upgrades and Additions are to replace older 60Hz (Hertz) communications and controls with newer technology including fiber optics in order to maintain or enhance the capabilities of the transmission system; to implement special remedial action control schemes to accommodate new generation and mitigate immediate operational and market constrained paths; and to support communications and remedial action schemes, among other proposals.

During this budget period, Bonneville will complete design, material acquisition, construction, and activation of several fiber optics facilities to provide bandwidth capacity and high-speed data transfers to eventually replace microwave analog radios, which are technologically obsolete and nearing the end of their useful life. Temporarily, in some areas, excess dark fiber capacity is being offered for a term to telecommunications providers or to public entities such as public utilities, schools, libraries, and hospitals, providing them access to high-speed telecommunication services as a public benefit.

Continued investments in Upgrades & Additions assets include:

VHF Radio System Upgrade

- FY 2020. Complete construction.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

VCC (Vancouver Control Center)

- FY 2020. Begin Scoping and design as well as some demolition.
- FY 2021. Complete design and begin construction.
- FY 2022. Continue construction.

Bell-Boundary #DC SONET Ring Upgrade

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Operational Megabit Ethernet (OMET) System

- FY 2020. Project on pause.

500 kV Spares at Wind Integration Substations

- FY 2020. Continue construction.
- FY 2021. Complete construction.
- FY 2022. No planned capital projects.

Continuous Activities (all years)

- Upgrading two miles of fiber between Bonneville Power House and Bonneville Control House.
- Planning, design, material acquisition, and construction of special remedial action control schemes required for interconnecting new generation projects and mitigating immediate constrained paths.
- Planning, design, material acquisition, and construction of various system additions and upgrades necessary to maintain a reliable system for Bonneville’s service area.
- Construction of secondary fiber related projects and digital radio system upgrades to improve the operational telecommunication system.
- Material procurement and construction to upgrade the main fiber optic backbone system (#KC and #NC systems).

System Replacements

(\$K)

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
192,743	318,912	333,889

Overview

Bonneville's strategic objectives for the Sustain Program are to replace high-risk, obsolete, and maintenance-intensive facilities and equipment and to reduce the chance of equipment failure by: (1) replacing high voltage transformers and power circuit breakers which are at or near the end of their useful life; (2) replacing risky, outdated and obsolete control and communications equipment and systems, including mandated replacements due to legislation; and (3) replacing all other existing high-risk equipment and facilities affecting the safety and reliability of the transmission system. Transmission Services uses a total economic cost model to determine priorities for replacement.

Continued investments in System Replacements assets include:

Continuous Activity (all years)

Non-Electric Replacements

- Continue non-electric replacements as necessary.
- Continue the design, material acquisition, and construction for the Access Road program capital component and the Land Rights program capital component in support of the Lines and ROW Programs.
- Continue design and construction of capital improvements for identified existing facilities.
- Continue replacement of tools, equipment, and vehicle fleet.
- Replace BPA fixed-wing aircraft with a helicopter from FY 2021-2023 utilizing General Services Administration exchange sale authority.

Electric Replacements

- Continue replacement of system protection and control equipment and other substation and line facilities as needed to maintain reliability using Reliability Centered Maintenance criteria. Such replacements include relays, annunciators, oscillographs, metering, and various types of communication related equipment replacing and migrating analog to digital technology and SCADA equipment.
- Begin design and replacement of the Keeler and Maple Valley SVC units. Completion scheduled for FY2020.
- Continue replacement of under-rated and high maintenance substation equipment.
- Continue replacing insulators and refurbishing foundations on 500 kV Lines.
- Continue replacement of older generations of digital equipment that is obsolete.
- Continue replacing critical, operational tools and business systems at the Dittmer and Munro Control Centers.
- Continue replacing deteriorating wood pole transmission line structures, spacer dampers, and insulators.

**Projects Funded in Advance
(\$K)**

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
89,450	70,107	55,775

Overview

This category includes those facilities and/or equipment where Bonneville retains control or ownership but which are funded or financed by a third party, revenue, or with reserves, either in total or in part.

Continued investments in PFIA assets include:

Umatilla Electrical Cooperative - Phase 2

- FY 2020. Complete construction.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Summit Ridge Wind Project

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Bakeoven Wind Project

- FY 2020. Begin design
- FY 2021. Begin construction.
- FY 2022. Continue construction.

Quenett Creek Load Service Project

- FY 2020. Continue construction.
- FY 2021. Complete construction.
- FY 2022. No planned capital projects.

PacifiCorps' Ponderosa Project Vitesse

- FY 2020. No planned capital projects.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Midway-Ashe Line Project

- FY 2020. Begin design.
- FY 2021. Begin construction.
- FY 2022. Continue construction.

Avangrid Montague 1 Wind Project

- FY 2020. Complete construction.
- FY 2021. No planned capital projects.
- FY 2022. No planned capital projects.

Invenergy's Heppner Wind Project

- FY 2020. No planned capital projects.
- FY 2021. Begin design.
- FY 2022. Begin construction.

Morrow Solar Project

- FY 2020. No planned capital projects.
- FY 2021. Begin design.
- FY 2022. Begin construction.

2 Morrow Energy LLC's Ella 3 Wind Project

- FY 2020. Begin construction.
- FY 2021. Continue construction.
- FY 2022. Continue construction.

Whistling Ridge 230 kV Ring Bus Project

- FY 2020. No planned capital projects.
- FY 2021. Begin design.
- FY 2022. Begin construction.

Badger Canyon 1

- FY 2020. No planned capital projects.
- FY 2021. Begin design.
- FY 2022. Begin construction.

Invenergy Crider Valley Wind

- FY 2020. No planned capital projects.
- FY 2021. Begin design
- FY 2022. Begin construction.

Boyd Ridge Substation

- FY 2020. Begin design
- FY 2021. Begin construction
- FY 2022. Continue construction.

Continuous Activity (all years)

- Continue to integrate various new generation and line/load projects into Bonneville transmission grid based on requests placed and processed in accordance with transmission tariff.
- Continue planning studies to identify system impacts and needs regarding proposed new generation projects.
- Engineer and begin construction of several large wind generation interconnection substations.

Activities, Milestones, and Explanation of Changes (\$K)

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Transmission Services – Capital \$554,576	\$552,861	\$-1,715/-0.3%
Main Grid \$26,122 Milestones: <ul style="list-style-type: none"> • Continue construction of Schultz-Wautoma 500Kv Series Capacitors. 	\$12,592 Milestones: <ul style="list-style-type: none"> • Complete construction of Schultz-Wautoma 500KV Series Capacitors. 	-\$13,530/-51.8% <ul style="list-style-type: none"> • The decrease is due to decreased construction planned for FY 2022.
Area & Customer Service \$88,584 Milestones: <ul style="list-style-type: none"> • Complete construction of the Puget Sound Area Norther Intertie. • Begin construction of Big Eddy Breaker Additions. • Begin construction of Midway-Ashe Double Circuit 230kV line. • Begin construction of Carlton Substation Upgrade. • Begin construction of Conkelley Substation Retirement. • Begin design of South Tri-cities reinforcement line. • Begin design of LaPine Substation Upgrade. • Begin construction of Longview Transformer Addition. 	\$48,590 Milestones: <ul style="list-style-type: none"> • Continue construction of Big Eddy Breaker Additions. • Continue construction of Midway-Ashe Double Circuit 230kV. • Continue construction of Carlton Substation Upgrade. • Continue construction of Conkelley Substation Retirement. • Begin construction of South Tri-Cities Reinforcement. • Begin construction of LaPine Substation Upgrade. • Continue construction of Longview Transformer Addition. 	\$-39,993/-45.1% <ul style="list-style-type: none"> • The decrease reflects decreased construction planned for FY 2022.

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Upgrades & Additions \$49,464 Milestones: <ul style="list-style-type: none"> • Complete design of Vancouver Control Center. • Complete construction of 500 kV Spares at Wind Intergration Substations. 	\$102,014 Milestones: <ul style="list-style-type: none"> • Begin construction of Vancouver Control Center. 	\$51,164/100.6% <ul style="list-style-type: none"> • The increase reflects increased planned capital projects for FY 2022.
Systems Replacements \$318,912 Milestones: <ul style="list-style-type: none"> • Continue design and construction of capital improvements for identified existing facilities. • Continue non-electric replacements as necessary. • Continue replacement of system protection and control equipment and other substation and line facilities as needed to maintain reliability using Reliability Centered Maintenance criteria. 	\$333,889 Milestones: <ul style="list-style-type: none"> • Continue design and construction of capital improvements for identified existing facilities. • Continue non-electric replacements as necessary. • Continue replacement of system protection and control equipment and other substation and line facilities as needed to maintain reliability using Reliability Centered Maintenance criteria. Such replacements include relays, annunciators, oscillographs, metering, and various types of communication related equipment replacing and migrating analog to digital technology and SCADA equipment. 	\$14,977/4.7% <ul style="list-style-type: none"> • The increase reflects increased planned capital projects for FY 2022.
Projects Funded in Advanced \$66,179	\$55,775	\$-14,332/-20.4%

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
<p>Milestone:</p> <ul style="list-style-type: none"> • Continue to integrate various new generation and line/load projects into Bonneville transmission grid based on requests placed and processed in accordance with transmission tariff. • Continue planning studies to identify system impacts and needs regarding proposed new generation projects. • Engineer and begin construction of several large wind generation interconnection substations. • Begin construction of Bakeoven Wind Project. • Complete construction of Quenett Creek Load Service Project. • Begin construction of Midway-Ashe Line Project. • Begin design of Invenergy's Heppner Wind Project. • Begin design of Morrow Solar Project. • Continue construction of 2 Morrow Energy LLC's Ella 3 Wind Project. • Begin design of Whistling Ridge 230kV Ring Bus Project. 	<p>Milestones:</p> <ul style="list-style-type: none"> • Continue to integrate various new generation and line/load projects into Bonneville transmission grid based on requests placed and processed in accordance with transmission tariff. • Continue planning studies to identify system impacts and needs regarding proposed new generation projects. • Engineer and begin construction of several large wind generation interconnection substations. • Continue construction of Bakeoven Wind Project. • Continue construction of Midway-Ashe Line Project. • Begin construction of Invenergy's Heppner Wind Project. • Begin construction of Morrow Solar Project. • Continue construction of 2 Morrow Energy LLC's Ella 3 Wind Project. • Begin construction of Whistling Ridge 230 kV Ring Bus Project. • Begin construction of Badger Canyon 1. • Begin construction of Invenergy Crider Valley Wind. • Continue construction of Boyd Ridge Substation. 	<ul style="list-style-type: none"> • The decrease reflects decreased planned PFIA capital projects for FY 2022.

**Capital Information Technology & Equipment/Capitalized Bond Premium
Funding Schedule by Activity
Funding (\$K)**

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2021 vs FY 2020	
				\$	%
Capital Information Technology (IT) & Equipment/Capitalized Bond Premium					
Capital IT & Equipment	21,144	21,744	22,002	257	1.2%
Capitalized Bond Premium	0	0	0	0	0.0%
Total, Capital IT & Equipment/Capitalized Bond Premium	21,144	21,744	22,002	257	1.2%

Outyears (\$K)

	FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
Capital Information Technology (IT) & Equipment/Capitalized Bond Premium					
Capital IT & Equipment	22,002	21,052	19,721	19,056	17,386
Capitalized Bond Premium	0	0	0	0	0
Total, Capital IT & Equipment/Capitalized Bond Premium	22,002	21,052	19,721	19,056	17,386

Capital Information Technology & Equipment/Capitalized Bond Premium

Overview

Capital Information Technology (IT) provides for the acquisition of general and some dedicated special purpose capital information technologies, and acquisition of special-use capital and IT equipment in support of Bonneville's strategic objectives. This category also includes Bonneville's on-going efforts to facilitate delivery of a highly resilient organization able to anticipate, withstand, and effectively respond to disruptive events affecting it and its partners in the Northwest region. The four main areas of resiliency focus continue to include asset management, emergency management, crisis management, and continuity of operations.

Bonneville continues to move its IT infrastructure to a more efficient architecture. This FY 2021 Budget supports this effort. IT continues to eliminate redundancies in tools and applications, establish an agency-wide IT architecture with standardized IT purchasing criteria, standardize software licensing processes and minimize agency liabilities through stronger contracts, apply continuous improvement practices to IT project management, and implement an agency IT portfolio cost management strategy. The IT estimates in this FY 2021 Budget under Capital IT and Equipment include all IT functions within the agency except TS grid operations. See the Capital Program – TS section of this budget for additional discussion of grid operations-related IT requirements acquisitions.

Capital equipment provides for the acquisition of general and some dedicated special purchases of capital office furniture and equipment.

Bonneville can incur a bond premium when it repays a U.S. Treasury bond before the due date. When bonds are refinanced and premiums are incurred, the bond premiums can be capitalized. Historically, Bonneville generally has chosen to finance capitalized bond premiums with bonds issued to the U.S. Treasury, as envisioned by the Transmission Act.

**Capital Information Technology & Equipment
(\$K)**

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
21,144	21,744	22,002

Overview

This category includes enhancements to Bonneville’s information technology processes to provide cost effective efficiencies for secure, timely, and accurate information. Investments will enable continued enhancements to Bonneville’s enterprise systems that are designed to link key information systems throughout Bonneville and improve business processes. Current efforts include continued functional process improvements in areas not included in the initial development phase. Other investments include a acquisition of capital office furniture and equipment, capital automated data processing (ADP) based administrative telecommunications equipment, ADP equipment (hardware), and support of capital software development for certain Bonneville programs.

Continued investments in Capital IT & Equipment assets include:

Continuous Activity (all years)

Capital system developments in support of:

- Corporate IT Projects
- IT Infrastructure Projects
- Power IT Projects
- Transmission Services IT Projects (excluding grid operations)

**Capitalized Bond Premium
(\$K)**

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
0	0	0

Overview

Continue to assess financial market and when cost-effective, refinance available bonds as prudent.

Activities, Milestones, and Explanation of Changes (\$K)

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Capital Information Technology & Equipment/Capitalized Bond Premium \$21,744	\$22,002	\$257/1.2%
Capital Information Technology & Equipment \$21,744 Milestones: Capital system developments in support of: <ul style="list-style-type: none"> • Corporate IT Projects • IT Infrastructure Projects • Power IT Projects • Transmission Services IT Projects 	\$22,002 Milestones: Capital system developments in support of: <ul style="list-style-type: none"> • Corporate IT Projects • IT Infrastructure Projects • Power IT Projects • Transmission Services IT Projects 	• Virtually no change for investment in the IT system assets.
Capitalized Bond Premium \$0	\$0	\$0/0.0%

**Power Services – Operating Expense
Funding Schedule by Activity
Funding (\$K)**

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2021 vs FY 2020	
				\$	%
Power Services - Operating Expenses					
Production	858,334	944,002	871,620	-72,383	-7.7%
Associated Projects Costs	442,348	457,660	464,915	7,255	1.6%
Fish & Wildlife	225,599	249,416	246,893	-2,523	-1.0%
Residential Exchange Program	249,983	249,747	259,000	9,253	3.7%
NW Power & Conservation Council	11,180	11,956	11,545	-411	-3.4%
Energy Efficiency & Renewable Resources	140,314	156,513	155,685	-828	-0.5%
Total, Power Services - Operating Expenses	1,927,757	2,069,294	2,009,658	-59,636	-2.9%

Outyears (\$K)

	FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
Power Services - Operating Expenses					
Production	871,620	925,441	949,606	972,622	993,027
Associated Projects Costs	464,915	462,680	474,016	484,842	495,299
Fish & Wildlife	246,893	246,581	246,565	246,551	246,537
Residential Exchange Program	259,000	259,000	265,346	271,406	277,260
NW Power & Conservation Council	11,545	11,797	12,086	12,363	12,629
Energy Efficiency & Renewable Resources	155,685	150,734	154,427	157,954	161,361
Total, Power Services - Operating Expenses	2,009,658	2,056,233	2,102,046	2,145,738	2,186,112

Power Services – Operating Expense

Overview

Production includes certain Bonneville non-federal amortization (including Energy Northwest amortization), O&M costs for federal base system power system generation resources (including a large nuclear plant (CGS), business operations, and short- and long-term power purchases²), acquisition of conservation, marketing of power, and oversight of the FCRPS hydroelectric projects and CGS. Bonneville develops power products and services to meet the needs of Bonneville's wholesale customers and acquires power as needed.

In FY 2018, Bonneville completed a long-term Resource Program, whose purpose is to assess BPA's future need for power and reserves and to develop an acquisition strategy to meet those projected needs. In the event that Bonneville does acquire output from a generating resource on a long-term basis, Bonneville will comply with section 6 of the Northwest Power Act and will modify its budget to reflect the acquisition.

Associated Projects Costs represents funding for operation and maintenance costs for the FCRPS hydroelectric projects, minor additions, improvements and replacements, and costs of the Corps and the Reclamation hydroelectric projects in the Pacific Northwest, which serve many purposes. All agencies emphasize efficient power production from existing facilities and improvement of the performance and availability of power generating units. Bonneville pays additional financing costs of the FCRPS facilities through its Interest Expense and Capital Transfer budget programs. Bonneville provides funding for the operations and maintenance costs that are part of the USFWS's Lower Snake River Compensation Plan (LSRCP) hatcheries. Bonneville is responsible for annual payments to the Confederated Tribes of the Colville Reservation for their contribution to the production of hydropower by the Grand Coulee Dam in accordance with the Settlement Agreement between the United States and the Colville Tribes (April 1994). Additionally, the Spokane Tribe of Indians of the Spokane Reservation Equitable Compensation Act (Public Law 116-100), enacted on December 20, 2019, provides for equitable compensation to the Spokane Tribe of Indians of the Spokane Reservation for the use of tribal land for the production of hydropower by the Grand Coulee Dam, and for other purposes. Bonneville is pleased that this longstanding issue has been resolved equitably for the Spokane Tribe. The Act provides Bonneville and Northwest electric ratepayers cost certainty on this issue as we move toward discussions of long-term power sales contracts with our utility customers. Bonneville expenditures under the settlement that would begin in FY 2021 are estimated at \$6 million annually.

Bonneville's Fish and Wildlife Program provides for extensive protection, mitigation, and enhancement of Columbia River Basin fish and wildlife adversely affected by the development and operation of the FCRPS. Bonneville satisfies its fish and wildlife responsibilities by funding projects and activities designed to be consistent with the Council's Program under the Northwest Power Act. Consistent with the Council's Program, Bonneville also implements measures to aid in the protection of fish and wildlife in the Columbia River and its tributaries, both listed as threatened or endangered as well as unlisted, under the ESA (see ESA discussion in the Power Services – Capital Overview section).

Bonneville's mitigation expenditures will focus on activities that benefit Columbia River Basin fish and wildlife resources, following priorities established through ESA consultations, agreements with resource managers, and the Council's Program, including actions that:

- increase survival of ESA-listed and non-listed fish at FCRPS dams and reservoirs;
- increase survival of ESA-listed and non-listed fish throughout their life cycle by protecting and enhancing important habitat areas;
- protect and enhance important wildlife habitat;
- use hatcheries to contribute to conservation and recovery of ESA-listed and non-listed fish;
- provide offsite mitigation projects and habitat, passage, and other improvements that address factors limiting improvements of target species; and
- support a focused and well-coordinated research, monitoring, and evaluation program.

² Including expenses associated with the use of power financial instruments to hedge Bonneville's exposure to market price risk and certain index sales contract provisions as permitted by Bonneville's internal power transacting risk management guidance.

The Energy and Water Development Appropriations Act of 1996 added section 4(h)(10)(D) to the Northwest Power Act, directing the Council to appoint an ISRP “to review a sufficient number of projects” proposed to be funded through Bonneville’s annual fish and wildlife budget “to adequately ensure that the list of prioritized projects recommended is consistent with the Program.” The Northwest Power Act further states that “in making its recommendations to Bonneville, the Council shall consider the impact of ocean conditions on fish and wildlife populations and shall determine whether the projects employ cost effective measures to achieve program objectives.” Today, most mitigation projects funded by Bonneville receive ISRP review as part of the Council recommendation process. The Council has shifted to a multi-year project review cycle during which the ISRP reviews categories of projects grouped together.

The Council’s major activities include the periodic preparation of a Northwest Conservation and Electric Power Plan (a 20-year electric energy demand and resources forecast and conservation program – known as the Power Plan) and the Fish and Wildlife Program. The Northwest Power Act directs Bonneville’s funding of the Council, subject to certain limits based on forecasted Bonneville power sales, be included in Bonneville’s annual budget to Congress. The cost of funding the Council is recovered through Bonneville’s power rates.

Bonneville’s Energy Efficiency program promotes the efficient use of energy in the loads of customers and supports Bonneville’s acquisition of conservation as the region’s lowest cost resource. Such actions will: 1) meet energy efficiency targets; 2) achieve a least cost resource mix; 3) lessen the cost impacts of power purchases; 4) avoid the costs of ramping programs and infrastructure up and down; 5) extend the value of the FCRPS to customers; and 6) build the region’s resource portfolio with energy efficiency. Bonneville is also exploring how best to integrate demand-side management, distributed generation, and other leading edge technologies into its generation and transmission planning processes.

Bonneville’s Energy Efficiency program offers several ways for customer utilities to participate in energy efficiency. Program components include: (1) standard offer efficiency measures and custom projects, which result in customer proposals to conserve energy through such programs as residential weatherization; commercial lighting; heating, ventilation, and air conditioning (HVAC); industrial processes and lighting; and irrigated agriculture; (2) third-party delivery programs, such as Comfort Ready Home, Energy Smart Industrial, and the Green Motors programs; (3) programs to help regional federal installations reduce energy use, including federal hatcheries and irrigation districts, and to support the Corps of Engineers and Bureau of Reclamation in their efforts to reduce energy use; (4) efficiency achieved independently through the market or through codes and standards, i.e. Momentum Savings; and (5) market transformation through the Northwest Energy Efficiency Alliance (NEEA).

Bonneville’s Energy Efficiency budgets reflect BPA’s commitment to provide energy efficiency supportive of the Northwest Power and Conservation Planning Council’s 7th Power Plan which forecasts Bonneville’s regional customers’ demand and resource strategies for the next 20 years. The 7th Power Plan’s preferred resource strategy calls for the region to acquire 1,400 aMW of energy efficiency between 2016 and 2021. Bonneville is pursuing a plan to achieve a portion of that goal (530-570 aMW). BPA uses its Resource Program to complement the Council’s plan, identifying BPA’s specific electricity supply obligations and potential resource acquisitions.

Bonneville acquires conservation energy savings from its firm power customers under long-term Energy Conservation Agreements. Customers also perform self-funded conservation. Bonneville also provides research, evaluation, contract support, NEEA support, and emerging technology development.

The Residential Exchange Program (REP) was created by section 5(c) of the Northwest Power Act to extend the benefits of low-cost federal power to the residential and small farm loads of Pacific Northwest retail electric utilities that have high average system costs. These benefits are passed directly to the consumers. Currently, the region’s six investor-owned utilities (IOUs) and two of the region’s consumer-owned utilities are actively participating in the REP. Payments under the REP are made to individual IOUs based on the difference between Bonneville’s utility-specific Priority Firm (PF) Exchange rates and each utility’s average system cost (ASC), times a utility’s residential and small farm loads. ASCs are determined in accordance with BPA’s 2008 Average System Cost Methodology (ASCM). Participating retail utility ASCs are established in a public process that occurs prior to and during Bonneville’s power rate cases. Bonneville’s utility-specific PF Exchange rates

are determined each rate period. As described below, Bonneville and regional parties reached a settlement of the REP in 2011 under which the total amount of REP benefits available to the IOUs was established through 2028. Payments to the IOUs are made monthly based on historical invoiced exchange loads and the terms of the settlement.

Over the past decade, and prior to the settlement, regional parties filed multiple lawsuits challenging Bonneville's implementation of the REP. These lawsuits were consolidated into four cases that were stayed before the U.S. Court of Appeals for the Ninth Circuit. On July 26, 2011, Bonneville adopted a regionally supported settlement, referred to as the 2012 REP Settlement. Under the settlement, the region's six IOUs will receive about \$4.1 billion in REP payments over the 17-year term of the settlement, beginning at \$182.1 million in FY 2012, and increasing to \$286.1 million in FY 2028. In addition to this settlement, Bonneville has reached related REP settlements with two consumer-owned utilities. A single challenge to the 2012 REP Settlement was dismissed by the U.S. Court of Appeals for the Ninth Circuit in October of 2013.

Explanation of Changes

Bonneville's budget includes \$2,009.7 million in FY 2022 for Power Services operating expenses, which is a decrease of 2.8 percent over the FY 2021 forecasted level.

The FY 2022 budget decreases the level for Production (-\$72.4 million), Fish & Wildlife (-\$2.5 million), Planning Council (-\$0.4 million), and Conservation and Energy Services (-\$0.8 million) and increases the Associated Projects Costs (+\$7.3 million) and Residential Exchange (+\$9.3 million).

Production (\$K)		
FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
858,334	944,002	871,620

Overview

Power Purchases: Includes power purchased to cover power supply obligations as well as balancing loads with generation from the hydro system. These power purchases can be made in the form of long-term purchases to meet BPA's contract obligations to its utility and other customers based on long-term planning requirements or they can be made within the year due to the monthly shape of the customers' loads and the monthly shape of the hydroelectric generation. Also, power purchases can be made within the month and within the day to fill temporary shortages due to fluctuations in the hydro system capability and in BPA's load.

Power Scheduling/Marketing: Scheduling and marketing (buy/sell) of electric energy with Bonneville's customers and the Pacific Northwest's interconnected utilities. Scheduling includes Power Services' implementation of physical and memo power schedules and associated transmission schedules, implementation of Electronic Tagging (ETag) in accordance with NERC and in accordance with FERC, and implementation of electronic scheduling.

Columbia Generating Station (CGS): Bonneville includes the project capability of CGS, a non-federal nuclear power plant, in the marketing of federal power to meet Bonneville's long term firm power supply obligations. CGS is on a 24-month fuel and outage cycle. Maintenance and refueling outage occurred in the spring of 2017 and 2019.

Continued investments in Production include:

Continuous Activity (all years)

- Provide oversight of all power supply contracts and related projects from which Bonneville acquires generation capability to ensure that all Bonneville approval rights are protected; coordinate, communicate, and administer agreements, issues, and programs between Bonneville and the project owners.
- Provide wind resource integration services for wind generation.
- Power Purchases.
- Power Scheduling/Marketing.
- Provide oversight of all contracts signed to date. Pursue cost-effective means to mitigate capacity demands associated with interconnecting large amounts of wind into the Bonneville system.
- Pursue acquisition of additional cost-effective generation to meet load growth.
- Provide oversight on the wind resource integration services currently purchased by public power customers and offer additional renewable resource shaping services to such customers using wind generation to serve their load.

**Associated Projects
(\$K)**

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
442,348	457,660	464,915

Overview

Support FCRPS project costs and work to strengthen interagency and regional relationships to improve project performance, supporting functions, and to better understand project resource requirements and costs. This helps to maintain FCRPS reliability and system performance, as well as to attain Bonneville's strategic business objectives.

Continued investments in Associated Projects include:

Continuous Activity (all years)

Bureau of Reclamation:

- Continue direct funding Reclamation O&M power activities.

Corps of Engineers:

- Continue direct funding Corps O&M power activities.

Fish & Wildlife

(\$K)

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
225,599	249,416	246,893

Overview

Bonneville implements a mature fish and wildlife mitigation program based on recommendations made by the region’s fish and wildlife management agencies and tribes to the Council. Several recent Council reviews have made additional fish and wildlife project recommendations to Bonneville. Bonneville, in coordination with the Council, reviews new and on-going projects for consistency with the Council’s Program and purposes of the Northwest Power Act. Bonneville reviews and resets project-specific funding commitments annually, including projects under the FCRPS BiOps and other agreements. Bonneville informs its funding decisions with the management objectives and priorities in the Council’s Program (including ISRP reviews) and the Accords extension as it integrates their implementation with actions necessary to fulfill ESA responsibilities. Regular coordination on implementation priorities continues among Bonneville, the Council, federal resource management agencies, states, Tribes, and others.

Continued investments in Fish & Wildlife include:

Continuous Activity (all years)

- Anadromous Fish: Continue implementing both ongoing and new projects that support ESA-listed species and other measures called for under the current FCRPS BiOps, the Washington Estuary Agreement, the Kalispel Agreement, and the Willamette and Southern Idaho agreements and 2018 Fish Accord extensions. Prioritize projects that address the factors that contribute most to mitigation success and that fulfill Bonneville’s responsibility for mitigating the impacts from the FCRPS. Implement and develop activities that protect and enhance tributary and estuary habitat, improve mainstem habitat, reduce potentially harmful hatchery practices on ESA-listed populations, and contribute to sustainable fisheries.
- Resident Fish: Implement activities to mitigate the impacts of the FCRPS on lamprey, sturgeon, and bull trout and promote the reproduction and recruitment of Kootenai River white sturgeon. These activities have been selected in response to the USFWS’s 2000 bull trout and 2006 Libby Bi Op, the Council Program, and the 2018 Fish Accord extensions.
- Mitigation using resident fish to offset anadromous fish losses (substitution): mitigate for reservoir power operation impacts to resident fish and wildlife by seeking projects that benefit both simultaneously. Those resident fish habitat acquisition projects that meet Bonneville’s Capitalization Policy will be funded under the capital portion of Bonneville’s Fish and Wildlife budget and credited for both fish and wildlife where appropriate.
- Wildlife: Use existing Bonneville policies to continue the current effort to mitigate wildlife in a manner consistent with the Council Program and fulfill commitments in wildlife agreements such as the Kalispel Agreement, Willamette Wildlife Agreement, and Southern Idaho Wildlife Agreement. Those wildlife projects that meet Bonneville’s Capitalization Policy will be funded under the capital portion of Bonneville’s Fish and Wildlife budget and credited against both wildlife and fish obligations according to Bonneville’s crediting policy and applicable mitigation contracts.

Residential Exchange, Northwest Power and Conservation Council, and Energy Efficiency & Renewable Resources
(\$K)

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
401,477	418,215	426,230

Overview

Residential Exchange Program (REP)

- Includes forecasted REP benefits based on the 2012 REP Settlement.

Northwest Power and Conservation Council

- Continue support of the Council activities, as directed under the Northwest Power Act, including regional power plan development and maintenance and fish and wildlife program activities.

Energy Efficiency Resources

- Conservation Purchases: Provide programmatic savings reimbursements and energy efficiency incentives to Bonneville customers to purchase conservation savings. This includes performance payments and EnergySmart Reserved Power payments for federal installations and fish hatcheries and irrigation districts.
- Conservation Infrastructure: All support for programs and operations, including third-party program implementation, contract support, market research (Momentum Savings research), evaluation, and emerging technology research.
- Market Transformation: Support for NEEA's market transformation initiatives. NEEA identifies barriers and opportunities to increase the market adoption of efficiency by leveraging its regional partnerships.

Activities, Milestones, and Explanation of Changes (\$K)

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Power Services - Operating Expense \$2,069,294	\$2,009,658	\$-59,636/-2.9%
Production \$944,002 Milestones: <ul style="list-style-type: none"> • Continue to provide oversight of all signed contracts. • Continue to provide wind resource integration services for customer wind generation. 	\$871,620 Milestones: <ul style="list-style-type: none"> • Continue to provide oversight of all signed contracts. • Continue to provide wind resource integration services for customer wind generation. 	\$-72,383/-7.7% <ul style="list-style-type: none"> • The decrease is primarily due to lower CGS and support costs.
Associated Project Costs \$457,660 Milestones: <ul style="list-style-type: none"> • Continue direct funding of Corps and Reclamation O&M power activities. 	\$464,915 Milestones: <ul style="list-style-type: none"> • Continue direct funding of Corps and Reclamation O&M power activities. 	\$7,255/1.6% <ul style="list-style-type: none"> • The increase reflects changes to security, biological opinion requirements, non-routine extraordinary maintenance, WECC/NERC compliance activities, and improvements, replacements, and minor additions at the projects.
Fish & Wildlife Costs \$249,416 Milestones: <ul style="list-style-type: none"> • Continue implementing both ongoing and new projects that support ESA-listed species and other measures called for under the current FCRPS BiOps, the 2018 Fish Accord extensions, the Washington Estuary Agreement, the Kalispel Agreement, the Southern Idaho Agreement, and the Willamette Agreement. 	\$246,893 Milestones: <ul style="list-style-type: none"> • Continue implementing both ongoing and new projects that support ESA-listed species and other measures called for under the current FCRPS BiOps, the 2018 Fish Accord extensions, the Washington Estuary Agreement, the Kalispel Agreement, the Willamette Agreement, and the Southern Idaho Agreement. 	\$-2,523/-1.0% <ul style="list-style-type: none"> • The decrease in the costs reflect funding associated with the Biological Opinions, 2018 Fish Accord extension commitments, and Northwest Power Act activities.

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Residential Exchange Program \$249,747 Milestones: <ul style="list-style-type: none"> • Continue to provide REP benefits. 	\$259,000 Milestones: <ul style="list-style-type: none"> • Continue to provide REP benefits. 	\$9,253/3.7% <ul style="list-style-type: none"> • The increase reflects the higher scheduled in the amount of REP payments payable to the IOUs prescribed by the Residential Exchange Settlement.
NW Power & Conservation Council \$11,956 Milestones: <ul style="list-style-type: none"> • Continue support of the Council activities, as directed under the Northwest Power Act, including regional power plan development and maintenance, and fish and wildlife program activities. 	\$11,545 Milestones: <ul style="list-style-type: none"> • Continue support of the Council activities, as directed under the Northwest Power Act, including regional power plan development and maintenance, and fish and wildlife program activities. 	\$-411/-3.4% <ul style="list-style-type: none"> • The small decrease reflects lower funding and continuing emphasis on the NW Power and Conservation Council.
Energy Efficiency & Renewable Resources \$156,513 Milestones: <ul style="list-style-type: none"> • Continue close-out of the legacy conservation resource acquisition contracts, which support Bonneville's contractual obligation to serve customer loads. • Continue to support utility incentive programs. • Continue to support regional energy efficiency programs. • Continue supporting energy efficiency at direct serve federal agencies. 	\$155,685 Milestones: <ul style="list-style-type: none"> • Continue close-out of the legacy conservation resource acquisition contracts, which support Bonneville's contractual obligation to serve customer loads. • Continue to support utility incentive programs. • Continue to support regional energy efficiency programs. • Continue supporting energy efficiency at direct serve federal agencies. 	\$-828/-0.5% <ul style="list-style-type: none"> • The small decrease reflects our cost cutting effort while continuing emphasis on the energy efficiency program consistent with the Power Plan.

**Transmission Services – Operating Expense
Funding Schedule by Activity**

Funding (\$K)

Transmission Services - Operating Expense
 Engineering
 Operations
 Maintenance
Total, Transmission Services - Operating Expense

FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2021 vs FY 2020	
			\$	%
77,155	82,877	87,805	4,927	5.9%
211,538	193,871	204,585	10,714	5.5%
193,118	205,026	215,804	10,778	5.3%
481,811	481,774	508,194	26,420	5.5%

Outyears (\$K)

Transmission Services - Operating Expense
 Engineering
 Operations
 Maintenance
Total, Transmission Services - Operating Expense

FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
87,805	88,535	90,705	92,778	94,780
204,585	208,000	213,287	218,336	223,213
215,804	218,552	223,909	229,026	233,968
508,194	515,087	527,901	540,140	551,961

Transmission Services – Operating Expense

Overview

This activity provides for the transmission system services of engineering, operations, and maintenance for Bonneville's electric transmission system, and the associated power system control and communication facilities. Primary goals of this program are: 1) maintain the safety and reliability of the transmission system; 2) increase the focus on meeting customers' needs; 3) optimize the transmission system; 4) provide open access and non-discriminatory transmission service; and 5) improve Bonneville's cost effectiveness. Consistent with the FY 2018, FY 2019, and FY 2020 Budget Requests, the FY 2021 Budget Request maintains the proposal that the Federal government be authorized to sell the transmission assets of Bonneville.

Explanation of Changes

Bonneville's budget includes \$508.2 million in FY 2022 for TS operating expense which is a 5.5 percent increase over the FY 2021 forecasted level. The increase still continues the operation and maintenance of Bonneville's transmission assets.

The FY 2022 budget increases the levels for Engineering (+\$4.9 million), Operations (+\$10.7 million), and Maintenance (+\$10.8 million).

Engineering (\$K)		
FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
77,155	82,670	87,805

Overview

Continue efforts to identify best methods for improving system reliability and maintenance practices, and continue cost reduction efforts by identifying opportunities for low-cost reinforcement and voltage support of the existing transmission system.

Continued investments in Engineering include:

Continuous Activity (all years)

- **Research and Development (R&D):** Conduct research focused on technologies related to business challenges Bonneville faces including reliability, energy efficiency, and integration of renewable energy resources. Technologies of interest are identified in Bonneville's Technology Roadmaps. A portfolio of research is selected every year through Bonneville's Portfolio Decision Framework.
- **System Development Planning and Analysis:** Continue providing technical support and asset planning to deploy the Asset Management approach to sustain existing assets and expand the system to meet Agency objectives.
- **Technical Support:** Provide technical support activities, such as transmission system planning and studies to optimize portions of the system. Provide support for non-wires solutions studies and pilot projects.
- **Capital-to-Expense Adjustments:** Conduct an annual analysis of Bonneville's outstanding capital work orders to assess whether they should be expensed. As obsolete inventory is identified and disposed of, it is expensed.
- **Regulatory Fees:** WECC dues and loop flow payments, Department of Commerce/National Telecommunications and Information Administration licensing costs for radio frequencies, DOE Radio Spectrum staff and contractor support, and NERC Critical Infrastructure Protection (CIP) compliance program costs. Includes membership in a regional transmission planning organization.
- **Reimbursable Transactions:** Enter into written agreements with federal and non-federal entities that have work or services to be performed by Bonneville staff at the expense of the benefiting entities. The projects must be beneficial, under agreed upon criteria, to Bonneville operations and to the federal or non-federal entity involved or otherwise be aligned with or supportive of Bonneville's strategic objectives. Additionally, these activities generally contribute to more efficient or reliable construction of the federal transmission system or otherwise enhance electric service to the region.
- **Leased and Other Costs:** Includes leases, lease purchases, and other costs of financing transmission, delivery, and voltage support facilities when such arrangements are operationally feasible and cost effective to deliver power. Leases and lease purchases enable Bonneville to continue to invest in infrastructure to support a safe and reliable system for the transmission of power. Other costs included are the accrued interest costs associated with Large Generator Interconnection Agreements (LGIA).

Operations (\$K)		
FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
211,538	193,884	204,585

Overview

Substation Operations: Perform operations functions necessary to provide electric service to customers and to protect the federal investment in electric equipment and other facilities. Includes equipment adjustments, switching lines and equipment during emergencies or maintenance, isolating damaged equipment, restoring service to customers, inspecting equipment, and reading meters.

Power System Dispatching and Supporting Functions: Perform central dispatching, control, and monitoring of the electric operation of the federal transmission system. Also includes load, frequency, and voltage control of federal generating plants, and coordinating long- and short-term outages of system equipment. In addition, provides technical engineering support of dispatching function and provides all technical and systems support for Dittmer Control Center (DCC) and Munro Control Center (MCC).

Marketing and Sales: Provide management and direction of transmission rates, and provide business strategy in marketing of transmission and ancillary products and services of Transmission Services. Involve customers and constituents in the process of product and rate development. Maintain accurate and complete historical records of current and past legacy transmission agreements. Provide guidance for current and future transmission contract negotiations. Provide financial analysis of market strategies. Monitor and report on the financial health of Transmission Services. Support cost management by effective reporting and analysis of current expenditures. Ensure official budget submittals reflect current management financial strategies and adequately fund transmission programs.

Transmission Scheduling: Provide non-discriminatory, open access to the Bonneville transmission system consistent with Bonneville's Open Access Transmission Tariff (OATT). Schedule transmission capacity to eligible Bonneville customers, which include customers acquiring services under Use of Facilities (UFT), Formula Power Transmission (FPT), Integration of Resources (IR), and Part II or Part III of the OATT. Manage the reservations and scheduling of all transmission services associated with the OATT. Update practices, policies, and commercial systems to accommodate a large diversity of resources, including wind.

Continuous Activity (all years):

- Continue to operate within parameters of NERC and WECC.
- Continue support of increased compliance activities related to the reliability of the transmission system, including cyber security.
- Continue developing facilities, policies, procedures, and implementing systems to support integrating the diversity of resources into the transmission grid.
- Continue preparation for increased complexity of transmission scheduling, power system operations, and dispatching, including congestion management and outage scheduling.
- Continue developing the Dittmer Scheduling Center and Munro Scheduling Center facilities to support continuous real time scheduling operations from both facilities.
- Continue developing a long-term approach to optimize transmission availability through streamlined, cost-effective, and sustainable processes.
- Continue to address succession planning issues across key functions.
- Continue development and implementation of business systems and tools.

Maintenance (\$K)		
FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate
193,118	205,040	215,804

Overview

In all aspects of maintenance, Bonneville is continuing the use of Reliability Centered Maintenance (RCM) practices. The use of RCM practices is focused on improving system reliability, increasing availability, and meeting new and existing compliance regulations at lowest lifecycle costs. In addition Bonneville is deploying Asset Management to optimize maintain/replace decision making. Maintenance costs are expected to increase as Bonneville addresses the aging transmission system, meeting reliability standards, including vegetation management, and environmental constraints associated with construction, enhancement, and maintenance of the system. The Bonneville transmission system encompasses 15,238 circuit miles on over 11,860 right-of-way miles (many of these miles are through rugged, inaccessible terrain).

Continued investments in Maintenance include:

Continuous Activity (all years)

- Continue to improve performance to meet System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) targets.
- Continue refining processes and procedures for monitoring and tracking compliance activities related to the reliability of the transmission system.
- Continue to improve system availability performance through new maintenance procedures and work practices.
- Continue to develop and implement work practices and procedures for implementation of a new specialty crew using bare-hand live line practices for maintenance of high-voltage transmission lines.
- Continue increased emphasis on replacement of line hardware (life extension programs for insulators, connectors, dampers, and fiber optic cable hardware).
- Continue to prepare for the impact of an expected high attrition rate among Bonneville's aging workforce by recruiting apprentices and replacements for critical minimum crew size workload positions.
- Increase outage-scheduling planning and coordination to increase customer satisfaction and system availability.
- Maintain vegetation management levels to ensure system reliability.
- Continue access road work to provide reliable access to facilities and ensure environmental compliance.
- Continue improving environmental stewardship.

Transmission Line Maintenance: Maintain and repair 15,238 circuit miles of high voltage transmission lines, of which over 4,734 circuit miles are 500 kV transmission extra-high voltage (EHV). Maintenance of EHV lines is two and one-half times more labor-intensive than maintenance of lower transmission voltages, although more efficient in transmission of power. This responsibility includes maintaining transmission rights-of-way to ensure system reliability, safety, and environmental compliance. Adopt work practices that improve system availability, reliability, and compliance.

Right-of-Way Maintenance: Maintain over 11,860 of Bonneville's right-of-way miles. This responsibility includes vegetation management, danger tree management, and access road maintenance to ensure system reliability, safety, and environmental compliance. Adopt procedures and processes that improve system availability, reliability, environmental compliance, and reliability compliance. Continue to deploy new technologies such as LiDAR (Light Detection and Ranging) to reliably and cost-effectively manage vegetation.

Substation Maintenance: Maintain and repair the transmission system power equipment located in Bonneville's 260 substations. Work includes inspections, diagnostic testing, and predictive and condition-based maintenance.

System Protection Maintenance: Maintain relaying metering and remedial action scheme equipment used to control and protect the electrical transmission system and to meter energy transfers for the purpose of revenue billing. Additionally,

field-engineering services provide technical advice and assure the correct operation of power system relaying and special control systems used to support interregional energy transmission capabilities.

Power System Control Maintenance: Test, repair, and provide field engineering support of Bonneville's highly complex equipment, communications, and control systems, including seven major microwave systems, fiber optic systems, and other critical communications and control equipment that support the power system.

Non-Electric Plant Maintenance: Maintain and manage Bonneville's non-electric facilities. Includes site, building, and building utility maintenance; custodial services; station utility; and other maintenance service activities, as well as facilities asset management on Bonneville-owned or Bonneville-leased non-electric facilities.

Maintenance Standards and Engineering: Establish, monitor, and update system maintenance standards, policies, and procedures, and review and update long-range plans for maintenance of the electric power transmission system.

Activities, Milestones, and Explanation of Changes (\$K)

FY 2021 Estimate	FY 2022 Estimate	Explanation of Changes FY 2022 vs FY 2021 Estimate
Transmission Services - Operating Expense \$481,594	\$508,194	\$26,600/5.5%
Engineering \$82,670 Milestones: <ul style="list-style-type: none"> • Continue efforts to identify best methods for improving system reliability and maintenance practices. • Continue cost reduction efforts by identifying opportunities for low-cost reinforcement and voltage support of the existing transmission system. 	\$87,805 Milestones: <ul style="list-style-type: none"> • Continue efforts to identify best methods for improving system reliability and maintenance practices. • Continue cost reduction efforts by identifying opportunities for low-cost reinforcement and voltage support of the existing transmission system. 	\$5,135/6.2% <ul style="list-style-type: none"> • The increase reflects continued emphasis on system reliability standards compliance and research and development.
Operations \$193,884 Milestones: <ul style="list-style-type: none"> • Continue to operate within parameters of NERC and WECC. • Continue support of increased compliance activities related to the reliability of the transmission system including cyber security. 	\$204,585 Milestones: <ul style="list-style-type: none"> • Continue to operate within parameters of NERC and WECC. • Continue support of increased compliance activities related to the reliability of the transmission system including cyber security. 	\$10,701/5.5% <ul style="list-style-type: none"> • The increase reflects continued emphasis on reliability compliance activities, resource integration activities, key strategic initiative, security, and control center systems support.
Maintenance \$205,040 Milestones: <ul style="list-style-type: none"> • Continue to improve performance to meet System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) targets. 	\$215,804 Milestones: <ul style="list-style-type: none"> • Continue to improve performance to meet System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) targets. 	\$10,764/5.2% <ul style="list-style-type: none"> • The increase reflects implementation of facilities asset management plans, continued implementation of live-line crew, NERC/WECC compliance activities related to land rights and vegetation management, continuing maintenance program activities, including system protection, right-of-way, line maintenance, and performance improvements.

**Interest, Pension, and Post-retirement Benefits
Operating Expense
Funding Schedule by Activity
Funding (\$K)**

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2022 vs FY 2021	
				\$	%
Interest, Pension, and Post-retirement Benefits					
BPA Bond Interest (Net)	163,964	137,860	137,677	-184	-0.1%
BPA Appropriation Interest	0	0	0	0	0.0%
Corps of Engineers Appropriation Interest	42,323	42,217	44,098	1,881	4.5%
Lower Snake River Comp Plan Interest	180	180	180	0	0.0%
Bureau of Reclamation Appropriation Interest	1,148	1,146	1,146	0	0.0%
Bond Premiums Paid/Discounts (not capitalized)	(0)	11,725	600	-11,125	-94.9%
Subtotal, Interest – Operating Expense	207,614	193,128	183,701	-9,428	-4.9%
Additional Pension, and Post-retirement Benefits	29,475	40,124	31,273	-8,851	-22.1%
Total, Interest, Pension, and Post-retirement Benefits	237,089	233,253	214,973	-18,279	-7.8%

Outyears (\$K)

	FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
Interest, Pension, and Post-retirement Benefits					
BPA Bond Interest (Net)	137,677	144,220	152,315	165,372	189,260
BPA Appropriation Interest	0	0	0	0	0
Corps of Engineers Appropriation Interest	44,098	44,920	45,325	46,631	48,682
Lower Snake River Comp Plan Interest	180	180	180	359	0
Bureau of Reclamation Appropriation Interest	1,146	1,146	1,146	1,146	1,146
Bond Premiums Paid/Discounts (not capitalized)	600	559	1,201	722	716
Subtotal, Interest – Operating Expense	183,701	191,024	200,167	214,230	239,804
Additional Pension, and Post-retirement Benefits	31,273	32,306	33,097	33,853	34,583
Total, Interest, Pension, and Post-retirement Benefits	214,973	223,330	233,264	248,083	274,387

Interest, Pension and Post-retirement Benefits Operating Expense

Overview

Interest expense provides for interest due on bonds issued to the U.S. Treasury and appropriations repayment responsibilities. The appropriation repayments relate to capital investment in FCRPS hydroelectric generating and transmission facilities of Bonneville, and the Corps and Reclamation. Investments were financed by Congressional appropriations and Bonneville borrowings from the U.S. Treasury. Bonneville repays these amounts through revenue raised in its power sales and transmission services revenues.

Since initially receiving U.S. Treasury borrowing authority in 1974 under the Transmission Act, all of Bonneville's U.S. Treasury borrowing has been at market rates. As of October 1, 1996, all of Bonneville's repayment obligations on FCRPS appropriated investment (Corps and Reclamation FCRPS investment and Bonneville investment financed with appropriations prior to the Transmission Act that were unpaid as of September 30, 1996) were restructured and assigned new current-market interest rates. The Bonneville Appropriations Refinancing Act of 1996 (Refinancing Act) called for resetting (reducing) the unpaid principal of FCRPS appropriations and reassigning (increasing) interest rates. New principal amounts were established as of the beginning of FY 1997 at the present value of the principal and annual interest payments Bonneville would make to the U.S. Treasury for these obligations in the absence of the legislation, plus \$100.0 million. The new principal amounts were assigned prevailing market interest rates as of October 1, 1996. Bonneville's outstanding appropriations repayment obligations at the end of FY 1996 were \$6.7 billion with a weighted average interest rate of 3.4 percent. The refinancing reduced the principal amount to \$4.1 billion with a weighted average interest rate of 7.1 percent. Implementation of the refinancing took place in 1997 after audited actual financial data were available. Pursuant to the legislation, Bonneville submitted its calculations and interest rate assignments implementing the Refinancing Act to the U.S. Treasury for its review and approval. The U.S. Treasury approved the implementation calculations in July 1997. The Refinancing Act also calls for all future FCRPS appropriations to be assigned prevailing U.S. Treasury yield curve interest rates. Bonneville's outstanding appropriations may be prepaid prior to their stated maturities.

Interest estimates are a function of costs of U.S. Treasury borrowing to Bonneville, repayment status of outstanding FCRPS investments, and projected additions to FCRPS plant in service. These estimates may change over time depending on forecasted market conditions. The interest cost estimates include the impact of Bonneville's appropriation refinancing legislation.

Federal employees associated with the operation of the FCRPS participate in either the Civil Service Retirement System or the Federal Employees Retirement System. Employees may also participate in the Federal Employees Health and Benefit Program and the Federal Employee Group Life Insurance Program. As a Federal agency, all post-retirement activity is managed by the Office of Personnel Management; therefore, neither the assets of the plans or the accumulated plan benefits are recorded by Bonneville. Since 1997, Bonneville has made additional annual contributions to the General Fund of the U.S. Treasury (receipt account 892889) related to the Federal post-retirement benefit programs provided to employees associated with the operation of the FCRPS.

**Capital Transfers
Funding Schedule by Activity
Funding (\$K)**

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Estimate	FY 2022 vs FY 2021	
				\$	%
Capital Transfers					
BPA Bond Amortization ¹	396,000	724,000	696,000	-28,000	-3.9%
Reclamation Appropriation Amortization	0	0	0	0	0.0%
BPA Appropriation Amortization	0	0	0	0	0.0%
Corps Appropriation Amortization	75,310	0	0	0	0.0%
Lower Snake River Comp Plan Amortization	0	0	0	0	0.0%
Total, Capital Transfers	471,310	724,000	696,000	-28,000	-3.9%

Outyears (\$K)

	FY 2022 Estimate	FY 2023 Estimate	FY 2024 Estimate	FY 2025 Estimate	FY 2026 Estimate
Capital Transfers					
BPA Bond Amortization ¹	696,000	726,000	678,000	689,000	701,000
Reclamation Appropriation Amortization	0	0	0	0	0
BPA Appropriation Amortization	0	0	0	0	0
Corps Appropriation Amortization	0	0	0	0	0
Lower Snake River Comp Plan Amortization	0	0	0	0	0
Total, Capital Transfers	696,000	726,000	678,000	689,000	701,000

Overview

This activity conveys funds to the U.S. Treasury for repayment of certain FCRPS costs not included in the Associated Project Costs budget. Since capital transfers are cash transactions, they are not considered budget obligations.

¹ Bonneville "Bond(s)" in this FY 2021 Budget refers to all bonds issued by Bonneville to and advances received from the U.S. Treasury. This reference is consistent with section 13(a) of the Transmission Act (P.L. 93-454), which defines Bonneville bonds as all bonds, notes, and other evidences of indebtedness issued and sold by Bonneville to the U.S. Treasury.

Additional Tables

**BONNEVILLE POWER ADMINISTRATION
TOTAL OBLIGATIONS/OUTLAYS**

Current Services
(in millions of dollars)

FISCAL YEAR

	2020		2021		2022		2023	2024	2025	2026
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
BP-1 SUMMARY ^{1/3/} 1 Residential Exchange Program	250	250	250	250	259	259	259	265	271	277
2 Power Services ^{2/}	1,730	1,730	1,403	1,403	1,338	1,338	1,388	1,424	1,457	1,488
3 Transmission Services	762	762	966	966	1,005	1,005	1,045	1,114	1,206	1,202
4 Conservation & Energy Efficiency	140	140	157	157	156	156	151	154	158	161
5 Fish & Wildlife	266	266	297	297	290	290	290	277	272	262
6 Interest/ Pension ^{4/}	237	237	233	233	215	215	223	233	248	274
7 Associated Project Cost - Capital	178	178	272	272	264	264	281	300	307	314
8 Capital Equipment	21	21	22	22	22	22	21	20	19	17
9 Planning Council	11	11	12	12	12	12	12	12	12	13
10 Projects Funded in Advance	89	89	70	70	56	56	61	48	35	35
11 Capitalized Bond Premiums	0	0	0	0	0	0	0	0	0	0
12 TOTAL OBLIGATIONS/OUTLAYS^{3/}	3,685	3,685	3,681	3,681	3,616	3,616	3,731	3,847	3,986	4,044

REVENUES AND REIMBURSEMENTS

Current Services
(in millions of dollars)

BP-1 SUMMARY	FISCAL YEAR									
	2020		2021		2022		2023	2024	2025	2026
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
13 Revenues ^{5/}	3,540	3,540	3,773	3,773	3,885	3,885	3,928	3,942	3,966	3,989
14 Project Funded in Advance	89	89	70	70	56	56	61	48	35	35
15 TOTAL	3,629	3,629	3,843	3,843	3,941	3,941	3,989	3,990	4,001	4,024
16 BUDGET AUTHORITY (NET) ^{6/}	39		102		130		149	258	328	295
17 OUTLAYS (NET) ^{6/7/8}		44		(162)		(325)	(259)	(143)	(15)	19

These notes are an integral part of this table.

^{1/} This FY 2022 budget includes capital and expense estimates based on initial spending proposals from Bonneville's BP-22 IPR process.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

^{2/} Power Services doesn't include Fish & Wildlife, Residential Exchange Program, Planning Council, Conservation & Energy Efficiency and Associated Project Costs which have been shown separately for display purposes.

Bonneville makes an accounting adjustment to the production services component of FY 2020 Bonneville's audited actual obligations. This past year adjustment relates primarily to long-term obligation requirements consistent with Bonneville's FY 2020 Combined Schedules of Budgetary Resources and the GTAS FY 2020 Treasury reports for Bonneville.

^{3/} This budget has been prepared in accordance with PAYGO. Under PAYGO all Bonneville budget estimates are treated as mandatory and are not subject to the discretionary caps included in the Budget Control Act of 2011. These estimates support activities that are separate from discretionary activities and accounts. Thus, any changes to Bonneville estimates cannot be used to affect any other budget categories which have their own dollar caps. Because Bonneville's obligations are and will be incurred under pre-existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

^{4/} See Interest Expense, Pension and Post-retirement Benefits and Capital Transfers section of this budget for a complete discussion of these cost estimates.

^{5/} Revenues, included in the Net Outlay formulation, are calculated consistent with cash management goals and assume a combination of adjustments. Assumed adjustments include the use of a combination of tools, including upcoming rate adjustment mechanisms, a net revenue risk adjustment, debt service refinancing strategies and/or short-term financial tools to manage net revenues and cash. Some of these potential tools will reduce costs rather than generate revenue, causing the same Net Outlay result. Adjustments for depreciation and 4(h)(10)(C) credits of the Northwest Power Act are also assumed.

^{6/} Bonneville received \$48.7 million of additional budget authority in FY 2007 to accommodate the work necessary to relocate the radio spectrum consistent with the Commercial Spectrum Enhancement Act (P.L. 108-494). In accordance with Federal law, Bonneville plans to return the forecasted unused balance of approximately \$8.2 million to the U.S. Treasury as soon as the National Telecommunications Information Administration notifies the Federal Communications Commission that the DOE relocation effort is complete.

^{7/} Net Outlay estimates are based on current cost savings to date and anticipated cash management goals. They are expected to follow anticipated management decisions throughout the rate period that, along with actual market conditions, will impact revenues and expenses. Actual Net Outlays are volatile and are reported in Report on Budget Execution and Budgetary Resources (SF-133). Actual Net Outlays could differ from estimates due to changing market conditions, streamflow variability, continued restructuring of the electric industry, and other reasons.

^{8/} FY 2020 Net Outlays are calculated using Bonneville's audited actual revenue. FYs 2021 to 2026 Net Outlays are based on FY 2020 initial IPR assumptions and an escalation factor from using the FY 2018 White Book Loads and Resources Report.

EXPENSED OBLIGATIONS/OUTLAYS ^{1,4/}

Current Services

(in millions of dollars)

FISCAL YEAR

BP-2	2020		2021		2022		2023	2024	2025	2026
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
1 Residential Exchange Program	250	250	250	250	259	259	259	265	271	277
2 Power Services ^{2/}	1,730	1,730	1,403	1,403	1,338	1,338	1,388	1,424	1,457	1,488
3 Transmission Services	482	482	482	482	508	508	515	528	540	552
4 Conservation & Energy Efficiency	140	140	157	157	156	156	151	154	158	161
5 Fish & Wildlife	226	226	249	249	247	247	247	247	247	247
6 Interest/ Pension ^{3/}	237	237	233	233	215	215	223	233	248	274
7 Planning Council	11	11	12	12	12	12	12	12	12	13
8 TOTAL EXPENSE	3,076	3,076	2,785	2,785	2,734	2,734	2,795	2,863	2,934	3,012
9 Projects Funded in Advance	89	89	70	70	56	56	61	48	35	35

CAPITAL OBLIGATIONS/OUTLAYS ^{1/}

Current Services

(in millions of dollars)

FISCAL YEAR

BP-2 continued	2020		2021		2022		2023	2024	2025	2026
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
10 Transmission Services	280	280	484	484	497	497	530	586	666	650
11 Associated Project Cost	178	178	272	272	264	264	281	300	307	314
12 Fish & Wildlife	40	40	47	47	43	43	43	30	25	15
13 Capital Equipment	21	21	22	22	22	22	21	20	19	17
14 Capitalized Bond Premiums	0	0	0	0	0	0	0	0	0	0
15 TOTAL CAPITAL INVESTMENTS	520	520	826	826	826	826	875	936	1,017	996
16 TREASURY BORROWING AUTHORITY TO										
17 FINANCE CAPITAL OBLIGATIONS ^{4/}	520		826		826		875	936	1,017	996

These notes are an integral part of this table.

^{1/} This FY 2022 budget includes capital and expense estimates based on initial spending proposals from Bonneville's BP-22 IPR process.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

^{2/} Power Services doesn't include Fish & Wildlife, Residential Exchange Program, Planning Council, Conservation & Energy Efficiency and Associated Project Costs which have been shown separately for display purposes.

Bonneville makes an accounting adjustment to the production services component of FY 2020 Bonneville's audited actual obligations. This past year adjustment relates primarily to long-term obligation requirements consistent with Bonneville's FY 2020 Combined Schedules of Budgetary Resources and the GTAS FY 2020 Treasury reports for Bonneville.

^{3/} See Interest Expense, Pension and Post-retirement Benefits and Capital Transfers section of this budget for a complete discussion of these cost estimates.

^{4/} This budget has been prepared in accordance with PAYGO. Under PAYGO all Bonneville budget estimates are treated as mandatory and are not subject to the discretionary caps included in the Budget Control Act of 2011. These estimates support activities that are separate from discretionary activities and accounts. Thus, any changes to Bonneville estimates cannot be used to affect any other budget categories which have their own dollar caps. Because Bonneville's obligations are and will be incurred under pre-existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

BP-3

CURRENT SERVICES
(in millions of dollars)

CAPITAL TRANSFERS

FISCAL YEAR

Amortization:
 18 BPA Bonds
 19 Reclamation Appropriations
 20 BPA Appropriations
 21 Corps Appropriations
 22 Lower Snake River Comp Plan Amortization
 23 **TOTAL CAPITAL TRANSFERS**

	2020	2021	2022	2023	2024	2025	2026
	Payment	Payment	Payment	Payment	Payment	Payment	Payment
18 BPA Bonds	396	724	696	726	678	689	701
19 Reclamation Appropriations	0	0	0	0	0	0	0
20 BPA Appropriations	0	0	0	0	0	0	0
21 Corps Appropriations	75	0	0	0	0	0	0
22 Lower Snake River Comp Plan Amortization	0	0	0	0	0	0	0
23 TOTAL CAPITAL TRANSFERS	471	724	696	726	678	689	701

24 **FULL-TIME EQUIVALENT (FTE)**

24 FULL-TIME EQUIVALENT (FTE)	2,743	3,000	3,000	3,000	3,000	3,000	3,000
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PROGRAM & FINANCING SUMMARY

Current Services

(in millions of dollars)

Identification Code: 89-4045-0-3-271

	est.						
	2020	2021	2022	2023	2024	2025	2026
Program by activities:							
Operating expenses:							
0.01 Power Services	1,287	944	872	925	950	973	993
0.02 Residential Exchange Program	250	250	259	259	265	271	277
Associated Project Costs:							
0.05 Bureau of Reclamation	153	152	154	152	155	159	162
0.06 Corps of Engineers	240	253	253	253	259	265	270
0.07 Colville Settlement	18	23	22	22	23	23	24
0.08 Spokane Settlement	0	0	6	5	6	6	6
0.19 U.S. Fish & Wildlife Service	32	30	31	31	32	32	33
0.20 Planning Council	11	12	12	12	12	12	13
0.21 Fish & Wildlife	226	249	247	247	247	247	247
0.23 Transmission Services	482	482	508	515	528	540	552
0.24 Conservation & Energy Efficiency	140	157	156	151	154	158	161
0.25 Interest	208	193	184	191	200	214	240
0.26 Pension and Health Benefits ^{1/}	29	40	31	32	33	34	35
0.91 Total operating expenses ^{2/}	3,076	2,784	2,733	2,795	2,863	2,934	3,012
Capital investment:							
1.01 Power Services	178	272	264	281	300	307	314
1.02 Transmission Services	280	484	497	530	586	666	650
1.04 Fish & Wildlife	40	47	43	43	30	25	15
1.05 Capital Equipment	21	22	22	21	20	19	17
1.06 Capitalized Bond Premiums	0	0	0	0	0	0	0
1.07 Total Capital Investment ^{3/}	520	826	826	875	936	1,017	996
2.01 Projects Funded in Advance	89	70	56	61	48	35	35
10.00 Total obligations ^{4/}	3,685	3,680	3,615	3,731	3,847	3,986	4,044

These notes are an integral part of this table.

^{1/} See Interest Expense, Pension and Post-retirement Benefits and Capital Transfers section of this budget for a complete discussion of these cost estimates.

^{2/} Assumes expense obligations, not accrued expenses.

Power Services doesn't include Fish & Wildlife, Residential Exchange Program, Planning Council, Conservation & Energy Efficiency and Associated Project Costs which have been shown separately for display purposes.

Bonneville makes an accounting adjustment to the production services component of FY 2020 Bonneville's audited actual obligations. This past year adjustment relates primarily to long-term obligation requirements consistent with Bonneville's FY 2020 Combined Schedules of Budgetary Resources and the GTAS FY 2020 Treasury reports for Bonneville.

^{3/} Assumes capital obligations, not capital expenditures.

^{4/} This FY 2022 budget includes capital and expense estimates based on initial spending proposals from Bonneville's BP-22 IPR process.

For purposes of this table, this FY 2022 budget reflects, for FY 2020, actual third party financing expense only for PFIA.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

Program and Financing (continued)

Current Services
(in millions of dollars)

	2020	2021	2022	2023	2024	2025	2026
	est.						
Financing:							
1000 Unobligated balance available, start of year. ^{5/}	13	11	10	0	0	0	0
1050 Unobligated balance available, end of year. ^{5/}	11	10	8	0	0	0	0
1900 Budget authority (gross)	1,165	3,945	4,071	4,138	4,247	4,329	4,319
Budget Authority:							
1400 Permanent Authority: Authority to borrow from Treasury (indefinite) ^{6/}	765	826	826	875	936	1,017	996
1600 Contract Authority	2,519						
1800 Spending authority from off-setting collections	3,629	3,843	3,941	3,989	3,990	4,001	4,024
1825 Portion applied to debt reduction	(396)	(724)	(696)	(726)	(678)	(689)	(701)
1850 Spending authority from offsetting collections (adjusted)	400	3,119	3,245	3,263	3,312	3,312	3,323
900 Total obligations	3,685	3,681	3,616	3,731	3,847	3,986	4,044
4110 Outlays (gross)	3,685	3,681	3,616	3,731	3,847	3,986	4,044
Adjustments to budget authority and outlays:							
Deductions for offsetting collections:							
4120 Federal funds	(55)	(90)	(90)	(90)	(90)	(90)	(90)
4121 Interest on Federal Securities	(2)						
4123 Non-Federal sources	(3,574)	(3,753)	(3,851)	(3,899)	(3,900)	(3,911)	(3,934)
4130 Total, offsetting collections	(3,629)	(3,843)	(3,941)	(3,989)	(3,990)	(4,001)	(4,024)
4160 Budget authority (net)	39	102	130	149	258	328	295
4170 Outlays (net)^{7/8/}	44	(162)	(325)	(259)	(143)	(15)	19

These notes are an integral part of this table.

^{5/} Reflects estimated cost for radio spectrum fund.

^{6/} The Permanent Authority: Authority to borrow (indefinite) from the U.S. Treasury amounts reflect both Bonneville's capital program financing needs and either the use of, or creation of, deferred borrowing. Deferred borrowing is created when, as a cash and debt management decision, Bonneville uses cash from revenues to liquidate capital obligations in lieu of borrowing at that time from the U.S. Treasury. This temporary use of cash on hand instead of borrowed funds creates the ability in future years to borrow money, when fiscally prudent. The FY 1989 Energy and Water Development Appropriations Act (P.L. 100-371 Of 7/19/88) confirmed that Bonneville has authority to incur obligations in excess of U.S. Treasury borrowing authority and cash in the BPA fund. Total includes BPA's self-financing activities and funds for Radio Spectrum Relocation. In addition, BPA has negotiated with the U.S. Treasury access to a \$750 million short term note as part of the \$7.7 billion borrowing authority.

^{7/} Net Outlay estimates are based on current cost savings to date and anticipated cash management goals. They are expected to follow anticipated management decisions throughout the rate period that, along with actual market conditions, will impact revenues and expenses. Actual Net Outlays are volatile and are reported in Report on Budget Execution and Budgetary Resources (SF-133). Actual Net Outlays could differ from estimates due to changing market conditions, streamflow variability, continued restructuring of the electric industry, and other reasons.

Revenues, included in the Net Outlay formulation, are calculated consistent with cash management goals and assume a combination of adjustments.

Assumed adjustments include the use of a combination of tools, including upcoming rate adjustment mechanisms, a net revenue risk adjustment, debt service refinancing strategies and/or short-term financial tools to manage net revenues and cash. Some of these potential tools will reduce costs rather than generate revenue, causing the same Net Outlay result. Adjustments for depreciation and 4(h)(10)(C) credits of the Northwest Power Act are also assumed.

This budget has been prepared in accordance with PAYGO. Under PAYGO all Bonneville budget estimates are treated as mandatory and are not subject to the discretionary caps included in the Budget Control Act of 2011. These estimates support activities that are separate from discretionary activities and accounts.

Thus, any changes to Bonneville estimates cannot be used to affect any other budget categories which have their own dollar caps. Because Bonneville's obligations are and will be incurred under pre-existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

**BONNEVILLE POWER ADMINISTRATION
BPA STATUS of U.S. TREASURY BORROWING
CURRENT SERVICES**

BP-4A

Fiscal Year

	2020				2021			
	Net Capital Capital Obs	Net Capital Subject to BA Obs	Net Capital Expend.	Bonds Out- Standing	Net Capital Capital Obs	Net Capital Subject to BA Obs	Net Capital Expend.	Bonds Out- Standing
Start-of-Year: Total	4,223	3,681	5,122	5,280	4,347	3,805	5,246	5,649
Plus: Annual Increase								
Cum.-Annual Treasury Borrowing	520	520	520	765	826	826	826	826
Treasury Borrowing (Cash)								
Less:								
BPA Bond Amortization	396	396	396	396	724	724	724	724
Net Increase/(Decrease):	124	124	124	369	102	102	102	102
Cum.-End-of-Year: Total	4,347	3,805	5,246	5,649	4,449	3,907	5,348	5,751
Total Remaining Treasury Borrowing Amount				2,051				1,949
Total Legislated Treasury Borrowing Amount				7,700				7,700

These notes are an integral part of this table.

In any given year, Bonneville may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, borrowing costs, and other cash management factors. In such cases, Bonneville accumulates a deferred borrowing balance that it accesses as necessary in the future.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

In this FY 2022 budget, Bonneville "bond(s)" refers to all bonds issued by Bonneville to and advances received from the U.S. Treasury. This reference is consistent with section 13 (a) of the Transmission Act, which defines Bonneville bonds as all bonds, notes, and other evidences of indebtedness issued and sold by Bonneville to the U.S. Treasury.

As in the past, Bonneville may pursue future restructuring of total debt as opportunities arise.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

Bonneville reserve financing of \$15 million annually was part of TS capital-PFIA for FYs 2018-2019.

Cumulative advance amortization payments as of the end of FY 2020 are \$5,819 million.

Total includes BPA's self-financing activities and funds for Radio Spectrum Relocation. In addition, BPA has negotiated with the U.S. Treasury access to a \$750 million short term note as part of the \$7.7 billion borrowing authority.

**BONNEVILLE POWER ADMINISTRATION
BPA STATUS of U.S. TREASURY BORROWING
CURRENT SERVICES
(in millions of dollars)**

BP-4B

	2022				2023			
	Net Capital		Net Capital	Bonds Out-	Net Capital		Net Capital	Bonds Out-
	Net Capital Obs	Obs Subject to BA			Net Capital Obs	Obs Subject to BA		
Start-of-Year: Total	4,449	3,907	5,348	5,751	4,579	4,037	5,478	5,881
Plus: Annual Increase								
Cum.-Annual Treasury Borrowing	826	826	826	826	875	875	875	875
Treasury Borrowing (Cash)								
Less:								
Total BPA Bond Amortization	696	696	696	696	726	726	726	726
Net Increase/(Decrease):								
Total	130	130	130	130	149	149	149	149
Cum.-End-of-Year: Total	4,579	4,037	5,478	5,881	4,728	4,186	5,627	6,030
Total Remaining Treasury Borrowing Amount				1,819				1,670
Total Legislated Treasury Borrowing Amount				7,700				7,700

These notes are an integral part of this table.

In any given year, Bonneville may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, borrowing costs, and other cash management factors. In such cases, Bonneville accumulates a deferred borrowing balance that it accesses as necessary in the future.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

In this FY 2022 budget, Bonneville "bond(s)" refers to all bonds issued by Bonneville to and advances received from the U.S. Treasury. This reference is consistent with section 13 (a) of the Transmission Act, which defines Bonneville bonds as all bonds, notes, and other evidences of indebtedness issued and sold by Bonneville to the U.S. Treasury.

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Total includes BPA's self-financing activities and funds for Radio Spectrum Relocation. In addition, BPA has negotiated with the U.S. Treasury access to a \$750 million short term note as part of the \$7.7 billion borrowing authority.

BONNEVILLE POWER ADMINISTRATION
BPA STATUS of U.S. TREASURY BORROWING
CURRENT SERVICES
(in millions of dollars)

BP-4C

Fiscal Year

	2024				2025			
	Net Capital		Net Bonds		Net Capital		Net Bonds	
	Net Capital	Obs Subject to BA	Net Capital	Bonds Out-Standing	Net Capital	Obs Subject to BA	Net Capital	Bonds Out-Standing
	Obs	to BA	Expend.	Standing	Obs	to BA	Expend.	Standing
Start-of-Year: Total	4,728	4,186	5,627	6,030	4,986	4,444	5,885	6,288
Plus: Annual Increase								
Cum.-Annual Treasury Borrowing	936	936	936	936	1,017	1,017	1,017	1,017
Treasury Borrowing (Cash)								
Less:								
Total BPA Bond Amortization	678	678	678	678	689	689	689	689
Net Increase/(Decrease):								
Total	258	258	258	258	328	328	328	328
Cum.-End-of-Year: Total	4,986	4,444	5,885	6,288	5,314	4,772	6,213	6,616
Total Remaining Treasury Borrowing Amount				1,412				1,084
Total Legislated Treasury Borrowing Amount				7,700				7,700

These notes are an integral part of this table.

In any given year, Bonneville may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, borrowing costs, and other cash management factors. In such cases, Bonneville accumulates a deferred borrowing balance that it accesses as necessary in the future.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

In this FY 2022 budget, Bonneville "bond(s)" refers to all bonds issued by Bonneville to and advances received from the U.S. Treasury. This reference is consistent with section 13 (a) of the Transmission Act, which defines Bonneville bonds as all bonds, notes, and other evidences of indebtednesses issued and sold by Bonneville to the U.S. Treasury.

As in the past, Bonneville may pursue future restructuring of total debt as opportunities arise.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

Bonneville reserve financing of \$15 million annually was part of TS capital-PFIA for FYs 2018-2019.

Cumulative advance amortization payments as of the end of FY 2020 are \$5,819 million.

Total includes BPA's self-financing activities and funds for Radio Spectrum Relocation. In addition, BPA has negotiated with the U.S. Treasury access to a \$750 million short term note as part of the \$7.7 billion borrowing authority.

**BONNEVILLE POWER ADMINISTRATION
BPA STATUS of U.S. TREASURY BORROWING
CURRENT SERVICES**

(in millions of dollars)

BP-4D

	Fiscal Year			
	2026			
	Net Capital Obs	Net Capital Subject to BA	Net Capital Expend.	Bonds Out- Standing
Start-of-Year: Total	5,314	4,772	6,213	6,616
Plus: Annual Increase				
Cum.-Annual Treasury Borrowing	996	996	996	996
Treasury Borrowing (Cash)				
Less:				
Total BPA Bond Amortization	701	701	701	701
Net Increase/(Decrease):				
Total	295	295	295	295
Cum.-End-of-Year: Total	5,609	5,067	6,508	6,911
Total Remaining Treasury Borrowing Amount				789
Total Legislated Treasury Borrowing Amount				7,700

These notes are an integral part of this table.

In any given year, Bonneville may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, borrowing costs, and other cash management factors. In such cases, Bonneville accumulates a deferred borrowing balance that it accesses as necessary in the future.

Capital funding levels reflect external factors such as the significant changes affecting West Coast power and transmission markets, along with planned infrastructure investments designed to address the long-term needs of the region.

In this FY 2022 budget, Bonneville "bond(s)" refers to all bonds issued by Bonneville to and advances received from the U.S. Treasury. This reference is consistent with section 13 (a) of the Transmission Act, which defines Bonneville bonds as all bonds, notes, and other evidences of indebtedness issued and sold by Bonneville to the U.S. Treasury.

As in the past, Bonneville may pursue future restructuring of total debt as opportunities arise.

Budget estimates included in this budget are subject to change due to rapidly changing economic and institutional conditions in the evolving electric utility industry.

Bonneville reserve financing of \$15 million annually was part of TS capital-PFIA for FYs 2018-2019.

Cumulative advance amortization payments as of the end of FY 2020 are \$5,819 million.

Total includes BPA's self-financing activities and funds for Radio Spectrum Relocation. In addition, BPA has negotiated with the U.S. Treasury access to a \$750 million short term note as part of the \$7.7 billion borrowing authority.

**BONNEVILLE POWER ADMINISTRATION
POTENTIAL THIRD PARTY FINANCING TRANSPARENCY**
(in millions of dollars)

BP-5

	Fiscal Year						
	2020	2021	2022	2023	2024	2025	2026
Transmission Services - Capital							
Main Grid	5	26	13	6	12	14	9
Area & Customer Services	28	89	49	72	60	47	47
Upgrades & Additions	54	51	102	147	150	75	85
System Replacements	193	319	334	305	364	530	508
Projects Funded in Advance	89	70	56	61	48	35	35
Total, Transmission Services - Capital	370	555	553	591	634	702	685

Associated Project Costs - Capital

	2020	2021	2022	2023	2024	2025	2026
Associated Project Costs	178	272	264	281	300	307	314
Projects Funded in Advance ^{1/}	0	0	0	0	0	0	0
Total, Associated Project Costs - Capital	178	272	264	281	300	307	314

Federal and Non-Federal Funding

	2020	2021	2022	2023	2024	2025	2026
Projects Funded in Advance	89	70	56	61	48	35	35
U.S. Treasury Borrowing Authority	459	757	761	811	886	973	963

Scenario

	2020	2021	2022	2023	2024	2025	2026
Projects Funded in Advance ^{1/}	0	0	0	0	0	0	0
Third Party Financing	70	121	124	132	146	167	162
Alternate Treasury Borrowing Authority	NA	636	637	678	739	807	801

These notes are an integral part of this table.

1/ In this instance, Projects Funded in Advance represents prepayment of Power customers' bills reimbursed by future credits and third party non-federal financing for Conservation initiatives. Also this category includes those facilities and/or equipment where Bonneville retains control or ownership but the table above shows both the potential use of U.S. Treasury borrowing authority for transmission capital projects based on this FY 2022 budget and the use adjusted for potential third-party financing to fund appropriate capital expenditures when feasible in lieu of U.S. Treasury borrowing. Estimates included in this FY 2022 budget are uncertain and may change due to revised capital investment plans, changing economic conditions, and an evolving financial market environment. The estimates of third-party financing included in the table show a reduction in the use of U.S. Treasury borrowing and do not reflect the actual notional third party financing commitment Bonneville may enter into in that particular year. The difference of reduction in use of U.S. Treasury borrowing and the actual notional third party financing commitment is primarily due to the difference in the timing of financing transactions between U.S. Treasury and third-party financing for capital projects with multi-year construction schedules.

Bonneville's Third Party Financing for Transmission Services consists primarily of lease-purchase agreements, which are capitalized obligations that enable Bonneville to acquire the use of transmission facilities over time. Bonneville also undertakes the construction and installation of facilities from funds that customers advance to Bonneville for construction of BPA-owned facilities that assist the customers in obtaining necessary transmission service from Bonneville. These customers receive monetary payment credits in bills for transmission services from Bonneville up to the amount of funds advanced to Bonneville, plus interest.

Bonneville's historical Third Party Financing amounts may vary over time due to re-assignment of certain lease-purchase agreements to Treasury Financing.

Bonneville Status of U.S. Treasury Borrowing with Potential Third Party Financing & PFIA Scenario

With the potential use of third party financing assumed in the scenario above, Bonneville's total remaining U.S. Treasury Borrowing Amount would be extended to the following amounts. See BP-4 BPA Status of Treasury Borrowing- Current Services.

	Fiscal Year						
	2020	2021	2022	2023	2024	2025	2026
Start-of-Year: Total Bonds Outstanding	5,280	5,649	5,630	5,636	5,652	5,763	5,925
Plus:							
U.S. Treasury Borrowing (Cash)	765	826	826	875	936	1,017	996
Less:							
Potential Third Party Financing & PFIA	70	121	124	132	146	167	162
BPA Bond Amortization	396	724	696	726	678	689	701
Net Increase/(Decrease) Bonds Outstanding:	369	(19)	6	16	111	162	132
Cum.-End-of-Year: Total	5,649	5,630	5,636	5,652	5,763	5,925	6,057
Total Remaining U.S. Treasury Borrowing Amount	2,051	2,070	2,064	2,048	1,937	1,775	1,643
Total Legislated U.S. Treasury Borrowing Amount	7,700	7,700	7,700	7,700	7,700	7,700	7,700

U.S. TREASURY PAYMENTS

(in millions of dollars)

	FISCAL YEAR						
	2020	2021	2022	2023	2024	2025	2026
A. INTEREST ON BONDS & APPROPRIATIONS							
Bonneville Bond Interest							
1 Bonneville Bond Interest (net)	136	138	138	144	152	165	189
2 AFUDC ^{1/}	28	35	36	39	42	47	53
Appropriations Interest							
3 Bonneville	0	0	0	0	0	0	0
4 Corps of Engineers ^{2/}	42	42	44	45	45	47	49
5 Lower Snake River Comp. Plan	0	0	0	0	0	0	0
6 Bureau of Reclamation ^{3/}	1	1	1	1	1	1	1
7 Bond Premiums paid/Discounts (not capitalized)	0	12	1	1	1	1	1
8 Total Bond and Approp. Interest	208	228	220	230	242	261	294
B. ASSOCIATED PROJECT COST							
9 Bureau of Reclamation Irrigation Assistance	24	15	16	13	15	14	21
10 Bureau of Rec. O & M ^{4/}	1	0	0	0	0	0	0
11 Corps of Eng. O & M ^{4/}	2	0	0	0	0	0	0
12 L. Snake River Comp. Plan O & M ^{4/}	0	0	0	0	0	0	0
13 Total Assoc. Project Costs	27	15	16	13	15	14	21
C. CAPITAL TRANSFERS							
Amortization							
14 Bonneville Bonds ^{6/}	396	724	696	726	678	689	701
15 Bureau of Reclamation Appropriations	0	0	0	0	0	0	0
16 Corps of Engineers Appropriations	75	0	0	0	0	0	0
17 Lower Snake River Comp. Plan	0	0	0	0	0	0	0
18 Bonneville Appropriations	0	0	0	0	0	0	0
19 Total Capital Transfers ^{8/}	471	724	696	726	678	689	701
D. OTHER PAYMENTS							
20 Unfunded Post-Retirement Liability ^{5/}	29	40	31	32	33	34	35
21 TOTAL TREASURY PAYMENTS	736	1,007	963	1,001	968	998	1,050

These notes are an integral part of this table.

^{1/} This interest cost is capitalized and included in BPA's Transmission System Development, System Replacements, and Associated Projects Capital programs. AFUDC is financed through the sale of bonds.

^{2/} Includes interest on construction funding for Corp of Engineers (Corps) fish bypass facilities at Corps dams in the Columbia River Basin, including Lower Monumental, Ice Harbor, and The Dalles.

^{3/} Includes payments paid by Reclamation to the U.S. Treasury on behalf of Bonneville.

^{4/} Costs for power O&M is funded directly by Bonneville as follows (in millions):

	FISCAL YEAR	2020	2021	2022	2023	2024	2025	2026
Bureau of Reclamation		153	152	154	152	155	159	162
Corps of Engineers		240	253	253	253	259	265	270
Subtotal Bureau and Corps		393	404	406	404	414	424	433
Lower Snake River Comp. Plan		32	30	31	31	32	32	33
Total		425	435	437	435	446	456	466

^{5/} See Interest Expense, Pension and Post-retirement Benefits and Capital Transfers section of this budget for a complete discussion of these cost estimates.

^{6/} In this FY 2022 budget, Bonneville "bond(s)" refers to all bonds issued by Bonneville to and advances received from the U.S. Treasury. This reference is consistent with section 13 (a) of the Transmission Act, which defines Bonneville bonds as all bonds, notes, and other evidences of indebtedness issued and sold by Bonneville to the U.S. Treasury.

Does not include Treasury bond premiums on refinanced Treasury bonds.

^{8/} FY 2020 data reflects audited actual capital transfer.

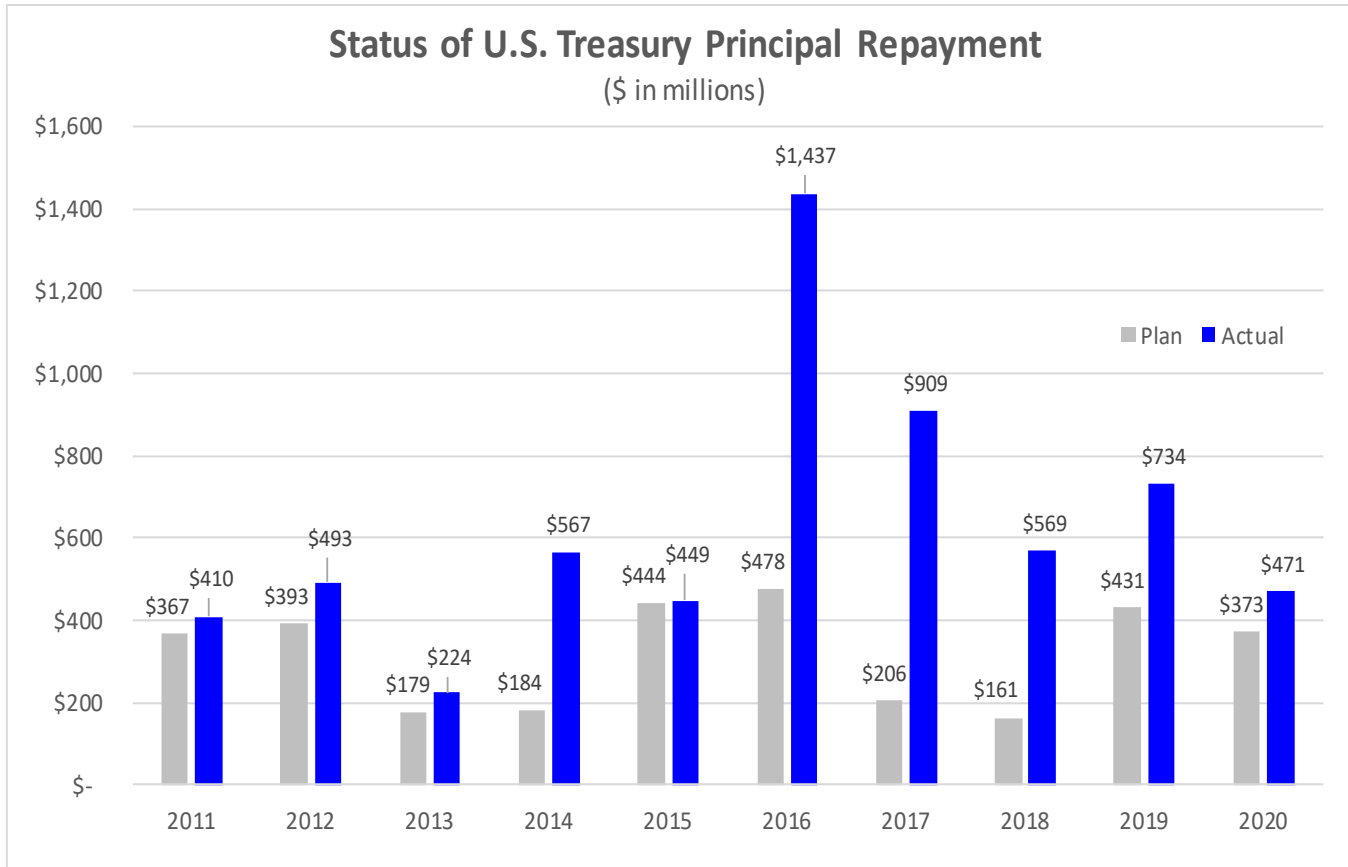


Chart Notes

^{1/} This chart displays principal repayment only.

^{2/} U.S. Treasury payment outyear estimates for planned amortization of principal are based on rate case estimates when available and are planned amortization for future rate case periods. These estimates may change due to revised capital investment plans, actual U.S. Treasury borrowing, and advanced amortization payments. Bonneville’s aggregate FY 2020 payment to the U.S. Treasury was approximately \$736 million. This was the 37th consecutive year that Bonneville made its scheduled payments to the U.S. Treasury on time and in full. The payment included \$471.3 million in principal, which included \$20 million in early retirement of higher interest rate U.S. Treasury debt, \$208 million for interest, \$24.1 million in irrigation assistance payments, and \$29.5 million in pension and post-retirement benefits.

^{3/} FYs 2002-2012 payments include portions of advance amortization amounts consistent with Bonneville’s capital strategy plan and the Bonneville /Energy Northwest debt optimization program.

^{4/} Advance amortization due to sale of transmission facilities includes \$12.7 million in FY 2003, \$5.3 million in FY 2006, \$2.0 million in FY 2011, \$0.4 million in FY 2013 and \$0.4 million in FY 2014, and \$0.6 million in FY 2017.

^{5/} The cumulative balance of advance amortization payments as of the end of FY 2020 was in excess of \$5.8 Billion.

^{6/} FYs 2014-2020 include advance amortization under the Regional Cooperation Debt initiative with Energy Northwest (EN) under which EN extended maturities on Bonneville-backed debt which enabled the early amortization of higher cost appropriations.

OBJECT CLASSIFICATION STATEMENT

(in millions of dollars)

ESTIMATES

	2020	2021	2022
11.1 Full-time permanent	234	261	257
11.3 Other than full-time permanent	1	1	1
11.5 Other personnel compensation	70	78	77
11.9 Total personnel compensation	304	340	334
12.1 Civilian personnel benefits	160	179	176
13.0 Benefits for former personnel	0	0	0
21.0 Travel and transportation of persons	3	3	3
22.0 Transportation of things	1	1	1
23.1 Rental payments to GSA	0	0	0
23.2 Rents, other	31	35	35
23.3 Communication, utilities & misc. charges	10	11	11
25.1 Consulting Services	80	89	88
25.2 Other Services	2,658	2,528	2,483
25.5 R & D Contracts	3	4	4
26.0 Supplies and materials	41	46	45
31.0 Equipment	48	54	53
32.0 Lands and structures	78	87	86
41.0 Grants, subsidies, contributions	37	42	41
43.0 Interest and dividends	233	260	256
99.0 Total obligations	3,685	3,680	3,615

Estimate of Receipts
(in millions of dollars)

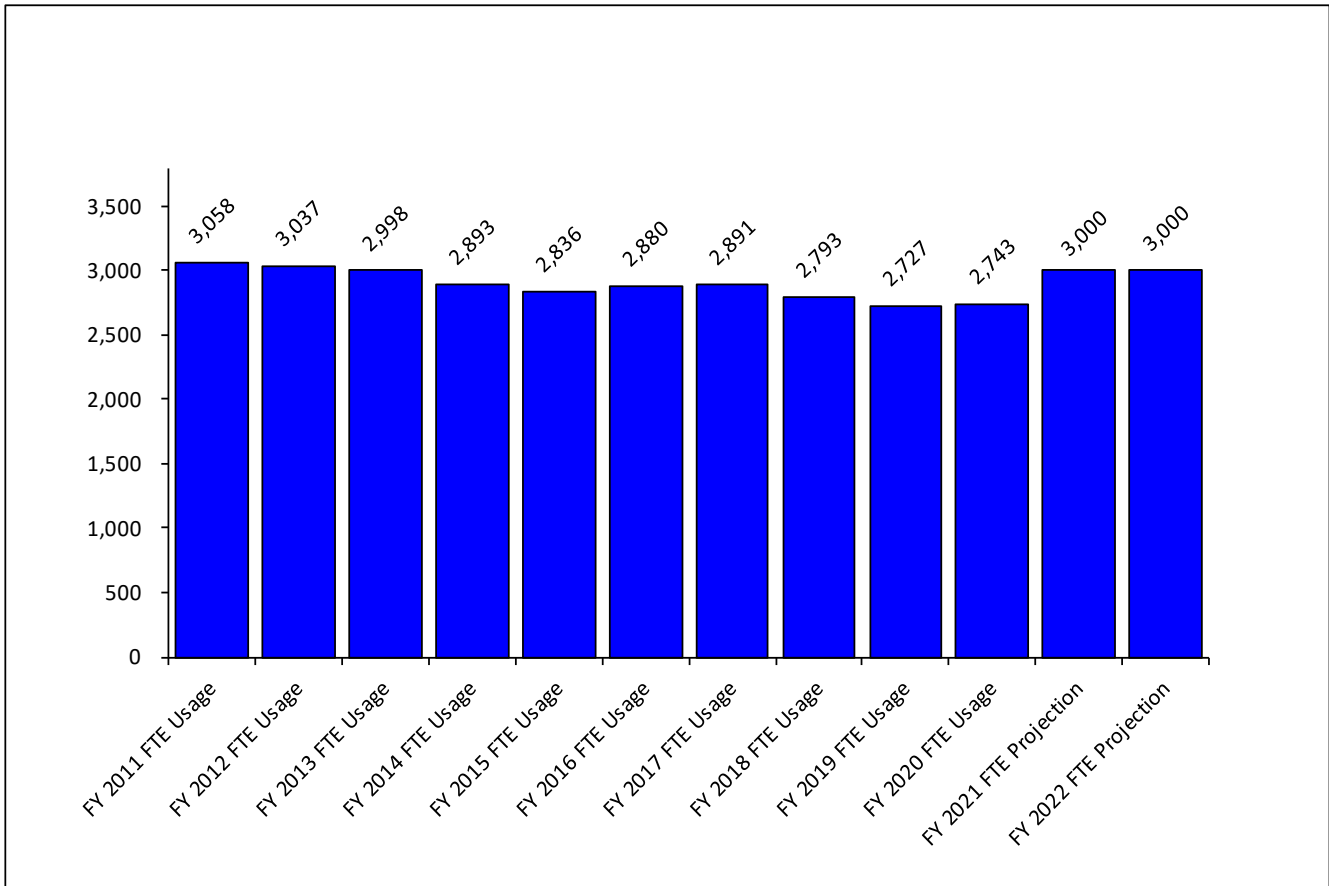
	Fiscal Year						
	2020	2021	2022	2023	2024	2025	2026
Reclamation Interest	1	1	1	1	1	1	1
Reclamation Amortization	0	0	0	0	0	0	0
Reclamation O&M	1	0	0	0	0	0	0
Reclamation Irrig. Assist.	24	15	16	13	15	14	21
Revenues Collected by Reclamation	-16	-7	-7	-7	-7	-7	-7
Distributed in Treasury Account (credit)							
Colville Settlement (credit)	-5	-5	-5	-5	-5	-5	-5
Total 1/ Reclamation Fund	5	4	5	2	4	3	10
Corps O&M							
CSRS	29	40	31	32	33	34	35
Total 2/ Repayments on miscellaneous costs	29	40	31	32	33	34	35

- 1/ Includes amortization of appropriations and irrigation assistance, and interest costs for Reclamation. The cost of power O&M for Reclamation is no longer included in Proprietary Receipts due to Direct Funding by Bonneville. Represents transfer to Account #895000.26
- 2/ The costs of power O&M for the Corps and Lower Snake River Comp. Plan are no longer included in Proprietary Receipts due to Direct Funding by Bonneville. Represents transfers to Account #892889, Repayments on misc. recoverable costs, not otherwise classified. Costs for power O&M is funded directly by Bonneville as follows (in millions)

	2020	2021	2022	2023	2024	2025	2026
Bureau of Reclamation	153	152	154	152	155	159	162
Corps of Engineers	240	253	253	253	259	265	270
Lower Snake River Comp. Plan	32	30	31	31	32	32	33
Total	425	435	437	435	446	456	466

See Interest Expense, Pension and Post-retirement Benefits and Capital Transfers section of this budget for a complete discussion of these cost estimates.

BONNEVILLE FTE



These notes are an integral part of this chart.

1. Actual FTE data is consistent with DOE personnel reports.
2. FTE outyear data are estimates and may change. Bonneville is facing a dynamic and changing transmission marketplace and operations while, at the same time, many of its employees are eligible to retire in the near future. It is important that Bonneville continue to attract and retain skilled individuals to meet the growing demands of a competitive and rapidly changing industry. Accordingly, FTE estimates may need to be adjusted in the future.
3. As of October 21, 2020 DOE HR staff has reported FY 2020 BPA's FTE usage at 2,743.

Total Cost of BPA Fish & Wildlife Actions

COST ELEMENT	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CAPITAL INVESTMENTS ^{1/}										
BPA FISH AND WILDLIFE	90.2	57.5	52.1	37.4	21.4	16.0	5.4	30.7	22.3	40.2
BPA SOFTWARE DEVELOPMENT COSTS	0.8	0.4	0.0	0.1	1.4	1.2	1.4	0.8	0.0	0.0
ASSOCIATED PROJECTS (FEDERAL HYDRO)	103.0	114.5	103.6	101.7	81.4	34.1	58.9	51.8	55.5	106.6
TOTAL CAPITAL INVESTMENTS	193.9	172.3	155.7	139.2	104.1	51.4	65.7	83.2	77.9	146.7
PROGRAM EXPENSES										
BPA DIRECT FISH AND WILDLIFE PROGRAM	221.1	248.9	239.0	231.8	258.2	258.1	254.7	258.7	240.4	238.1
FISH & WILDLIFE SOFTWARE EXPENSE COSTS			0.2	0.3	0.1	0.0	0.0	0.1	0.0	0.0
SUPPLEMENTAL MITIGATION PROGRAM EXPENSES ^{2/}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
REIMBURSABLE/DIRECT-FUNDED PROJECTS ^{3/}										
O & M LOWER SNAKE RIVER HATCHERIES	24.5	22.0	28.7	31.0	30.9	28.6	26.0	31.4	26.7	31.9
O & M CORPS OF ENGINEERS	40.3	41.1	39.2	47.8	46.4	48.2	46.8	47.5	48.9	46.3
O & M BUREAU OF RECLAMATION	5.0	5.3	5.6	6.6	2.6	6.0	7.0	5.5	8.7	5.8
NW POWER AND CONSERVATION COUNCIL ALLOCATED @ 50%	4.5	4.6	5.0	4.9	4.9	5.4	5.4	5.5	5.6	5.6
SUBTOTAL (REIMB/DIRECT-FUNDED)	74.3	73.0	78.5	90.3	84.9	88.2	85.2	89.9	89.9	89.6
TOTAL OPERATING EXPENSES	295.3	321.9	317.70	322.40	343.17	346.34	339.90	348.65	330.30	327.66
PROGRAM RELATED FIXED EXPENSES ^{4/}										
INTEREST EXPENSE	79.2	80.6	89.1	83.4	89.2	85.6	58.6	41.0	39.7	32.5
AMORTIZATION EXPENSE	28.3	30.2	35.7	38.7	41.3	42.5	42.5	43.4	45.1	46.7
DEPRECIATION EXPENSE	19.6	20.7	18.6	19.2	20.1	20.1	20.3	20.8	21.0	21.1
TOTAL FIXED EXPENSES	127.2	131.5	143.4	141.3	150.6	148.2	121.4	105.1	105.8	100.3
GRAND TOTAL PROGRAM EXPENSES	422.5	453.4	461.1	463.7	493.7	494.6	461.3	453.7	436.1	428.0
FORGONE REVENUES AND POWER PURCHASES										
FOREGONE REVENUES	156.7	152.2	135.5	122.7	195.8	76.6	9.6	2.9	174.4	33.4
BPA POWER PURCH. FOR FISH ENHANCEMENT	70.7	38.5	85.8	196.2	67.5	50.3	(20.5)	24.3	177.6	150.0
TOTAL FOREGONE REVENUES AND POWER PURCHASES	227.4	190.7	221.3	318.9	263.3	126.9	(10.9)	27.2	352.0	183.4
TOTAL PROGRAM EXPENSES, FOREGONE REVENUES, & POWER PURCHASES	649.9	644.1	682.4	782.6	757.0	621.5	450.4	480.9	788.1	611.5
CREDITS										
4(h)(10)(C)	(85.3)	(77.0)	(84.1)	(103.9)	(77.7)	(72.6)	(53.7)	(70.1)	(98.2)	(95.5)
FISH COST CONTINGENCY FUND	-	-	-	-	-	-	-	-	-	-
TOTAL CREDITS	(85.3)	(77.0)	(84.1)	(103.9)	(77.7)	(72.6)	(53.7)	(70.1)	(98.2)	(95.5)

This information has been made publicly available by BPA on 10/30/2020. 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

1/ Capital Investments include both BPA's direct Fish and Wildlife Program capital investments, funded by BPA's Treasury borrowing, and "Associated Projects", which include capital investments at Corps of Engineers' and Bureau of Reclamation projects, funded by appropriations and repaid by BPA. The negative amount in FY 1997 reflects a decision to reverse "plant-in-service" investment that was never actually placed into service. The annual expenses associated with these investments are included in "Program-Related Fixed Expenses", below.

2/ Includes High Priority and Action Plan Expenses and other supplemental programs.

3/ "Reimbursable/Direct-Funded Projects" includes the portion of costs BPA pays to or on behalf of other entities that is determined to be for fish and wildlife purposes.

4/ "Fixed Expenses" include depreciation, amortization and interest on investments on the Corps of Engineers' projects, and amortization and interest on the investments associated with BPA's direct Fish and Wildlife Program.