

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 Shoshone Paiute Trout Hatchery, the Spokane Tribal Hatchery, the Snake River Sockeye Weirs and, in addition, for] official reception and representation expenses in an amount not to exceed \$5,000: Provided, that during fiscal year [2016] 2017, no new direct loan obligations may be made.

Explanation of Changes

The proposed appropriations language restricts new direct loans in FY 2017 as in FY 2016. This bill language is drafted consistent with the Credit Reform Act of 1990.

Please Note - The FY 2017 Bonneville Power Administration Congressional Budget submission includes FY 2016 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, the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Pacific Northwest Power Act) (Public Law 96-501) for acquisition of energy conservation and renewable energy 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 amount of U.S. Treasury borrowing outstanding at any time cannot exceed \$7.70 billion.¹ Bonneville finances its approximate \$4.3 billion annual cost of operations and investments primarily using power and transmission revenues, and 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 which are legally 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 legal dollar caps. Because Bonneville operates within existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

¹ Amount of total bonds outstanding 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			
	2015 Actuals	2016 Original ^{2/}	2016 Revised ^{2/}	2017 Proposed
Capital Investment Obligations				
Associated Project Costs ^{3/}	43,201	N/A	240,790	269,908
Fish & Wildlife	21,373	N/A	40,000	45,602
Conservation & Energy Efficiency ^{3/}	87,225	N/A	0	0
Subtotal, Power Services	151,799	N/A	280,790	315,510
Transmission Services	461,279		700,040	644,478
Capital Equipment & Bond Premium	34,344	N/A	37,356	28,794
Total, Capital Obligations ^{3/}	647,423	1,051,569	1,018,186	988,782
Expensed and Other Obligations				
Expensed	2,747,786	3,040,716	3,016,942	3,049,010
Projects Funded in Advance	389,677	30,000	30,000	30,000
Total, Obligations	3,784,886	4,122,285	4,065,128	4,067,792
Capital Transfers (cash)	448,761	206,900	189,107	205,868
BPA Total	4,233,647	4,329,185	4,254,235	4,273,660
Bonneville Net Outlays	(383,275)		(635)	(45,734)
Full-time Equivalents (FTEs)	2,836	3,100	3,100	3,100

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			
	2018	2019	2020	2021
Capital Investment Obligations				
Associated Project Costs ^{3/}	281,511	313,754	333,297	347,926
Fish & Wildlife	18,646	34,806	35,033	33,599
Conservation & Energy Efficiency ^{3/}	0	0	0	0
Subtotal, Power Services	300,157	348,560	368,330	381,525
Transmission Services	445,475	445,032	417,097	306,225
Capital Equipment & Bond Premium	12,854	8,417	6,069	13,136
Total, Capital Obligations ^{3/}	758,486	802,009	791,497	700,886
Expensed and Other Obligations				
Expensed	3,248,601	3,387,808	3,415,055	3,306,906
Projects Funded in Advance	30,000	50,000	50,000	50,000
Total, Obligations	4,037,087	4,239,817	4,256,552	4,057,791
Capital Transfers (cash)	228,791	564,341	533,603	517,744
BPA Total	4,265,878	4,804,158	4,790,155	4,575,535
Bonneville Net Outlays	(76,734)	126,266	102,129	(138,420)
Full-time Equivalents (FTEs)	3,100	3,100	3,100	3,100

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 which are legally 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 legal dollar caps. Because Bonneville operates within 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 2016 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 2016.
- ^{3/} Includes infrastructure investments designed to address the long-term electric power related needs of the Northwest and to reflect significant changes affecting Bonneville's power and transmission markets.

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 2015 are \$3,291 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 competitive 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, and continuing restructuring of the electric industry.

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 2015 Net Outlays are based on Bonneville's FY 2015 audited actuals. FYs 2016 & 2017 Net Outlays are calculated using Bonneville's revenue forecast from the BP-16 rate case. FYs 2018 & 2019 assume no growth in Offsetting Collections compared to FYs 2016 & 2017. FYs 2020 and 2021 assume a 1% growth in Offsetting Collections.

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.

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.

Overview and Accomplishments

Bonneville provides electric power, transmission, and energy efficiency throughout the Pacific Northwest. Bonneville serves a 300,000 square mile area including Oregon, Washington, Idaho, western Montana, and parts of northern California, Nevada, Utah, and Wyoming with a population of about 12.9 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) – the hydro projects are known as Associated Projects. Bonneville also acquires non-federal power, including the power from the nuclear power plant, Columbia Generating Station (CGS), to meet the needs of its customer utilities. Bonneville maintains and operates 15,156 circuit miles of transmission lines, 259 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 promotes conservation and energy efficiency, as part of its efforts to preserve and balance the economic and environmental benefits of the Federal Columbia River Power System (FCRPS).

The organization of Bonneville's FY 2017 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 (PS) and Transmission Services (TS) with administrative costs included. The PS includes line items for Fish and Wildlife, Energy Efficiency, Residential Exchange Program (REP), Associated Projects Operations & Maintenance (O&M) Costs, and Northwest Power and Conservation Council (Planning Council or Council).

The mission of Bonneville is to create and deliver the best value for its customers and constituents as it acts in concert with others to assure the Pacific Northwest: (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 FCRPS impacts on fish and wildlife. Bonneville is legally obligated to provide cost-based rates and public and regional preference in its marketing of power. Bonneville establishes rates as low as possible consistent with sound business principles and sufficient to ensure the full recovery of all of its costs, including timely repayment of the federal investment in the system. Bonneville's vision is to provide: (1) high reliability; (2) low rates consistent with sound business principles; (3) responsible environmental stewardship; and (4) accountability to the region. Bonneville pursues this vision consistent with its four core values of safety, trustworthy stewardship of the FCRPS, collaborative relationships, and operational excellence.

Alignment to Strategic Plan and President's Climate Action Plan

Bonneville contributes to the Administration's clean energy goals and aligns to Goal 1 of the Department of Energy's (DOE) Strategic Plan to *Advance foundational science, innovate energy technologies, and inform data driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with emphasis on implementation of the President's Climate Action Plan to mitigate the risks of and enhance resilience against climate change.*

The FCRPS is one of the nation's largest nearly carbon-free energy sources 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 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.

In addition to these efforts, Bonneville is committed to the quality of the Northwest's natural resources. Bonneville funds one of the largest fish and wildlife programs in the nation and continues to be a national leader on environmental protection and compliance.

Together, all of these efforts contribute to sustaining and advancing the region's resilience against climate change.

To validate and verify program performance, Bonneville conducts various internal and external reviews and audits. Bonneville conducts extensive reviews with regional stakeholders of both capital and expense programs. In addition, Bonneville's programmatic activities are subject to review by Congress, the U.S. Government Accountability Office (GAO), the DOE's Inspector General, and other governmental entities. Bonneville's financial statements are audited annually by an independent external auditor. Bonneville has received unqualified audit opinions since the mid-1980s and no material weaknesses have been identified in controls over financial reporting.

Legislative History

The Bonneville Project Act of 1937 provides the statutory foundation for Bonneville's utility 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 to finance the region's high-voltage electric transmission system requirements.

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

As of 2015, Congress has provided Bonneville with revolving U.S. Treasury borrowing authority of \$7.7 billion.

The Columbia River Treaty

On December 13, 2013, the U.S. Entity, which includes Bonneville and the Corps, delivered the final regional recommendation concerning the post-2024 future of the Columbia River Treaty to the U.S. Department of State. The U.S. Government reached consensus on a high level position for negotiations of the Treaty in June 2015. The State Department selected a lead negotiator in August 2015. U.S. Government discussions of a path forward for formal negotiations are underway.

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 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.

Fish and Wildlife Program Overview

Bonneville is committed to continue funding its share of the region's efforts to protect and mitigate Columbia River Basin fish and wildlife. To the extent possible, Bonneville is integrating actions to protect listed species in response to the FCRPS Biological Opinions (BiOps), including the National Oceanic and Atmospheric Administration (NOAA) Willamette River BiOp and the United States Fish and Wildlife Service's (USFWS) 2006 Libby Dam BiOp, with projects implemented under the Council's Fish and Wildlife Program (Program). The Program, BiOps, and long-term agreements include prioritized strategies for mitigation actions that help guide project selection to meet both Bonneville's Endangered Species Act (ESA) and Northwest Power Act responsibilities.

Included with the budget schedules section of this document is the current tabulation of Bonneville's fish and wildlife costs from FY 2006 through FY 2015.

Infrastructure Investments

Bonneville is moving forward with infrastructure investments in the Pacific Northwest to meet transmission 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. The McNary-John Day line – completed in FY 2012, under budget and ahead of schedule – added 79 miles, and three additional transmission projects would add more than 140 miles of lines to the Northwest transmission grid, increasing service and improving reliability. In combination with other transmission projects, these projects would allow Bonneville to provide service to about 3,881 megawatts (MWs) of requests for Bonneville transmission, including 3,138 MWs of additional renewable resource generation. One transmission project is the proposed Bonneville's I-5 Corridor Reinforcement Project, which is currently undergoing environmental review. The Big Eddy-Knight 500kV transmission line and substation project resumed construction in 2014 and was energized in November 2015. In addition, Central Ferry-Lower Monumental 500kV Reinforcement began construction in May 2014 and was also energized in November 2015. If the I-5 Corridor Reinforcement Project is constructed, these three projects plus the McNary-John Day will provide almost 6,000 MW of transmission service. In addition, Bonneville is continuing to target additional transmission investments in those areas with reliability needs.

In FY 2012, Bonneville signed two agreements to participate with two investor-owned utilities in the environmental work and permitting for the proposed Boardman-to-Hemingway 500kV line. Participation in this preliminary review keeps Bonneville's options open for serving its six southeast Idaho preference customers after the current transmission service agreements terminate. Bonneville has not made a decision to co-develop or purchase capacity in these projects. On January 17, 2014, Public Law 113-76 was enacted into law, 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 has experienced significant growth within its balancing area in installed variable renewable generation, primarily in the form of wind generation. Since 2001, installed wind generation has grown from 115 MWs to 5,081 MWs through December 2015. This substantial increase in variable renewable generation has resulted in additional uncertainties in the balance between load and generation required for maintaining a reliable grid. Wind is a non-dispatchable source of energy, meaning it cannot be relied upon for capacity. As a result, Bonneville has implemented and continues to study operational tools for integrating this variable generation more cost effectively and reliably.

Bonneville is considering approaches, in addition to the use of its U.S. Treasury borrowing authority, to sustain funding for its infrastructure investment requirements. These approaches include reserve financing of some amount of transmission investments, and seeking, when feasible, third party financing sources. See the BP-5 Potential Third Party Financing Transparency table (page 80) in the budget schedules section of this document. This FY 2017 Budget assumes \$15 million of annual reserve financing in FYs 2016-2021 for transmission infrastructure capital, which is included in this budget under Projects Funded In Advance.

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 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 NERC/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 utility responsibility 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 \$40,000, 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. 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 is participating in a new spectrum relocation effort. 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 apportionment on July 24, 2015.

Financial Mechanisms

Bonneville's program is treated as mandatory and nondiscretionary. Bonneville is "self-financed" with 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 due to variations in weather conditions and fish mitigation needs. Through FY 2015, Bonneville has returned approximately \$30.7 billion to the U.S. Treasury, of which about \$3.5 billion was for payment of FCRPS operation and maintenance (O&M) and other costs, \$15.1 billion for interest, and \$12.1 billion for amortization of appropriations and bonds.

In the FY 2017 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 Bonneville bonds as all bonds, notes, and other evidences of indebtednesses issued and sold by Bonneville to the U.S. Treasury.

As of September 30, 2015, debt instruments issued by non-federal entities but secured by payment and other financial commitments provided by Bonneville maintained their credit ratings as follows: Moody's at Aa1 with a stable outlook, Fitch at AA with a stable outlook and Standard & Poor's 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 and establishes a phased-in approach to a market-based investing program. This provides Bonneville with the ability to borrow to finance assets 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.

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 the 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 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 hydroelectric 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.

Treasury Payments and Budget Overview

Bonneville made its full scheduled FY 2015 payment responsibility to the U.S. Treasury. Bonneville's aggregate U.S. Treasury payment was \$891 million, comprised of \$449 million in principal, which included \$229 million in early retirement of higher interest rate U.S. Treasury debt, \$350 million in interest, and \$92 million for other costs. Total credits associated with fish mitigation and recovery and applied toward Bonneville's U.S. Treasury payment, were about \$80 million for FY 2015. These credits are established and applied under section 4(h)(10)(C) of the Northwest Power Act. For FY 2016, Bonneville plans to pay the U.S. Treasury \$640 million: \$189 million to repay investment principal, \$351 million for interest, and \$100 million for Associated Project costs and pension and post-retirement benefits. The FYs 2017 and 2018 U.S. Treasury payments are currently estimated at \$662 million and \$707 million, respectively. The FY 2016-2017 4(h)(10)(C) credits are estimated at \$91 million and \$88 million, respectively.

Estimates of interest and amortization levels for outyear U.S. Treasury payments are included in the FY 2016-2017 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 amount of advance amortization payments as of the end of FY 2015 is about \$3,291 million.

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 capital costs, which were previously funded through appropriations to the Corps and Reclamation prior to the initiation of direct funding, are now paid primarily from the proceeds of bonds issued by Bonneville to the U.S. Treasury. Certain power prepayments have also been a source of proceeds for direct funding. Bonneville's aggregate direct funding provided for capital and O&M was \$559 million in FY 2015.

Starting in FY 2014, Bonneville and Energy Northwest, the not-for-profit Washington state joint operating agency that owns and operates the Columbia Generating Station nuclear plant, worked closely to establish a new phase of integrated debt management for their combined total debt portfolios, the debt service of which is borne by Bonneville and recovered from Bonneville ratepayers through Bonneville's rates. Energy Northwest-related debt refinanced under this effort for both fiscal years 2014 and 2015 is called Regional Cooperation Debt.

An important component of Regional Cooperation Debt is the issuance of new bonds by Energy Northwest to refund outstanding bonds shortly before their maturities when substantial principal repayments are due. Funds made available from these refinancings enable Bonneville to prepay higher interest rate federal obligations. The net effect of Regional Cooperation Debt and prepayment of higher interest rate federal obligations is that both the weighted-average interest rate and the maturity of Bonneville's overall debt portfolio will be reduced over the life of the proposal. The refinancings also preserve and restore U.S. Treasury borrowing capacity, enabling Bonneville to make much-needed investments in critical infrastructure.

Energy Northwest accelerated site restoration of the Energy Northwest Nuclear Projects 1 and 4 beginning in the summer of 2015.

This FY 2017 Budget proposes estimated accrued expenditures of \$3,049 million for operating expenses, \$30 million for Projects Funded in Advance (PFIA), \$989 million for capital investments, and \$206 million for capital transfers in FY 2017.

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, and the continued restructuring of the electric industry.

Current Financial Status

Bonneville is striving to enhance its competitive, cost-effective delivery of utility products and services and continued delivery of the public benefits of its operations, while ensuring its ability to make its scheduled payments to the U.S. Treasury on time and in full. Bonneville employs a strategic planning process using the balanced scorecard model to align all business units around specific goals and align resources to achieve these goals. Results from these efforts include continued efficiency gains, performance integration improvements, and a high assurance for repayment of bonds issued to the U.S. Treasury and the appropriated investment in the FCRPS.

Through cost-based rates and attentive cost management efforts once rates are set, Bonneville has maintained adequate financial reserve levels to assure full recovery of its costs and long-term financial stability while meeting its overall responsibilities to the Pacific Northwest and U.S. taxpayers.

The Final Record of Decision for the FYs 2016-2017 rate case was issued on July 23, 2015 and FERC granted interim approval on September 17, 2015. The new rates went into effect on a provisional basis on October 1, 2015 pending final FERC review.

Budget Estimates and Planning

This FY 2017 Budget includes capital and expense estimates based on Bonneville's Capital Investment Review (CIR), Integrated Program Review (IPR), and Integrated Program Review 2 (IPR2) processes and updated estimates for FYs 2016 and 2017 Transmission capital. FY 2015 actual costs are based on Bonneville's FY 2015 audited financial statements.

Capital funding levels reflect Bonneville's capital asset management process and external factors such as the significant 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.

Capital investment levels in this FY 2017 Budget reflect executive management decisions from Bonneville's Finance Committee and the associated capital review process. 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 2016-2021 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 under section 4h(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 (OMB) Circular A-11.

The organization of Bonneville's FY 2017 Budget and these performance summaries reflect Bonneville's business services basis for 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 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 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, energy efficiency, fish and wildlife, and capital equipment. These capital investments are estimated to require budget obligations and expected use of \$988.8 million in bonds to be issued and sold to the U.S. Treasury in FY 2017.

The near-term forecast of capital funding levels has undergone an extensive internal review as a result of Bonneville's capital asset management strategy. These capital reviews 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 capital funding review process and Bonneville's standard operating budget process, this FY 2017 Budget includes updated capital funding levels for FY 2016. Utilizing this review process helps Bonneville in its efforts to compete in the deregulated wholesale energy market. Bonneville will continue to work with the Corps and Reclamation to optimize the mix of projects.

In addition to its internal management assessment of capital investments, Bonneville has developed and implemented an associated external capital investment review process that provides significant benefits to Bonneville. The combined internal and external processes add value by both improving direction on what the FCRPS invests in (tying investments more closely to agency strategy) and by improving how those investments are made (more detailed analysis and review of capital investments and their alternatives).

Bonneville's second section of the 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 2017, budget expense obligations are estimated at \$3,049 million. The total program requirements of all Bonneville programs include estimated budget obligations of \$4,068 million in FY 2017.

Evidence and Analysis in the Budget

Consistent with the President's emphasis on evidence and evaluation in the budget, Bonneville has undertaken several initiatives and processes to determine appropriate budget expenditures.

Bonneville's Integrated Program Review (IPR) process allows interested parties to see all relevant FCRPS expense and capital spending level estimates in the same forum. The IPR occurs every two years, or just prior to each rate case, and provides participants with an opportunity to review and comment on Bonneville's program level estimates prior to spending levels being set for inclusion in rate cases. In addition, Bonneville's Capital Investment Review (CIR) process allows interested parties to review and comment on Bonneville's draft Asset Strategies and 10-year capital forecasts. The CIR occurs every two years prior to the IPR. The 2014 IPR and CIR processes concluded in 2014. Bonneville's IPR2 process, a follow-up to the 2014 IPR process, concluded in May 2015. The 2016 IPR and CIR processes will be combined and is expected to begin in June 2016.

Bonneville also 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 Strategy Execution organization provides programs and process support to improve business operations, and the quality of outputs, while applying the tools and principles of operational excellence in alignment with the vision of Bonneville's strategic direction. In FY 2012, Bonneville embarked on an extensive assessment of utility benchmarking and elected to adopt a benchmarking program to support meaningful evidence of efficiency and cost-effectiveness. In FY 2013, the Bonneville Benchmarking & Operational Excellence Program comprehensively benchmarked four specific strategic focus areas around Safety, Supply Chain, Reliability Compliance, and Energy Accounting and Determination of Loads. As a result of those efforts, in FY 2014 Bonneville took the data collected and implemented process improvement actions to move its business units towards becoming top quartile performers. In FY 2015, Bonneville refocused its continuous improvement efforts to concentrate on seven Key Strategic Initiatives. One of these initiatives resulted in a major program overhaul to our Safety and Health program. This effort encompassed changes to safety governance, improved safety culture, organization design modifications, process improvement projects to close gaps, and improvements in policy, human performance and job specific training.

Educational Activities

The Bonneville Power Administration 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. Working with Bonneville employees as volunteer ambassadors, the Bonneville education program provides value-added presentations, curricula and activities to K-12 schools that enhance the learning experience for students and teachers, and extend awareness of the value of the region's hydroelectric system to future generations. As a regional leader in STEM education, Bonneville also proudly supports and organizes an award-winning Science Bowl. Bonneville also sponsors Science Fair competitions for students in Washington state, as well as a Lego Robotics tournament championship.

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

Funding (\$K)

Power Services – Capital

Associated Project Costs

Fish & Wildlife

Energy Efficiency

Projects Funded in Advance¹

Total, Power Services – Capital

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Associated Project Costs	43,201	240,790	269,908	29,118	12%
Fish & Wildlife	21,373	40,000	45,602	5,602	14%
Energy Efficiency	87,225	0	0	0	0
Projects Funded in Advance ¹	123,694	0	0	0	0
Total, Power Services – Capital	275,493	280,790	315,510	34,720	12%

Outyears (\$K)

Power Services – Capital

Associated Project Costs

Fish & Wildlife

Energy Efficiency

Projects Funded in Advance

Total, Power Services - Capital

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Associated Project Costs	269,908	281,511	313,754	333,297	347,926
Fish & Wildlife	45,602	18,646	34,806	35,033	33,599
Energy Efficiency	0	0	0	0	0
Projects Funded in Advance	0	0	0	0	0
Total, Power Services - Capital	315,510	300,157	348,560	368,330	381,525

¹ Amount is attributable to Bonneville's Power Prepayment Program.

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 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 system. 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 customer prepayment program 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 FY 1997, Bonneville, along with its joint operating partners, the Corps and Reclamation, has improved system performance. In 1999, at the direction of Congress, Bonneville issued a report that it soon began to implement called the "Asset Management Strategy for the FCRPS." In this report, Bonneville concluded that it needed to invest nearly \$1 billion, in aggregate, in the hydroelectric projects over the ensuing 12 to 15 years. Supplementary analyses and experience with the system have revealed additional and ongoing investment needs above and beyond the levels originally planned under the 1999 Asset Management Strategy. In 2008, 2010, 2012, and 2014, Bonneville updated its asset strategy and refined its understanding of the long-term capital investments needed to preserve system performance.

These planned investments, included in the FY 2017 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 market to serve growing Pacific Northwest electricity needs.

Fish and wildlife capital costs incurred by Bonneville are directed at activities that improve Columbia River Basin fish and wildlife resources. It includes projects designed to increase juvenile and adult fish passage through the Columbia River system, 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. These capital projects support both Northwest Power Act and ESA priorities and are integrated with the Program in order to efficiently meet Bonneville's legal responsibilities to mitigate hydrosystem impacts to Columbia River Basin fish and wildlife.

Bonneville implements projects consistent with the Program and the purposes of the Northwest Power Act. Most projects recommended by the Council 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 will review categories of projects grouped together.

Under the Northwest Power Act, the Council must develop a Fish and Wildlife Program that protects, mitigates, and enhances Columbia River Basin fish and wildlife affected by the federal and non-federal hydroelectric projects in the basin. The Program, FCRPS 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.

As required under the ESA, Bonneville implements additional measures to avoid jeopardizing listed species. ESA measures are part of the most recent BiOp issued by NOAA in 2008, as supplemented in 2010 and 2014, and USFWS BiOp in 2006/2010.

- In February 2006, USFWS issued a BiOp for Libby Dam for the Kootenai River white sturgeon and bull trout. A subsequent Settlement Agreement between USFWS and the Center for Biological Diversity was memorialized by modifying the BiOp in 2008. Additional consultation is occurring as part of the larger USFWS bull trout consultation.
- In 2010 USFWS designated critical habitat for bull trout (following USFWS's issuance in 2000 of a BiOp for FCRPS impacts on bull trout). The Action Agencies (Corps, Reclamation, and Bonneville) are preparing a biological assessment covering FCRPS operational effects on bull trout and designated bull trout critical habitat.
- In May 2008, NOAA issued a FCRPS BiOp for 13 listed species of salmon and steelhead, supplemented in a 2010 Supplemental BiOp that incorporated the Action Agency's Adaptive Management Implementation Plan, and further supplemented in a 2014 Supplemental BiOp. On January 17, 2014, NOAA released its 2014 Supplemental BiOp. The 2008/2010/2014 BiOp is now under legal review.
- In July 2008, USFWS and NOAA issued Willamette River BiOps to address impacts from 13 federal dams on salmon, steelhead, Oregon chub, and bull trout. Implementation of a BiOp measure related to hatchery fish in the McKenzie River was the subject of litigation in Federal District Court. The Action Agencies are currently engaged in discussion with NOAA related to BiOp implementation for downstream passage and for hatchery consultations.

Under these collective BiOps, 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 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 extinguish the required mitigation for the flooding and inundation caused by FCRPS dams operating in those states. These Fish Accords and settlements complement the BiOps and provide firm commitments to prioritize mitigation actions and secure funding over the life of the agreements.

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

Energy Efficiency is an important part of Bonneville's diverse portfolio of resources that provides a reliable approach to meeting Bonneville's load obligations. When acquiring resources to meet planned future loads, the Northwest Power Act requires the Administrator to first consider and acquire all cost-effective conservation that the Administrator determines is consistent with the Council's Power Plan. The Council's 6th Power Plan, finalized in February 2010, established a regional target of 1,200 annual average megawatts (aMW) of energy efficiency in 2010 through 2014. Bonneville, in collaboration with its public power customers, took responsibility for public power's share of the regional target, approximately 42 percent (504 aMW). Bonneville exceeded the target of 504 aMW by approximately 109 aMW, at the end of FY 2014. Since the 7th Power Plan is not expected to be issued until early in 2016, in the interim, Bonneville's planning is focused on consistency with the 6th Power Plan's later years. Bonneville has adopted an interim goal of 400 aMW of energy efficiency in FY 2015 through FY 2017. In FY 2015, Bonneville anticipates that between 45 and 50 aMW of this amount will be acquired under its capital energy efficiency program. Beginning in FY 2012, at least 70 percent of this energy efficiency budget was allocated to utilities to fund energy efficiency incentives with the remainder going to support regional programs. Program performance measurements (\$/aMW) indicate that Bonneville is realizing value for these investments relative to other

resources. As of FY 2016, new expenditures in this program are being expensed and are included in the Power Services – Operating Expense category discussed further below.

In general, long-term investments in energy efficiency help buffer the FCRPS against future resource uncertainties. During periods of price volatility, energy efficiency reduces financial risk associated with relying on the market for energy purchases.

Accomplishments

- Issued final Record of Decision for the FYs 2016-2017 rate case on July 23, 2015.
- Facilitated integration of 5,081 MW of wind generation through December 2015.
- Completed 500 kV switchyard relay replacements at Grand Coulee.
- Completed fire detection and alarm system at Palisades.
- Completed governor replacements and vibration and air gap monitoring installation at Bonneville Dam.
- Completed powerhouse roof replacement at Libby.
- Completed spillway crane modernization, spillway gate modification, and intake crane modernization at Albeni Falls.
- The returns of adult salmon and steelhead to the Columbia River system from 2009 to 2014 vary by species, but many stocks (especially Snake River fall Chinook and Snake River sockeye) have returned at the highest numbers in decades. Research shows that survival of juvenile salmon and steelhead migrating down the Snake and Columbia rivers has improved in recent years and is on track to meet performance standards of 96 percent survival per dam for spring-migrating fish and 93 percent survival for summer migrants.

Explanation of Changes

Bonneville's budget includes \$315.5 million in FY 2017 for Power Services capital, which is a 12.4 percent increase over the FY 2016 forecasted level. The FY 2017 level reflects a continuing need for investment in the hydro electric system assets, and funding necessary to implement the BiOps, Fish Accords, and Columbia Basin Fish and Wildlife activities.

The FY 2017 budget increases the levels for Associated Projects (+\$29.1 million) and Fish & Wildlife (+\$5.6 million), relative to FY 2016. Energy Efficiency will be funded out of expense beginning in FY 2016.

Strategic Management

Bonneville provides electric power 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 continue funding efforts to protect listed fish and wildlife species in the Columbia Basin under the ESA and to work closely with the Council, regional fisheries managers, and other federal agencies to prioritize and manage projects to address Fish and Wildlife Program priorities.
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 partnered and assisted with a DOE Wind Power crosscutting initiative to strengthen energy security by adding alternative sources of renewable energy.

The following external factors present the most significant risk and impact to overall achievement of the program's strategic goals:

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 Reclamation to reach mutual agreement on budgeting and scheduling those 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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
33,712	154,324	160,429

Bonneville Dam:

- **FY 2015.** Completed governor replacements and vibration and air gap monitoring installation. Continued main unit breaker and station service reconfiguration, governor oil filtration system installation, generator step-up (GSU) transformer instrumentation, Powerhouse 2 transformer refurbishment, and control room fire protection upgrades.
- **FY 2016.** Complete governor oil filtration system installation. Continue control room fire protection upgrades, Powerhouse 2 transformer refurbishment, GSU transformer instrumentation, and main unit breaker and station service reconfiguration. Begin Powerhouse 1 DC and preferred AC upgrades.
- **FY 2017.** Continue main unit breaker and station service reconfiguration, Powerhouse 2 transformer refurbishment, GSU transformer instrumentation, and Powerhouse 1 DC and preferred AC upgrades. Begin Powerhouse 2 tailrace gantry crane rehabilitation and fire protection projects for the control room and both oil storage rooms, and purchase draft tube stop logs for the Powerhouse 2.

John Day Dam:

- **FY 2015.** Continued governor replacements, DC system upgrades, Baldwin-Lima Hamilton (BLH) turbine hub upgrades, draft tube bulkhead refurbishment, station service transformer replacements, and control room fire protection upgrades. Began transformer and powerhouse oil/water separator and rotor pedestal installation.
- **FY 2016.** Complete governor replacements and DC system upgrades. Continue BLH turbine hub upgrades, control room fire protection upgrades, transformer and powerhouse oil/water separator, rotor pedestal installation, and station service transformer replacements. Begin 500kV disconnect replacement.
- **FY 2017.** Complete draft tube bulkhead refurbishment and rotor pedestal installation. Continue BLH turbine hub upgrades, control room fire protection upgrades, 500kV disconnect replacement, and station service transformer replacement. Begin SQ board (switchgear) replacement and powerhouse oil detection system installation.

The Dalles Dam:

- **FY 2015.** Completed control room fire protection upgrades, Station Control Console (SCC) replacement, and elevator refurbishments. Continued tailrace gantry crane refurbishment and transformer replacements.
- **FY 2016.** Complete tailrace gantry crane refurbishment. Continue transformer replacements and elevator refurbishments. Begin emergency crane rehabilitation, arc flash hazard reduction project, and SR panel (switchgear) replacement.
- **FY 2017.** Complete elevator refurbishments. Continue transformer replacements, SR panel replacement, arc flash hazard reduction project, and emergency crane rehabilitation. Begin fish unit breaker replacement and thrust bearing oil coolers installation.

Willamette Plants:

- **FY 2015.** Completed spillway tainter gate repair at Dexter and butterfly valve replacement at Lost Creek. Completed turbine runner replacements at Hills Creek and governor replacement at Green Peter and Foster. Continued governor replacements at Big Cliff, Cougar, Dexter, Detroit, and Lookout Point. Continued electrical reliability upgrades at Dexter and Foster. Continued spillway tainter gate rehabilitation at Green Peter. Continued Generic Data Acquisition and Control System (GDACS) installation and communication system upgrade at all Willamette Valley plants. Began main unit breaker replacement at Green Peter and bridge crane rehabilitation at Foster and Green Peter. Began Hills Creek and Detroit spillway tainter gate rehabilitation.
- **FY 2016.** Complete governor replacements at Big Cliff, Cougar, Dexter, Detroit, and Lookout Point. Complete spillway tainter gate rehabilitation at Lookout Point, Green Peter, and Hills Creek. Complete electrical reliability upgrades at Dexter. Continue Detroit spillway tainter gate rehabilitation and electrical reliability upgrades at Foster, as well as bridge crane rehabilitation at Foster and Green Peter. Continue GDACS installation and communication system upgrade at all Willamette Valley plants. Begin electrical reliability upgrades at Lookout Point and spillway gate rehabilitation at Hills Creek and Cougar.
- **FY 2017.** Complete Foster bridge crane rehabilitation. Continue Detroit spillway gate rehabilitation and electric reliability upgrades at Foster and Lookout Point. Continue GDACS installation and communication system upgrade at all Willamette Valley plants. Continue main unit breaker and electrical reliability upgrades and powerhouse bridge crane refurbishment at Green Peter. Begin powerhouse roof replacement at Cougar and turbine platform installations at all Willamette Valley plants.

Albeni Falls Dam:

- **FY 2015.** Completed spillway crane modernization, spillway gate modification, and intake crane modernization. Began transformer replacement and station service switchgear replacement.
- **FY 2016.** Continue transformer replacement and station service switchgear replacement. Begin generator fire suppression system upgrade.
- **FY 2017.** Complete station service switchgear replacement. Continue transformer replacement.

Libby Dam:

- **FY 2015.** Completed powerhouse roof replacement. Continued governor installation and powerhouse and dam electrical distribution equipment replacement. Began powerhouse DC emergency lighting system installation and control console replacement.
- **FY 2016.** Complete powerhouse and dam electrical distribution equipment replacement. Complete powerhouse DC emergency lighting system installation and control console replacement. Continue governor installation.
- **FY 2017.** Complete governor installation.

Chief Joseph Dam:

- **FY 2015.** Completed exciter replacement. Continued governor installation, generator cooling system upgrades, DC and preferred AC upgrades, Station Control Console (SCC) board replacement, and turbine replacements. Began upgrades for station service units.
- **FY 2016.** Complete SCC board replacement. Continue governor installation, generator cooling system upgrades, DC and preferred AC upgrades, upgrades for station service units SS01 and SS02, and turbine replacements. Begin Units 17-27 generator rewinds.
- **FY 2017.** Complete turbine replacements. Continue DC and preferred AC upgrade, generator cooling system upgrades, Units 17-27 generator rewinds.

Dworshak Dam

- **FY 2015.** Continued governor replacement and Unit 3 rehabilitation. Began Regulating Outlet (RO) valve upgrade.
- **FY 2016.** Complete powerhouse Heating, Ventilating, Air Conditioning (HVAC) upgrade. Continue governor replacement and Unit 3 rehabilitation. Continue upgrade RO valve. Begin exciter replacement and tailrace crane rehabilitation.
- **FY 2017.** Complete unit 3 stator and cooler replacement. Continue exciter replacement, RO valve upgrade and

tailrace crane rehabilitation.

McNary Dam

- **FY 2015.** Continued generator winding replacements. Continued turbine design and replacement, 4160-480V station service rehabilitation, exciter replacement, potable water system upgrade, and levee drainage pump station upgrades. Began governor installation, powerhouse bridge crane skew control, spillway gate rehabilitation, main unit (MU) cooling water strainers replacement, and 230kV transformer design.
- **FY 2016.** Complete generator winding replacements and potable water system upgrade. Continue turbine design and replacement, 4160-480V station service rehabilitation, exciter replacement, MU cooling water strainers replacement, levee drainage pump station upgrades, and governor installation. Begin isophase bus upgrade.
- **FY 2017.** Complete transformer purchase, bridge crane skew control, digital governor replacements and exciter replacements. Continue turbine design, isophase bus upgrade, levee drainage pump station upgrades, MU cooling water strainers replacement, and 4160-480V station service rehabilitation. Begin spare main unit bearing design and purchase.

Ice Harbor Dam

- **FY 2015.** Completed governor replacement, drainage and dewatering pump upgrade, and oil storage and handling upgrade. Continued Units 1-3 runner replacements and stator winding replacement. Began HVAC controls upgrade.
- **FY 2016.** Continue Units 1-3 runner replacements, stator winding replacement, and HVAC controls upgrade.
- **FY 2017.** Continue Units 1-3 runner replacements.

Little Goose Dam

- **FY 2015.** Completed powerhouse bridge crane rehabilitation. Continued governor installations. Began station service transformers replacement.
- **FY 2016.** Complete governor installation. Purchase spare tailrace stoplogs. Continue station service transformers replacement.
- **FY 2017.** Purchase spare main unit bearing.

Lower Granite Dam

- **FY 2015.** Completed sewage treatment plant upgrade and powerhouse bridge crane refurbishment. Continued governor replacement, powerhouse HVAC system upgrade, and Unit 1 BLH linkage upgrade.
- **FY 2016.** Complete powerhouse HVAC system upgrade. Continue Unit 1 BLH linkage upgrade and governor replacement.
- **FY 2017.** Complete Unit 1 BLH linkage upgrade and governor replacement. Purchase spare main unit bearing.

Lower Monumental Dam

- **FY 2015.** Continued Unit 1 BLH linkage upgrade and generator rewind. Continued governor replacement.
- **FY 2016.** Continue Unit 1 BLH linkage upgrade and generator rewind. Continue governor replacement. Begin isophase bus rehabilitation.
- **FY 2017.** Complete Unit 1 BLH linkage upgrade and generator rewind. Continue governor replacement. Begin station service breaker replacement.

Bureau of Reclamation Projects

(\$K)

FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
9,489	86,466	109,479

Grand Coulee Dam

- **FY 2015.** Completed 500 kV switchyard relay replacements. Continued Supervisory Control and Data Acquisition System (SCADA) replacement, purchase of another left and right powerhouse spare winding, G22-24 wear ring replacements, and right powerplant transformer replacements. Continued powerplant battery replacement, drumgate floating bulkhead, Units 1-18 stator windings, cores, and spare replacement program, Units 1-18 exciter and governor replacement, station service compressed air system upgrades, and Units 21-24 transformer replacement. Began design for Units 19-21 upgrades including winding replacements.
- **FY 2016.** Complete powerplant battery replacement. Continue SCADA replacement, G22-24 wear ring replacements, drumgate floating bulkhead, Units 1-18 stator windings, cores, and spare replacement program, Units 1-18 exciter and governor replacement. Continue purchase of another left and right powerhouse spare winding, Units 19-21 upgrades including winding replacements, station service compressed air system upgrades, and Units 21-24 transformer replacement. Begin Units 22 and 23 wicket gate replacements.
- **FY 2017.** Complete G22-24 wear ring replacements and floating drumgate bulkhead. Continue SCADA replacement, Units 19-21 upgrades including winding replacements, Units 1-18 windings, core, exciter and governor replacements. Continue Units 22 and 23 wicket gate replacements, Units 21-24 transformer replacements and compressed air system upgrades. Begin Units 11-18 transformer replacements.

Keys Pump Generating Plant

- **FY 2015.** Continued P1-P6 exciters, relays and unit controls, PG7-PG12 governors, exciters, relays and unit controls. Continued PG7-PG12 circuit breaker replacement, and P5 and P6 impeller and core replacement and rewinds.
- **FY 2016.** Continue P1-P6 exciters, relays and unit controls, PG7-PG12 governors, exciters, relays and unit controls. Continue PG7-PG12 circuit breaker replacement, and P5 and P6 impeller and core replacement and rewinds. Begin phase reversal switch replacement.
- **FY 2017.** Complete PG7-PG12 circuit breaker replacement. Continue P5 and P6 impeller and core replacement and rewinds. Continue P1-P6 exciters, relays and unit controls and PG7-12 governors, exciters, relays and unit controls. Continue phase reversal switch replacement.

Hungry Horse Dam

- **FY 2015.** Continued SCADA replacement and station service and Motor Control Center (MCC) upgrades, main unit transformer fire protection system replacement, powerhouse crane controls, and exciter and governor replacement.
- **FY 2016.** Complete station service and MCC upgrades. Continue SCADA replacement, main unit transformer fire protection system replacement, powerhouse crane controls, and exciter and governor replacement.
- **FY 2017.** Continue SCADA replacement, G1-G4 exciter and governor replacement, main unit transformer fire protection system replacement, and powerplant crane controls.

Chandler Dam

- **FY 2015.** No capital projects underway.
- **FY 2016.** Begin Units 1 and 2 generator rewinds.
- **FY 2017.** Continue Units 1 and 2 generator rewinds.

Palisades Dam

- **FY 2015.** Completed fire detection and alarm system. Continued turbine runner replacement. Begin microwave system backbone east side.
- **FY 2016.** Complete turbine runner replacement and arc flash mitigation.
- **FY 2017.** Continue microwave system backbone eastside.

Green Springs Dam

- **FY 2015.** Continued exciter and transformer replacement.
- **FY 2016.** Complete transformer replacement.
- **FY 2017.** Complete exciter replacement.

Black Canyon Dam

- **FY 2015.** Continued Units 1 and 2 upgrades, and trash rake system.
- **FY 2016.** Continue Units 1 and 2 upgrades, and trash rake system.
- **FY 2017.** Complete installation of trash rake system. Continue Units 1 and 2 upgrades.

Anderson Ranch Dam

- **FY 2015.** Continued station service upgrade.
- **FY 2016.** Complete station service upgrade.
- **FY 2017.** No planned capital projects.

Roza Dam

- **FY 2015.** Continued switch rehabilitation and breaker upgrade.
- **FY 2016.** Complete switch rehabilitation and breaker upgrade.
- **FY 2017.** No planned capital projects.

Minidoka Dam

- **FY 2015.** Began Units 8 and 9 governor replacement and microwave system backbone east side. Continued arc flash mitigation.
- **FY 2016.** Complete arc flash mitigation. Continue Units 8 and 9 governor replacement and microwave system backbone east side. Begin switchyard modernization.
- **FY 2017.** Continue Units 8 and 9 governor replacement, switchyard modernization and microwave system backbone eastside.

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

FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
21,373	40,000	45,602

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 Fish Accords, 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 responsibilities 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 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.

Bonneville also may capitalize investment in some fish and wildlife habitat acquisitions if it provides a creditable and quantifiable benefit against a defined obligation for Bonneville and follows Bonneville’s Capitalization Policy.

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

- 1) Fish passage structures -- Structures that enhance fish access to habitat in the Columbia River Basin. Work elements could contain the following: 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 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 instream wetland and riparian habitat and provide credit to Bonneville, such as habitat units (HUs) or 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.

Fish supplementation, production, and related facilities that may require capital funds in FY 2017 include the following:

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 propose that Bonneville fund the purchase and/or construction of a trout hatchery. The Tribes would own and operate the hatchery to produce trout for stocking in reservoirs located on the Duck Valley Reservation. Bonneville would fund the capital expenditure to meet contemporary aquaculture standards and achieve fish production goals. The Tribes believe they can reduce federal reservoir stocking costs—some of which Bonneville pays now on an annual basis.

- Spokane Tribal Hatchery: The Spokane Tribal Hatchery, funded by Bonneville in 1989 as partial mitigation for the impacts of the FCRPS, is owned and operated by the Spokane Tribe of Indians. The facility spawns, incubates, and rears Kokanee salmon and rainbow trout near Wellpinit, WA. 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 ground water pumps and rearing containers. The work could begin in FY 2017.

-Snake River Sockeye Weirs: Bonneville funds efforts implemented by the Idaho Department of Fish and Game and the Shoshone Bannock Tribes to rebuild Snake River sockeye throughout their historic range. The combination of substantially increased numbers of returning adults as well as the completion of the Springfield Sockeye Hatchery in 2013 and its associated increased production, has created the need for Bonneville to potentially fund 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: This project is being proposed by the Columbia River Inter-Tribal Fish Commission (CRITFC) under the Accords to work on the balance between upriver and down river salmon hatchery production mitigating for John Day and The Dalles Dams. Final reprogramming facilities and locations are still being analyzed by the Tribes, the Corps, and Bonneville. The project area encompasses the mainstem Columbia River from the base of McNary Dam downstream to The Dalles Dam. Capital dollars for this project will integrate with the Corps funds constructing additions to new or existing FCRPS hatchery facilities to accommodate the reprogramming of hatchery fish.

- Columbia River Basin White Sturgeon Hatchery: The Columbia River Basin White Sturgeon Hatchery, proposed by the CRITFC under the Accords, will mitigate for white sturgeon population declines due to consistent poor recruitment upstream of Bonneville Dam. Expected production at a new or existing facility will be 15,000 - 20,000 yearling white sturgeon per year. The final project may include broodstock collection and holding, rearing wild-spawned juveniles, and acclimating juveniles prior to release. A location for the facility has not yet been determined, but it will likely be located within 60 miles of the confluence of the Columbia and Snake Rivers. The Master Plan for the hatchery is currently under review by the Council.

- Kelt Reconditioning and Reproductive Success Evaluation Research: CRITFC, under the Accords, is proposing a relatively small holding tank facility to recondition female steelhead (kelts) after they have spawned. The fish will be held and fed until they have rematured 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 Lower Granite Dam. As specified in 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 increase the number of returning Snake River B-run steelhead spawners to Lower Granite Dam by a target of 6 percent as specified under the BiOp. The Master Plan for the facility is currently being reviewed by Bonneville.

Ongoing Projects (Expenditure Authority previously received):

- Crystal Springs Hatchery Facilities: This project is for facilities for rearing and out-planting resident and anadromous fish in central and southern Idaho. The facility would be located near the American Falls Reservoir in Idaho. It may produce Yellowstone Cutthroat, a resident fish, and anadromous fish including Snake River spring Chinook salmon Snake River steelhead, and Snake River sockeye. The facility is expected to produce up to one million Chinook smolts annually. The facility is sponsored by the Shoshone-Bannock Tribes under their Accord, who are expected to operate and manage the facility once it is complete. A final Environmental Impact Statement is expected to be complete in 2016 and a Record of Decision is expected in February 2017.

- Redfish Lake Sockeye Salmon program: The Snake River sockeye salmon, an Evolutionarily Significant Unit (ESU), was listed under the Endangered Species Act in 1991 (56 FR 58619). The Snake River Sockeye Salmon Captive Broodstock Program has

prevented the extinction of endangered Snake River sockeye salmon. The program has been able to help successfully conserve the genetic resources of the founding population and begun producing fish for rebuilding the naturally spawning population in Redfish Lake. The program uses state of the art hatchery facilities and fish husbandry protocols, genetic support, and monitoring and evaluation to continue rebuilding numbers of fish. Currently, the program retains replicate, captive broodstock within multiple facilities (Eagle Fish Hatchery (FH) located in Idaho state and Burley Creek FH and Manchester Research Station, both located in Washington state). Eggs produced from these locations are transferred to other facilities (Oxbow FH, located in Oregon state and/or Sawtooth FH located in Idaho state) for release programs. The project continues to expand by increasing the capacity of existing facilities and also by acquiring a new facility under the Idaho Columbia Basin Fish Accord. The newly constructed Springfield FH located in Idaho produces additional smolts as called for in the NOAA Fisheries FCRPS BiOp. The expanded smolt releases have already resulted in an increase in the abundance and productivity of the naturally-spawning population. This strategy will greatly increase the likelihood of higher adult returns. Additional expansions include improvements at the Redfish Lake Creek trap and Sawtooth FH weir to hold/trap an increased number of adults to support increased smolt production from Springfield Hatchery. The biological goals are to increase the number of adults spawning naturally in the Sawtooth Valley and transition the captive broodstock to a conventional hatchery production program that uses anadromous adults as broodstock.

- Klickitat Production Expansion: The Klickitat River Master Plan was submitted by the Yakama Nation, reviewed by the ISRP, recommended with comments by the Council, and approved by Bonneville in 2008. The plan's goal is to protect and increase naturally producing populations of spring Chinook and steelhead while protecting the biological integrity and the genetic diversity of indigenous fish stocks in the sub-basin. The Klickitat Master Plan includes three main elements: Lyle Falls Fishway upgrades; construction of the Castile Falls enumeration facility; upgrades to the Klickitat hatchery with the potential for constructing a new facility in the lower Klickitat River to accommodate the ongoing production of coho and fall Chinook; and an acclimation site in the upper watershed at McCreedy Creek. In early 2009 Bonneville completed the Lyle Falls Environmental Impact Statement (EIS) and Record of Decision (ROD). Upgrades to enumeration and collection facilities at Lyle and Castile have been completed. Certain upgrades at the Klickitat Hatchery have also been made to maintain existing fish and wildlife program activities and to address hatchery safety concerns. Lyle and Castile Falls fishways have passive integrated transponder (PIT) tag interrogation capability, and the Lyle Falls facility includes a lamprey passage structure. A new Klickitat Hatchery Complex EIS initiated in July 2009 will examine options for the development and operation of new production and supplementation facilities and acclimation alternatives, and additional upgrades to the existing hatchery facility. The Yakama Nation issued a revised Master Plan, July 2012, providing updates to their fish management plans. When the EIS is complete and Master Plan accepted, the Council will review the Step 3 recommendation in the Council 3-Step Review process. The final EIS has been held up while the Yakama Nation refines its proposal. The National Environmental Policy Act (NEPA) process will resume shortly after the tribe settles on its proposal. Construction would occur only after Bonneville issues a ROD and the National Marine Fisheries Service (NMFS) completes the Biological Opinion for the Klickitat Production/Fish Management plans. Bonneville is working with the Yakama Nation to identify and focus on the highest priority construction actions in the Klickitat Watershed.

- Hood River Production Facility: This project is underway and includes expansion of existing Parkdale fish hatchery to accommodate spring Chinook rearing, construction of new Hood River adult salmonid trapping facilities, and development of alternative adult trapping sites. 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. PacificCorps' demolition of its Powerdale Dam and the associated fish trapping facility in 2010 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 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 summer and 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's vision is to re-establish naturally reproducing coho salmon populations in the Wenatchee River and Methow River sub-basins at biologically sustainable levels which provide significant harvest in most years. 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. Major facility construction is expected to occur over the FYs 2016-2017 timeframe.

- Walla Walla Hatchery: The Walla Walla Hatchery is proposed by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) under their Accord. The Tribes would own and operate the hatchery, which will produce up to 500,000 spring Chinook smolts annually for release into the Walla Walla River. Final-design started in the summer of 2013, upon finalization of the Council/BPA/CTUIR agreement to proceed. An environmental impact statement, which was started in January 2013, is now expected to be completed in 2016. Construction may commence as early as 2016. The facility will hold, spawn, incubate and rear spring Chinook on the South Fork Walla Walla River near Milton-Freewater, Oregon.

- Yakima Coho Facility: This hatchery is proposed by the Confederated Tribes and Bands of the Yakama Nation under the Yakama Nation Accord, and is presented in the Yakima River Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan. The Yakama Nation would own and operate the hatchery which will produce 500,000 parr and 200,000 smolts using broodstock collected at Roza and Sunnyside dams. Pre-design is completed. Bonneville will hold the design and construction contract on behalf of the Yakama Nation. A Request for Offers went out in June 2015 and proposals are expected later in the summer of 2015. Shortly afterward, Bonneville expects to begin scoping an environmental impact statement. Construction is not expected to begin until 2017.

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

Energy Efficiency (\$K)		
FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
87,225	0	0

Overview

Bonneville’s energy efficiency program offers several ways for customer utilities to participate in regional 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, irrigated agriculture, etc.; (2) third party delivery programs, such as Simple Steps Smart Savings, Energy Smart Industrial, and Green Motors programs; and, (3) programs to help regional federal installations reduce energy use, including federal hatcheries and irrigation districts, and to support the Corps and Reclamation in their efforts to reduce energy use. Support is also available through the large project program which offers funding for larger energy efficiency opportunities. Beginning in FY 2016, all but the large project program will transfer funding from capital to operating expense. Bonneville does not currently have any projected spending for the large project program. This funding conversion from capital to expense eliminates the growth of long-term energy efficiency debt and associated debt service costs without reducing the ability to help the region meet its energy efficiency goals.

Bonneville’s energy efficiency budget reflects a need to meet aggressive targets from the Council’s 6th Power Plan and anticipated targets in the 7th Power Plan. Specifically, Bonneville’s energy efficiency targets increased from about 280 aMW under the Council’s 5th Power Plan (2005-09) to 504 aMW under its 6th Power Plan (2010-14). The 504 aMW reflects conservation that was expected to be achievable in the service territories of Bonneville’s public power customers. In FY 2014, Bonneville exceeded the five-year target and FY 2015 performance continued on that trajectory, exceeding the 117 aMW which was the target for FY 2014 and FY 2015 combined. Because the 7th Power Plan draft is expected to be released in early 2016, Bonneville has determined its level of energy efficiency performance and associated budget based on the 6th Power Plan’s annual savings targets, which call for an incremental 400 aMW of energy efficiency between 2015 and 2017. In meeting its energy efficiency goals, Bonneville may employ resource acquisition agreements, as authorized by Northwest Power Act section 6, and customer self-funded conservation.

Activities and Explanation of Changes

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
Power Services – Capital \$280,790,000	\$315,510,000	+\$34,720,000
Associated Projects \$240,790,000 Milestones ¹ : <ul style="list-style-type: none"> • Complete powerplant battery replacement at Grand Coulee. • Complete governor oil filtration system installation at Bonneville dam. • Complete powerhouse and dam electrical distribution equipment replacement at Libby. • Complete turbine runner replacement and arc flash mitigation at Palisades. 	\$269,908,000 Milestones: <ul style="list-style-type: none"> • Complete G22-24 wear ring replacements and floating drumgate bulkhead at Grand Coulee. • Complete turbine replacements at Chief Joseph. • Complete station service switchgear replacement at Albeni Falls. • Complete draft tube bulkhead refurbishment and rotor pedestal installation at John Day. • Complete governor installation at Libby. 	+\$29,118,000/+12.1% The increase reflects a reshaping of funding needs for investment in the hydro electric system assets.
Fish & Wildlife \$40,000,000 Milestones: <ul style="list-style-type: none"> • Continue implementation of the Program, BiOps and Fish Accords. 	\$45,602,000 Milestones: <ul style="list-style-type: none"> • Continue implementation of the Program, BiOps and Fish Accords. 	+\$5,602,000/+14.0% The increase reflects a long-term, planned effort to reshape funding necessary to implement the BiOps, Fish Accords, Columbia River Basin Fish and Wildlife activities.
Energy Efficiency \$0 Milestones: Not applicable	\$0 Milestones: Not applicable	\$0 Not applicable

¹ FY 2016 milestones have been updated from the FY 2016 Congressional submission due to updated forecasts.

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

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Transmission Services – Capital					
Main Grid	63,518	104,380	133,777	29,397	28%
Area & Customer Services	4,101	12,946	30,754	17,809	138%
Upgrades & Additions	267,057	253,097	213,994	-39,103	-15%
System Replacements	126,603	329,618	265,952	-63,665	-19%
Projects Funded in Advance	265,983	30,000	30,000	0	0
Total, Transmission Services - Capital	727,262	730,040	674,478	-55,562	-8%

Outyears (\$K)

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Transmission Services - Capital					
Main Grid	133,777	147,782	149,848	121,797	618
Area & Customer Services	30,754	939	299	232	76
Upgrades & Additions	213,994	63,785	59,268	55,017	52,684
System Replacements	265,952	232,969	235,617	240,052	252,846
Projects Funded in Advance	30,000	30,000	50,000	50,000	50,000
Total, Transmission Services - Capital	674,478	475,475	495,032	467,097	356,225

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, upgrades and replacements to the Bonneville transmission system, resulting in reliable service to northwest generators and transmission customers. The Bonneville transmission system also facilitates the sale and exchange of power to and from the region.

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, replace aging and obsolete equipment, allow for interconnection of needed new generation, and remove constraints that limit economic trade or the ability to maintain the system. Many of the proposed TS projects will 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.

Bonneville's completed infrastructure investments in the last decade that further strengthen the network consist of the following projects: Puget Sound Area Additions, North of Hanford/North of John Day, Celilo Modernization, Eastern Washington Reinforcement, Grand Coulee-Bell, Kangley-Echo Lake, Schultz-Wautoma, McNary-John Day, and Portland Area Additions.

Congressionally-approved Production Tax Credits (PTC) for renewable energy enacted in 2005 were extended in 2009 to 2012, and most recently again in 2013, 2014 and 2015. The incentives created by these credits, along with Renewable Portfolio Standards (RPS) implemented by the states of Oregon, Washington, and California, have spurred a large number of renewable interconnection requests to the Bonneville transmission grid. As of December 31, 2015, Bonneville has interconnected a total of 5,243 MW of new renewable qualified generation. Bonneville has more than 7,000 MW in additional renewable (wind, solar, biomass, geothermal, etc.) interconnection requests still remaining in the study queue. The current projections are possibly 8,500 interconnected MW by 2025. Much of the remaining generation demand is the result of the Renewable Portfolio Standards enacted by Oregon and Washington that require utilities to acquire more than 8,000 MW of renewable energy in the Northwest by 2025. Exports to California are limited now by California laws and are expected to remain at 2,000 to 2,500 MW during the same period. Also in the interconnection queue is approximately 800 MW of natural gas fired generation. Efficiency improvements to the FCRPS hydro units that qualify as renewable are also proposed between 2015 and 2021.

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. The I-5 Corridor project is currently undergoing environmental review. If all four projects are constructed they will provide almost 6,000 MW of new transmission service.

Bonneville's second NOS window for new transmission service requests in 2009 resulted in 82 service requests resulting in 34 contracts totaling 1,553 MW. Of that amount, approximately 923 MW represent wind project interconnection requests.

Bonneville's third NOS window in 2010 resulted in new requests totaling 3,759 MW, of which 2,993 MW represent wind integration requests. The 2010 process identified one additional Main Grid capital project, the Montana to Washington project, for which environmental review was begun, however, the requests to support this project have been subsequently withdrawn and so all work on the project was terminated.

After a three-year pause, Bonneville re-started the NOS process in the spring of 2013. Bonneville's 2013 NOS included 50 transmission service requests from 18 customers for 3,673 MW demand of which only 95 MW represent new wind integration requests in the Pacific Northwest. The 2013 NOS identified one new area of expansion at the Monroe-Novely Hill facilities but otherwise found no additional Main Grid capital projects beyond those previously recommended under the prior NOS processes.

As noted, Bonneville's capital program for TS includes a wide variety of specific investments that are determined after internal review and, in some cases, external review. In 2009, 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 Agency Strategies, drive Bonneville's Asset Plans, which determine its capital and expense needs. On occasion, capital investments must be made on short notice because of unexpected needs; because of the identification of obsolete, worn out, failed, failing, or at-risk systems and facilities; because of system reliability requirements; and because near-term opportunities to install or construct facilities arise as outages occur or as schedules for outages change. For these and other reasons, TS's capital program is fluid and subject to change. Thus, Bonneville is unable to predict with specificity some of the new capital investments in the transmission system. The types of investments may include but are not limited to: arrestor, bus and bus pedestal, circuit breaker, circuit switcher, communication tower, concrete pole, control center mapboard and video wall displays, control house, converter grading capacitors, converter harmonic filters, converter smoothing reactors, converter transformers, current limiting reactor, current limiting resistor, current transformer, digital fault locator, digital cross-connect system (DCS), disconnect switch, engine generator, engineered steel pole, fiber optic cable, fiber terminal, fuel dispensing facility, grounding system, grounding transformer, microwave multiplex transmitter, network management system (NMS), overhead conductor, overhead ground wire, phase measuring unit (PMU), power control assembly (PCA), power transformer, relay, revenue meter, series capacitor, shunt capacitor, shunt reactor, station service transformer, station service inverter, substation dead end tower, substation perimeter fence, switchyard lighting, thyristor, transfer switch, transmission steel tower, voltage regulator, voltage transformer, water/sewer system, wood pole and cross-arm, and other similar items consistent with Bonneville's capitalization policy determinations (such as spacer damper replacements).

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

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

- Issued final Record of Decision for the FYs 2016-2017 rate case on July 23, 2015.
- Integrated 5,081 MW of wind by December 2015 on Bonneville's transmission system.
- Completed construction of the Big Eddy-Knight Transmission Project.
- Completed construction of the Central Ferry-Lower Monumental Transmission Project.
- Completed route analysis for the I-5 Corridor Reinforcement project and completed the draft EIS.
- Completed design of the Paul Substation 500kV Shunt Reactor Addition.
- Completed construction of the Raver Substation Reactor Upgrade.
- Completed construction of the Capacitor Bank at Kalispel.

Explanation of Changes

Bonneville's budget includes \$674.5 million in FY 2017 for TS which is an eight percent decrease from the FY 2016 forecasted level. The decrease reflects reduced investment in Systems and Replacements and Upgrades and Additions driven by a reduction in the Pacific Direct Current Line (PDCI) projected spending needs as construction nears completion offset by increases in Main Grid and Area and Customer Services driven by an increase in the I-5 Corridor Reinforcement project and other projects.

The FY 2017 budget increases the levels for Main Grid (+\$29.4 million) and Area & Customer Services (+\$17.8 million). The budget decreases levels for Upgrades & Additions (-\$39.1 million) and System Replacements (-\$63.6 million). There is no change in funding for PFIA.

Strategic Management

Bonneville provides transmission and energy services while supporting integration of renewable resources in the Pacific Northwest. Bonneville will continue to implement the following strategies to serve the region:

1. To improve system adequacy, reliability and availability, Bonneville has embarked on major transmission infrastructure projects. The projects shore up the region's transmission system and help deliver 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 Bonneville's open access policy in support of competitive markets. Specific strategies for these efforts are outlined in the TS Load Service and Generation Integration strategies.
2. Bonneville will continue to replace aging assets that are 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 Center

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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
63,518	104,380	133,777

Overview

Bonneville's strategic objectives for Main Grid projects are to assure compliance with the NERC and Western Electricity Coordinating Council (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. In addition, transmission reinforcements are planned for load centers in central Oregon, central Washington, the Puget Sound area, the Willamette Valley, and along the I-5 Corridor, as well as projects to provide transmission access for new generation projects.

Continued investments in Main Grid assets include:

I-5 Corridor Reinforcement

- **FY 2015.** Concluded route analysis and completing National Environmental Policy Act (NEPA) work.
- **FY 2016.** Complete NEPA work and begin design.
- **FY 2017.** Complete design and possibly begin construction.

Big Eddy-Knight (West of McNary Reinforcements Group 2)

- **FY 2015.** Continued construction.
- **FY 2016.** Completed construction and energized in November 2015.

Central Ferry-Lower Monumental 500 kV Reinforcement (formerly Little Goose Area Reinforcement)

- **FY 2015.** Continued construction.
- **FY 2016.** Completed construction and energized in November 2015.

Midway-Grandview 115 kV Line upgrade

- **FY 2016.** Begin construction.
- **FY 2017.** Continue construction.

Puget Sound Area Northern Intertie (PSANI)

- **FY 2015.** Continued construction.
- **FY 2016.** Continue construction.
- **FY 2017.** Complete construction.

Tucannon, LaPine, Franklin, White Bluffs, Monroe and McNary (6 separate Capacitor projects)

- **FY 2015.** Completed construction.

Alvey Substation Reactors

- **FY 2015.** Began construction.
- **FY 2016.** Complete construction.

Raver Substation Reactor

- **FY 2015.** Completed construction of the 500 kV Reactor upgrade.

Schultz Series Capacitors

- **FY 2017.** Begin design.

Monroe-Echo Lake 500 kV Line Re-termination #2

- **FY 2016.** Begin design.

- **FY 2017.** Begin construction.

McNary Substation 500/230 kV Bank Addition

- **FY 2015.** Completed design and begin construction.
- **FY 2016.** Continue construction.
- **FY 2017.** Continue construction.

Paul Substation 500 kV Shunt Reactor Addition

- **FY 2015.** Completed design and begin construction.
- **FY 2016.** Complete construction.

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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
4,101	12,946	30,754

Overview

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

Continued investments in Area & Customer Service assets include:

Hooper Springs Substation

- **FY 2015.** Began design.
- **FY 2016.** Begin construction.
- **FY 2017.** Continue construction.

Capacitor Bank at Kalispel

- **FY 2015.** Completed 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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
267,057	253,097	213,994

Overview

Bonneville’s strategic objectives for Upgrades and Additions are to replace older 60 Hz (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 2015.** Continued construction.
- **FY 2016.** Continue construction.
- **FY 2017.** Complete construction.

Synchrophasor Project

- **FY 2015.** Continued construction at multiple sites.
- **FY 2016.** Continue construction at multiple sites.
- **FY 2017.** Continue construction at multiple sites.

Pacific DC Intertie from 3,100 MW to 3,800 MW Project

- **FY 2015.** Began construction for upgrade.
- **FY 2016.** Continue construction.
- **FY 2017.** Continue construction.

Ross-Schultz Fiber Circuit Upgrade

- **FY 2015.** Continued construction.
- **FY 2016.** Continue construction.
- **FY 2017.** Continue construction.

Bell-Boundary #DC SONET Ring Upgrade

- **FY 2015.** Continued construction.
- **FY 2016.** Continue construction.
- **FY 2017.** Complete construction.

Operational Megabit Ethernet (OMET) System

- **FY 2015.** Continued construction.
- **FY 2016.** Continue construction.
- **FY 2017.** Continue construction.

Longhorn Annex for Umatilla Electric Cooperative (UEC)

- **FY 2015.** Continued construction.
- **FY 2016.** Complete construction.

500 kV Spares at Wind Integration Substations

- **FY 2016.** Begin design for site 1.
- **FY 2017.** Begin construction for site 1 and design for site 2.

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).
- Continue to upgrade control houses and standby engine generators at various locations.

**System Replacements
(\$K)**

FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
126,603	329,618	265,952

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, and includes 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.

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.
- Continue replacement of under-rated and high maintenance substation equipment.
- Continue replacing spacer dampers on various 500 kV lines.
- Continue replacing critical, operational tools and marketing 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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
265,983	30,000	30,000

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 or with reserves, either in total or in part. This program also includes investments associated with the Commercial Spectrum Enhancement Act (CSEA).

Continued investments in PFIA assets include:

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.
- Complete environmental cleanup and other work necessary for the sale of Bonneville facilities.
- Continue the design and construction for various radio replacements at accessible sites associated with the CSEA.

Activities, Milestones, and Explanation of Changes

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
Transmission Services – Capital \$730,040,000	\$674,478,000	-\$55,562,000
Main Grid \$104,380,000 Milestones: <ul style="list-style-type: none"> • Complete NEPA and begin design of the I-5 Corridor Reinforcement project. • Begin construction of Midway-Grandview 115kV Line upgrade. • Complete construction of the Big Eddy-Knight project. • Continue construction of the PSANI project. • Complete construction of Central Ferry Lower Monumental. 	\$133,777,000 Milestones: <ul style="list-style-type: none"> • Complete design and possibly begin construction of the I-5 Corridor Reinforcement project. • Continue construction of Midway-Grandview 115kV Line upgrade. • Complete construction of the PSANI project • Continue construction of McNary Substation. 	+\$29,397,000/+28.2% The increase reflects the start of construction on the I-5 Corridor Reinforcement project.
Area & Customer Service \$12,946,000 Milestones: <ul style="list-style-type: none"> • Begin construction of Hooper Springs Substation. 	\$30,754,000 Milestones: <ul style="list-style-type: none"> • Continue construction of Hooper Springs Substation. 	+\$17,809,000/+137.6% The increase reflects the construction work scheduled for the Hooper Springs project.

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
<p>Upgrades & Additions \$253,097,000</p> <p>Milestones:</p> <ul style="list-style-type: none"> • Begin design for site 1 for 500kV spares at wind integration substations. • Continue construction at multiple sites of the Synchrophasor project. • Continue construction for the upgrading of the Pacific DC Intertie from 3,100 MW to 3,800 MW project. 	<p>\$213,994,000</p> <p>Milestones:</p> <ul style="list-style-type: none"> • Begin construction of site 1 and design for site 2 for 500kV spares at wind integration substations. • Continue construction at multiple sites of the Synchrophasor project. • Continue construction for the upgrading of the Pacific DC Intertie from 3,100 MW to 3,800 MW project. 	<p>-\$39,103,000/-15.4%</p> <p>The decrease reflects the ramping down of construction in the Pacific Direct Current Line (PDCI) project as construction nears completion.</p>
<p>Systems Replacements \$329,618,000</p> <p>Milestones:</p> <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. 	<p>\$265,952,000</p> <p>Milestones:</p> <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. 	<p>-\$63,665,000/-19.3%</p> <p>The decrease reflects a decrease in the number of replacement projects.</p>
<p>Projects Funded in Advanced \$30,000,000</p> <p>Milestones:</p> <ul style="list-style-type: none"> • Continue to integrate new generation as requested. • Continue planning studies on needs and impacts of proposed new generation. 	<p>\$30,000,000</p> <p>Milestones:</p> <ul style="list-style-type: none"> • Continue to integrate new generation as requested. • Continue planning studies on needs and impacts of proposed new generation. 	<p>\$0/0%</p> <p>No change in funding identified.</p>

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

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Capital Information Technology (IT) & Equipment/Capitalized Bond Premium					
Capital IT & Equipment	34,344	37,356	28,794	-8,562	-23%
Capitalized Bond Premium	0	0	0	0	-
Total, Capital IT & Equipment/Capitalized Bond Premium	34,344	37,356	28,794	-8,562	-23%

Outyears (\$K)

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Capital Information Technology (IT) & Equipment/Capitalized Bond Premium					
Capital IT & Equipment	28,794	10,854	6,417	4,069	11,136
Capitalized Bond Premium	0	2,000	2,000	2,000	2,000
Total, Capital IT & Equipment/Capitalized Bond Premium	28,794	12,854	8,417	6,069	13,136

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 2017 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 2017 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 IT & Equipment
(\$K)**

FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
34,344	37,356	28,794

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 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 2015 Actual	FY 2016 Estimate	FY 2017 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

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
Capital Information Technology & Equipment/Capitalized Bond Premium \$37,356,000	\$28,794,000	-\$8,562,000/22.9%
Capital Information Technology & Equipment \$37,356,000 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 	\$28,794,000 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 	-\$8,562,000/22.9% The decrease reflects an anticipated shift toward using less capital for infrastructure projects and system upgrades. Possible shifting to Software as a Service (SaaS) solutions may also require less capital funding.
Capitalized Bond Premium \$0 Milestones: <ul style="list-style-type: none"> • Bonneville does not expect to refinance any federal bonds with premium in FY 2016. 	\$0 Milestones: <ul style="list-style-type: none"> • Bonneville does not expect to refinance any federal bonds with premium in FY 2017. 	\$0/0% No change in funding.

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

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Power Services - Operating Expenses					
Production	948,520	1,103,239	1,097,286	-5,952	-1%
Associated Projects Costs	414,511	454,869	464,286	9,417	2%
Fish & Wildlife	258,177	267,000	274,000	7,000	3%
Residential Exchange Program	200,265	217,100	217,100	0	0
NW Power & Conservation Council	9,870	11,236	11,446	210	2%
Energy Efficiency & Renewable Resources	74,897	177,636	173,306	-4,329	-2%
Total, Power Services - Operating Expenses	1,906,240	2,231,080	2,237,425	6,345	.3%

Outyears (\$K)

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Power Services - Operating Expenses					
Production	1,097,286	1,202,507	1,295,414	1,249,570	1,077,360
Associated Projects Costs	464,286	471,846	479,399	498,032	513,942
Fish & Wildlife	274,000	281,000	288,000	295,000	302,000
Residential Exchange Program	217,100	238,600	238,600	251,600	251,600
NW Power & Conservation Council	11,446	11,629	11,812	12,004	12,207
Energy Efficiency & Renewable Resources	173,306	179,120	182,719	186,987	191,380
Total, Power Services - Operating Expenses	2,237,425	2,384,702	2,495,944	2,493,193	2,348,489

Power Services – Operating Expense

Overview

Production includes all Bonneville non-federal debt service (including Energy Northwest debt service), O&M costs for power system generation resources (including a large nuclear plant, business operations, short- and long-term power purchases⁴), electric utility marketing of power, and oversight of the FCRPS hydroelectric projects and CGS. Bonneville develops products and services to meet the needs of Bonneville's customers and stakeholders, and acquires power as needed.

In FY 2010, Bonneville completed a long-term Resource Program to guide potential future resource acquisitions needed to meet Bonneville's supply obligations. In the event that Bonneville does acquire output from a resource on a long-term basis, Bonneville will modify its budget to reflect the acquisition.

Associated Projects represents funding for operation and maintenance costs for the FCRPS hydroelectric projects, minor additions, improvements and replacements, and liabilities of the Corps and 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 claims concerning 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).

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 Program under the Northwest Power Act. Through the Program, Bonneville also implements measures to aid in the protection of fish 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 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 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 of 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.

In order to address 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 continues its ongoing work with the Council and the regional fish and wildlife managers, customers, and Tribes to review projects to ensure ratepayers fund appropriate mitigation. For example, Bonneville established a cost sharing Memorandum of Understanding (MOU) with the U.S. Forest Service in 2005, and renewed it in 2010, that requires a programmatic 30 percent cost share for fish mitigation projects

⁴ 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.

funded by Bonneville on U.S. Forest Service lands. Bonneville continues to operate in a cooperative manner with the U.S. Forest Service.

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; e.g., all wildlife projects were recently reviewed simultaneously.

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 that expenses of the Council, subject to certain limits based on forecasted Bonneville power sales, shall 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 acquires conservation resources consistent with the Council’s Power Plan and acts as a catalyst for energy efficiency actions in the region. 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 (e.g., Energy Web and Smart Grid applications) into its generation and transmission planning processes.

Starting in FY 2016, Bonneville’s Energy Efficiency program will be expensed. This 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, irrigated agriculture, etc.; (2) third party delivery programs, such as Simple Steps Smart Savings, Energy Smart Industrial, and Green Motors programs; and, (3) programs to help regional federal installations reduce energy use, including federal hatcheries and irrigation districts, and to support the Corps and Reclamation in their efforts to reduce energy use.

Bonneville’s Energy Efficiency budgets reflect a need to meet aggressive targets from the Council’s 6th Power Plan and anticipated targets in the 7th Power Plan. Specifically, Bonneville’s energy efficiency targets increased from about 280 aMW under the Council’s 5th Power Plan (FYs 2005-2009) to 504 aMW under its 6th Power Plan (FYs 2010-2014). The 504 aMW reflects conservation that was expected to be achievable in the service territories of Bonneville’s preference customers. In FY 2014, Bonneville exceeded the five-year target and FY 2015 performance continued on that trajectory, exceeding the 117 aMW that was the target for FY 2014 and FY 2015 combined. Because the 7th Power Plan draft is not expected to be released until early 2016, Bonneville has determined its level of energy efficiency performance and associated budget based on the 6th Power Plan annual savings targets, which call for an incremental 400 aMW of energy efficiency between 2015 and 2017. In meeting its energy efficiency goals Bonneville may employ resource acquisition agreements, as authorized by Northwest Power Act section 6, and customer self-funded conservation.

The Residential Exchange Program (REP) was created by the Northwest Power Act to extend the benefits of low-cost federal power to the residential and farm customers of Pacific Northwest electric utilities that have high average system costs. 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 farm loads. ASCs are determined in accordance with the 2008 Average System Cost Methodology (ASCM).

Participating utility ASCs are established in a public process that occurs prior to and during Bonneville's power rate case. 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 in 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.

Over the past decade, regional parties have 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 \$2,237 million in FY 2017 for Power Services operating expenses, which is a 0.3 percent increase over the FY 2016 forecasted level. The increase reflects continuing emphasis on operation and maintenance of hydro generation projects on the FCRPS.

The FY 2017 budget decreases the level for Production (-\$5.9 million), increases the level for Associated Projects (+\$9.4 million), Fish & Wildlife (+\$7.0 million), Planning Council (+\$210,000), and decreases the level for Energy Efficiency & Renewable Resources (-\$4.3 million). There is no change in funding for Residential Exchange.

Production (\$K)		
FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
948,520	1,103,239	1,097,286

Overview

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

Power Scheduling/Marketing: Schedule and market (buy/sell) electric energy with Bonneville 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 has acquired full lifetime project capability of CGS. CGS is on a 24-month fuel and outage cycle. A maintenance and refueling outage occurred in the spring of 2015.

Continued investments in Production include:

Continuous Activity (all years)

- Provide oversight of all power supply contracts and related projects from which Bonneville purchases 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.
- Continue to provide wind resource integration services for customer wind generation.
- Power Purchases. Power expenditures could increase somewhat due to the implementation of the Oversupply Management Protocol.
- Power Scheduling/Marketing.
- Continue to 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 renewable generation to meet load growth. Continue to 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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
414,511	454,869	464,286

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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
258,177	267,000	274,000

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 Program. 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 Program (including ISRP reviews), and the Accords as it integrates their implementation with actions necessary to fulfill ESA responsibilities consistent with the applicable BiOps. 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 2008 FCRPS BiOp and Supplemental FCRPS BiOps issued in 2010 and 2014, the Fish Accords, the Washington Estuary Agreement, the Kalispel Agreement, and the Willamette and Southern Idaho agreements. 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 mainstream 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, 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 BiOp, the Program, and the Fish Accords.
- **Continue 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 provide dual benefits, i.e., benefits to both. 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.
- **Wildlife:** Use existing Bonneville policies to continue the current effort to mitigate wildlife in a manner consistent with the 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 according to Bonneville’s crediting policy and applicable mitigation contracts.

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

FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
285,032	405,972	401,852

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 & Renewable Resources

- Continue close-out of the legacy conservation resource acquisition contracts, which support Bonneville’s contractual obligation to serve customer loads.
- Provide incentives to help utilities acquire Public Power’s share of regional energy efficiency targets.
- Deliver regional energy efficiency programs, such as Simple Steps Smart Savings, Energy Smart Industrial, and Green Motors, to acquire energy efficiency throughout the region.
- Provide credible, unbiased information, and technical and financial support to energy efficiency purposes. Bonneville has a statutory responsibility to encourage and support the development of conservation in the Pacific Northwest. Bonneville is participating with other regional entities to support market transformation, low income energy efficiency, and program development activities that meet the needs of Bonneville customers and create business opportunities for the private sector in the Pacific Northwest. Towards that end, Bonneville has been helping create a delivery infrastructure to ensure conservation savings are installed efficiently and effectively throughout the region and that energy efficiency savings can be counted on to be reliable.
- Continue to purchase the output from renewable resources such as wind and solar.

Activities, Milestones, and Explanation of Changes

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
Power Services - Operating Expense \$2,231,080,000	\$2,237,425,000	+\$6,345,000/.03%
Production \$1,103,239,000 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. 	\$1,097,286,000 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. 	-\$5,952,000/-0.5% The decrease reflects lower power purchase costs.
Associated Project Costs \$454,869,000 Milestones: <ul style="list-style-type: none"> • Continue direct funding of Corps and Reclamation O&M power activities. 	\$464,286,000 Milestones: <ul style="list-style-type: none"> • Continue direct funding of Corps and Reclamation O&M power activities. 	+\$9,417,000/+2.1% 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 \$267,000,000 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 2008, 2010, and 2014 FCRPS BiOps, the Fish Accords, the Washington Estuary Agreement, the Kalispel Agreement, the Southern Idaho Agreement, and the Willamette Agreement. 	\$274,000,000 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 2008, 2010, and 2014 FCRPS BiOps, the Fish Accords, the Washington Estuary Agreement, the Kalispel Agreement, the Willamette Agreement, and the Southern Idaho Agreement. 	+\$7,000,000/+2.6% The increase reflects funding associated with the Biological Opinions, Fish Accord commitments, and Northwest Power Act activities.

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
Residential Exchange Program \$217,100,000 Milestones: <ul style="list-style-type: none"> • Continue to provide REP benefits. 	\$217,100,000 Milestones: <ul style="list-style-type: none"> • Continue to provide REP benefits. 	+\$0/0% No change in funding.
NW Power & Conservation Council \$11,236,000 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. 	\$11,446,000 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. 	+\$210,000/1.9% The increase reflects continuing emphasis on the NW Power and Conservation Council.
Energy Efficiency & Renewable Resources \$177,636,000 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 purchase the output from renewable resources such as wind and solar. • Continue to support utility incentive programs. • Continue to support regional energy efficiency programs. • Continue supporting energy efficiency at direct serve federal agencies. 	\$173,306,000 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 purchase the output from renewable resources such as wind and solar. • Continue to support utility incentive programs. • Continue to support regional energy efficiency programs. • Continue supporting energy efficiency at direct serve federal agencies. 	-\$4,329,000/-2.4% Even though there is a small decrease, there is a continuing emphasis on the energy efficiency program consistent with the Power Plan and increased Renewable Resource acquisition costs.

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

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Transmission Services - Operating Expense					
Engineering	103,892	81,574	82,284	710	1%
Operations	155,928	179,207	185,868	6,661	4%
Maintenance	193,645	188,021	190,287	2,266	1%
Total, Transmission Services - Operating Expense	453,465	448,803	458,439	9,637	2%

Outyears (\$K)

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Transmission Services - Operating Expense					
Engineering	82,284	84,036	85,247	86,512	87,834
Operations	185,868	186,168	189,943	193,854	197,906
Maintenance	190,287	195,238	198,956	202,824	206,848
Total, Transmission Services - Operating Expense	458,439	465,441	474,146	483,191	492,588

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 strategies 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 and non-discriminatory transmission access; and 5) improve Bonneville's cost effectiveness.

Explanation of Changes

Bonneville's budget includes \$458.4 million in FY 2017 for TS expense which is a two percent increase over the FY 2016 forecasted level. The increase reflects continuing operation and maintenance of Bonneville's transmission assets.

The FY 2017 budget increases the levels for Engineering (+\$710,000), Operations (+\$6.7 million), and Maintenance (+\$2.3 million)

Engineering (\$K)		
FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
103,892	81,574	82,284

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)

- **Asset Management:** Continue deploying the Asset Management approach to sustain the existing assets and expanding the system to meet Agency objectives using leading practices as guidance for improving Asset Management.
- **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.
- **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 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 ColumbiaGrid, a transmission planning organization in the region.
- **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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
155,928	179,207	185,868

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, reading meters, etc.

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, including wind, 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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
193,645	188,021	190,287

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 15,156 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-handing 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 & 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 15,156 circuit miles of high voltage transmission lines, of which over 7,617 km (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 259 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

FY 2016 Estimate	FY 2017 Estimate	Explanation of Changes FY 2017 vs FY 2016 Estimate
Transmission Services - Operating Expense \$448,803,000	\$458,439,000	+\$9,637,000/2.0%
Engineering \$81,574,000 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. 	\$82,284,000 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. 	+\$710,000/+0.9% The increase reflects emphasis on system reliability standards compliance and research and development.
Operations \$179,207,000 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. 	\$185,868,000 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. 	+\$6,661,000/+3.7% The increase reflects continued emphasis on reliability compliance activities, wind integration activities, security, and control center systems support.
Maintenance \$188,021,000 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. 	\$190,287,000 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. 	+\$2,266,000/+1.2% The increase reflects a small reduction in the 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 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Interest, Pension, and Post-retirement Benefits					
BPA Bond Interest (Net)	132,324	94,631	118,915	24,285	25.7%
BPA Appropriation Interest	14,482	14,386	8,954	-5,432	-37.8%
Corps of Engineers Appropriation Interest	145,645	136,302	136,223	-79	-.1%
Lower Snake River Comp Plan Interest	16,534	16,534	16,534	0	0%
Bureau of Reclamation Appropriation Interest	40,456	36,921	33,294	-3,627	-9.8%
Bond Premiums Paid/Discounts (not capitalized)	0	0	0	0	0%
Subtotal, Interest – Operating Expense	349,441	298,773	313,920	15,147	5.1%
Additional Pension, and Post-retirement Benefits	37,638	38,286	39,226	940	2.5%
Total, Interest, Pension, and Post-retirement Benefits	387,079	337,059	353,146	16,087	4.8%

Outyears (\$K)

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Interest, Pension, and Post-retirement Benefits					
BPA Bond Interest (Net)	118,915	167,034	195,144	213,998	240,293
BPA Appropriation Interest	8,954	4,940	0	0	0
Corps of Engineers Appropriation Interest	136,223	136,841	135,931	137,425	137,672
Lower Snake River Comp Plan Interest	16,534	16,534	16,534	16,534	16,534
Bureau of Reclamation Appropriation Interest	33,294	33,294	29,697	29,697	29,697
Bond Premiums Paid/Discounts (not capitalized)	0	0	0	0	0
Subtotal, Interest – Operating Expense	313,920	358,643	377,306	397,654	424,196
Additional Pension, and Post-retirement Benefits	39,226	39,814	40,412	41,018	41,633
Total, Interest, Pension, and Post-retirement Benefits	353,146	398,457	417,718	438,672	465,829

Bonneville Power Administration/
Interest, Pension and Post-retirement Benefits –
Operating Expense

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 receiving U.S. Treasury borrowing authority in 1974 under the Transmission Act, all Bonneville 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 re-setting (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 \$6.6 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. All such postretirement systems and programs are sponsored by the Office of Personnel Management; therefore, Bonneville does not record any accumulated plan assets or liabilities related to the administration of such programs. Bonneville makes 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. These payments were begun with the FY 1998 Administration's budget which assumed Bonneville would prospectively cover the unfunded liability that accrues in fiscal years after FY 1997 of the Civil Service Retirement and Disability Fund (Disability Fund), the Employees Health Benefits Fund (Health Fund), and the Employees Life Insurance Fund (Insurance Fund) that it had not covered prior to FY 1998. Bonneville's additional annual contributions include amounts relating to pension and post-retirement benefits for Bonneville and the power-related portion of the Corps and Reclamation projects.

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

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate	FY 2017 vs FY 2016	
				\$	%
Capital Transfers					
BPA Bond Amortization ¹	212,300	30,000	76,100	46,100	153.7%
Reclamation Appropriation Amortization	49,439	50,728	0	-50,728	-100%
BPA Appropriation Amortization	6,000	74,910	55,489	-29,321	-25.9%
Corps Appropriation Amortization	181,022	33,469	74,279	40,810	121.9%
Total, Capital Transfers	448,761	189,107	205,868	16,761	8.9%

Outyears (\$K)

	FY 2017 Estimate	FY 2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate
Capital Transfers					
BPA Bond Amortization ¹	76,100	47,862	559,419	533,548	473,598
Reclamation Appropriation Amortization	0	50,295	0	0	0
BPA Appropriation Amortization	55,489	68,458	0	0	0
Corps Appropriation Amortization	74,279	62,176	4,922	56	44,146
Total, Capital Transfers	205,868	228,791	564,341	533,603	517,744

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 2017 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 indebtednesses issued and sold by Bonneville to the U.S. Treasury.

**Bonneville Power Administration
Performance Measures**

In accordance with the GPRA Modernization Act of 2010, the Department sets targets for, and tracks progress toward, achieving performance goals for each program.

	FY 2015	FY 2016	FY 2017
Performance Goal (Measure)	BPA Hydropower Generation Efficiency Performance - Achieve 97.5% Heavy-Load-Hour Availability (HLHA) through efficient performance of Federal hydro-system processes and assets, including joint efforts of BPA, Army Corps of Engineers, and Bureau of Reclamation. HLHA is actual machine capacity available during heavy-load hours (0700-2200 Monday-Saturday), divided by planned available capacity during heavy-load hours.		
Target	≥ 97.5%	≥ 97.5%	≥ 97.5%
Result	Target Met: 100.6%	Not yet available	Not yet available
Endpoint Target	Maintain at least 97.5% Heavy-Load-Hour Availability.		

	FY 2015	FY 2016	FY 2017
Performance Goal (Measure)	BPA Repayment of Federal Power Investment Performance - Meet planned annual repayment of principal on Federal power investments.		
Target	≥ 100%	≥ 100%	≥ 100%
Result	Target Met: 100%	Not yet available	Not yet available
Endpoint Target	Continue to meet planned annual repayment of principal.		

	FY 2015	FY 2016	FY2016
Performance Goal (Measure)	BPA System Reliability Performance - NERC Rating - Attain average North American Reliability Council (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) which measures generation/load balance on one-minute intervals (rating > or = 100%).		
Target	CPS1 ≥ 100%	CPS1 ≥ 100%	CPS1 ≥ 100%
Result	Target Met:139.91%	Not yet available	Not yet available
Endpoint Target	Maintain CPS1 score of >= 100%.		

Additional Tables

**BONNEVILLE POWER ADMINISTRATION
TOTAL OBLIGATIONS/OUTLAYS**

Current Services
(in millions of dollars)

FISCAL YEAR

BP-1 SUMMARY^{1/3/}

	2015		2016		2017		2018	2019	2020	2021
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
1 Residential Exchange Program	200	200	217	217	217	217	239	239	252	252
2 Power Services ^{2/}	1,364	1,364	1,558	1,558	1,562	1,562	1,674	1,775	1,748	1,591
3 Transmission Services	915	915	1,149	1,149	1,103	1,103	911	919	900	799
4 Conservation & Energy Efficiency	162	162	178	178	173	173	179	183	187	191
5 Fish & Wildlife	280	280	307	307	320	320	300	323	330	336
6 Interest/ Pension ^{4/}	387	387	337	337	353	353	398	418	439	466
7 Associated Project Cost - Capital	43	43	241	241	270	270	282	314	333	348
8 Capital Equipment	34	34	37	37	29	29	11	6	4	11
9 Planning Council	10	10	11	11	11	11	12	12	12	12
10 Misc. Accounting Adjs.	0	0	0	0	0	0	0	0	0	0
11 Projects Funded in Advance	390	390	30	30	30	30	30	50	50	50
12 Capitalized Bond Premiums	0	0	0	0	0	0	2	2	2	2
13 TOTAL OBLIGATIONS/ OUTLAYS ^{3/}	3,785	3,785	4,065	4,065	4,068	4,068	4,037	4,240	4,257	4,058

REVENUES AND REIMBURSEMENTS

Current Services

(in millions of dollars)

FISCAL YEAR

BP-1 SUMMARY	2015		2016		2017		2018	2019	2020	2021
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
14 Revenues ^{5/}	3,164	3,164	4,035	4,035	4,084	4,084	4,084	4,064	4,105	4,146
15 Project Funded in Advance	390	390	30	30	30	30	30	50	50	50
16 TOTAL	3,554	3,554	4,065	4,065	4,114	4,114	4,114	4,114	4,155	4,196
BUDGET AUTHORITY (NET) ^{6/}	420		624		556		145	210	(52)	(194)
17 OUTLAYS (NET) ^{6/7/8}		383		(1)		(46)	(77)	126	102	(138)

These notes are an integral part of this table.

^{1/} This FY 2017 budget includes capital and expense estimates based on Bonneville's IPR and CIR processes and updated estimates for the FY 2016 and 2017 Transmission capital.

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 competitive electric utility industry.

^{2/} Power Services includes Fish & Wildlife, Residential Exchange Program, Planning Council, Conservation & Energy Efficiency and Associated Project Costs which have been shown separately for display purposes.

^{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 legally 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 legal dollar caps. Because Bonneville operates within 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/} BPA 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, and continuing restructuring of the electric industry.

^{8/} FY 2015 Net Outlays are based on Bonneville's FY 2015 audited actuals. FYs 2016 & 2017 Net Outlays are calculated using Bonneville's revenue forecast from the BP-16 rate case. FYs 2018 & 2019 assume no growth in Offsetting Collections compared to FYs 2016 & 2017. FYs 2020 and 2021 assume a 1% growth in Offsetting Collections.

EXPENSED OBLIGATIONS/OUTLAYS ^{1,4/}
Current Services
(in millions of dollars)
FISCAL YEAR

BP-2	2015		2016		2017		2018	2019	2020	2021
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
1 Residential Exchange Program	200	200	217	217	217	217	239	239	252	252
2 Power Services ^{2/}	1,364	1,364	1,558	1,558	1,562	1,562	1,674	1,775	1,748	1,591
3 Transmission Services	453	453	449	449	458	458	465	474	483	493
4 Conservation & Energy Efficiency	75	75	178	178	173	173	179	183	187	191
5 Fish & Wildlife	258	258	267	267	274	274	281	288	295	302
6 Interest/ Pension ^{3/}	387	387	337	337	353	353	398	418	439	466
7 Planning Council	10	10	11	11	11	11	12	12	12	12
8 TOTAL EXPENSE	2,748	2,748	3,017	3,017	3,049	3,049	3,249	3,388	3,415	3,307
9 Projects Funded in Advance	390	390	30	30	30	30	30	50	50	50

CAPITAL OBLIGATIONS/OUTLAYS^{2/}

Current Services

(in millions of dollars)

FISCAL YEAR

	2015		2016		2017		2018	2019	2020	2021
	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Outlays	Oblig.	Oblig.	Oblig.	Oblig.
BP-2 continued										
10 Conservation & Energy Efficiency	87	87	0	0	0	0	0	0	0	0
11 Transmission Services	461	461	700	700	644	644	445	445	417	306
12 Associated Project Cost	43	43	241	241	270	270	282	314	333	348
13 Fish & Wildlife	21	21	40	40	46	46	19	35	35	34
14 Capital Equipment	34	34	37	37	29	29	11	6	4	11
15 Capitalized Bond Premiums	0	0	0	0	0	0	2	2	2	2
16 TOTAL CAPITAL INVESTMENTS	647	647	1,018	1,018	989	989	758	802	791	701
17 TREASURY BORROWING AUTHORITY TO										
18 FINANCE CAPITAL OBLIGATIONS ^{4/}	647		1,018		989		758	802	791	701

These notes are an integral part of this table.

^{1/} This FY 2017 budget includes capital and expense estimates based on Bonneville's IPR and CIR processes and updated estimates for the FY 2016 and 2017 Transmission capital.

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 competitive electric utility industry.

^{2/} Power Services includes Fish & Wildlife, Residential Exchange Program, Planning Council, Conservation & Energy Efficiency and Associated Project Costs which have been shown separately for display purposes.

^{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 which are legally 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 legal dollar caps. Because Bonneville operates within existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

CURRENT SERVICES
(in millions of dollars)

	FISCAL YEAR						
	2015 Pymts	2016 Pymts	2017 Pymts	2018 Pymts	2019 Pymts	2020 Pymts	2021 Pymts
CAPITAL TRANSFERS							
Amortization:							
19 BPA Bonds	212	30	76	48	559	534	474
20 Reclamation Appropriations	49	51	0	50	0	0	0
21 BPA Appropriations	6	75	55	68	0	0	0
22 Corps Appropriations	181	33	74	62	5	0	44
23 TOTAL CAPITAL TRANSFERS	449	189	206	229	564	534	518
24 FULL-TIME EQUIVALENT (FTE)	2,836	3,100	3,100	3,100	3,100	3,100	3,100

PROGRAM & FINANCING SUMMARY

Current Services

(in millions of dollars)

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

est.

	2015	2016	2017	2018	2019	2020	2021
Program by activities:							
Operating expenses:							
0.01 Power Services	950	1,103	1,097	1,203	1,295	1,250	1,077
0.02 Residential Exchange Program	200	217	217	239	239	252	252
Associated Project Costs:							
0.05 Bureau of Reclamation	134	157	158	161	163	165	172
0.06 Corps of Engineers	230	244	251	255	259	274	282
0.07 Colville Settlement	19	22	22	23	23	23	24
0.19 U.S. Fish & Wildlife Service	31	32	33	34	34	35	36
0.20 Planning Council	10	11	11	12	12	12	12
0.21 Fish & Wildlife	258	267	274	281	288	295	302
0.23 Transmission Services	453	449	458	465	474	483	493
0.24 Conservation & Energy Efficiency	75	178	173	179	183	187	191
0.25 Interest	350	299	314	359	377	398	424
0.26 Pension and Health Benefits ^{1/}	38	38	39	40	40	41	42
0.91 Total operating expenses ^{2/}	2,748	3,017	3,049	3,249	3,388	3,415	3,307
Capital investment:							
1.01 Power Services	43	241	270	282	314	333	348
1.02 Transmission Services	461	700	644	445	445	417	306
1.03 Conservation & Energy Efficiency	87	0	0	0	0	0	0
1.04 Fish & Wildlife	21	40	46	19	35	35	34
1.05 Capital Equipment	34	37	29	11	6	4	11
1.06 Capitalized Bond Premiums	0	0	0	2	2	2	2
1.07 Total Capital Investment ^{3/}	647	1,018	989	758	802	791	701
2.01 Projects Funded in Advanced	390	30	30	30	50	50	50
10.00 Total obligations ^{4/}	3,785	4,065	4,068	4,037	4,240	4,257	4,058

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 includes Fish & Wildlife, Residential Exchange Program, Planning Council, Conservation & Energy Efficiency and Associated Project Costs which have been shown separately for display purposes.

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

^{4/} This FY 2017 budget includes capital and expense estimates based on Bonneville's IPR and CIR processes and updated estimates for the FY 2016 and 2017 Transmission capital.

For purposes of this table, this FY 2017 budget reflects, for FY 2015, 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 competitive electric utility industry.

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.

Program and Financing (continued)

Current Services
(in millions of dollars)

	est.						
	2015	2016	2017	2018	2019	2020	2021
Financing:							
1000 Unobligated balance available, start of year. ^{5/}	8	13	0	0	0	0	0
1050 Unobligated balance available, end of year. ^{5/}	8	10	0	0	0	0	0
1900 Budget authority (gross)	3,788	4,894	4,906	4,645	4,352	4,412	4,379
Budget Authority:							
1400 Permanent Authority: Authority to borrow from Treasury (indefinite) ^{6/}	619	1,018	989	758	802	791	701
1800 Spending authority from off-setting collections	3,345	4,065	4,114	4,114	4,114	4,155	4,196
1825 Portion applied to debt reduction	(212)	(189)	(206)	(229)	(564)	(534)	(518)
1850 Spending authority from offsetting collections (adjusted)	1,218	3,876	3,917	3,886	3,550	3,621	3,678
900 Total obligations	3,785	4,065	4,068	4,037	4,240	4,257	4,058
4110 Outlays (gross)	3,728	4,065	4,068	4,037	4,240	4,257	4,058
Adjustments to budget authority and outlays:							
Deductions for offsetting collections:							
4120 Federal funds	(47)	(90)	(90)	(90)	(90)	(90)	(90)
4121 Interest on Federal Securities	3						
4123 Non-Federal sources	(3,301)	(3,975)	(4,024)	(4,024)	(4,024)	(4,065)	(4,106)
4130 Total, offsetting collections	(3,345)	(4,065)	(4,114)	(4,114)	(4,114)	(4,155)	(4,196)
4160 Budget authority (net)	420	829	792	531	238	257	183
4170 Outlays (net) ^{7/8/}	383	(1)	(46)	(77)	126	102	(138)

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 from 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.

^{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, and continuing restructuring of the electric industry.

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 which are legally 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 legal dollar caps. Because Bonneville operates within existing legislative authority, Bonneville is not subject to a "pay-as-you-go" test regarding its revision of current-law funding estimates.

^{8/} FY 2015 Net Outlays are based on Bonneville's FY 2015 audited actuals. FYs 2016 & 2017 Net Outlays are calculated using Bonneville's revenue forecast from the BP-16 rate case. FYs 2018 & 2019 assume no growth in Offsetting Collections compared to FYs 2016 & 2017. FYs 2020 and 2021 assume a 1% growth in Offsetting Collections.

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

BP-4A

	Fiscal Year							
	2015				2016			
	Net Capital		Net Capital		Net Capital		Net Capital	
	Net Capital Obs	Obs Subject to BA	Net Capital Expend.	Bonds Out- Standing	Net Capital Obs	Obs Subject to BA	Net Capital Expend.	Bonds Out- Standing
Start-of-Year: Total	3,388	2,846	4,287	4,214	3,823	3,281	4,722	4,649
Plus: Annual Increase								
Cum.-Annual Treasury Borrowing	647	647	647		1,018	1,018	1,018	
Treasury Borrowing (Cash)				647				1,018
Less:								
BPA Bond Amortization	212	212	212	212	30	30	30	30
Net Increase/(Decrease):	435	435	435	435	988	988	988	988
Cum.-End-of-Year: Total	3,823	3,281	4,722	4,649	4,811	4,269	5,710	5,637
Total Remaining Treasury Borrowing Amount				3,051				2,063
Total Legislated Treasury Borrowing Amount				7,700				7,700

These notes are an integral part of this table.

In any given year, BPA may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, Treasury interest rates, and other cash management factors. In such cases, BPA 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 2017 budget, BPA "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 BPA 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 competitive electric utility industry.

Bonneville reserve financing of \$15 million annually is assumed as part of TS capital-PFIA for FYs 2015-2021.

Cumulative advance amortization payments as of the end of FY 2015 are \$3,291 million.

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

BP-4B

	2017				2018			
	Net Capital		Net Bonds		Net Capital		Net Bonds	
	Net Capital Obs	Obs Subject to BA	Net Capital Expend.	Bonds Out- Standing	Net Capital Obs	Obs Subject to BA	Net Capital Expend.	Bonds Out- Standing
Start-of-Year: Total	4,811	4,269	5,710	5,637	5,724	5,182	6,623	6,550
Plus: Annual Increase								
Cum.-Annual Treasury Borrowing	989	989	989		758	758	758	
Treasury Borrowing (Cash)				989				758
Less:								
Total BPA Bond Amortization	76	76	76	76	48	48	48	48
Net Increase/(Decrease):								
Total	913	913	913	913	710	710	710	710
Cum.-End-of-Year: Total	5,724	5,182	6,623	6,550	6,434	5,892	7,333	7,260
Total Remaining Treasury Borrowing Amount				1,150				440
Total Legislated Treasury Borrowing Amount				7,700				7,700

These notes are an integral part of this table.

In any given year, BPA may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, Treasury interest rates, and other cash management factors. In such cases, BPA 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 2017 budget, BPA "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 BPA 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 competitive electric utility industry.

Bonneville reserve financing of \$15 million annually is assumed as part of TS capital-PFIA for FYs 2015-2021.

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

BP-4C

Fiscal Year

	2019				2020			
	Net Capital		Net Bonds		Net Capital		Net Bonds	
	Net Capital	Obs Subject	Net Capital	Bonds Out-	Net Capital	Obs Subject	Net Capital	Bonds Out-
	Obs	to BA	Expend.	Standing	Obs	to BA	Expend.	Standing
Start-of-Year: Total	6,434	5,892	7,333	7,260	6,677	6,135	7,576	7,503
Plus: Annual Increase								
Cum.-Annual Treasury Borrowing	802	802	802		791	791	791	
Treasury Borrowing (Cash)				802				791
Less:								
Total BPA Bond Amortization	559	559	559	559	534	534	534	534
Net Increase/(Decrease):								
Total	243	243	243	243	257	257	257	257
Cum.-End-of-Year: Total	6,677	6,135	7,576	7,503	6,934	6,392	7,833	7,760
Total Remaining Treasury Borrowing Amount				197				(60)
Total Legislated Treasury Borrowing Amount				7,700				7,700

These notes are an integral part of this table.

In any given year, BPA may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, Treasury interest rates, and other cash management factors. In such cases, BPA 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 2017 budget, BPA "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 BPA 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 competitive electric utility industry.

Bonneville reserve financing of \$15 million annually is assumed as part of TS capital-PFIA for FYs 2015-2021.

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

BP-4D

	Fiscal Year			
	2021			
	Net Capital Obs	Net Capital Subject to BA Obs	Net Capital Expend.	Bonds Out- Standing
Start-of-Year: Total	6,934	6,392	7,833	7,760
Plus: Annual Increase				
Cum.-Annual Treasury Borrowing	701	701	701	
Treasury Borrowing (Cash)				701
Less:				
Total BPA Bond Amortization	474	474	474	474
Net Increase/(Decrease):				
Total	227	227	227	227
Cum.-End-of-Year: Total	7,161	6,619	8,060	7,987
Total Remaining Treasury Borrowing Amount				(287)
Total Legislated Treasury Borrowing Amount				7,700

These notes are an integral part of this table.

In any given year, BPA may issue lower principal amount of bonds to the U.S. Treasury than forecast depending on net revenues, Treasury interest rates, and other cash management factors. In such cases, BPA 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 2017 budget, BPA "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 BPA 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 competitive electric utility industry.

Bonneville reserve financing of \$15 million annually is assumed as part of TS capital-PFIA for FYs 2015-2021.

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

BP-5

		Fiscal Year						
		2015	2016	2017	2018	2019	2020	2021
Transmission Services - Capital								
Requirements	Main Grid	63	104	134	148	150	122	1
	Area & Customer Services	4	13	31	1	0	0	0
	Upgrades & Additions	267	205	160	24	17	14	15
	System Replacements	127	377	320	272	278	281	291
	Projects Funded in Advance	266	30	30	30	50	50	50
	Total, Transmission Services - Capital	727	730	674	475	495	467	356

Associated Project Costs - Capital

		2015	2016	2017	2018	2019	2020	2021
Requirements	Associated Project Costs	43	241	270	282	314	333	348
	Projects Funded in Advance ^{1/}	124	NA	NA	NA	NA	NA	NA
	Total, Associated Project Costs - Capital	167	241	270	282	314	333	348

Federal and Non-Federal Funding

		2015	2016	2017	2018	2019	2020	2021
Sources	Projects Funded in Advance	390	30	30	30	50	50	50
	Treasury Borrowing Authority	504	941	914	727	759	750	654

Scenario

		2015	2016	2017	2018	2019	2020	2021
Scenario	Projects Funded in Advance ^{1/}	124	82	0	0	0	0	0
	Third Party Financing	249	350	322	223	223	209	153
	Alternate Treasury Borrowing Authority	NA	509	592	504	536	542	501

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.

The table above shows both the potential use of Treasury borrowing authority for transmission capital projects based on this FY 2017 budget and the use adjusted for potential third-party financing to fund appropriate capital expenditures when feasible in lieu of Treasury borrowing. Estimates included in this FY 2017 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 Treasury borrowing and do not reflect the actual notional third party financing commitment BPA may enter into in that particular year. The difference of reduction in use of Treasury borrowing and the Bonneville's Third Party Financing for Transmission Services consists primarily of lease-purchase agreements, which are capitalized obligations that enable BPA to acquire the use of transmission facilities over time. BPA also undertakes the construction and installation of facilities from funds that customers advance to BPA for construction of BPA-owned facilities that assist the customers in obtaining necessary transmission service from BPA. These customers receive monetary payment credits in bills for transmission services from BPA up to the amount of funds advanced to BPA, plus interest.

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

BPA Status of Treasury Borrowing with Potential Third Party Financing & PFIA Scenario

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

	Fiscal Year						
	2015	2016	2017	2018	2019	2020	2021
Start-of-Year: Total Bonds Outstanding	4,214	4,649	5,205	5,796	6,283	6,303	6,352
Plus:							
Treasury Borrowing (Cash)	647	1,018	989	758	802	791	701
Less:							
Potential Third Party Financing & PFIA	NA	432	322	223	223	209	153
BPA Bond Amortization	212	30	76	48	559	534	474
Net Increase/(Decrease) Bonds Outstanding:	435	556	591	487	20	48	74
Cum.-End-of-Year: Total	4,649	5,205	5,796	6,283	6,303	6,352	6,426
Total Remaining Treasury Borrowing Amount	3,051	2,495	1,904	1,417	1,397	1,348	1,274
Total Legislated Treasury Borrowing Amount	7,700						

U.S. TREASURY PAYMENTS

(in millions of dollars)

	FISCAL YEAR						
	2015	2016	2017	2018	2019	2020	2021
A. INTEREST ON BONDS & APPROPRIATIONS							
Bonneville Bond Interest							
1 Bonneville Bond Interest (net)	132	95	119	167	195	214	240
2 AFUDC ^{1/}		53	51	52	58	54	48
Appropriations Interest							
3 Bonneville	14	14	9	5	0	0	0
4 Corps of Engineers ^{2/}	146	136	136	137	136	137	138
5 Lower Snake River Comp. Plan	17	17	17	17	17	17	17
6 Bureau of Reclamation ^{3/}	40	37	33	33	30	30	30
7 Bond Premiums paid/Discounts (not capitalized)		0	0	0	0	0	0
8 Total Bond and Approp. Interest	350	351	365	411	435	452	472
B. ASSOCIATED PROJECT COST							
9 Bureau of Reclamation Irrigation Assistance	52	61	51	28	57	25	12
10 Bureau of Rec. O & M ^{4/}	2	0	0	0	0	0	0
11 Corps of Eng. O & M ^{4/}	1	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	55	61	51	28	57	25	12
C. CAPITAL TRANSFERS							
Amortization							
14 Bonneville Bonds ^{6/}	212	30	76	48	559	534	474
15 Bureau of Reclamation Appropriations	49	51		50	0	0	0
16 Corps of Engineers Appropriations	181	33	74	62	5	0	44
17 Lower Snake River Comp. Plan	0	0	0	0	0	0	0
18 Bonneville Appropriations	6	75	55	68	0	0	0
19 Total Capital Transfers	449	189	206	229	564	534	518
D. OTHER PAYMENTS							
20 Unfunded CSRS Liability ^{5/}	38	38	39	40	40	41	42
21 TOTAL TREASURY PAYMENTS	891	640	662	707	1,098	1,051	1,044

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	2015	2016	2017	2018	2019	2020	2021
Bureau of Reclamation		134	157	158	161	163	165	172
Corps of Engineers		230	244	251	255	259	274	282
Subtotal Bureau and Corps		364	401	409	416	422	440	455
Lower Snake River Comp. Plan		31	32	33	34	34	35	36
Total		395	433	442	449	456	475	490

^{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 2017 budget, BPA "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 BPA 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.

Status of U.S. Treasury Principal Repayment

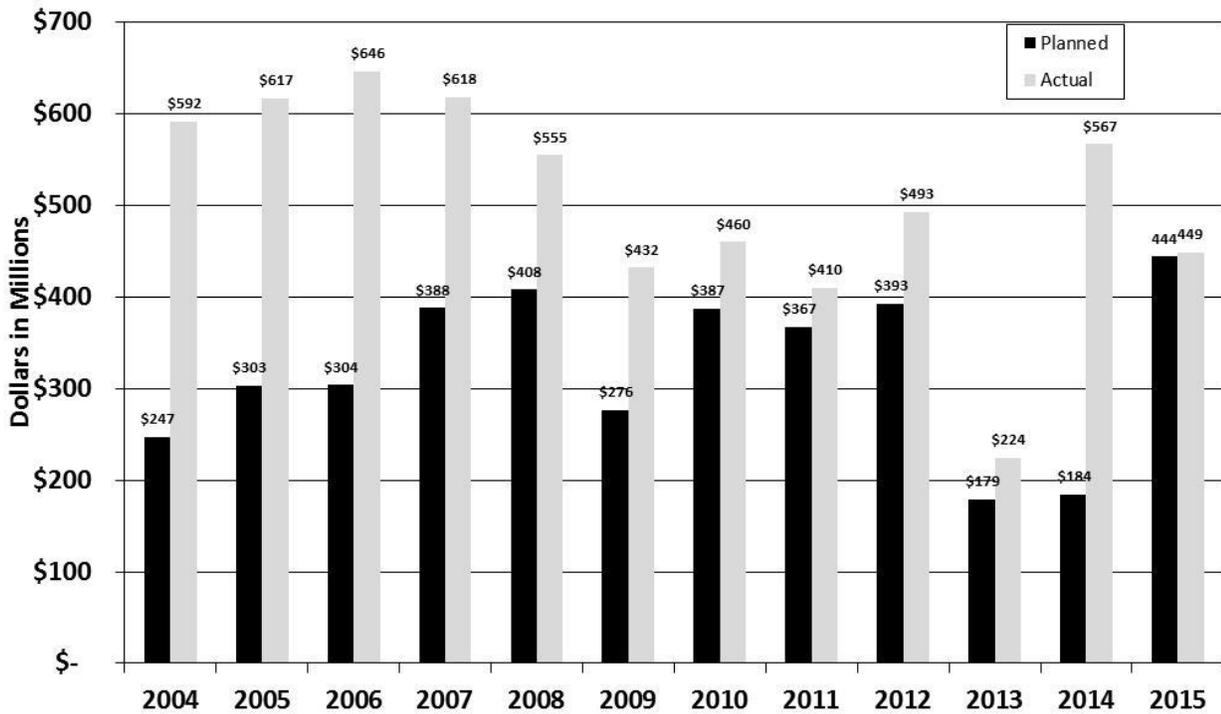


Chart Notes

^{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 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 made its full scheduled FY 2015 payment responsibility to the U.S. Treasury. Bonneville's aggregate U.S. Treasury payment was \$891.0 million, comprised of \$449.0 million in principal, which included \$229.0 million in early retirement of higher interest rate U.S. Treasury debt, \$350.0 million in interest, and \$92.0 million for other costs.

^{3/} FYs 2002-2012 payments include portions of future planned 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.

^{5/} The cumulative amount of actual advance amortization payments as of the end of FY 2015 is \$3,291 million.

OBJECT CLASSIFICATION STATEMENT
(in millions of dollars)

ESTIMATES

	2015 act.	2016	2017
11.1 Full-time permanent	348	372	373
11.3 Other than full-time permanent			
11.5 Other personnel compensation	65	69	69
11.9 Total personnel compensation	413	442	442
12.1 Civilian personnel benefits	130	139	139
13.3 Benefits for former personnel	0	0	0
21.0 Travel and transportation of persons	21	22	22
22.0 Transportation of things	2	2	2
23.1 Rental payments to GSA	17	19	19
23.2 Rents, other	30	32	32
23.3 Communication, utilities & misc. charges	10	11	11
25.1 Consulting Services	221	237	237
25.2 Other Services	1,933	2,088	2,090
25.5 R & D Contracts	13	11	11
26.0 Supplies and materials	59	63	63
31.0 Equipment	232	248	249
32.0 Lands and structures	397	425	425
41.0 Grants, subsidies, contributions	46	49	49
43.0 Interest and dividends	260	277	278
99.0 Total obligations	3,785	4,065	4,068

Estimate of Receipts
(in millions of dollars)

	Fiscal Year						
	2015	2016	2017	2018	2019	2020	2021
Reclamation Interest	40	37	33	33	30	30	30
Reclamation Amortization	49	51	0	50	0	0	0
Reclamation O&M	2	0	0	0	0	0	0
Reclamation Irrig. Assist.	52	61	51	28	57	25	12
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	123	137	73	99	75	42	30
Corps O&M							
CSRS	38	38	39	40	40	41	42
Total 2/ Repayments on misc.costs	38	38	39	40	40	41	42

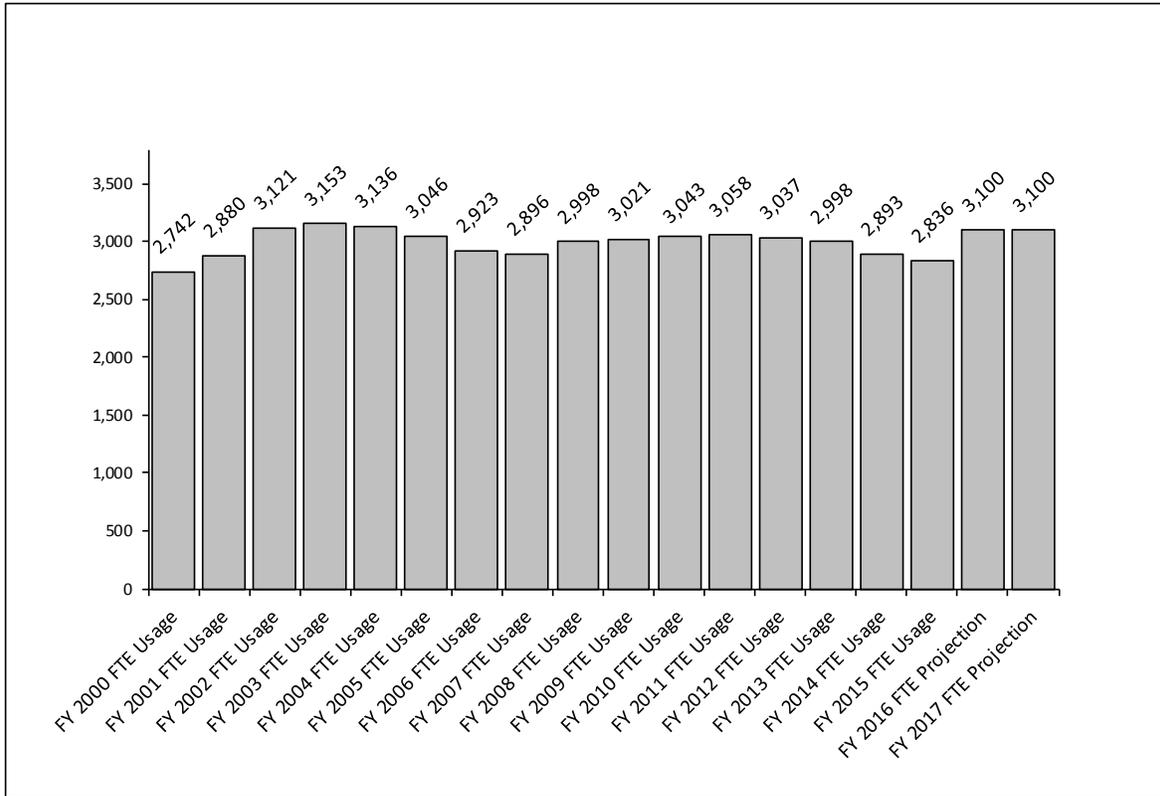
1/ Includes amortization of appropriations and irrigation assistance, and interest costs for Reclamation. The cost of power O&M for Reclamation is no longer included in Proprietary Receipts due to Direct Funding by Bonneville. Represents transfer to Account #895000.26

2/ The costs of power O&M for the Corps and Lower Snake 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)

	2015	2016	2017	2018	2019	2020	2021
Bureau of Reclamation	134	157	158	161	163	165	172
Corps of Engineers	230	244	251	255	259	274	282
Lower Snake River Comp. Plan	31	32	33	34	34	35	36
Total	395	433	442	449	456	475	490

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



Actual FTE data is consistent with DOE personnel reports.

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.

Total Cost of BPA Fish & Wildlife Actions

COST ELEMENT	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CAPITAL INVESTMENTS ^{1/}										
BPA FISH AND WILDLIFE	35.4	35.2	25.5	27.4	40.0	90.2	57.5	52.1	37.4	21.4
BPA SOFTWARE DEVELOPMENT COSTS	0.9	1.0	1.3	0.6	1.2	0.8	0.4	0.0	0.1	1.4
ASSOCIATED PROJECTS (FEDERAL HYDRO)	360.0	60.4	37.3	135.7	56.4	103.0	114.5	103.6	101.7	81.4
TOTAL CAPITAL INVESTMENTS	396.3	96.6	64.2	163.7	97.6	193.9	172.3	155.7	139.2	104.1
PROGRAM EXPENSES										
BPA DIRECT FISH AND WILDLIFE PROGRAM	137.9	139.5	148.9	177.9	199.6	221.1	248.9	239.0	231.8	258.2
FISH & WILDLIFE SOFTWARE EXPENSE COSTS								0.2	0.3	0.1
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	20.1	19.3	19.4	20.8	23.3	24.5	22.0	28.7	31.0	30.9
O & M CORPS OF ENGINEERS	31.8	32.9	34.4	34.3	36.5	40.3	41.1	39.2	47.8	46.4
O & M BUREAU OF RECLAMATION	4.5	3.9	4.3	4.5	5.2	5.0	5.3	5.6	6.6	2.6
NW POWER AND CONSERVATION COUNCIL ALLOCATED @ 50%	4.3	4.2	4.1	4.7	4.7	4.5	4.6	5.0	4.9	4.9
SUBTOTAL (REIMB/DIRECT-FUNDED)	60.7	60.3	62.2	64.3	69.7	74.3	73.0	78.5	90.3	84.9
TOTAL OPERATING EXPENSES	198.6	199.7	211.1	242.1	269.3	295.3	321.9	317.0	322.40	343.17
PROGRAM RELATED FIXED EXPENSES ^{4/}										
INTEREST EXPENSE	53.4	76.0	76.9	78.7	80.5	79.2	80.6	89.1	83.4	89.2
AMORTIZATION EXPENSE	17.4	22.9	24.4	24.6	25.0	28.3	30.2	35.7	38.7	41.3
DEPRECIATION EXPENSE	16.7	14.0	14.9	16.7	18.0	19.6	20.7	18.6	19.2	20.1
TOTAL FIXED EXPENSES	87.5	112.9	116.2	120.0	123.5	127.2	131.5	143.4	141.3	150.6
GRAND TOTAL PROGRAM EXPENSES	286.1	312.7	327.3	362.1	392.8	422.5	453.4	461.1	463.7	493.7
FORGONE REVENUES AND POWER PURCHASES										
FOREGONE REVENUES	397.4	282.6	273.5	142.8	99.4	156.7	152.2	135.5	122.7	195.8
BPA POWER PURCH. FOR FISH ENHANCEMENT	168.2	120.7	274.9	240.3	310.1	70.7	38.5	85.8	196.2	67.5
TOTAL FOREGONE REVENUES AND POWER PURCHASES	565.6	403.3	548.5	383.1	409.5	227.4	190.7	221.3	318.9	263.3
TOTAL PROGRAM EXPENSES, FOREGONE REVENUES, & POWER PURCHASES	851.7	716.0	875.8	745.3	802.3	649.9	644.1	682.4	782.6	757.0
CREDITS										
4(h)(10)(C)	(76.4)	(66.1)	(100.5)	(99.5)	(122.8)	(85.3)	(77.0)	(84.1)	(103.9)	(77.7)
TOTAL CREDITS	(76.4)	(66.1)	(100.5)	(99.5)	(122.8)	(85.3)	(77.0)	(84.1)	(103.9)	(77.7)

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.