

BP-20 Rate Proceeding

Final Proposal

# Power Revenue Requirement Study

BP-20-FS-BPA-02

July 2019





**POWER REVENUE REQUIREMENT STUDY**  
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## COMMONLY USED ACRONYMS AND SHORT FORMS

AAC	Anticipated Accumulation of Cash
ACNR	Accumulated Calibrated Net Revenue
ACS	Ancillary and Control Area Services
AF	Advance Funding
AFUDC	Allowance for Funds Used During Construction
aMW	average megawatt(s)
ANR	Accumulated Net Revenues
ASC	Average System Cost
BAA	Balancing Authority Area
BiOp	Biological Opinion
BPA	Bonneville Power Administration
Bps	basis points
Btu	British thermal unit
CIP	Capital Improvement Plan
CIR	Capital Investment Review
CDQ	Contract Demand Quantity
CGS	Columbia Generating Station
CHWM	Contract High Water Mark
CNR	Calibrated Net Revenue
COB	California-Oregon border
COE	U.S. Army Corps of Engineers
COI	California-Oregon Intertie
Commission	Federal Energy Regulatory Commission
Corps	U.S. Army Corps of Engineers
COSA	Cost of Service Analysis
COU	consumer-owned utility
Council	Northwest Power and Conservation Council
CP	Coincidental Peak
CRAC	Cost Recovery Adjustment Clause
CSP	Customer System Peak
CT	combustion turbine
CWIP	Construction Work in Progress
CY	calendar year (January through December)
DD	Dividend Distribution
DDC	Dividend Distribution Clause
<i>dec</i>	decrease, decrement, or decremental
DERBS	Dispatchable Energy Resource Balancing Service
DFS	Diurnal Flattening Service
DNR	Designated Network Resource
DOE	Department of Energy
DOI	Department of Interior
DSI	direct-service industrial customer or direct-service industry
DSO	Dispatcher Standing Order

EE	Energy Efficiency
EIM	Energy imbalance market
EIS	Environmental Impact Statement
EN	Energy Northwest, Inc.
ESA	Endangered Species Act
ESS	Energy Shaping Service
e-Tag	electronic interchange transaction information
FBS	Federal base system
FCRPS	Federal Columbia River Power System
FCRTS	Federal Columbia River Transmission System
FELCC	firm energy load carrying capability
FERC	Federal Energy Regulatory Commission
FOIA	Freedom Of Information Act
FORS	Forced Outage Reserve Service
FPS	Firm Power and Surplus Products and Services
FPT	Formula Power Transmission
FRP	Financial Reserves Policy
F&W	Fish & Wildlife
FY	fiscal year (October through September)
G&A	general and administrative (costs)
GARD	Generation and Reserves Dispatch (computer model)
GMS	Grandfathered Generation Management Service
GSP	Generation System Peak
GSR	Generation Supplied Reactive
GRSPs	General Rate Schedule Provisions
GTA	General Transfer Agreement
GWh	gigawatthour
HLH	Heavy Load Hour(s)
HOSS	Hourly Operating and Scheduling Simulator (computer model)
HYDSIM	Hydrosystem Simulator (computer model)
IE	Eastern Intertie
IM	Montana Intertie
<i>inc</i>	increase, increment, or incremental
IOU	investor-owned utility
IP	Industrial Firm Power
IPR	Integrated Program Review
IR	Integration of Resources
IRD	Irrigation Rate Discount
IRM	Irrigation Rate Mitigation
IRPL	Incremental Rate Pressure Limiter
IS	Southern Intertie
kcfs	thousand cubic feet per second
kW	kilowatt
kWh	kilowatthour
LDD	Low Density Discount
LGIA	Large Generator Interconnection Agreement

LLH	Light Load Hour(s)
LPP	Large Project Program
LTF	Long-term Firm
Maf	million acre-feet
Mid-C	Mid-Columbia
MMBtu	million British thermal units
MNR	Modified Net Revenue
MRNR	Minimum Required Net Revenue
MW	megawatt
MWh	megawatthour
NCP	Non-Coincidental Peak
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFB	National Marine Fisheries Service (NMFS) Federal Columbia River Power System (FCRPS) Biological Opinion (BiOp)
NLSL	New Large Single Load
NMFS	National Marine Fisheries Service
NOAA Fisheries	National Oceanographic and Atmospheric Administration Fisheries
NOB	Nevada-Oregon border
NORM	Non-Operating Risk Model (computer model)
Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NP-15	North of Path 15
NPCC	Pacific Northwest Electric Power and Conservation Planning Council
NPV	net present value
NR	New Resource Firm Power
NRFS	NR Resource Flattening Service
NRU	Northwest Requirements Utilities
NT	Network Integration
NTSA	Non-Treaty Storage Agreement
NUG	non-utility generation
NWPP	Northwest Power Pool
OATT	Open Access Transmission Tariff
O&M	operation and maintenance
OATI	Open Access Technology International, Inc.
OS	Oversupply
OY	operating year (August through July)
PDCI	Pacific DC Intertie
PF	Priority Firm Power
PFp	Priority Firm Public
PFx	Priority Firm Exchange
PNCA	Pacific Northwest Coordination Agreement
PNRR	Planned Net Revenues for Risk
PNW	Pacific Northwest
POD	Point of Delivery
POI	Point of Integration or Point of Interconnection

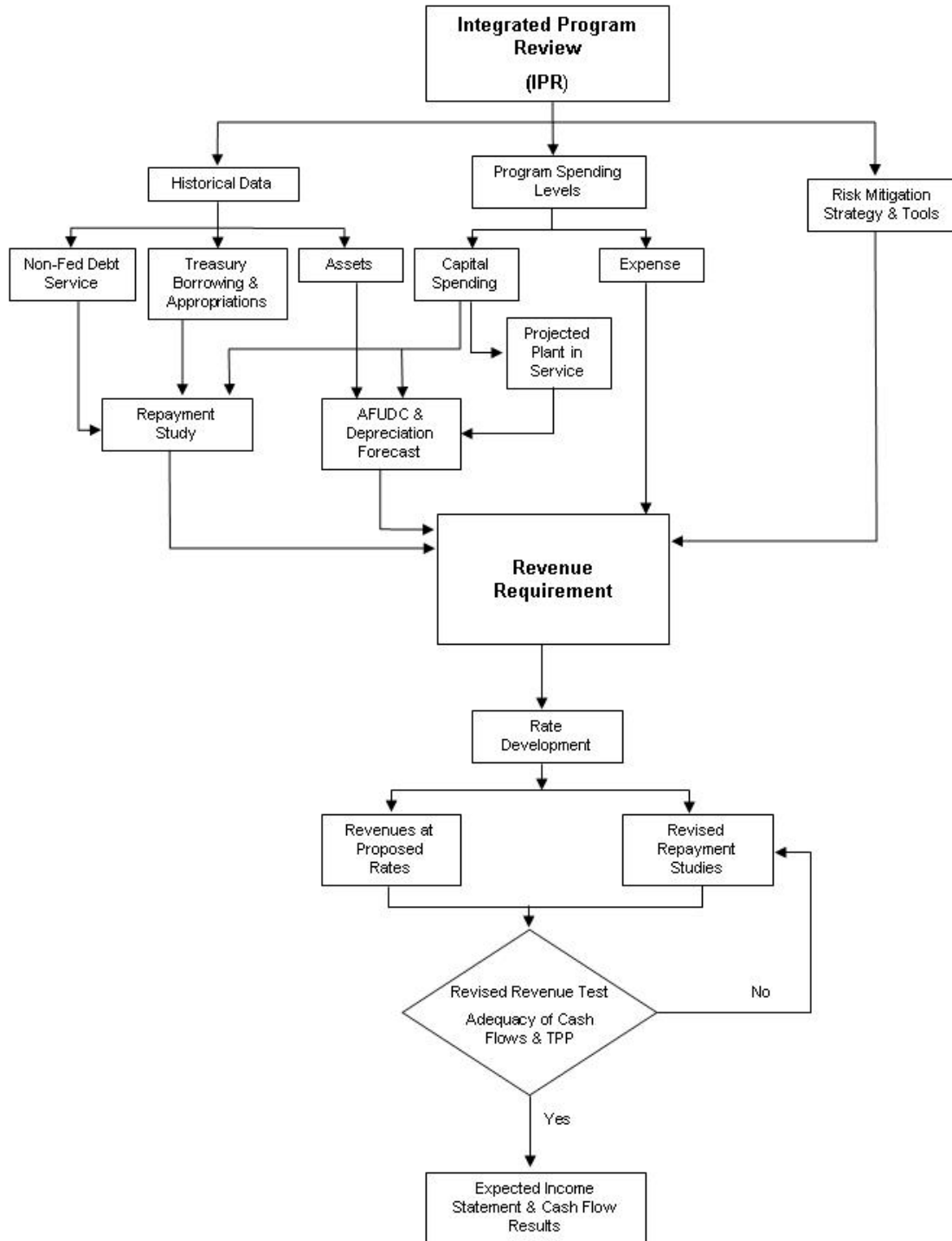
POR	Point of Receipt
PS	Power Services
PSC	power sales contract
PSW	Pacific Southwest
PTP	Point to Point
PUD	public or people's utility district
PW	WECC and Peak Service
RAM	Rate Analysis Model (computer model)
RCD	Regional Cooperation Debt
RD	Regional Dialogue
RDC	Reserves Distribution Clause
REC	Renewable Energy Certificate
Reclamation	U.S. Bureau of Reclamation
REP	Residential Exchange Program
REPSIA	REP Settlement Implementation Agreement
RevSim	Revenue Simulation Model
RFA	Revenue Forecast Application (database)
RHWM	Rate Period High Water Mark
ROD	Record of Decision
RPSA	Residential Purchase and Sale Agreement
RR	Resource Replacement
RRS	Resource Remarketing Service
RSC	Resource Shaping Charge
RSS	Resource Support Services
RT1SC	RHWM Tier 1 System Capability
SCD	Scheduling, System Control, and Dispatch Service
SCS	Secondary Crediting Service
SDD	Short Distance Discount
SILS	Southeast Idaho Load Service
Slice	Slice of the System (product)
T1SFCO	Tier 1 System Firm Critical Output
TCMS	Transmission Curtailment Management Service
TGT	Townsend-Garrison Transmission
TOCA	Tier 1 Cost Allocator
TPP	Treasury Payment Probability
TRAM	Transmission Risk Analysis Model
Transmission System Act	Federal Columbia River Transmission System Act
Treaty	Columbia River Treaty
TRL	Total Retail Load
TRM	Tiered Rate Methodology
TS	Transmission Services
TSS	Transmission Scheduling Service
UAI	Unauthorized Increase
UFT	Use of Facilities Transmission
UIC	Unauthorized Increase Charge
ULS	Unanticipated Load Service



USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish & Wildlife Service
VER	Variable Energy Resource
VERBS	Variable Energy Resource Balancing Service
VOR	Value of Reserves
VR1-2014	First Vintage Rate of the BP-14 rate period (PF Tier 2 rate)
VR1-2016	First Vintage Rate of the BP-16 rate period (PF Tier 2 rate)
WECC	Western Electricity Coordinating Council
WSPP	Western Systems Power Pool

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**Figure 1: Generation Revenue Requirement Process**



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# 1. INTRODUCTION

## 1.1 Purpose of Study

The purpose of the Power Revenue Requirement Study (Study) is to establish the revenues from wholesale power rates and other power sales and services that are necessary to recover, in accordance with sound business principles, the Federal Columbia River Power System (FCRPS) costs associated with the production, acquisition, marketing, and conservation of electric power. The revenue requirement developed in this Study includes recovery of the Federal investment in hydro generation, fish and wildlife, and conservation costs; Federal agencies' operations and maintenance (O&M) expenses allocated to power; capitalized contract expenses associated with non-Federal power suppliers, such as Energy Northwest (EN); other power purchase expenses, such as short-term power purchases; power marketing expenses; cost of transmission services necessary for the sale and delivery of FCRPS power; and all other generation-related costs incurred by the Administrator pursuant to law.

The cost evaluation period, as defined by the Federal Energy Regulatory Commission (Commission), is the period extending from the last year for which historical information is available through the proposed rate period. The cost evaluation period for this rate filing includes fiscal year (FY) 2019 and the proposed rate period, FY 2020–2021. This Study is based on generation revenue requirements that include the results of generation repayment studies. This Study does not include the revenue requirement or a cost recovery demonstration for Bonneville Power Administration's (BPA) transmission function. *See* Transmission Revenue Requirement Study, BP-20-FS-BPA-09.

This Study outlines the policies, forecasts, assumptions, and calculations used to determine the generation revenue requirement. The Power Revenue Requirement Study Documentation,

1 BP-20-FS-BPA-02A, contains key technical assumptions and calculations, the results of the  
2 generation repayment studies, and further explanation of the repayment program and its outputs.

3  
4 The revenue requirement for this Study is developed using a cost accounting analysis comprised  
5 of three parts. First, repayment studies for the generation function are prepared to determine the  
6 schedule of amortization payments and to project annual interest expense for bonds and  
7 appropriations that fund the Federal investment in hydro generating resources, fish and wildlife  
8 recovery, conservation, and other generation assets. Repayment studies are conducted for each  
9 year of the rate period and extend over the 50-year repayment period. Second, generation  
10 operating expenses and Minimum Required Net Revenues (MRNR) are projected for each year  
11 of the rate period. Third, annual Planned Net Revenues for Risk (PNRR) are determined after  
12 taking into account risks, BPA's cost recovery goals, and other risk mitigation measures, as  
13 described in the Power and Transmission Risk Study, BP-20-FS-BPA-05. From these three  
14 steps, the revenue requirement is set at the revenue level necessary to fulfill cost recovery  
15 requirements and objectives. This process is depicted in Figure 1 above. Once the revenue  
16 requirement is completed, the costs identified in it are passed to the rate development process,  
17 where they are allocated to the appropriate cost pools and used to develop rates in the Power  
18 Rates Study (PRS), BP-20-FS-BPA-01.

19  
20 Consistent with Department of Energy (DOE) Order RA 6120.2 and the standards of review of  
21 BPA's rates applied by the Commission, BPA must demonstrate the adequacy of both current  
22 and proposed rates. BPA conducts a current revenue test to determine whether revenues  
23 projected from current rates meet cost recovery requirements for the rate period and the  
24 repayment period. If the current revenue test indicates that cost recovery and risk mitigation  
25 requirements are met, current rates could be extended through the proposed rate approval period,  
26 although other reasons may exist for revising rates, such as the implementation of a new rate

1 design. The current revenue test, described in Section 3.2 below, demonstrates that revenues  
2 from current rates will not recover the generation revenue requirement for the rate period.

3  
4 The revised revenue test, which is performed after calculation of the proposed power rates,  
5 determines whether projected revenues from proposed rates meet cost recovery requirements and  
6 objectives for the rate test and repayment periods. The revised revenue test, described in  
7 Section 3.3 below, demonstrates that revenues from the proposed power rates will recover  
8 generation costs in the rate period and over the ensuing 50-year repayment period. In addition,  
9 revenues from the proposed rates, together with risk mitigation tools, are sufficient to meet  
10 BPA's 95 percent Treasury Payment Probability (TPP) standard that all U.S. Treasury payments  
11 will be paid on time and in full, as discussed in the Power and Transmission Risk Study,  
12 BP-20-FS-BPA-05.

13  
14 Table 1 summarizes the revised revenue test and shows projected net revenues from proposed  
15 power rates for FY 2020–2021. These net revenues are the lowest level necessary to achieve  
16 BPA's cost recovery objectives, when combined with other risk mitigation tools, given hydro  
17 condition uncertainty, market price volatility, and other risks. Table 2 shows planned generation  
18 amortization payments to the U.S. Treasury for each year of the rate period and irrigation  
19 assistance payments that are due to be paid from power revenues. The amortization payments  
20 are divided into two categories. One is a base payment, which is Bonneville's repayment  
21 commitment to the Treasury. The second is a conditional payment that will occur only if  
22 non-Federal debt is refinanced in FYs 2020 and 2021. The refinancings will allow BPA to repay  
23 higher interest rate Federal debt in place of the non-Federal debt. If the refinancings do not  
24 occur, the conditional payments to the Treasury will not be made and the non-Federal debt will  
25 be repaid instead.

1 **1.2 Legal Requirements**

2 This section summarizes the statutory framework that guides the development of BPA’s  
3 generation revenue requirement and the recovery of BPA’s generation costs from the various  
4 users of the FCRPS, and the repayment policies BPA follows in the development of its revenue  
5 requirement.

6  
7 **1.2.1 Governing Authorities**

8 BPA’s revenue requirements are governed primarily by four legislative acts: the Bonneville  
9 Project Act of 1937, Pub.L. No. 75-329, 50 Stat. 731; the Flood Control Act of 1944, Pub.L.  
10 No. 78-534, 58 Stat. 890, amended 1977; the Federal Columbia River Transmission System Act  
11 (Transmission System Act) of 1974, Pub.L. No. 93-454, 88 Stat. 1376; and the Pacific Northwest  
12 Electric Power Planning and Conservation Act (Northwest Power Act), Pub.L. No. 96-501,  
13 94 Stat. 2697 (1980). The Omnibus Consolidated Rescissions and Appropriations Act of 1996,  
14 Pub.L. No. 104-134, 110 Stat. 1321, also guides the development of BPA’s revenue  
15 requirements. DOE Order “Power Marketing Administration Financial Reporting,” RA 6120.2,  
16 issued by the Secretary of Energy, provides guidance to Federal power marketing  
17 administrations regarding repayment of the Federal investment. In addition, policies issued by  
18 the Commission provide guidance on separate accounting for transmission system costs.  
19 *See, e.g., Bonneville Power Admin., 25 FERC ¶ 61,140 (1983).*



1 **1.2.1.1 Legal Requirements Governing BPA’s Revenue Requirement**

2 BPA’s rates must be set to ensure that revenues are sufficient to recover costs. This requirement  
3 was first set forth in Section 7 of the Bonneville Project Act, codified at 16 U.S.C. § 832f (as  
4 amended in 1977), which provides that:

5 Rate schedules shall be drawn having regard to the recovery (upon the basis of the  
6 application of such rate schedules to the capacity of the electric facilities of the  
7 Bonneville project) of the cost of producing and transmitting such electric energy,  
8 including the amortization of the capital investment over a reasonable period of  
9 years.

10 *Id.*

11  
12 This cost recovery principle was repeated for Army reservoir projects in Section 5 of the Flood  
13 Control Act of 1944, 16 U.S.C. § 825s. In 1974, Section 9 of the Transmission System Act,  
14 16 U.S.C. § 838g, expanded the cost recovery principle so that BPA’s rates also would be set to  
15 recover:

16 payments provided [in the Administrator’s annual budget] . . . at levels to produce  
17 such additional revenues as may be required, in the aggregate with all other  
18 revenues of the Administrator, to pay when due the principal of, premiums,  
19 discounts, and expenses in connection with the issuance of and interest on all  
20 bonds issued and outstanding pursuant to [this Act,] and amounts required to  
21 establish and maintain reserve and other funds and accounts established in  
22 connection therewith.

23 *Id.*

24  
25 The Northwest Power Act reiterates and clarifies the cost recovery principle. Section 7(a)(1) of  
26 the Northwest Power Act, 16 U.S.C. § 839e(a)(1), provides:

27 The Administrator shall establish, and periodically review and revise, rates for the  
28 sale and disposition of electric energy and capacity and for the transmission of  
29 non-Federal power. Such rates shall be established and, as appropriate, revised to  
30 recover, in accordance with sound business principles, the costs associated with  
31 the acquisition, conservation, and transmission of electric power, including the  
32 amortization of the Federal investment in the Federal Columbia River Power  
33 System (including irrigation costs required to be repaid out of power revenues)  
34 over a reasonable period of years and the other costs and expenses incurred by the

1 Administrator pursuant to this chapter and other provisions of law. Such rates  
2 shall be established in accordance with Sections 9 and 10 of the Federal Columbia  
3 River Transmission System Act (16 U.S.C. § 838), Section 5 of the Flood Control  
4 Act of 1944, and the provisions of this chapter.

5 *Id.*

6  
7 Section 7(a)(2) of the Northwest Power Act, 16 U.S.C. § 839e(a)(2), provides that the  
8 Commission shall issue a confirmation and approval of BPA’s rates upon a finding that the rates

- 9 (A) are sufficient to assure repayment of the Federal investment in the Federal  
10 Columbia River Power System over a reasonable number of years after  
11 first meeting the Administrator’s other costs;
- 12 (B) are based upon the Administrator’s total system costs; and
- 13 (C) insofar as transmission rates are concerned, equitably allocate the costs of  
14 the Federal transmission system between Federal and non-Federal power  
15 utilizing such system.

16  
17 Development of the revenue requirement is a critical component of meeting the statutory cost  
18 recovery principles relevant to BPA. The costs associated with the FCRPS and associated  
19 services and expenses, as well as other costs incurred by the Administrator in furtherance of  
20 BPA’s mission, are included in this Study.

21  
22 **1.2.1.2 The BPA Appropriations Refinancing Act**

23 BPA’s power rates for the FY 2020–2021 rate period will reflect the requirements of the  
24 Refinancing Act, 16 U.S.C. § 838l, part of the Omnibus Consolidated Rescissions and  
25 Appropriations Act of 1996, Pub.L. No. 104-134, 110 Stat. 1321, enacted in April 1996. The  
26 Refinancing Act required that unpaid principal on BPA appropriations (“old capital  
27 investments”) at the end of FY 1996 be reset at the present value of the principal and annual  
28 interest payments BPA would make to the U.S. Treasury for these obligations absent the

1 Refinancing Act, plus \$100 million. 16 U.S.C. § 8381(b). The Refinancing Act also specified  
2 that the new principal amounts of the old capital investments be assigned new interest rates from  
3 the Treasury yield curve prevailing at the time of the refinancing transaction. 16 U.S.C.  
4 § 8381(a)(6)(A).

5  
6 The Refinancing Act restricted prepayment of the new principal for old capital investments to  
7 \$100 million during the first five years after the effective date of the financing. 16 U.S.C.  
8 § 8381(e). The Refinancing Act also specifies that repayment dates on new principal amounts  
9 may not be earlier than the repayment dates for old capital investments. 16 U.S.C. § 8381(d).  
10 The Refinancing Act further directs the Administrator to offer to provide assurance in new or  
11 existing contracts for power, transmission, and related services that the Federal government will  
12 not increase the repayment obligations in the future. 16 U.S.C. § 8381(i).

### 14 **1.2.1.3 Allocation of FCRPS Costs**

15 The individual generating projects comprising the FCRPS serve purposes in addition to power  
16 production, including navigation, irrigation, recreation, and flood control. The total costs of  
17 these Federal projects are allocated to the power revenue requirement and the appropriate cost  
18 pools, and are generally allocated according to the purposes they serve.

19  
20 For projects that provide power generation to the FCRPS, this allocation has generally been  
21 accomplished pursuant to statutory direction. For example, Section 7 of the Bonneville Project  
22 Act, 16 U.S.C. § 832f, requires that BPA’s rates be based on, *inter alia*, “an allocation of costs  
23 made by the [Secretary of Energy,]” and, insofar as costs of the Bonneville Project are  
24 concerned:

25 [T]he Secretary of Energy may allocate to the costs of electric facilities such a  
26 share of the cost of facilities having joint value for the production of electric

1 energy and other purposes as the power development may fairly bear as compared  
2 with other such purposes.

3 *Id.*

4  
5 Similar allocations for U.S. Bureau of Reclamation (Reclamation) projects constructed pursuant  
6 to various authorizing statutes have been performed by the Secretary of the Interior under the  
7 authority of 43 U.S.C. § 485h(a)–(b). Cost allocations for projects constructed by the U.S. Army  
8 Corps of Engineers (Corps) have been performed by the Secretary of the Army and approved by  
9 the Federal Power Commission (the predecessor to the Federal Energy Regulatory Commission).

10  
11 In general, an attempt is made to allocate the cost of each feature of a multipurpose dam to the  
12 purpose it serves. For example, the costs of powerhouses, penstocks, and other specific  
13 power-related facilities have been allocated to the generation function, whereas the costs of  
14 navigation locks have been allocated to navigation. More problematic are the joint-use costs that  
15 remain unallocated after the costs identifiable to single purposes have been allocated. The  
16 joint-use formulas approximate the relative benefits provided by each function, and costs are  
17 allocated accordingly.

18  
19 Thus, costs assigned to the power production functions include specific cost items whose sole  
20 purpose is power production, as well as the “power production share” of joint costs assigned to  
21 more than one purpose. Both types of costs are included in BPA’s generation revenue  
22 requirement.

#### 23 24 **1.2.1.4 Section 4(h)(10)(C) Credit**

25 The Northwest Power Act provides:

26 The Administrator shall use the Bonneville Power Administration fund and the  
27 authorities available to the Administrator under this Act and other laws  
28 administered by the Administrator to protect, mitigate, and enhance fish and

1 wildlife to the extent affected by the development and operation of any  
2 hydroelectric project of the Columbia River and its tributaries . . . .

3 16 U.S.C. § 839b(h)(10)(A).  
4

5 BPA is not obligated to reimburse the U.S. Treasury for the non-power portion of these fish  
6 and wildlife costs. Such non-power costs are instead allocated to the various project purposes  
7 by the BPA Administrator, in consultation with the Corps and Reclamation, pursuant to  
8 Section 4(h)(10)(C) of the Northwest Power Act. 16 U.S.C. § 839b(h)(10)(C). This allocation to  
9 various project purposes implements the principle that electric power consumers will bear no  
10 greater share of the costs of fish and wildlife mitigation than the power portion of the project.  
11 The legislative history of Section 4(h)(10)(C) illustrates how the expenditures by the  
12 Administrator for protection, mitigation, and enhancement of fish and wildlife at individual  
13 Federal projects in excess of the portion allocable to electric consumers are to be treated as a  
14 credit for electric consumers. H.R. Rep. No. 96-976, 2d Sess., pt. 2, at 45 (1980), *reprinted in*  
15 *1980 U.S.C.C.A.N.* 5989, 6011. This principle is satisfied by treating expenditures on behalf of  
16 non-power purposes as other project costs. BPA receives a credit against its cash transfers to the  
17 U.S. Treasury for expenditures attributable to non-power purposes. BPA's initial funding of all  
18 the costs for fish and wildlife has the advantage of avoiding the need for funding the non-power  
19 portion of these costs through the annual appropriations process.  
20

#### 21 **1.2.1.5 Colville Settlement Act Credits**

22 The Confederated Tribes of the Colville Reservation Grand Coulee Dam Settlement Act  
23 approves and ratifies the Settlement Agreement entered into by the United States and the  
24 Confederated Tribes of the Colville Reservation (Colville Tribes) related to the claims for a  
25 portion of the revenues from Grand Coulee Dam, and directs BPA to carry out its obligations  
26 under the Settlement Agreement. P.L. No. 103-436, 108 Stat. 4577 (1994).

1 The Settlement Agreement obligates BPA to make annual payments to the Colville Tribes.  
2 Payments have been tied to BPA’s average prices and the amount of annual generation from  
3 Grand Coulee Dam. Under the Refinancing Act, part of the Omnibus Consolidated Rescissions  
4 and Appropriations Act of 1996, Pub.L. No. 104-134, 110 Stat. 1321, BPA receives annual  
5 credits from the U.S. Treasury against payments due the U.S. Treasury in order to defray a  
6 portion of the costs of making payments to the Colville Tribes. The annual payments to the  
7 Colville Tribes are forecast to be \$22.9 million in FY 2020 and \$22.9 million in FY 2021. The  
8 credits for the FY 2020–2021 rate period are \$4.6 million in each fiscal year.  
9

## 10 **1.2.2 Repayment Requirements and Policies**

### 11 **1.2.2.1 Separate Repayment Studies**

12 Section 10 of the Transmission System Act, 16 U.S.C. § 838h, and Section 7(a)(2)(C) of the  
13 Northwest Power Act, 16 U.S.C. § 839e(a)(2)(C), provide that the recovery of the costs of the  
14 Federal transmission system shall be equitably allocated between Federal and non-Federal power  
15 utilizing such system. In 1982, the Commission first directed BPA to provide accounting and  
16 repayment statements for its transmission system separate and apart from the accounting and  
17 repayment statements for the Federal generation system. *Bonneville Power Admin.*, 20 FERC  
18 ¶ 61,142 (1982). The Commission required BPA to establish books of account for the Federal  
19 Columbia River Transmission System (FCRTS) separate from its generation books of account;  
20 explained that the FCRTS shall be comprised of all investments, including administrative and  
21 management costs, related to the transmission of electric power; and directed BPA to develop  
22 repayment studies for its transmission function separate from those for its generation function.  
23 Such studies must set forth the date of each investment, the repayment date, and the amount  
24 repaid from transmission revenues. *Bonneville Power Admin.*, 26 FERC ¶ 61,096 (1984).  
25  
26

1 The Commission approved BPA’s methodology for separate repayment studies in 1984.  
2 *Bonneville Power Admin.*, 28 FERC ¶ 61,325 (1984). Thus, BPA has prepared separate  
3 repayment studies for its transmission and generation functions since 1984. This standard has  
4 enabled BPA to set power and transmission rates separately with minimal change in repayment  
5 policy and the process for developing each revenue requirement. This Study incorporates only  
6 the repayment study for the generation function for FY 2020–2021.

### 8 **1.2.2.2 Repayment Schedules**

9 The statutes applicable to BPA do not include specific directives for scheduling repayment of  
10 capital appropriations and bonds issued to Treasury other than a directive that the Federal  
11 investment be amortized over a reasonable period of years. BPA’s repayment policy has been  
12 established largely through administrative interpretation of its statutory requirements.

13  
14 There have been a number of changes in BPA’s repayment policy over the years concurrent with  
15 expansion of the Federal system and changing conditions. In general, current repayment criteria  
16 were approved by the Secretary of the Interior on April 3, 1963. These criteria were refined and  
17 submitted to the Secretary and the Federal Power Commission in support of BPA’s rate filing in  
18 September 1965.

19  
20 The repayment policy was presented to Congress for its consideration for the authorization of the  
21 Grand Coulee Dam Third Powerhouse in June 1966. The underlying theory of repayment was  
22 discussed in the House of Representatives’ Report related to authorization of this project,  
23 H.R. Rep. No. 89-1409, 2d Sess., at 9-10 (1966). As stated in that report:

24       Accordingly, [in a repayment study] there is no annual schedule of capital  
25       repayment. The test of the sufficiency of revenues is whether the capital  
26       investment can be repaid within the overall repayment period established for each  
27       power project, each increment of investment in the transmission system, and each

1 block of irrigation assistance. Hence, repayment may proceed at a faster or  
2 slower pace from year-to-year as conditions change . . . .

3 *Id.* This approach to repayment scheduling has the effect of averaging the year-to-year  
4 variations in costs and revenues over the repayment period. This results in a uniform cost per  
5 unit of power sold, and permits the maintenance of stable rates for extended periods. It also  
6 facilitates the orderly marketing of power and permits Bonneville Power Administration  
7 customers to plan for the future with assurance.

8  
9 The Secretary of the Interior issued a statement of power policy on September 30, 1970 setting  
10 forth general principles that reaffirmed the repayment policy as previously developed. The most  
11 pertinent of these principles were set forth in the Department of the Interior Manual, Part 730,  
12 Chapter 1:

- 13 A. Hydroelectric power, although not a primary objective, will be proposed to  
14 Congress and supported for inclusion in multiple-purpose Federal projects  
15 when . . . it is capable of repaying its share of the Federal investment,  
16 including operation and maintenance costs and interest, in accordance with  
17 the law.
- 18 B. Electric power generated at Federal projects will be marketed at the lowest  
19 rates consistent with sound financial management. Rates for the sale of  
20 Federal electric power will be reviewed periodically to assure their  
21 sufficiency to repay operating and maintenance costs and the capital  
22 investment within 50 years with interest that more accurately reflects the  
23 cost of money.

24  
25 To achieve a greater degree of uniformity in repayment policy for all Federal power marketing  
26 administrations, the Deputy Assistant Secretary of the Department of the Interior (DOI) issued a  
27 memo on August 2, 1972 outlining (1) a uniform definition of the start of the repayment period  
28 for a particular project; (2) the method for including future replacement costs in repayment  
29 studies; and (3) a provision that the investment or obligation bearing the highest interest rate  
30 shall be amortized first, to the extent possible, while ensuring that BPA still complies with the  
31 prescribed repayment period established for each increment of investment.



1 A further clarification of the repayment policy was outlined in a joint memo of January 7, 1974  
2 from the Assistant Secretary for Reclamation and Assistant Secretary for Energy and Minerals.  
3 This memo states that in addition to meeting the overall objective of repaying the Federal  
4 investment and obligations within the prescribed repayment periods, revenues shall be adequate,  
5 except in unusual circumstances, to repay annually all costs for O&M, purchased power, and  
6 interest.

7  
8 On March 22, 1976, the DOI issued Chapter 4 of Part 730 of the DOI Manual to codify financial  
9 reporting requirements for the Federal power marketing agencies. It describes standard policies  
10 and procedures for preparing system repayment studies.

11  
12 BPA and other Federal power marketing agencies were transferred to the newly established  
13 Department of Energy on October 1, 1977. DOE Organization Act, 42 U.S.C. § 7101 *et seq.*  
14 (1994). The DOE adopted the policies set forth in Part 730 of the DOI Manual by issuing  
15 Interim Management Directive No. 1701 on September 28, 1977, which subsequently was  
16 replaced by RA 6120.2, issued on September 20, 1979 and amended on October 1, 1983.

17  
18 The repayment policy outlined in DOE Order RA 6120.2, paragraph 12, provides that BPA's  
19 total revenues from all sources must be sufficient to:

- 20 (1) Pay all annual costs of operating and maintaining the Federal power  
21 system;
- 22 (2) Pay the cost of obtaining power through purchase and exchange  
23 agreements, the cost for transmission services, and other costs during the  
24 year in which such costs are incurred;
- 25 (3) Pay interest each year on the unamortized portion of the commercial  
26 power investment financed with appropriated funds at the interest rates

1 established for each generating project and for each annual increment of  
2 such investment in the BPA transmission system, except that recovery of  
3 annual interest expense may be deferred in unusual circumstances for  
4 short periods of time;

5 (4) Pay when due the interest and amortization portion on outstanding bonds  
6 sold to the U.S. Treasury;

7 (5) Repay:

- 8 • each dollar of power investments and obligations in the FCRPS  
9 generating projects within 50 years after the projects become  
10 revenue-producing (50 years has been deemed a “reasonable  
11 period” as intended by Congress, except for the Yakima-Chandler  
12 Project, which has a legislated amortization period of 66 years);
- 13 • each annual increment of transmission financed by Federal  
14 investments and obligations within the average service life of such  
15 transmission facilities (currently 40 years) or within a maximum of  
16 50 years, whichever is less (BPA has interpreted RA 6120.2 to  
17 require repayment of bonds sold to finance conservation to be  
18 within the average service lives of these projects, currently  
19 estimated to be five years, and for fish and wildlife facilities to be  
20 15 years);
- 21 • the federally financed amount of each replacement within its  
22 service life up to a maximum of 50 years; and

23 (6) As required by Pub.L. No. 89-448, repay the portion of construction costs  
24 at Federal reclamation projects that is beyond the repayment ability of the  
25 irrigators, and which is assigned for repayment from commercial power

1 revenues, within the same overall period available to the irrigation water  
2 users for making their payments on construction costs.

3  
4 The typical repayment period for appropriated capital investments for generation is 50 years  
5 from the year in which the plant is placed in service. Appropriated transmission investments  
6 have due dates set at no more than 45 years. The Refinancing Act (see Section 1.2.1.2 above)  
7 overrides provisions in DOE Order RA 6120.2 related to determining interest during  
8 construction and assigning interest rates to Federal investments financed by appropriations. The  
9 Refinancing Act also contains provisions on repayment periods (due dates) for the refinanced  
10 investments.

11  
12 Other sections within DOE Order RA 6120.2 require that any outstanding deferred interest  
13 payments must be repaid before any planned amortization payments are made. Also, repayments  
14 are to be made by amortizing those Federal investments and obligations bearing the highest  
15 interest rate first, to the extent possible, while ensuring that BPA still completes repayment of  
16 each increment of Federal investment and obligation within its prescribed repayment period.

17  
18 The generation function is also charged with recovering irrigation assistance costs. Irrigation  
19 costs are repaid without interest. Pub.L. No. 89-448 authorizes the payment of irrigation costs  
20 from revenues of the entire power system; such payments thus are functionalized to generation,  
21 consistent with the so-called "Basin Account" concept. Pub.L. No. 89-561, approved on  
22 September 7, 1966, amended Pub.L. No. 89-448 to provide several limitations on the repayment  
23 of irrigation costs from power revenues. These limitations are:

- 24 (1) the irrigation costs are to be paid from "net revenues" of the power  
25 system, with net revenues defined as those revenues over and

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- above the amount needed to cover power costs and previously authorized irrigation payments;
- (2) the construction of new Federal irrigation projects will be scheduled or deferred, if necessary, so that the repayment of the irrigation costs from power revenues will not require an increase in the BPA power rate level; and
- (3) the total amount of irrigation costs to be repaid from power revenues shall not average more than \$30 million per year in any period of 20 consecutive years.

## 2. DEVELOPMENT OF THE GENERATION REVENUE REQUIREMENT

### 2.1 Spending Level Development

The development of program spending levels occurs outside the rate process. For the FY 2020–2021 rate period, it began in June 2018, when BPA hosted the 2018 Integrated Program Review (IPR) workshops. These workshops provided customers and constituents an opportunity to examine, understand, and comment on BPA’s cost projections and capital investments for BPA’s power and transmission functions.

BPA began the 2018 IPR discussion with the release of the IPR initial report and an opening workshop on June 18, 2018, containing an overview of Power Services, Transmission Services, and Corporate proposed capital and program spending levels for FY 2019–2021 (the cost evaluation period). The initial report and workshop discussed proposed spending, particularly for the FY 2020–2021 rate period; the drivers, goals, and risks associated with the proposed spending; and comparisons to previous IPR costs. The initial report also included capital cost projections for FY 2020–2021.

BPA held six days of workshops in June and July 2018 to discuss the projected capital spending and program spending levels of many program areas, including the Columbia Generating Station (CGS); Corps; Reclamation; BPA’s energy efficiency, transmission, and fish and wildlife programs; and BPA’s Information Technology program. While debt management actions are outside the scope of the IPR, a workshop was held to enhance participants’ understanding of the implications of past debt management decisions, proposed capital spending, and potential debt management tools. After considering the comments received, BPA released a final IPR close-out report in October 2018.

1 This Study incorporates the spending levels identified in the 2018 IPR final close-out report,  
2 which can be found on BPA’s public website: [https://www.bpa.gov/Finance/  
3 FinancialPublicProcesses/IPR/Pages/IPR-2018.aspx](https://www.bpa.gov/Finance/FinancialPublicProcesses/IPR/Pages/IPR-2018.aspx)  
4

## 5 **2.2 Capital Funding**

6 The forecast of BPA’s capital investments for FY 2020–2021 used in setting the BP-20 power  
7 rates was produced in the IPR process. The following section describes these forecasts,  
8 recognizing that the timing of some planned capital spending may be stretched into the following  
9 rate period. FCRPS capital investments include Corps, Reclamation, and BPA capital  
10 investments and third-party resource investments for which debt is secured by BPA (capitalized  
11 contracts). Projections of current FCRPS capital outlays total \$729 million for the FY 2020–  
12 2021 rate period. These investments include:

- 13 • improvements and maintenance needed to increase reliability, safety, and  
14 performance at the CGS nuclear plant;
- 15 • improvements and maintenance needed to improve reliability of the Federal  
16 hydro system;
- 17 • investment in fish and wildlife mitigation measures;
- 18 • investment in conservation activities; and
- 19 • investment in capital equipment.

20 This Study projects that no capital investments will be funded from current revenues.  
21

### 22 **2.2.1 Bonds Issued to the U.S. Treasury**

23 Bonds issued to the U.S. Treasury are the source of capital that will be used to finance BPA’s  
24 FY 2020–2021 capital program and Corps and Reclamation investments that BPA has agreed to  
25 direct-fund under Section 2406 of the Energy Policy Act of 1992, Pub.L. No. 102-486, 106 Stat.  
26 2776, *amending* 16 U.S.C. § 839d-1. Total capital projected capital expenditures are

1 \$681 million, which is comprised of BPA Fish and Wildlife direct program investments  
2 (\$95 million), BPA capital equipment (\$17.5 million), and generating resource investments of  
3 the Corps and Reclamation (\$569 million) during FY 2020–2021.

4  
5 Interest rates on bonds issued by BPA to the U.S. Treasury are set at market interest rates  
6 comparable to interest rates on securities issued by other agencies of the U.S. government.  
7 Interest rates on bonds projected to be issued are included in Chapter 6 of the Power Revenue  
8 Requirement Study Documentation, BP-20-FS-BPA-02A.

### 9 10 **2.2.2 Federal Appropriations**

11 In general, the Study reflects that all Corps and Reclamation capital investments in the FCRPS  
12 will be financed by Federal appropriations unless they are direct-funded by BPA. This Study  
13 includes projected appropriated investments totaling \$92.6 million during the rate period for  
14 Corps fish and wildlife mitigation and recovery measures through the Columbia River Fish  
15 Mitigation (CRFM) project. No other appropriations-financed investments are forecast for the  
16 rate period. Capital investments funded by this source do not become BPA’s obligation to repay  
17 until they are placed in service.

18  
19 The interest rate forecast for appropriated capital investments expected to be placed in service is  
20 found in Chapter 6 of the Power Revenue Requirement Study Documentation,  
21 BP-20-FS-BPA-02A. Each new capital investment is assigned a rate from the U.S. Treasury  
22 yield curve prevailing in the month prior to the beginning of the fiscal year in which the new  
23 investment is placed in service.

1 **2.2.3 Third-Party Debt**

2 Third-party debt differs from U.S. Treasury debt in that entities other than BPA or the  
3 U.S. Treasury issue the debt. BPA’s promise to make payments serves as security for bonds or  
4 other debt that the third party issues, resulting in wider market access and potentially more  
5 favorable interest rates for the seller. Examples of acquisitions financed in this way include the  
6 Energy Northwest, Inc. (EN) WNP-1, WNP-3, and CGS nuclear power projects and the Lewis  
7 County Public Utility District Hydroelectric Project (Cowlitz Falls).

8  
9 **2.2.4 Prepayment Program**

10 The prepayment program involves customers prepaying future power bills by purchasing blocks  
11 of revenue credits that would be applied to billings through FY 2028, when the current Regional  
12 Dialogue contracts expire. Four customers chose to participate in the program, prepaying  
13 revenues of \$340 million. The funds received from these customers will be fully expended by  
14 the end of FY 2019.

15  
16 **2.3 Regional Cooperation Debt**

17 Regional Cooperation Debt (RCD) is debt held by EN that is related to its one operational, and  
18 two terminated, nuclear plants. BPA has worked with EN to refinance RCD as it comes due in  
19 order to repay a like amount of higher interest rate Federal debt to reduce BPA’s total debt  
20 service. The interest savings have been accelerated by one year through the use of lines of credit  
21 (LOC) that EN uses for operations & maintenance and interest expense. The use of the LOC  
22 reduces the amount of cash that BPA transfers to EN, which is then used to repay a like amount  
23 of Federal debt. In the year after the use of the LOC, EN will refinance RCD, which allows BPA  
24 to repay the LOC from the prior year as well as some higher interest rate Federal debt if the  
25 refinancing value is larger than the LOC. The Final Proposal includes an assumption that



1 \$250 million of RCD due in FY 2020 will be refinanced allowing for the repayment of an  
2 anticipated LOC of \$227 million and additional Federal repayment of \$23 million.

3  
4 BPA anticipates that the RCD program will enter a second phase, called RCD2, in 2021.  
5 Beginning in that year, EN debt coming due along with eligible bond issuance premiums will be  
6 refinanced which will allow for the repayment of an equal amount of Treasury bonds. The Final  
7 Proposal also assumes an RCD2 refinancing of \$321 million in FY 2021 which will allow for a  
8 matching increase in Federal repayment.

#### 9 10 **2.4 Modeling of BPA's Repayment Obligations**

11 Repayment studies are performed as part of the process for determining revenue requirements.  
12 The studies establish a schedule of annual U.S. Treasury amortization for the rate period and the  
13 resulting interest payments. Each repayment study covers a rate test year and the ensuing  
14 repayment period, which extends to the last year by which all outstanding and projected  
15 obligations must be repaid. For generation repayment studies, that period is 50 years.

16  
17 In conducting the repayment studies, BPA includes as fixed inputs the annual debt service  
18 payments associated with its capitalized contract obligations and the fixed annual payments  
19 associated with long-term energy resource acquisition contracts. All outstanding and projected  
20 generation repayment obligations for appropriated investments (including irrigation assistance)  
21 and bonds issued to the U.S. Treasury are included to be scheduled for repayment. Funding for  
22 replacements projected during the repayment period is also included in the repayment study,  
23 consistent with the requirements of RA 6120.2.

24  
25 Appropriations and bonds are scheduled to be repaid within the expected useful life of the  
26 associated facility or 50 years, whichever is less. Corps and Reclamation project replacements

1 funded by appropriations and placed in service in 1994 or later have repayment periods that are  
2 set at the weighted average service life of all replacements going into service at that project in  
3 that year.

4  
5 Bonds issued by BPA to the U.S. Treasury have varying terms, taking into account the estimated  
6 average service lives for investments and prudent financing and cash management factors.

7 Generally, bonds are usually issued with a provision that allows them to be called after a certain  
8 time. Bonds may also be issued with no early call provision. Early retirement of eligible bonds  
9 may require that BPA pay a bond premium to the U.S. Treasury. Bonds may also be called and  
10 repaid at a discount. In addition, the interest rate that BPA pays on callable bonds is higher than  
11 the interest rate on non-callable bonds issued at the same time.

12  
13 Bonds are issued primarily to finance BPA's Fish and Wildlife Program, and Corps and  
14 Reclamation investments that are direct-funded by BPA. These bonds are repaid within the  
15 terms and conditions of each bond issued to the U.S. Treasury. Bonds to finance fish and  
16 wildlife capital investments are issued with maturities not to exceed 15 years, the same period  
17 over which BPA amortizes these capital investments. Corps and Reclamation direct-funding  
18 bonds are issued with maturities not to exceed 30 years, although they can be refinanced within  
19 the 50-year repayment period.

20  
21 Based on these parameters, the repayment study establishes a schedule of planned amortization  
22 payments and resulting interest expense by determining the lowest levelized debt service stream  
23 necessary to repay all generation obligations within the required repayment period.

24  
25 Federal amortization payments are then identified two ways. One is a base payment that is  
26 BPA's firm repayment commitment to the U.S. Treasury. The second is a conditional payment

1 that is will be made if BPA and EN refinance non-Federal debt as it comes due and instead repay  
2 Federal debt, as occurred in the Debt Optimization or Regional Cooperation Debt refinancing  
3 actions. If the refinancings occur as planned, an equal amount of Federal debt will be repaid in  
4 place of the non-Federal debt. If the refinancings do not occur, funds will instead be used to  
5 repay the EN debt as it comes due. The BP-20 repayment study assumes that non-Federal  
6 refinancings will occur. The breakout between base and conditional payments can be seen in  
7 Table 2.

8  
9 For further discussion of the repayment program, see Power Revenue Requirement Study  
10 Documentation, BP-20-FS-BPA-02A, Chapter 13.

## 11 12 **2.5 Products Used by Other Studies**

13 This Study produces information that is used in other studies. The information provided to the  
14 Rate Analysis Model (RAM2020) includes itemized program spending data; the allocation of net  
15 interest, MRNR, and PNR to cost pools; and the allocation of interest income between the  
16 Composite cost pool and the Non-Slice cost pool.

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1 sufficient to compensate for the difference between Cash Used for Investment Activities  
2 (Line 17) and Cash Provided by Borrowing and Appropriations (Line 27). If cash provided by  
3 current operations is not sufficient, MRNR must be included in revenue requirements to  
4 accommodate the shortfall, yielding at least zero Annual Increase in Cash (Line 29). Any  
5 MRNR amounts shown on the Statement of Cash Flow (Line 2) are then incorporated in the  
6 Income Statement (Table 3, Line 35).

### 7 8 **3.2 Current Revenue Test**

9 Consistent with DOE Order RA 6120.2, the continuing adequacy of existing rates must be tested  
10 annually. The current revenue test, exhibited in Tables 5 and 6, determines whether the revenue  
11 expected from current rates will meet cost recovery requirements during the FY 2020–2021 rate  
12 period and the ensuing repayment period. Revenue at current rates can be found in the Power  
13 Rates Study (PRS) Documentation, BP-20-FS-BPA-01A, Table 9.1.

14  
15 The result of the current revenue test demonstrates that projected revenue from current rates is  
16 inadequate to meet the cost recovery criteria of Order RA 6120.2, because the net position is  
17 negative for the 2020–2021 rate period. *See* Table 7, Column L. If revenues from current rates  
18 were adequate, current rates could be extended, although other reasons may exist for revising  
19 rates, such as the implementation of a new rate design.

### 20 21 **3.3 Revised Revenue Test**

22 Consistent with DOE Order RA 6120.2, the adequacy of proposed rates must be demonstrated.  
23 The revised revenue test determines whether the revenue projected from proposed rates will meet  
24 cost recovery requirements for the rate period. The revised revenue test is conducted using the  
25 forecast of revenue under proposed rates. *See* PRS Documentation, BP-20-FS-BPA-01A,  
26 Table 9.2.

1 For the rate period, the demonstration of the adequacy of proposed rates is shown in Tables 8  
2 and 9. Table 9 tests the sufficiency of the resulting net revenues from Table 8 (Line 38) for  
3 making the planned annual amortization and irrigation assistance payments. The sufficiency of  
4 net revenues is demonstrated by the annual increase (decrease) in cash (Table 9, Line 30). The  
5 annual cash flow must be at least zero to demonstrate the adequacy of the projected revenues to  
6 cover all cash requirements.

7  
8 The results of the revised revenue test demonstrate that proposed rates are adequate to fulfill the  
9 basic cost recovery requirements for the rate period, FY 2020–2021. With the successful test of  
10 proposed rates, the rate development process ends.

#### 11 12 **3.4 Repayment Test at Proposed Rates**

13 Table 10, Generation Revenue from Proposed Rates, demonstrates whether projected revenue  
14 from proposed rates is adequate to meet the cost recovery criteria of DOE Order RA 6120.2 over  
15 the repayment period. The data are presented in a format consistent with the revised revenue  
16 tests, Tables 8 and 9, and the separate accounting analysis that is an attachment to the filing with  
17 the Commission. The focal point of this table is the net position (Column L), which is the  
18 amount remaining after meeting annual expenses requiring cash for the rate period and  
19 repayment of the Federal investment. Thus, if the net position is zero or greater in each of the  
20 years of the rate period through the repayment period, the projected revenues demonstrate BPA's  
21 ability to repay the Federal investment in the FCRPS within the allowable time. As shown in  
22 Table 10, Column L, the resulting net position is zero or greater for each year of the rate period  
23 and in each year of the repayment period.

24  
25 The historical data on this table were taken from BPA's financial statements, Statements A-F,  
26 and the separate accounting analysis. The rate period data were developed specifically for this

1 Study. The repayment period data are presented consistent with the requirements of RA 6120.2.  
2 Typically, the test of revenue sufficiency through the repayment period uses expenses from the  
3 last year of the rate period. As has been done since the WP-07 rate proceeding, expenses for the  
4 CGS nuclear plant are normalized because it is on a two-year refueling cycle. FY 2021 is a  
5 refueling year for CGS, which increases O&M costs for the facility and increases BPA's power  
6 purchase costs to make up for the loss of generation during the refueling. The projection of these  
7 outage costs in every year of the repayment period would misrepresent the costs associated with  
8 the CGS refueling cycle. For the purposes of this revenue test, these CGS costs for FY 2020 and  
9 FY 2021 have been averaged to produce an average annual cost for the operation of CGS for the  
10 rate period. Any augmentation purchases are also averaged in this fashion because of the higher  
11 costs in FY 2021 to make up for lost CGS generation.

12  
13 Table 11, Amortization of Generation Investments Over Repayment Period, summarizes the  
14 amortization of Federal investments over the repayment period. It displays the total investment  
15 costs through the cost evaluation period, forecast replacements required to maintain the system  
16 through the repayment period, the cumulative dollar amount of investment placed in service,  
17 scheduled amortization payments for each year of the repayment period (due and discretionary),  
18 unamortized investments including replacements through the repayment period, unamortized  
19 obligations as determined by a term schedule (*i.e.*, if all obligations were paid at maturity and  
20 never early), predetermined amortization payments, and the unamortized amount of irrigation  
21 assistance for each year of the repayment period.



## **TABLES**

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**Table 1: Projected Net Revenues from Projected Rates**  
(\$000s)

		<b>A</b>	<b>B</b>	<b>C</b>
		<b>FY 2020</b>	<b>FY 2021</b>	<b>Average</b>
1	Projected Revenues from Proposed Rates	\$ 2,709,679	\$ 2,689,777	\$ 2,699,728
2	Projected Expenses	<u>2,662,169</u>	<u>2,620,809</u>	<u>2,641,489</u>
3	Net Revenues	\$ 47,510	\$ 68,968	\$ 58,239

**Table 2: Planned Federal Amortization & Irrigation Assistance Payments**  
(\$000s)

<b>Base Amortization</b>					
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>Bond</b>	<b>Appropriations</b>	<b>Irrigation</b>	
	<b>Fiscal Year</b>	<b>Amortization</b>	<b>Amortization</b>	<b>Assistance</b>	<b>Total</b>
1	2020	\$150,417	\$0	\$24,331	\$174,748
2	2021	<u>196,775</u>	<u>-</u>	<u>14,747</u>	<u>211,522</u>
3	Total	\$347,192	\$0	\$39,078	\$386,270
<b>Conditional Amortization</b>					
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>Bond</b>	<b>Appropriations</b>	<b>Irrigation</b>	
	<b>Fiscal Year</b>	<b>Amortization</b>	<b>Amortization</b>	<b>Assistance</b>	<b>Total</b>
4	2020	\$22,655	\$0	\$0	\$22,655
5	2021	<u>321,290</u>	<u>-</u>	<u>-</u>	<u>321,290</u>
6	Total	\$343,945	\$0	\$0	\$343,945
<b>Total Amortization</b>					
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>Bond</b>	<b>Appropriations</b>	<b>Irrigation</b>	
	<b>Fiscal Year</b>	<b>Amortization</b>	<b>Amortization</b>	<b>Assistance</b>	<b>Total</b>
7	2020	\$173,072	\$0	\$24,331	\$197,403
8	2021	<u>518,065</u>	<u>-</u>	<u>14,747</u>	<u>532,812</u>
9	Total	\$691,137	\$0	\$39,078	\$730,215

**Table 3: Generation Revenue Requirement Income Statement**  
(\$000s)

			<b>A</b>	<b>B</b>
			<b>2020</b>	<b>2021</b>
1	OPERATING EXPENSES			
2	POWER SYSTEM GENERATION RESOURCES			
3	OPERATING GENERATION RESOURCES		681,345	736,892
4	OPERATING GENERATION SETTLEMENT PAYMENTS		22,997	22,997
5	NON-OPERATING GENERATION		1,631	1,531
6	CONTRACTED POWER PURCHASES		86,010	73,977
7	AUGMENTATION POWER PURCHASES		0	0
8	EXCHANGES & SETTLEMENTS		249,767	249,747
9	RENEWABLE GENERATION		36,523	34,869
10	GENERATION CONSERVATION		121,530	121,644
11	POWER NON-GENERATION OPERATIONS		82,816	84,922
12	PS TRANSMISSION ACQUISITION AND ANCILLARY SERVICES		221,643	217,308
13	F&W/USF&W/PLANNING COUNCIL		291,811	292,470
14	GENERAL AND ADMINISTRATIVE/SHARED SERVICES		77,436	78,475
15	OTHER INCOME, EXPENSES AND ADJUSTMENTS		0	(20,000)
16	DEPRECIATION		138,968	141,050
17	AMORTIZATION		379,327	384,364
18	TOTAL OPERATING EXPENSES		2,391,803	2,420,246
19				
20	OTHER EXPENSE AND (INCOME)			
21	INTEREST			
22	APPROPRIATED FUNDS		44,685	45,908
23	CAPITALIZATION ADJUSTMENT		(45,937)	(45,937)
24	BONDS ISSUED TO U.S. TREASURY		61,145	68,928
25	BOND PREMIUMS/DISCOUNTS		13	10
26	NON-FEDERAL INTEREST		245,801	169,807
27	ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION		(15,904)	(16,493)
28	INTEREST CREDIT ON CASH RESERVES		(4,959)	(6,753)
29	INTEREST INCOME ON DECOMMISSIONING TRUST		(8,818)	(9,112)
30	OTHER EXPENSE AND (INCOME) (GAINS/LOSSES)		<u>(5,052)</u>	<u>(5,220)</u>
31	TOTAL OTHER EXPENSE AND (INCOME)		270,974	201,138
32				
33	TOTAL EXPENSES		2,662,777	2,621,385
34				
35	MINIMUM REQUIRED NET REVENUE 1/		15,780	100,690
36	PLANNED NET REVENUE FOR RISK		0	0
37	PLANNED NET REVENUE, TOTAL (34+35)		15,780	100,690
38				
39	<b>TOTAL REVENUE REQUIREMENT</b>		<b>2,678,557</b>	<b>2,722,074</b>
	1/ See note on Statement of Cash Flows			

**Table 4: Generation Revenue Requirement Statement of Cash Flow**  
(\$000s)

		<b>A</b>	<b>B</b>
		<b>2020</b>	<b>2021</b>
1	CASH FROM OPERATING ACTIVITIES		
2	MINIMUM REQUIRED NET REVENUE 1/	15,780	100,690
3	NON-CASH ITEMS:		
4	NON-FEDERAL INTEREST	9,826	8,863
5	DEPRECIATION AND AMORTIZATION	518,295	525,414
6	NON-CASH EXPENSES (INTEREST INCOME & GAINS/LOSSES)	(13,870)	(14,332)
7	CAPITALIZATION ADJUSTMENT	(45,937)	(45,937)
8	NON-CASH REVENUES	(30,600)	(30,600)
9	CASH CONTRIBUTION TO DECOMMISSIONING TRUST	(4,100)	(4,300)
10	CASH FREE UP	<u>16,590</u>	<u>15,885</u>
11	CASH PROVIDED BY OPERATING ACTIVITIES	465,984	555,683
12			
13	CASH FROM INVESTMENT ACTIVITIES		
14	INVESTMENT IN:		
15	UTILITY PLANT (INCLUDING AFUDC)	(280,737)	(323,018)
16	FISH & WILDLIFE	<u>(47,266)</u>	<u>(47,266)</u>
17	CASH USED FOR INVESTMENT ACTIVITIES	(328,003)	(370,284)
18			
19	CASH FROM BORROWING AND APPROPRIATIONS:		
20	INCREASE IN BONDS ISSUED TO U.S. TREASURY	308,885	327,639
21	REPAYMENT OF BONDS ISSUED TO U.S. TREASURY	(173,072)	(518,065)
22	INCREASE IN FEDERAL CONSTRUCTION APPROPRIATIONS	19,119	42,646
23	REPAYMENT OF FEDERAL CONSTRUCTION APPROPRIATIONS	0	0
24	REPAYMENT OF NON-FEDERAL OBLIGATIONS	(268,581)	(22,871)
25	CUSTOMER PROCEEDS	0	0
26	PAYMENT OF IRRIGATION ASSISTANCE	<u>(24,331)</u>	<u>(14,747)</u>
27	CASH PROVIDED BY BORROWING AND APPROPRIATIONS	(137,981)	(185,398)
28			
29	ANNUAL INCREASE (DECREASE) IN CASH	0	0
30			
31	PLANNED NET REVENUE FOR RISK	0	0
32			
33	TOTAL ANNUAL INCREASE (DECREASE) IN CASH	0	0
1/	Minimum required net revenues are added to ensure sufficient cash flow is available to repay the federal investment.		

**Table 5: Generation Current Revenue Test Income Statement**  
(\$000s)

		<b>A</b>	<b>B</b>
		<b>2020</b>	<b>2021</b>
1	REVENUES FROM CURRENT RATES	2,686,228	2,700,442
2			
3	OPERATING EXPENSES		
4	POWER SYSTEM GENERATION RESOURCES		
5	OPERATING GENERATION	681,345	736,892
6	OPERATING GENERATION SETTLEMENTS	22,997	22,997
7	NON-OPERATING GENERATION	1,631	1,531
8	CONTRACTED POWER PURCHASES	86,010	73,977
9	AUGMENTATION POWER PURCHASES	0	0
10	EXCHANGES & SETTLEMENTS	249,767	249,747
11	RENEWABLE GENERATION	36,523	34,869
12	GENERATION CONSERVATION	121,530	121,644
13	POWER NON-GENERATION OPERATIONS	82,816	84,922
14	PS TRANSMISSION ACQUISITION AND ANCILLARY SERVICES	221,643	217,308
15	F&W/USF&W/PLANNING COUNCIL	291,811	292,470
16	BPA INTERNAL SUPPORT	77,436	78,475
17	OTHER INCOME, EXPENSES AND ADJUSTMENTS	0	(20,000)
18	DEPRECIATION	138,968	141,050
19	AMORTIZATION	<u>379,327</u>	<u>384,364</u>
20	TOTAL OPERATING EXPENSES	2,391,803	2,420,246
21			
22	OTHER EXPENSE AND (INCOME)		
23	INTEREST		
24	APPROPRIATED FUNDS	44,685	45,908
25	CAPITALIZATION ADJUSTMENT	(45,937)	(45,937)
26	BONDS ISSUED TO U.S. TREASURY	61,145	68,928
27	PREMIUMS/DISCOUNTS	13	10
28	NON-FEDERAL INTEREST	245,801	169,807
29	ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION	(15,904)	(16,493)
30	INTEREST CREDIT ON CASH RESERVES	(4,937)	(6,553)
31	INTEREST INCOME ON DECOMMISSIONING TRUST	(8,818)	(9,112)
32	OTHER EXPENSE AND (INCOME) (GAINS/LOSSES)	<u>(5,052)</u>	<u>(5,220)</u>
33	TOTAL OTHER EXPENSE AND (INCOME)	270,996	201,339
34			
35	TOTAL EXPENSES	2,662,799	2,621,585
36			
37	NET REVENUES	23,429	78,857

**Table 6: Generation Current Revenue Test Statement of Cash Flow**  
(\$000s)

		<b>A</b>	<b>B</b>
		<b>2020</b>	<b>2021</b>
1	CASH PROVIDED BY OPERATING ACTIVITIES		
2	NET REVENUES	23,429	78,857
3	NON-CASH ITEMS:		
4	NON-FEDERAL INTEREST	9,826	8,863
5	DEPRECIATION AND AMORTIZATION	518,295	525,414
6	NON-CASH EXPENSES (INTEREST INCOME & GAINS/LOSSES)	(13,870)	(14,332)
7	CAPITALIZATION ADJUSTMENT	(45,937)	(45,937)
8	NON-CASH REVENUES	(30,600)	(30,600)
9	CASH CONTRIBUTION TO DECOMMISSIONING TRUST	(4,100)	(4,300)
10	CASH FREE UP	16,590	15,885
11	CASH FLOW ADJUSTMENT (RESERVE)/APPLICATION	<u>0</u>	<u>0</u>
12	CASH PROVIDED BY OPERATING ACTIVITIES	473,634	533,850
13			
14	CASH USED FOR INVESTMENT ACTIVITIES		
15	INVESTMENT IN:		
16	FEDERAL UTILITY PLANT (INCLUDING AFUDC)	(280,737)	(323,018)
17	FISH & WILDLIFE	<u>(47,266)</u>	<u>(47,266)</u>
18	CASH USED FOR INVESTMENT ACTIVITIES	(328,003)	(370,284)
19			
20	CASH FROM (AND USED FOR) FINANCING ACTIVITIES		
21	INCREASE IN TREASURY DEBT	308,885	327,639
22	REPAYMENT OF TREASURY DEBT	(173,072)	(518,065)
23	INCREASE IN FEDERAL CONSTRUCTION APPROPRIATIONS	19,119	42,646
24	REPAYMENT OF FEDERAL CONSTRUCTION APPROPRIATIONS	0	0
25	REPAYMENT OF NON-FEDERAL OBLIGATIONS	(268,581)	(22,871)
26	CUSTOMER PROCEEDS	0	0
27	PAYMENT OF IRRIGATION ASSISTANCE	<u>(24,331)</u>	<u>(14,747)</u>
28	CASH USED FOR FINANCING ACTIVITIES	(137,981)	(185,398)
29			
30	ANNUAL INCREASE (DECREASE) IN CASH	7,650	(21,833)

**Table 7: Generation Revenue from Current Rates – Results Through the Repayment Period**  
(\$000s)

	A	B	C	D	E	F	G	H	I	J	K	L
			PURCHASE AND EXCHANGE POWER		NET INTEREST	NET REVENUES	NONCASH EXPENSES 1/	FUNDS FROM OPERATION 2/	NON-FEDERAL AMORTIZATION 3/	AMORTIZATION	IRRIGATION AMORTIZATION	NET POSITION
	YEAR COMBINED CUMULATIVE	REVENUES (STATEMENT A)	OPERATION & MAINTENANCE (STATEMENT E)	DEPRECIATION (STATEMENT E)	(STATEMENT D)	(F=A-B-C-D-E)	(COLUMN D)	(H=F+G)	(REV REQ STUDY DOCUMENTATION)	(REV REQ STUDY DOCUMENTATION)	(STATEMENT C)	(L=H-I-J-K)
1	Thru 2014	85,655,930	18,971,574	52,260,235	5,723,414	7,536,544	1,164,163	4,581,338	5,951,783	5,521,807	157,944	272,032
2	2015	2,588,858	1,009,924	841,782	224,188	2,588,858	185,925	327,038	585,598	402,532	61,066	122,000
3	2016	2,600,726	1,140,374	864,698	222,551	185,925	187,178	690,354	877,532	1,053,348	60,184	(236,000)
4	2017	2,721,171	1,171,666	947,790	224,047	121,678	255,990	844,640	156,657	847,413	50,769	(53,542)
5	2018	2,862,774	1,188,441	966,795	221,031	73,686	412,821	154,714	323,225	387,766	27,234	(91,775)
6												
7	<b>COST EVALUATION PERIOD</b>											
8	2019	2,805,133	1,177,622	1,129,714	221,031	73,686	203,079	234,967	768,046	423,334	56,573	288,140
9	<b>RATE APPROVAL PERIOD</b>											
10	2020	2,686,228	1,224,398	649,110	518,295	270,996	23,429	450,204	473,634	268,581	173,072	7,649
11	2021	2,700,442	1,201,997	692,835	525,414	201,339	78,857	454,993	533,850	22,871	518,065	(21,832)
12	<b>REPAYMENT PERIOD</b>											
13	2022	2,700,442	1,201,997	664,340	525,414	229,855	78,836	454,993	533,829	324,102	16,606	88,706
14	2023	2,700,442	1,201,997	664,340	525,414	197,803	565,881	454,993	361,934	104,627	12,852	86,469
15	2024	2,700,442	1,201,997	664,340	525,414	198,579	110,113	454,993	565,105	372,960	102,808	15,111
16	2025	2,700,442	1,201,997	664,340	525,414	200,937	107,754	454,993	562,747	387,548	100,065	61,583
17	2026	2,700,442	1,201,997	664,340	525,414	193,690	115,001	454,993	569,994	402,403	92,756	54,061
18	2027	2,700,442	1,201,997	664,340	525,414	188,318	120,373	454,993	575,366	415,381	108,455	45,409
19	2028	2,700,442	1,201,997	664,340	525,414	181,450	127,241	454,993	582,233	426,801	107,007	37,234
20	2029	2,700,442	1,201,997	664,340	525,414	178,127	130,564	454,993	585,557	434,048	125,732	4,065
21	2030	2,700,442	1,201,997	664,340	525,414	158,288	150,403	454,993	605,396	232,849	344,217	1,996
22	2031	2,700,442	1,201,997	664,340	525,414	140,912	167,779	454,993	622,772	228,686	357,180	10,530
23	2032	2,700,442	1,201,997	664,340	525,414	129,730	178,961	454,993	633,954	185,934	423,715	24,305
24	2033	2,700,442	1,201,997	664,340	525,414	116,170	192,521	454,993	647,514	184,952	464,831	4,347
25	2034	2,700,442	1,201,997	664,340	525,414	84,421	224,270	454,993	679,263	190,005	464,831	24,427
26	2035	2,700,442	1,201,997	664,340	525,414	52,238	256,453	454,993	711,446	171,844	508,546	23,290
27	2036	2,700,442	1,201,997	664,340	525,414	68,818	239,873	454,993	694,866	163,763	479,144	28,920
28	2037	2,700,442	1,201,997	664,340	525,414	49,769	258,922	454,993	713,915	166,016	509,033	23,156
29	2038	2,700,442	1,201,997	664,340	525,414	29,827	278,864	454,993	733,857	142,400	569,404	22,053
30	2039	2,700,442	1,201,997	664,340	525,414	10,342	298,349	454,993	753,342	63,017	658,014	14,069
31	2040	2,700,442	1,201,997	664,340	525,414	(11,321)	320,012	454,993	775,005	61,721	695,096	18,188
32	2041	2,700,442	1,201,997	664,340	525,414	(32,529)	341,220	454,993	796,213	55,735	648,923	73,659
33	2042	2,700,442	1,201,997	664,340	525,414	(50,239)	358,930	454,993	813,923	56,377	526,291	231,255
34	2043	2,700,442	1,201,997	664,340	525,414	(58,938)	367,629	454,993	822,621	57,047	213,150	552,425
35	2044	2,700,442	1,201,997	664,340	525,414	(60,122)	368,813	454,993	823,806	166,139	213,150	444,518
36	2045	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,036	213,150	108,525
37	2046	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
38	2047	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,037	213,150	120,110
39	2048	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
40	2049	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,036	213,150	120,111
41	2050	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,036	213,150	120,111
42	2051	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
43	2052	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
44	2053	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
45	2054	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,036	213,150	120,111
46	2055	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,036	213,150	120,111
47	2056	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,034	213,150	120,113
48	2057	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,034	213,150	120,113
49	2058	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
50	2059	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,038	213,150	120,109
51	2060	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,037	213,150	120,109
52	2061	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,037	213,150	120,110
53	2062	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
54	2063	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,111
55	2064	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,037	213,150	120,110
56	2065	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,034	213,150	120,112
57	2066	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
58	2067	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,037	213,150	120,110
59	2068	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,034	213,150	120,113
60	2069	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
61	2070	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,034	213,150	120,113
62	2071	2,700,442	1,201,997	664,340	525,414	(58,613)	367,304	454,993	822,297	489,035	213,150	120,112
63												
64	<b>GENERATION TOTALS</b>	325,299,293	106,157,415	143,830,184	39,874,092	16,799,907	18,637,696	34,246,494	53,987,559	18,219,617	29,022,718	879,097
65												5,866,127
66	1/	Consists of depreciation plus other non-cash expenses and other adjustments and any accounting write-offs included in expenses.										
67	2/	Includes adjustments for non-cash revenues or other accrual to cash adjustments. FY 2019 includes a one-time increase of \$330 million to rebalance financial reserves between the transmission and generation functions to correct for a misallocation error in the calculation of financial reserves attributed to the business units.										
68	3/	Prior to 2020, non-Federal debt was considered part of purchase and exchange power. Starting in 2020, BPA is implementing new guidance on lease accounting. Non-Federal principal and interest will be treated like Federal debt.										



**Table 8: Generation Revised Revenue Test Income Statement**  
(\$000s)

		<b>A</b>	<b>B</b>
		<b>2020</b>	<b>2021</b>
1	REVENUES FROM PROPOSED RATES	2,709,679	2,689,777
2			
3	OPERATING EXPENSES		
4	POWER SYSTEM GENERATION RESOURCES		
5	OPERATING GENERATION	681,345	736,892
6	OPERATING GENERATION SETTLEMENTS	22,997	22,997
7	NON-OPERATING GENERATION	1,631	1,531
8	CONTRACTED POWER PURCHASES	86,010	73,977
9	AUGMENTATION POWER PURCHASES	0	0
10	EXCHANGES & SETTLEMENTS	249,767	249,747
11	RENEWABLE GENERATION	36,523	34,869
12	GENERATION CONSERVATION	121,530	121,644
13	POWER NON-GENERATION OPERATIONS	82,816	84,922
14	PS TRANSMISSION ACQUISITION AND ANCILLARY SERVICES	221,643	217,308
15	F&W/USF&W/PLANNING COUNCIL	291,811	292,470
16	BPA INTERNAL SUPPORT	77,436	78,475
17	OTHER INCOME, EXPENSES AND ADJUSTMENTS	0	(20,000)
19	DEPRECIATION	138,968	141,050
20	AMORTIZATION	<u>379,327</u>	<u>384,364</u>
21	TOTAL OPERATING EXPENSES	2,391,803	2,420,246
22			
23	OTHER EXPENSE AND (INCOME)		
24	INTEREST		
25	APPROPRIATED FUNDS	44,685	45,908
26	CAPITALIZATION ADJUSTMENT	(45,937)	(45,937)
27	BONDS ISSUED TO U.S. TREASURY	61,145	68,928
28	PREMIUMS/DISCOUNTS	13	10
29	NON-FEDERAL INTEREST	245,801	169,807
30	ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION	(15,904)	(16,493)
31	INTEREST CREDIT ON CASH RESERVES	(5,567)	(7,329)
32	INTEREST INCOME ON DECOMMISSIONING TRUST	(8,818)	(9,112)
33	OTHER EXPENSE AND (INCOME) (GAINS/LOSSES)	<u>(5,052)</u>	<u>(5,220)</u>
34	TOTAL OTHER EXPENSE AND (INCOME)	270,366	200,563
35			
36	TOTAL EXPENSES	2,662,169	2,620,809
37			
38	NET REVENUES	47,510	68,968

**Table 9: Generation Revised Revenue Test Statement of Cash Flow**  
(\$000s)

		<b>A</b>	<b>B</b>
		<b>2020</b>	<b>2021</b>
1	CASH PROVIDED BY OPERATING ACTIVITIES		
2	NET REVENUES	47,510	68,968
3	NON-CASH ITEMS:		
4	NON-FEDERAL INTEREST	9,826	8,863
5	DEPRECIATION AND AMORTIZATION	518,295	525,414
6	NON-CASH EXPENSES	(13,870)	(14,332)
7	CAPITALIZATION ADJUSTMENT	(45,937)	(45,937)
8	NON-CASH REVENUES	(30,600)	(30,600)
9	CASH CONTRIBUTION TO DECOMMISSIONING TRUST	(4,100)	(4,300)
10	CASH FREE UP	16,590	15,885
11	CASH FLOW ADJUSTMENT (RESERVE)/APPLICATION	<u>(31,725)</u>	<u>31,725</u>
12	CASH PROVIDED BY OPERATING ACTIVITIES	465,990	555,686
13			
14	CASH USED FOR INVESTMENT ACTIVITIES		
15	INVESTMENT IN:		
16	FEDERAL UTILITY PLANT (INCLUDING AFUDC)	(280,737)	(323,018)
17	FISH & WILDLIFE	<u>(47,266)</u>	<u>(47,266)</u>
18	CASH USED FOR INVESTMENT ACTIVITIES	(328,003)	(370,284)
19			
20	CASH FROM (AND USED FOR) FINANCING ACTIVITIES		
21	INCREASE IN TREASURY DEBT	308,885	327,639
22	REPAYMENT OF TREASURY DEBT	(173,072)	(518,065)
23	INCREASE IN FEDERAL CONSTRUCTION APPROPRIATIONS	19,119	42,646
24	REPAYMENT OF FEDERAL CONSTRUCTION APPROPRIATIONS	0	0
25	REPAYMENT OF NON-FEDERAL OBLIGATIONS	(268,581)	(22,871)
26	CUSTOMER PROCEEDS	0	0
27	PAYMENT OF IRRIGATION ASSISTANCE	<u>(24,331)</u>	<u>(14,747)</u>
28	CASH USED FOR FINANCING ACTIVITIES	(137,981)	(185,398)
29			
30	ANNUAL INCREASE (DECREASE) IN CASH	5	3

**Table 10: Generation Revenue from Proposed Rates – Results Through the Repayment Period**  
(\$000s)

	A	B	C	D	E	F	G	H	I	J	K	L
			PURCHASE AND EXCHANGE POWER (STATEMENT E)			NET REVENUES (F=A-B-C-D-E)		FUNDS FROM OPERATION 2/ (H=F-G)	NON-FEDERAL AMORTIZATION 3/ (REV REQ STUDY DOCUMENTATION)	FEDERAL AMORTIZATION (REV REQ STUDY DOCUMENTATION)	IRRIGATION AMORTIZATION (STATEMENT C)	NET POSITION (L=H-I-J-K)
YEAR COMBINED CUMULATIVE	REVENUES (STATEMENT A)	OPERATION & MAINTENANCE (STATEMENT B)	POWER (STATEMENT E)	DEPRECIATION	NET INTEREST (STATEMENT D)	NET REVENUES (F=A-B-C-D-E)	NONCASH EXPENSES 1/ (COLUMN D)	OPERATION 2/ (H=F-G)	NON-FEDERAL AMORTIZATION 3/ (REV REQ STUDY DOCUMENTATION)	FEDERAL AMORTIZATION (REV REQ STUDY DOCUMENTATION)	IRRIGATION AMORTIZATION (STATEMENT C)	NET POSITION (L=H-I-J-K)
1 Thru 2014	85,655,930	18,971,574	52,260,235	5,723,414	7,536,544	1,164,163	4,581,338	5,951,783	5,521,807	157,944	272,032	
2 2015	2,588,858	1,009,924	841,782	224,188	185,925	327,038	192,292	585,598	402,532	61,066	122,000	
3 2016	2,600,726	1,140,374	864,698	222,551	185,925	187,178	690,354	877,532	1,053,348	60,184	(236,000)	
4 2017	2,721,171	1,171,666	947,790	224,047	121,678	255,990	156,657	844,640	847,413	50,769	(53,542)	
5 2018	2,862,774	1,188,441	966,795	221,031	73,686	412,821	154,714	323,225	387,766	27,234	(91,775)	
6												
7 COST EVALUATION PERIOD												
8												
9 2019	2,805,133	1,177,622	1,129,714	221,031	73,686	203,079	234,967	768,046	423,334	56,573	288,140	
10 RATE APPROVAL PERIOD												
11												
12 2020	2,709,679	1,224,398	649,110	518,295	270,366	47,510	450,204	465,990	268,581	173,072	24,331	5
13 2021	2,689,777	1,201,997	692,835	525,414	200,563	68,968	454,993	555,686	22,871	518,065	14,747	4
14 REPAYMENT PERIOD												
15												
16 2022	2,689,777	1,201,997	664,340	525,414	224,338	73,689	454,993	528,681	104,961	324,102	16,060	83,558
17 2023	2,689,777	1,201,997	664,340	525,414	194,409	103,618	454,993	558,610	104,627	102,627	12,852	79,198
18 2024	2,689,777	1,201,997	664,340	525,414	186,303	111,723	454,993	566,716	102,808	372,960	15,111	75,838
19 2025	2,689,777	1,201,997	664,340	525,414	188,333	109,693	454,993	564,686	387,548	100,065	13,550	63,523
20 2026	2,689,777	1,201,997	664,340	525,414	188,338	109,688	454,993	564,680	402,403	92,756	20,774	48,748
21 2027	2,689,777	1,201,997	664,340	525,414	182,809	115,217	454,993	570,210	415,381	108,455	6,121	40,253
22 2028	2,689,777	1,201,997	664,340	525,414	177,082	120,944	454,993	575,937	426,801	107,007	11,191	30,938
23 2029	2,689,777	1,201,997	664,340	525,414	167,321	130,705	454,993	585,698	125,732	434,048	4,065	21,853
24 2030	2,689,777	1,201,997	664,340	525,414	152,104	145,922	454,993	600,915	152,849	344,217	1,996	21,853
25 2031	2,689,777	1,201,997	664,340	525,414	134,770	163,256	454,993	618,249	228,686	357,180	10,530	21,853
26 2032	2,689,777	1,201,997	664,340	525,414	121,517	176,509	454,993	631,502	185,934	423,715	-	21,853
27 2033	2,689,777	1,201,997	664,340	525,414	107,901	190,126	454,993	645,118	184,952	433,966	4,347	21,853
28 2034	2,689,777	1,201,997	664,340	525,414	76,330	221,696	454,993	676,689	190,005	464,831	-	21,853
29 2035	2,689,777	1,201,997	664,340	525,414	43,010	255,016	454,993	710,009	171,844	508,546	7,766	21,853
30 2036	2,689,777	1,201,997	664,340	525,414	59,338	238,688	454,993	693,681	163,763	479,144	28,920	21,853
31 2037	2,689,777	1,201,997	664,340	525,414	40,408	257,619	454,993	712,611	166,016	509,033	15,710	21,853
32 2038	2,689,777	1,201,997	664,340	525,414	19,362	278,664	454,993	733,657	142,400	569,404	-	21,853
33 2039	2,689,777	1,201,997	664,340	525,414	(3,935)	301,961	454,993	756,953	63,017	658,014	14,069	21,853
34 2040	2,689,777	1,201,997	664,340	525,414	(25,651)	323,677	454,993	778,670	61,721	695,096	-	21,853
35 2041	2,689,777	1,201,997	664,340	525,414	(47,151)	345,177	454,993	800,170	55,735	648,923	73,659	21,853
36 2042	2,689,777	1,201,997	664,340	525,414	(64,819)	362,845	454,993	817,838	56,377	626,291	-	235,170
37 2043	2,689,777	1,201,997	664,340	525,414	(73,475)	371,501	454,993	826,494	57,047	613,150	-	556,297
38 2044	2,689,777	1,201,997	664,340	525,414	(75,136)	373,162	454,993	828,155	166,139	213,150	-	448,866
39 2045	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	11,586	114,561
40 2046	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
41 2047	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
42 2048	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
43 2049	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
44 2050	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
45 2051	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
46 2052	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
47 2053	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
48 2054	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
49 2055	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
50 2056	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
51 2057	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
52 2058	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
53 2059	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
54 2060	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
55 2061	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
56 2062	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
57 2063	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
58 2064	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
59 2065	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
60 2066	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
61 2067	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
62 2068	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
63 2069	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
64 2070	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
65 2071	2,689,777	1,201,997	664,340	525,414	(75,314)	373,340	454,993	828,333	161,340	213,150	-	126,148
66												
67 GENERATION TOTALS	271,044,758	97,392,399	107,581,246	36,446,058	10,625,222	18,999,834	30,810,164	50,942,920	26,267,841	837,394	5,618,067	

1/ Consists of depreciation plus other non-cash expenses and other adjustments and any accounting write-offs included in expenses.

2/ Includes adjustments for non-cash revenues or other accrual to cash adjustments. FY 2019 includes a one-time increase of \$330 million to rebalance financial reserves between the transmission and generation functions to correct for a misallocation error in the calculation of financial reserves attributed to the business units.

3/ Prior to 2020, non-Federal debt was considered part of purchase and exchange power. Starting in 2020, BPA is implementing new guidance on lease accounting. Non-Federal principal and interest will be treated like Federal debt.

**Table 11: Amortization of Generation Investments Over Repayment Period**  
(\$000s)

	A	B	C	D	E	F	G	H	I	J	K
	Investments Placed in Service							Irrigation Assistance			
	Fiscal Year	Original & New Obligations	Replacements	Cumulative Amount In Service	Due Amortization	Discretionary Amortization	Unamortized Investment	Term Investment Schedule	Cumulative Amount In Service	Amortization	Unamortized Amount
1	2019	13,102,835	-	13,102,835	196,250	227,084	3,253,761	7,428,090	363,988	56,604	307,384
2	2020	345,551	-	13,448,386	173,000	72	3,426,240	7,396,812	-	24,331	283,053
3	2021	821,057	-	14,269,443	518,000	65	3,729,233	7,616,021	-	14,747	268,306
4	2022	-	213,150	14,482,592	132,800	191,302	3,618,280	7,628,658	-	16,060	252,247
5	2023	-	213,150	14,695,742	102,000	2,627	3,726,803	7,478,795	-	12,852	239,395
6	2024	-	213,150	14,908,892	74,200	28,608	3,837,145	7,543,477	-	15,111	224,284
7	2025	-	213,150	15,122,042	74,000	26,065	3,950,229	7,411,136	-	13,550	210,734
8	2026	-	213,150	15,335,192	86,000	6,756	4,070,623	7,269,099	-	20,774	189,960
9	2027	-	213,150	15,548,342	91,000	17,455	4,175,318	7,280,350	-	6,121	183,839
10	2028	-	213,150	15,761,491	51,000	56,007	4,281,460	7,195,300	-	11,191	172,648
11	2029	-	213,150	15,974,641	227,000	207,048	4,060,562	7,034,029	-	4,065	168,584
12	2030	-	213,150	16,187,791	60,000	284,217	3,929,495	7,184,065	-	1,996	166,588
13	2031	-	213,150	16,400,941	83,000	274,180	3,785,465	7,271,862	-	10,530	156,058
14	2032	-	213,150	16,614,091	26,000	397,715	3,574,900	7,252,499	-	-	156,058
15	2033	-	213,150	16,827,241	70,000	363,966	3,354,083	7,096,815	-	4,347	151,711
16	2034	-	213,150	17,040,390	55,000	409,831	3,102,402	7,214,964	-	-	151,711
17	2035	-	213,150	17,253,540	-	508,546	2,807,006	7,312,900	-	7,766	143,945
18	2036	-	213,150	17,466,690	-	479,144	2,541,012	7,366,786	-	28,920	115,024
19	2037	-	213,150	17,679,840	-	509,033	2,245,129	7,477,400	-	15,710	99,314
20	2038	-	213,150	17,892,990	-	569,404	1,888,875	7,541,702	-	-	99,314
21	2039	-	213,150	18,106,140	-	658,014	1,444,010	7,624,852	-	14,069	85,245
22	2040	-	213,150	18,319,289	-	695,096	962,064	7,785,244	-	-	85,245
23	2041	-	213,150	18,532,439	-	648,923	526,291	7,898,643	-	73,659	11,586
24	2042	-	213,150	18,745,589	-	526,291	213,150	7,976,919	-	-	11,586
25	2043	-	213,150	18,958,739	-	213,150	213,150	7,875,591	-	-	11,586
26	2044	-	213,150	19,171,889	-	213,150	213,150	8,021,954	-	-	11,586
27	2045	-	213,150	19,385,039	-	213,150	213,150	8,054,158	-	11,586	-
28	2046	-	213,150	19,598,188	-	213,150	213,150	8,206,459	-	-	-
29	2047	-	213,150	19,811,338	-	213,150	213,150	8,222,299	-	-	-
30	2048	-	213,150	20,024,488	-	213,150	213,150	8,298,249	-	-	-
31	2049	-	213,150	20,237,638	-	213,150	213,150	8,467,398	-	-	-
32	2050	-	213,150	20,450,788	-	213,150	213,150	8,374,842	-	-	-
33	2051	-	213,150	20,663,938	-	213,150	213,150	8,313,082	-	-	-
34	2052	-	213,150	20,877,087	-	213,150	213,150	8,512,305	-	-	-
35	2053	-	213,150	21,090,237	-	213,150	213,150	8,649,868	-	-	-
36	2054	-	213,150	21,303,387	-	213,150	213,150	8,755,884	-	-	-
37	2055	-	213,150	21,516,537	-	213,150	213,150	8,823,544	-	-	-
38	2056	-	213,150	21,729,687	-	213,150	213,150	8,658,113	-	-	-
39	2057	-	213,150	21,942,837	-	213,150	213,150	8,814,251	-	-	-
40	2058	-	213,150	22,155,986	-	213,150	213,150	8,968,185	-	-	-
41	2059	-	213,150	22,369,136	-	213,150	213,150	9,029,884	-	-	-
42	2060	-	213,150	22,582,286	-	213,150	213,150	9,181,226	-	-	-
43	2061	-	213,150	22,795,436	-	213,150	213,150	9,272,926	-	-	-
44	2062	-	213,150	23,008,586	-	213,150	213,150	9,377,414	-	-	-
45	2063	-	213,150	23,221,736	-	213,150	213,150	9,486,234	-	-	-
46	2064	-	213,150	23,434,885	-	213,150	213,150	9,583,781	-	-	-
47	2065	-	213,150	23,648,035	-	213,150	213,150	9,707,995	-	-	-
48	2066	-	213,150	23,861,185	-	213,150	213,150	9,886,801	-	-	-
49	2067	-	213,150	24,074,335	-	213,150	213,150	9,824,899	-	-	-
50	2068	-	213,150	24,287,485	-	213,150	213,150	9,771,731	-	-	-
51	2069	-	213,150	24,500,635	-	213,150	213,150	9,684,350	-	-	-
52	2070	-	213,150	24,713,784	-	213,150	213,150	9,648,799	-	-	-
53	<b>Totals</b>	<b>\$14,269,443</b>	<b>\$10,444,342</b>		<b>\$2,019,250</b>				<b>\$363,988</b>	<b>\$363,988</b>	<b>\$3,956,990</b>



