B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

BP-18 Rate Proceeding

Initial Proposal

Power Rates Study

BP-18-E-BPA-01

November 2016

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COMMONLY USED ACRONYMS AND SHORT FORMS

ACNR	Accumulated Calibrated Net Revenue
ACS	Ancillary and Control Area Services
AF	Advance Funding
aMW	average megawatt(s)
ANR	Accumulated Net Revenues
ASC	Average System Cost
BAA	Balancing Authority Area
BiOp	Biological Opinion
BPA	Bonneville Power Administration
Btu	British thermal unit
CDQ	Contract Demand Quantity
CGS	Columbia Generating Station
CHWM	Contract High Water Mark
CNR	Calibrated Net Revenue
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
CY	calendar year (January through December)
DD	Dividend Distribution
dec	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
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
FORS	Forced Outage Reserve Service
FPS	Firm Power and Surplus Products and Services
FPT	Formula Power Transmission
FY	fiscal year (October through September)
G&A	general and administrative (costs)
GARD	Generation and Reserves Dispatch (computer model)
GMS	Grandfathered Generation Management Service
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
inc	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
IS	Southern Intertie
kcfs	thousand cubic feet per second
kW	kilowatt
kWh	kilowatthour
LDD	Low Density Discount
LLH	Light Load Hour(s)
LPP	Large Project Program
LPTAC	Large Project Targeted Adjustment Charge
Maf	million acre-feet
Mid-C	Mid-Columbia
MMBtu	million British thermal units
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

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
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
Peak	Peak Reliability (assessment/charge)
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
Project Act	Bonneville Project Act
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
REC	Renewable Energy Certificate
Reclamation	U.S. Bureau of Reclamation
RDC	Reserves Distribution Clause
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 rate
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
VERBS	Variable Energy Resources 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

1. INTRODUCTION AND BACKGROUND

1.1 Power Rates Study Overview

The Power Rates Study (PRS or Study) explains the processes and calculations used to develop the power rates and billing determinants for Bonneville Power Administration's (BPA) wholesale power products and services. The PRS serves three primary purposes: (1) to demonstrate that the rates have been developed in a manner consistent with statutory direction, including the initial allocation of costs and the subsequent reallocations directed by statute; (2) to set rates consistent with BPA policies; and (3) to demonstrate that the rates have been set at a level that recovers the allocated power revenue requirement for the upcoming rate period, fiscal years (FY) 2018 and 2019.

The development of rates in the PRS uses inputs from a variety of sources:

- The Power Loads and Resources Study, BP-18-E-BPA-03, and its accompanying documentation, BP-18-E-BPA-03A, provide load and resource forecasts.
- The Power Revenue Requirement Study, BP-18-E-BPA-02, and its accompanying documentation, BP-18-E-BPA-02A, provide information regarding the power revenue requirement; *see* Power Revenue Requirement Study § 2.5.
- The Power Market Price Study and Documentation, BP-18-E-BPA-04, provide the electricity market price forecasts and forecast quantities of power expected to be sold and purchased in electric markets. The market price forecasts are used in the development of the demand rates, load shaping rates, short-term balancing purchases and expenses, augmentation purchases and expenses, secondary energy sales and revenue, and Planned Net Revenues for Risk (PNRR), if any.
- The Power and Transmission Risk Study, BP-18-E-BPA-05, and its accompanying documentation, BP-18-E-BPA-05A, demonstrate that the rates and risk mitigation tools

together meet BPA's standard for financial risk tolerance, the Treasury Payment Probability (TPP) standard of 95 percent. The Risk Study includes quantitative and qualitative analyses of financial risks and tools for mitigating those risks and summarizes BPA's proposed Financial Reserves Policy.

Power Services receives revenue from the generation inputs it provides to Transmission Services. The amount of the anticipated revenues from balancing services and other power services provided to Transmission customers is specified in the BP-18 Generation Inputs and Transmission Ancillary and Control Area Services Rates Settlement Agreement dated September 23, 2016. Fredrickson & Fisher, BP-18-E-BPA-18, Appendix A.

The results of the power rate development process, including rates and billing determinants for power products and services and general rate schedule provisions for the rate period, appear in the power rate schedules. The revenues resulting from the rates developed in the PRS are used by the Power Revenue Requirement Study in the Revised Revenue Test to test the adequacy of the proposed rates to recover expenses and supply adequate cash to cover non-expense cash outlays. *See* Power Revenue Requirement Study, BP-18-E-BPA-02, § 3.3.

1.2 Statutory and Legal Overview

The Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), 16 U.S.C. § 839 (2015), is the primary statute providing ratemaking directives to BPA. Section 7(a)(1), 16 U.S.C. § 839e(a)(1) (2015), states:

> The Administrator shall establish, and periodically review and revise, rates for the sale and disposition of electric energy and capacity and for the transmission of non-Federal power. Such rates shall be established and, as appropriate, revised to recover, in accordance with sound business principles, the costs associated with

> the acquisition, conservation, and transmission of electric power, including the amortization of the Federal investment in the Federal Columbia River Power System (including irrigation costs required to be repaid out of power revenues) over a reasonable period of years and the other costs and expenses incurred by the Administrator pursuant to this chapter and other provisions of law.

The Bonneville Project Act defines "periodically review and revise" as revision of power and transmission rates not less frequently than once in every five years. 16 U.S.C. § 832d(a) (2015). Rates also are to be set in accordance with two other statutes, the Federal Columbia River Transmission System Act (Transmission System Act), 16 U.S.C. § 838 (2015), and the Flood Control Act of 1944, 16 U.S.C. § 825s (2015).

Section 7 of the Northwest Power Act governs the allocation of BPA's costs, which is performed in a cost of service analysis (PRS § 2.1), and establishes a set of rate directives that provide further guidance on how individual rates are to be derived (PRS § 2.2).

1.3 Regional Dialogue Policy Overview

In the Long-Term Regional Dialogue Policy, issued in July 2007, BPA defined its power supply and marketing role for the long term. Key components of the policy include 20-year power sales contracts and a tiered Priority Firm Power (PF) rate construct that provides each preference customer with a Contract High Water Mark (CHWM). Each customer's CHWM defines the amount of power that customer has a right to buy at a Tier 1 rate. Any power a utility chooses to buy from BPA for its load in excess of its CHWM is priced at a Tier 2 rate that is designed to recover the marginal cost of serving this additional load.

BPA offered Regional Dialogue contracts to all of its preference and investor-owned utility (IOU) customers. Currently, power service contracts are in effect for these customers for FY 2012–2028.

1.3.1 Regional Dialogue Contract Product Descriptions

Below is a brief summary of the products offered under BPA's CHWM contracts. See BPA's *Regional Dialogue Guidebook*, available in the Regional Dialogue Policy Implementation section of BPA's Web site, www.bpa.gov, for full product descriptions and additional details on the interactions of the products, Tier 2 rate service, and Resource Support Services (RSS).

Load Following. The Load Following product supplies firm power to meet a preference customer's Total Retail Load (TRL), less any firm power supplied by the customer from any Dedicated Resources, including "behind the meter" non-Federal resource amounts. The costs associated with the energy and capacity necessary to provide the Load Following service are recovered through Tier 1 rate charges for energy and demand.

Block. The Block product provides a planned amount of firm power to meet a preference customer's planned annual net requirement load. To buy this product, the customer must have dedicated non-Federal resources, and the customer is responsible for using those resources dedicated to its TRL to meet any load in excess of its planned monthly BPA Block purchase. The costs associated with the energy and capacity necessary to provide this service are recovered through Tier 1 rate charges for energy and demand.

Slice/Block. The Slice/Block product provides a combined sale of two distinct power products: (1) firm power for a preference customer's net requirements load and an advance sale of surplus energy based on the generation shape of the Federal system; and (2) firm requirements power under a Block product. The costs associated with the energy and capacity necessary to provide this service are recovered through Tier 1 rate charges for energy and demand.

1.4 Tiered Rate Methodology

The CHWM contracts and the Tiered Rate Methodology (TRM) provide long-term certainty to preference customers regarding their access to Tier 1 rate power and to BPA regarding its obligation to serve its preference customers' loads. *See* 2012 Wholesale Power and Transmission Rate Adjustment Proceeding (BP-12), Tiered Rate Methodology, BP-12-A-03.

The TRM provides for a two-tiered Priority Firm Public (PFp) rate design applicable to firm requirements power service for preference customers that signed CHWM contracts. The TRM established a predictable and durable means to calculate BPA's PF tiered rates for power deliveries beginning in FY 2012. The tiered rate design differentiates between the cost of service associated with Tier 1 system resources and the cost associated with additional amounts of power sold by BPA to serve any remaining portion of a customer's net requirement, also referred to as Above-Rate Period High Water Mark (Above-RHWM) load. The tiering of the PF Public rate is one of the final steps in the development of rates and does not alter the fundamental manner in which BPA allocates costs to the various rate pools under the Northwest Power Act. PRS section 3.2 describes the steps taken to tier the PF Public rate.

CHWMs, determined according to the TRM, help determine how much of each customer's net requirement purchased from BPA is charged at Tier 1 rates and how much may be charged at Tier 2 rates. The CHWM for each customer was calculated by BPA in FY 2011 based on the expected output of Tier 1 system resources during FY 2012–2013 and customers' actual FY 2010 loads. The individual utility CHWMs set each customer's initial eligibility to purchase power at Tier 1 rates and became part of each utility's CHWM contract.

1.4.1 Rate Period High Water Marks

Related to the CHWM and also defined in the TRM is the RHWM, which is an expression of the CHWM scaled to the expected output of resources identified as comprising the Tier 1 system for the relevant rate period. Each customer's RHWM for FY 2018–2019 defines that customer's maximum eligibility to purchase at Tier 1 rates for the rate period, limited for Slice and Block customers by the purchaser's Annual Net Requirement and for Load Following customers by the purchaser's Actual Net Requirement. The TRM specifies how rates will be developed to ensure, to the maximum extent possible, that customers' purchases of power at Tier 1 rates do not pay any of the costs of serving Above-RHWM Load.

To meet its Above-RHWM Load, a customer may purchase Federal power, non-Federal power, or a combination of the two. To the extent a customer purchases Federal power for its Above-RHWM Load, a PF Tier 2 rate(s) will be applied to this portion of its Federal power service. *See* § 4.1.2.

1.4.2 Rate Period High Water Mark Process

The RHWM is determined based on the customer's CHWM and the RHWM Tier 1 System Capability (RT1SC) for each applicable rate period. The determination of a customer's RHWM occurs outside of the rate proceeding in the RHWM Process, as described in TRM section 4.2.1.

The RHWM Process for the FY 2018–2019 rate period was completed in September 2016. BPA engaged customers in a public process from May to September 2016, with two public comment periods and three public workshops. After completion of the review and comment periods, BPA examined the information collected. BPA posted its determination of values for the FY 2018–2019 rate period for RHWM Tier 1 System Capability, including RHWM Augmentation; each customer's RHWM; and each customer's Above-RHWM Load. *See* the link below:

https://www.bpa.gov/Finance/RateCases/BP-18/Pages/Rate-Period-High-Water-Mark-Process.aspx and PRS Table 1.

Once established, RHWMs are, under most circumstances, not changed. Exceptions include certain changes on a customer's system, including annexation that results in a gain or loss of service territory or later discovery that a load is a New Large Single Load (NLSL).

1.5 Overview

The next two chapters discuss the ratesetting methodology and process, which result in the rate schedules and General Rate Schedule Provisions discussed in Chapters 4 and 5. At a high level, BPA's ratesetting process for power products and services has three main steps:

(1) A Cost of Service Analysis (COSA) Step (PRS § 2.1), which allocates the various types of costs (categorized into resource or cost pools) to the various classes of customers (categorized into load or rate pools) using allocation factors calculated based on loads and resources.

(2) A Rate Directives Step (§ 2.2), which reallocates costs between rate pools to ensure that the relationships between the rates for the different classes of customers comport with the rate directives in the Northwest Power Act.

(3) A Rate Design Step (Chapter 3), which produces tiered PF Public (PFp) rates that collect the PFp revenue requirement determined in the Rate Directives Step. This step also implements the rate design for the non-tiered rates.

Chapter 6 discusses Transfer Service. More than half of BPA's power customers are served by the transmission systems of third parties (entities other than BPA). BPA must acquire transmission services from these third-party transmission providers to deliver Federal power to BPA's power customers. This third-party transmission service is commonly referred to as transfer service. Transfer service customers may be subject to one or more separate charges from BPA.

Chapter 7 discusses the Slice True-Up. Slice customers are subject to an annual Slice True-Up Adjustment for expenses, revenue credits, and adjustments allocated to the Composite cost pool and to the Slice cost pool. BPA calculates the annual Slice True-Up Adjustment for each fiscal year as soon as BPA's audited actual financial data are available.

Chapter 8 discusses Average System Costs. The Residential Exchange Program (REP) established by section 5(c) of the Northwest Power Act was designed to provide residential and farm customers of Pacific Northwest utilities a form of access to low-cost Federal power. Under the REP, BPA purchases power from each participating utility at that utility's average system cost (ASC). The ASC (stated in $/MWh or mills/kWh) is a rate determination that BPA calculates for each utility participating in the REP.

Chapter 9 discusses BPA's revenue forecast. The revenue forecast calculates the expected revenue from power rates and other sources for the rate period, FY 2018–2019, and the current year, FY 2017. BPA prepares two revenue forecasts, one using rates from the rate schedules currently in effect (BP-16 rates) and the second using proposed rates (BP-18 rates). The revenue forecasts are used to test whether current rates and proposed rates will recover the power revenue requirement.

2. RATESETTING COST OF SERVICE AND RATE DIRECTIVES STEPS

2.1 Cost of Service Analysis

2.1.1 Statutory Background

Northwest Power Act sections 7(b), 7(f), and 7(g) provide guidance to BPA for allocating resource and other costs to load (rate) pools, which is performed in the Rate Analysis Model (RAM2018).

Section 7(b)(1) states:

> The Administrator shall establish a rate or rates of general application for electric power sold to meet the general requirements of public body, cooperative, and Federal agency customers within the Pacific Northwest, and loads of electric utilities under section 5(c) of this title. Such rate or rates shall recover the costs of that portion of the Federal base system resources needed to supply such loads until such sales exceed the Federal base system resources. Thereafter, such rate or rates shall recover the cost of additional electric power as needed to supply such loads, first from the electric power acquired by the Administrator under section 5(c) of this title and then from other resources.

16 U.S.C. § 839e(b)(1) (2015). Section 7(b)(1) thus describes how BPA is to allocate resource costs to meet the general requirements of public body, cooperative, and Federal agency customers within the Pacific Northwest and the loads of electric utilities participating in the REP under section 5(c), collectively called the Priority Firm Power (PF) customer class. At this initial stage of the ratesetting process, the PF rate pool consists of the loads of public bodies and cooperatives (collectively identified as preference customers in Northwest Power Act section 5(b)), which are combined with Federal agency loads in section 7(b)(1), and the loads of the REP-participating utilities.

Section 7(b)(1) requires that Federal base system (FBS) resources be used to serve the PF rate pool until the FBS resources are exhausted. Thus, a corresponding amount of FBS costs is allocated to the PF rate pool. After FBS resources are fully used, resources acquired pursuant to the REP (called exchange resources) are used, and then, if needed, new resources are used to serve remaining PF rate load. By allocating resource costs in this order, the appropriate amounts of exchange and new resource costs are allocated to the PF rate pool.

Section 7(f) states:

> Rates for all other firm power sold by the Administrator for use in the Pacific Northwest shall be based upon the cost of the portions of Federal base system resources, purchases of power under section 5(c) of this title and additional resources which, in the determination of the Administrator, are applicable to such sales.

Id. § 839e(f). Section 7(f) sets forth how costs are allocated to rates for all other firm power after costs are allocated to the PF rate pool and the rates for BPA's direct-service industrial customers (DSIs) are determined. Section 7(f) allocates the remaining exchange and new resource costs to the remaining regional load (power sold at the New Resource Firm Power (NR) rate and the Firm Power and Surplus Products and Services (FPS) rate).

Section 7(g) states:

> Except to the extent that the allocation of costs and benefits is governed by provisions of law in effect on December 5, 1980, or by other provisions of this section, the Administrator shall equitably allocate to power rates, in accordance with generally accepted ratemaking principles and the provisions of this chapter, all costs and benefits not otherwise allocated under this section, including, but not

> limited to, conservation, fish and wildlife measures, uncontrollable events, reserves, the excess costs of experimental resources acquired under section 6 of this title, the cost of credits granted pursuant to section 6 of this title, operating services, and the sale of or inability to sell excess electric power.

Id. § 839e(g). Section 7(g) thus addresses the allocation of costs that are not covered by the previously cited sections of the Northwest Power Act, such as conservation and fish and wildlife costs.

Consistent with these mandates, the COSA assigns repayment responsibility for ("allocates") BPA's power revenue requirement (grouped into resource pools, or "cost pools") to the various classes of service (grouped into load pools, or "rate pools"). These allocations are based upon the resources used to serve those loads, in compliance with the statutory directives governing BPA's ratemaking and in accordance with generally accepted ratemaking principles. The COSA and the other ratemaking steps are programmed into RAM2018 for purposes of calculating power rates.

2.1.2 COSA Overview

The COSA categorizes loads and resources determined in the Loads and Resources Study, BP-18-E-BPA-03, into "pools." The load pools and resource pools are then used to calculate Energy Allocation Factors (EAFs). The EAFs are calculated based on the priorities of service from resource pools to rate pools specified in section 7 of the Northwest Power Act, and when section 7 does not provide guidance, based on general principles of cost causation. The COSA then categorizes costs, determined in the Power Revenue Requirement Study, BP-18-E-BPA-02, and revenue credits, determined in the Power Market Price Study and Documentation, BP-18-E-BPA-04, as well as section 2.1.6 below, into cost pools. The COSA concludes by using the EAFs to apportion these costs and revenue credits among the rate pools.

Sections 2.1.3 through 2.1.7 below provide more detail.

2.1.3 Loads and Resources

The COSA uses disaggregated customer load data from the source data used to produce the Power Loads and Resources Study, BP-18-E-BPA-03. *See* Documentation Table 2.1.1. The disaggregated load data are aggregated into the PF rate pool (consisting of two sub-pools, the PF Public (PFp) rate pool and the PF Exchange (PFx) rate pool); the Industrial Firm Power (IP) rate pool; the NR rate pool; and the FPS rate pool. *See* Documentation Table 2.2.2.

The COSA also uses the disaggregated resource data from the source data in the Power Loads and Resources Study. *See* Documentation Tables 2.1.2.1–2. The disaggregated resource data are aggregated into the resource pools specified by section 7 of the Northwest Power Act. These resource pools are the FBS resource pool, the exchange resource pool, and the new resource pool. *See* Documentation Table 2.2.2. The resources in the FBS and new resource pools are actual or planned resources that are forecast to be able to serve load during the rate period. The ratemaking process requires that the forecast firm resources available to serve load equal BPA's firm load obligations under critical water conditions. Critical water conditions assume very low streamflow conditions based on the historical record along with today's generating facilities and constraints to yield an amount of energy output.

2.1.3.1 Load Pools

Load pools are groupings of forecast sales into customer classes for cost allocation purposes. These load pools are used to create rate pools. The Northwest Power Act establishes three rate pools based on the loads served at particular rates. The 7(b) rate pool includes sales to public body and cooperative customers (consumer-owned utilities or COUs), Federal agencies, and utilities participating in the REP. The 7(c) rate pool includes sales to BPA's DSI customers under contracts authorized by section 5(d) of the Northwest Power Act. The 7(f) rate pool includes three types of sales: (1) power sold to consumer-owned utilities that is determined to serve NLSLs; (2) section 5(b) requirements power sold to the region's IOUs; and (3) all power BPA sells pursuant to section 5(f) of the Northwest Power Act.

The Northwest Power Act states that after July 1, 1985, BPA is not required to allocate any resource costs to the IP rate pool; rather, the IP rate is set using a formula pursuant to section 7(c). The formula ties the IP rate to the PF rate. However, if DSI loads were excluded from cost allocations, loads and resources would be out of balance, leaving an amount of resource costs not allocated to any loads. Therefore, for ratemaking purposes BPA allocates resource costs to IP loads as it does to all other remaining firm power sold. The result is that BPA has, for all practical purposes, only two rate pools, the 7(b) rate pool and all other loads. The resource cost allocations to the IP rate pool are adjusted later in the Rate Directives Step to conform the IP rate to the statute-based formula.

2.1.3.2 Resource Pools

The three resource pools are Federal base system resources, exchange resources, and new resources.

The FBS resource pool and associated costs are defined in section 3(10) of the Northwest Power Act. The FBS consists of the costs of the following resources: (1) the Federal Columbia River Power System (FCRPS) hydroelectric projects; (2) resources acquired by the Administrator under long-term contracts in force on the effective date of the Northwest Power Act; and

(3) replacements for reductions in the capability of the resources listed in (1) and (2). Market purchases of system augmentation, balancing purchases, and purchases designated for Tier 2 rates are included in the FBS as replacements for reductions in the capability of FBS resources. Forecast costs for FBS replacement resources during the rate period are included in the FBS resource cost pool.

To implement the direction in Northwest Power Act section 5(c)(1) that BPA is to purchase resources from each eligible REP participant and sell an equivalent amount of electric power to each participant, the exchange resources are sized to be equal to the forecast of the eligible REP exchange load during the rate period. To calculate the eligible REP exchange load, the COSA determines whether the potential exchanging utilities have ASCs that are greater than the applicable Base PF Exchange rate for the rate period. Utilities with ASCs higher than the Base PFx rate are assumed to participate in the REP during the rate period. In this way, BPA estimates the PFx load, the size of the exchange resource pool, and the costs of the exchange resources (the ASCs multiplied by the eligible exchange loads). *See* Documentation Table 2.1.3. This process is iterative and dependent upon the outcomes of the Rate Directives Step. *See* § 2.2.2.

Exchange resources are set equal to the amount of resulting qualifying exchange load, which implements the direction in section 5(c)(1) that BPA is to purchase resources from each eligible REP participant and sell an equivalent amount of electric power to each participant.

The new resources pool includes all other resources acquired by BPA unless a resource has been determined to be a replacement for reduced FBS capability.

2.1.3.3 Order of Resource Service to Load Pools

Section 7(b)(1) of the Northwest Power Act specifies how resource costs must be allocated to the Priority Firm Power customer class. FBS resources are used to serve the PF rate pool until FBS resources are exhausted, whereupon exchange resources and then new resources are used to serve remaining PF rate load. Section 7(f) of the Northwest Power Act specifies what and how costs are allocated to "all other firm power" after costs are allocated to the PF rate pool: the remaining exchange and new resources costs are allocated to remaining load. That remaining load is Industrial Firm Power, New Resource Firm Power, and Firm Power and Surplus Products and Services contracts.

For the BP-18 rates, the PF load (which includes both PFp and PFx loads) is greater than the capability of the FBS resources. Therefore, all FBS costs and benefits are allocated to the PF rate pool. A pro rata share of exchange resource costs is allocated to the PF rate pool in the amount necessary for the exchange resources to serve the PF load not served by FBS resources. The costs of remaining exchange resources and all new resources are allocated to all other firm load.

2.1.3.4 Load and Resource Adjustments

The Loads and Resources Study includes a forecast of the generating capability of all resources available to BPA to serve its load obligations. Ratemaking uses only the amount of resources available to serve the rate pool loads; thus, some adjustments must be made. BPA has certain system obligations, including the Canadian Entitlement and U.S. Bureau of Reclamation (USBR) pumping loads (together called FBS obligations), that have existed since before the passage of the Northwest Power Act. FBS resources used to serve these system obligations are "taken off the top," removing both the obligation and a corresponding amount of FBS resource before the ratemaking load-resource balance is calculated.

The ratemaking load-resource balance after adjustments is shown in Documentation Table 2.2.2.

2.1.3.5 Energy Allocation Factors

The aggregated load and resource data are used to calculate energy allocation factors that the COSA uses to apportion costs among rate pools. EAFs are calculated for each resource and rate pool combination by dividing the amount of annual energy load in each rate pool by the amount served from each resource pool. The annual EAFs for each resource cost pool and for the rate directive steps are shown in Documentation Tables 2.2.3.1–2. The General and Conservation allocation factors assume a pro rata allocation of costs to all firm loads. For example, the General and Conservation ("Total Usage") EAFs are used to allocate some section 7(g) costs and rate directive allocation adjustments to all firm energy loads.

2.1.4 Ratemaking Costs

The COSA aggregates costs from the Power Revenue Requirement Study (*see* Documentation Tables 2.3.1.1–5) into BPA's ratemaking cost pools specified by section 7 of the Northwest Power Act. *See* Documentation Table 2.3.2.

Functionalization of costs between the generation and transmission functions (BPA does not have a distribution function normal to most utilities) is reflected in the Power Revenue Requirement Study and the Transmission Revenue Requirement Study. The costs functionalized to the generation function are included in the power revenue requirement found in the COSA. An exception is exchange resource costs (*see* § 2.1.4.2). The exchange resource costs are calculated internal to RAM2018. The exchange resource costs include transmission function costs. The exchange resource costs are functionalized in the COSA modeling so that only the generation portion of the exchange resource costs is subject to the power cost rate steps, and the transmission cost portion is then added back in after the Rate Directives Step is completed.

See Documentation Table 2.3.4.2. In this way, the statutorily mandated power cost relationships between the various rate pools are maintained without being affected by the exchange transmission function costs.

The COSA modeling uses other costs that are internally generated by RAM2018. These include exchange resource costs, some power purchase costs, revenue shortfall costs associated with some rate credits, and revenues from secondary power sales. These items are covered in greater detail below.

2.1.4.1 Revenue Requirement

The revenue requirement from the Power Revenue Requirement Study is supplemented in the COSA for costs that are determined in other steps of the ratemaking process (such as projected balancing purchase power costs; system augmentation costs; PNRR, if any; and the functionalized exchange resource costs). Disaggregated costs are listed in a form consistent with the income statement from the Power Revenue Requirement Study and are shown in PRS Documentation Table 2.3.1. RAM2018 uses unique identifier key codes to categorize these costs to the COSA cost pools (*see* Documentation Table 2.3.2).

In addition to costs associated with operation of the FCRPS, there are three categories of purchased power that are included in the COSA: (1) purchased power under contract; (2) forecast system augmentation; and (3) forecast balancing power purchases.

Purchased Power. The purchased power subset of purchased power costs includes the costs of acquisition of power through renewable energy, wind, geothermal, and competitive acquisition programs. Costs of purchased power from the Power Revenue Requirement Study are included in the new resources pool.

System Augmentation. For ratesetting purposes, it is assumed that BPA acquires resources beyond the inventory represented by the system generating resources and balancing power purchases. These system augmentation acquisition amounts are determined in the Power Loads and Resources Study and are used to meet annual customer firm power loads in excess of annual firm system resources. The mean price from the Critical Water Run is used to value the cost of system augmentation. Power and Transmission Risk Study, BP-18-E-BPA-05, § 3.1.2.1. System augmentation purchases are treated as FBS replacements and, as such, the costs are included in and allocated as FBS costs. *See* Documentation Tables 2.3.1–2.

Balancing Power Purchases. The costs of power purchases and storage required to meet firm deficits on a monthly/diurnal basis are included in the category of balancing power purchases. Projected balancing power purchases are generally needed to serve firm loads in months other than the spring fish migration period under some water conditions. Balancing purchase expenses are calculated for each monthly/diurnal period where BPA is energy deficit across all 3,200 iterations in the Revenue Simulation Model (RevSim). The median purchasing price and quantity associated with these purchases for each year of the rate period are passed to RAM2018 to compute balancing purchase costs. Power and Transmission Risk Study, BP-18-E-BPA-05, § 3.1.2.1. Balancing power purchases are treated as FBS replacements and, as such, the costs are included in and allocated as FBS costs. *See* Documentation Tables 2.3.1–2.

2.1.4.2 Functionalization of Exchange Resource Costs

In the COSA, exchange resource costs are based on participating utilities' ASCs and their exchange power sales to BPA. Each utility's ASC includes the cost of power and transmission services associated with serving the utility's total retail load. By definition, exchange resource sales to BPA equal the exchange sales by BPA. The rate directive adjustments that occur subsequent to the COSA use the results of the COSA allocations of the generation revenue requirement. Therefore, because the exchange resource costs in the COSA include transmission costs, the PF Exchange rate includes a transmission cost adder, and the exchange resource costs are functionalized between power and transmission.

The exchange resource costs functionalized to power continue through the ratemaking process. The exchange resource costs functionalized to transmission are removed from the generation revenue requirement for the Rate Directives Step and are added back to determine the PF Exchange rate after the Rate Directives Step is completed. In this way, the exchange resource costs functionalized to power are treated the same as other power function costs through the rate development process. The transmission function costs are collected directly from PFx loads through a transmission adder included in the PFx rate. Because the amount of exchange resource costs functionalized to transmission is equal to the increased revenue due to the PFx rate adder, there is no net cost to other rates due to these transmission costs. The functionalization of exchange resource costs is shown in Documentation Table 2.3.4.2.

2.1.4.3 Low Density Discount

Section 7(d)(1) of the Northwest Power Act instructs BPA to apply a Low Density Discount (LDD) to mitigate the costs of customers with relatively fewer consumers spread over relatively larger geographic areas. *See* GRSP II.B.

The cost of providing the discount is computed in RAM2018 using offset quantities and the internally computed TRM rates. Offset quantities are the sum of the applicable LDD percentages applied to the customer-specific billing determinants. *See* TRM, BP-12-A-03, § 10.2. These offsets are computed in the TRM Billing Determinants Model, which is a module of RAM2018.

The estimated cost of the LDD is shown in Documentation Table 2.3.3. The entire cost of the discount is allocated to the PF load pool prior to linking the IP rate to the PF rate (*see* Documentation Tables 2.3.3.2–3).

2.1.4.4 Irrigation Rate Discount

A rate discount is available to qualifying irrigation loads pursuant to CHWM contracts and the TRM. The discount is a rate, expressed in mills per kilowatthour, that when applied to qualified irrigation load produces a dollar credit on eligible customers' power bills. *See* GRSP II.C. The Irrigation Rate Discount (IRD) rate is calculated in RAM2018, as described in § 5.4.2 below. The cost of the discount is computed in RAM2018 using contract irrigation loads and the internally calculated rate. The entire cost of the IRD is allocated to the PF load pool prior to linking the IP rate to the PF rate.

2.1.5 Cost Pools

The COSA has six cost pools for the initial allocation of BPA's power costs: FBS resource costs, exchange resource costs, new resource costs, conservation costs, BPA program costs, and power transmission costs. These costs are allocated to the rate pools using direction from sections 7(b)(1), 7(f), and 7(g) of the Northwest Power Act.

2.1.5.1 Section 7(b)(1) costs

Section 7(b)(1) costs are associated with the resource cost pools necessary to serve PF load, including the PFp load and the PFx load. For the BP-18 rates, these resources include all of the FBS resources and a large portion of the exchange resources. Therefore, all FBS resource costs and most of the exchange resource costs are section 7(b)(1) costs allocated to serve section 7(b)(1) loads; that is, PF loads.

2.1.5.2 Section 7(f) Costs

Section 7(f) costs are associated with the resource cost pools necessary to serve non-PF load, including IP, NR, and FPS loads. For the BP-18 rates, these resources are a small portion of the exchange resources and all of the new resources. Therefore, a small portion of exchange resource costs and all new resource costs are section 7(f) costs allocated to serve all remaining loads; that is, IP, NR, and FPS loads.

2.1.5.3 Section 7(g) Costs

Conservation Costs. The Northwest Power Act requires BPA to treat cost-effective conservation savings as a resource in planning to meet the Administrator's obligations to serve loads. The "conservation" line item, as seen in Documentation Tables 2.3.1–2, includes (1) amortization of BPA's previous conservation resource acquisition activities; (2) BPA's continuing contributions to the region's market transformation efforts; (3) costs associated with BPA's energy efficiency business; and (4) a share of Net Revenues (Minimum Required Net Revenues (MRNR) plus PNRR, if any). Conservation costs are allocated to all rate pools using the Conservation EAFs. *See* Documentation Table 2.3.4.3.

BPA Program Costs. Some of BPA's program costs are not identified directly with any specific resource pool. An example is the cost of tracking and implementing national energy policies and initiatives. Development of these power program costs occurs in the Integrated Program Review, as described in Power Revenue Requirement Study section 2.1. The power portion appears in the COSA as BPA program costs. BPA program costs are allocated to all rate pools based on the Total Usage EAFs. *See* Documentation Table 2.3.4.3.

BPA Power Transmission Costs. Power transmission expenses include the costs of serving customers under transfer service (see Chapter 6). They also include the costs Power Services incurs to procure transmission and ancillary services to transmit surplus Federal power to purchasers that do not hold transmission contracts, primarily outside the Pacific Northwest. BPA also has Federal generation that exists in third-party service territories; both wheeling costs and financial payments to cover losses are included in this category of costs. *See* § 3.2.6 below. Finally, it includes the costs of the FCRPS generation-integration segment, as determined in the Transmission Segmentation Study and Documentation, BP-18-E-BPA-07. Transmission costs are allocated to all rate pools based on the Total Usage EAFs. *See* Documentation Table 2.3.4.3.

2.1.5.4 Planned Net Revenues for Risk

PNRR is an amount of net revenues required to be recovered from power rates to ensure that cash flows from proposed rates meet BPA's probability standard for repaying Power Services' portion of Treasury payments on time and in full. PNRR may also include an amount of cash required to restore an accumulated negative balance of financial reserves attributed to Power Services. Under the ratemaking methodology, the amount of PNRR is the result of an iterative process among several models: RAM2018, RevSim, the Power Non-Operating Risk Model (P-NORM), and ToolKit. *See* Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.2.1.2. The iteration is initiated with a seed value, if any, for PNRR in Documentation Tables 2.3.1.4 and 2.3.2. The resultant rates are used in RevSim to produce net revenue probability distributions. These net revenue distributions are then used in the ToolKit to produce a new PNRR value. *See* Documentation Table 2.3.1.4. Because the PNRR is zero for the BP-18 rates, no iterative process is required to determine PNRR.

2.1.6 Revenue Credits

In addition to allocating cost data, the COSA allocates various revenue credits that offset costs in each pool. Allocation of revenue credits follows the same principles as the allocation of costs, based upon statutory guidance. For example, some revenue credits are associated with the operation of FBS resources and reduce FBS resource costs to be recovered by PF rates. Some revenue credits reduce the new resource and conservation costs. Other revenue credits that are not associated with any particular cost pool are allocated to rate pools pro rata to load.

2.1.6.1 Downstream Benefits and Pumping Power Revenues

Downstream benefits and pumping power revenues are described in section 9.2. Downstream benefits and pumping power revenues are associated with FBS resources, and these credits are allocated to loads that have been allocated FBS costs. *See* Documentation Table 2.3.6.

2.1.6.2 Section 4(h)(10)(C) Credits

Section 4(h)(10)(C) credits are described in section 9.4.1. The forecast credit is calculated as described in the Power and Transmission Risk Study, section 4.1, and supplied to RAM2018. Section 4(h)(10)(C) credits are associated with FBS resources, and these credits are allocated to loads that have been allocated FBS costs. *See* Documentation Table 2.3.6.

2.1.6.3 FBS Contract Obligations Revenue

BPA has certain FBS system obligations that provide revenues. For the BP-18 period, this includes only Upper Baker revenues for energy and capacity purchased by Puget Sound Energy to enable flood control elevation levels at that project. These FBS system obligation revenues are allocated to loads that have been allocated FBS costs. *See* Documentation Table 2.3.6.

2.1.6.4 Colville Credit

The Colville credit is described in section 9.4.2. The Colville credit is associated with FBS resources, and this credit is allocated to loads that have been allocated FBS costs. *See* Documentation Table 2.3.6.

2.1.6.5 Energy Efficiency Revenues

The Energy Efficiency revenue credit reflects revenues associated with the activities of BPA's Energy Efficiency program. These revenues are generally payments for reimbursable expenditures that are included in the generation revenue requirement. The Energy Efficiency revenue credit is allocated in the same way as BPA's conservation expenses and effectively reduces the amount of those expenses allocated to power rates. *See* Documentation Table 2.3.6.

2.1.6.6 Large Project Program (LPP) Revenues

This credit is associated with revenues collected under the Large Project Targeted Adjustment Charge (LPTAC). *See* GRSP II.V. These revenues recover from customers participating in the LPP the costs of acquiring conservation consistent with the Northwest Power Planning Council's applicable Power Plan for the upcoming rate period.

2.1.6.7 Miscellaneous Revenues

Miscellaneous revenues are described in section 9.2. These revenues are allocated to all firm load through the Total Usage EAFs. *See* Documentation Table 2.3.6.

2.1.6.8 Renewable Energy Certificates

Revenues result from BPA's sales of Renewable Energy Certificates (RECs). For FY 2018–2019, no revenues are expected, and the forecast is zero. *See* Documentation Table 2.3.6.

2.1.6.9 General Revenue Credits

In the course of marketing power, Power Services generates transmission-related revenues and credits. The revenues and credits are predominantly revenues associated with providing reserves and energy for ancillary services, control area services, and other reliability needs. The source of these credits is the BP-18 Generation Inputs and Transmission Ancillary and Control Area Services Rates Settlement Agreement, dated September 23, 2016. *See* Fredrickson & Fisher, BP-18-E-BPA-18, Appendix A, Attachment 3. In addition to revenues associated with generation inputs, revenues from Energy Shaping Service products for NLSL service, New Resource Flattening Service, and Resource Support Services for non-Federal resources are allocated to all loads through the General Cost EAFs. *See* Documentation Tables 2.3.7.5–6.

2.1.6.10 Secondary Energy Revenue Credits

The Secondary Energy Revenue Credit adjustment recognizes that BPA collects revenues from certain power sales to which costs are not allocated. BPA credits these revenues to classes of service served with firm Federal power.

The ratemaking process ensures that the forecast of firm resources available to serve load is equal to BPA's firm load obligations under critical water conditions. However, if firm load obligations exceed firm resources, a system augmentation purchase is assumed to achieve load-resource balance. If firm resources exceed firm load obligations, a firm surplus secondary sale is assumed to achieve load-resource balance. System Augmentation expenses are included as FBS replacements in the COSA (*see* § 2.1.4.1). Firm Surplus Secondary Sales are included in the secondary revenue credit calculation but allocated in the Surplus Power Sales Revenue Deficiency/Surplus Reallocation (*see* § 2.1.7).

Non-firm secondary sales recognize that better than critical water conditions will most likely occur. Generation from water in excess of critical water conditions is called secondary energy. The projected secondary energy revenue credits are included so that power rates are set at a level such that revenues from all sources do not recover more than the total Power Services revenue requirement.

The sales of energy in excess of firm obligations on a monthly/diurnal basis under 3,200 games of different risk conditions are calculated by RevSim. *See* Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.1.1; *see also* PRS Documentation Table 2.3.8. Median prices and quantities of these secondary sales, as well as mean market prices, are passed to RAM2018 for the purposes of the secondary revenue credit and the computation of the load shaping rates.

The secondary revenues projected in RevSim are for market sales BPA expects to make on behalf of Non-Slice customers. However, RevSim also calculates the value of secondary energy that is expected to be sold by Slice customers. The ratemaking process does not consider product choice by preference customers until the Rate Design Step; therefore, the revenues from RevSim used at this stage of ratemaking include all secondary energy expected to be produced by Federal generation. *See* Documentation Table 2.3.8. Secondary energy revenues are allocated to rate pools based on the FBS and new resources energy allocation factors to credit the revenues against the costs of the resources producing the secondary energy. *Id.*

2.1.7 Surplus Power Sales Revenue Deficiency/Surplus Reallocation

BPA sells surplus firm power under the FPS rate schedule. If BPA anticipates firm generation to exceed firm load obligations on an annual average basis, Firm Surplus Secondary Sales are included as a revenue credit. The COSA includes the quantity of these sales in the FPS rate pool and allocates costs to these sales. Sales of such firm power are not necessarily made at rates that recover the exact costs allocated in the COSA to these sales. Therefore, either a revenue surplus or a revenue deficiency will result when the costs allocated to the sales of this firm power are compared with the revenues received under the applicable contract. Revenue credits also include revenues from WNP-3 Settlement power sales to Avista. The expected revenue forecast from the sale of firm power and settlements, the allocated costs, and the resulting FPS revenue deficiency are shown in Documentation Table 2.3.9. This revenue deficiency is allocated to all other firm power (PF, IP, and NR) rates.

This is the final step of the COSA. At this point, all of BPA's costs have been allocated to the PF, IP, NR, and FPS rate pools, as have all revenues derived from sources other than these rate pools. After completion of the COSA, certain statutory reallocations of these COSA-allocated costs are performed in the Rate Directives Step.

2.2 Rate Directives Step

2.2.1 Statutory Background

Northwest Power Act sections 7(c), 7(b)(2), and 7(b)(3) provide guidance for the Rate Directives Step. After the COSA allocation of costs and credits to rate pools, the Rate Directives Step reallocates costs among rate pools to ensure that the relationships between the rates for the different classes of customers comport with the rate directives in the Northwest Power Act.

Section 7(c), in pertinent part, states:

> The rate or rates applicable to direct service industrial customers shall be established for the period beginning July 1, 1985, at a level which the Administrator determines to be equitable in relation to the retail rates charged by the public body and cooperative customers to their industrial consumers in the region.

16 U.S.C. § 839e(c) (2015). Section 7(c) describes how BPA is to set the rate it charges DSI customers. It provides that the DSI rate will be set to be equitable in relation to retail industrial rates of consumer-owned utility (COU) customers. Section 7(c) provides guidance on how to establish and modify this equitable relationship.

> The [DSI rate] shall be based upon the Administrator's applicable wholesale rates to such public body and cooperative customers and the typical margins included by such public body and cooperative customers in their retail industrial rates but shall take into account the comparative size and character of the loads served, the relative costs of electric capacity, energy, transmission, and related delivery facilities provided and other service provisions, and direct and indirect overhead costs, all as related to the delivery of power to industrial customers, except that the Administrator's rates during such period shall in no event be less than the rates in effect for the contract year ending on June 30, 1985.

Id. Section 7(c) speaks of the "applicable wholesale rates" to consumer-owned utility (COU) customers plus the "typical margins" included by those customers in their retail industrial rates. The computation of these elements of the DSI rate is discussed in sections 2.2.2.5.1–2, section 4.3.1.1.2, and Appendix A. Section 7(c) also provides for a comparison of the proposed DSI rate to the DSI rate in effect in 1985, as discussed in section 2.2.2.5.4.

Finally, section 7(c)(3) provides:

> The Administrator shall adjust such rates to take into account the value of power system reserves made available to the Administrator through his rights to interrupt or curtail service to such direct service industrial customers.

Id. § 839(c)(3). Section 7(c)(3) thus directs that the DSI rate is to be adjusted to account for the value of power system reserves provided through contractual rights that allow BPA to restrict portions of the DSI load. This adjustment is typically made through a Value of Reserves (VOR) credit. The VOR analysis is discussed in sections 2.2.2.5.2 and 4.3.1.1.1 below.

In summary, the result of section 7(c) requirements is that the DSI rate is set equal to the applicable wholesale rate, plus the typical margin, minus the VOR credit, subject to the DSI floor rate test. Because the DSI rate interacts with the PF rate and the NR rate, the three rates are determined simultaneously through a solution called the 7(c)(2) delta. The determination and application of the 7(c)(2) delta are discussed in sections 2.2.2.1–4 and 2.2.2.5.1–4 and applied to the IP rate in section 4.3.1.1.

Section 7(b)(2) states:

> After July 1, 1985, the projected amounts to be charged for firm power for the combined general requirements of public body, cooperative and Federal agency customers, exclusive of amounts charged such customers under subsection (g) of this section for the costs of conservation, resource and conservation credits, experimental resources and uncontrollable events, may not exceed in total, as determined by the Administrator, during any year after July 1, 1985, plus the ensuing four years, an amount equal to the power costs for general requirements of such customers if the Administrator assumes [five specified assumptions].

Id. § 839e(b)(2). Section 7(b)(2) describes a rate test designed to ensure that preference customers' firm power rates are no higher than rates calculated using five assumptions that remove specified effects of the Northwest Power Act. The rate test is now implemented through provisions of the 2012 REP Settlement, which resolved challenges to BPA's previous implementation of sections 7(b)(2) and 7(b)(3). *See* 2012 REP Settlement, REP-12-A-03. The 2012 REP Settlement provides the manner by which BPA computes the amount of rate protection for preference customers, and the amount of REP benefits to the IOUs, in lieu of performing the rate test every rate period.

Section 7(b)(3), in pertinent part, states:

> Any amounts not charged to public body, cooperative, and Federal agency customers by reason of [section 7(b)(2)] shall be recovered through supplemental rate charges for all other power sold by the Administrator to all customers.

16 U.S.C. § 839e(b)(3) (2015). Section 7(b)(3) directs that the cost of any rate protection afforded to preference customers arising from implementation of section 7(b)(2) be borne by all other BPA power sales. The rate protection does not extend to all PF customers: the public body, cooperative, and Federal agency customers receive the rate protection, but REP participants do not. Thus, to allow the cost reallocations due to the rate protection, the PF rate is bifurcated. The two resulting rates are the PF Public (PFp) rate, which receives the rate protection, and the PF Exchange (PFx) rate, which does not receive rate protection and bears its allocated share of the rate protection reallocation. The rate protection amount is collected through additional charges included in rates for all non-PF Public sales. The reallocation of rate protection costs is discussed in section 2.2.2.3 below. The 2012 REP Settlement retains the allocation of rate protection costs to all other rates through mechanisms specified therein.

2.2.2 Rate Directives Step Modeling

The Rate Directives Step modeling takes as input the costs allocated to the four rate pools (PF, IP, NR, and FPS) from the COSA modeling. The Rate Directives Step adjusts these initial allocations among the PF, IP, and NR rate pools with reallocations of costs that conform to section 7 of the Northwest Power Act. At this point in the modeling, the allocation of costs to the FPS rate pool is equal to the expected revenues from FPS sales and will not be altered throughout the remaining ratemaking steps.

2.2.2.1 First IP-PF Rate Link

The IP rate for sales of power to BPA's DSI customers is a formula rate tied to the unbifurcated PF rate (*i.e.*, the PF rate at this point in the modeling includes costs to be allocated between the PFp and PFx rate sub-pools later in the process). Also at this point in the modeling, the costs allocated to the IP and NR rate pools are equal on a per-megawatthour basis. An adjustment is needed to set the IP rate to its proper relationship with the PF rate. That adjustment, the IP-PF Link 7(c)(2) rate adjustment, will result in the 7(c)2 delta, thereby reducing the allocated costs to the IP rate pool and increasing the costs allocated to the PF and NR rate pools.

The IP-PF Link adjustment sets the IP rate equal to the monthly/diurnal PFp energy rates applied to DSI billing determinants, plus the net industrial margin. To determine the IP rate, the model first calculates the net industrial margin by subtracting the Value of Reserves provided by sales to the DSIs from the typical industrial margin calculated in the 7(c)(2) Margin Study, PRS Appendix A. *See* Documentation Table 2.4.1. Monthly and diurnally PF melded rates are calculated as described in section 4.1.3 below. *See* Documentation Tables 2.4.2–3. Because the IP-PF Link calculation maintains a set relationship between the levels of the IP and PF rates for each year and simultaneously allocates costs between the two rates, and to avoid multiple iterations, RAM2018 has an algebraic formula to approximate a solution and then uses an intrinsic Excel function, "Goal Seek," to converge on a solution for each year of the rate test period. *See* Documentation Table 2.4.4.

After allocation of the 7(c)2 delta in the IP-PF Link reallocation, the IP floor rate test determines if the currently calculated IP rate is below the IP rate that was in effect for the contract year ending on June 30, 1985, as required by section 7(c)(2) of the Northwest Power Act. The BP-18 IP rate at this point in the modeling is not below the IP floor rate, and no floor rate adjustment is needed.

2.2.2.2 Determination of Active Exchanging Utilities

With the proper relationship between the IP rate and the unbifurcated PF rate established, the Base PF Exchange rates for the IOUs and the COUs can be calculated. The Base PF Exchange rate for the IOUs is the average unbifurcated PF rate plus a transmission adder. The Base PF Exchange rate for the COUs begins with the IOU rate and removes Tier 2 costs and loads. A test is again conducted to determine if the ASCs of the potential IOU and COU exchanging utilities are greater than the IOU and COU Base PF Exchange rates. If a utility's ASC is greater than its Base PF Exchange rate, the utility is included as an active exchanging utility.

2.2.2.3 7(b)(2) Rate Protection and 7(b)(3) Reallocations

The next step is to calculate the level of rate protection due to preference customers as a result of the ASC and PFx calculation and pursuant to section 7(b)(2) of the Northwest Power Act. The rate test specified in section 7(b)(2) of the Northwest Power Act ensures that BPA's rates for public body, cooperative, and Federal agency customers (collectively referred to as preference customers or 7(b)(2) customers) are no higher than rates calculated using specific assumptions that remove certain effects of the Northwest Power Act. The BP-18 rates are calculated pursuant to a settlement of litigation associated with the REP and the section 7(b)(2) rate test. *See* 2012 Residential Exchange Program Settlement Agreement, Contract No. 11PB-12322 (2012 REP Settlement), REP-12-A-02A, at 1. The 2012 REP Settlement was evaluated for compliance with, among other statutory provisions, sections 7(b)(2) and 7(b)(3).

Rate modeling for the REP under the 2012 REP Settlement begins with total IOU REP benefits, as specified in the 2012 REP Settlement, known as Scheduled Amounts. Added to this total IOU REP benefit amount are the Refund Amounts, which are allocated to the preference customers and also specified in the 2012 REP Settlement. The Refund Amounts are credited back to preference customers in the form of a credit on their power bills. Together these amounts are referred to as REP Recovery Amounts. *See* Documentation Table 2.4.9.

The 2012 REP Settlement rate modeling first calculates the Unconstrained Benefits, which are the REP benefits that would be in place if there were no PFp rate protection. In such circumstance, the REP benefits for each exchanging utility would be its ASC minus its appropriate Base PFx rate multiplied by its qualified exchange load. The Unconstrained Benefits are shown in Documentation Table 2.4.10. These Unconstrained Benefits are then used to calculate COU REP benefits, as specified in individual settlements with each eligible COU. COU REP benefits are calculated using a ratio of (1) the IOU Scheduled Amounts plus COU Refund Amount to (2) the total IOU Unconstrained Benefits for IOUs. This ratio is then multiplied by COU Unconstrained Benefits to derive COU REP benefits.

The total rate protection provided to preference customers is composed of two parts. With the Unconstrained Benefits and the total IOU and COU REP benefits determined, the first part of rate protection due to preference customers is calculated as the Unconstrained Benefits minus the sum of REP benefits. The REP Settlement modeling then allocates this amount to individual REP participants. Next, the cost of providing Refund Amounts is allocated to the IOU REP participants. The sum of these two specific allocations to each REP participant is divided by the exchange load for each participant, calculating a utility-specific 7(b)(3) Surcharge that is added to the appropriate Base PFx rates to produce a utility-specific PFx rate. *See* Documentation Table 2.4.11. After the utility-specific PFx rates are calculated, the utility-specific REP benefits are calculated and summed. See Documentation Tables 2.4.11–12, which show reallocations between participating IOUs pursuant to Section 6.2 of the 2012 REP Settlement Agreement.

A second part of rate protection, the REP Surcharge, is calculated and allocated to the IP and NR rate pools. The REP Surcharge is determined by multiplying the REP benefit costs determined above (REP Recovery Amounts plus COU REP benefits) by a scalar specified in the 2012 REP Settlement. The scalar is based on the WP-10 7(b)(3) rate surcharge to the IP and NR rates and increases this historical 7(b)(3) rate surcharge in direct proportion to increases in REP Recovery Amounts relative to WP-10 REP benefit levels. The REP Surcharge, when multiplied by the forecast sales under the IP and NR rate schedules, produces an amount of rate protection dollars. *See* Documentation Table 2.4.13. This amount is allocated to the IP and NR rate pools.

The REP Settlement rate protection allocations increase the IP, NR, and PFx rates while decreasing the PFp rate. *See* Documentation Table 2.4.14.

2.2.2.4 Second IP-PF Rate Link

After the IP and NR adjustment, the now-lower PFp rate and the now-higher IP rate must be adjusted to maintain the proper 7(c)(2) rate directive cost relationship. For this second IP-PF Link calculation, monthly/diurnal PFp energy rates are determined, and the IP rate is set equal to the flat PFp rate plus the net Industrial Margin plus the REP Surcharge. At this point in the ratemaking process, a reallocation of costs (consistent with section 2.2.2.5 below) establishes the NR rate. *See* Documentation Tables 2.4.16–19.

2.2.2.5 IP Rate

The IP rate is calculated using directives in sections 7(c)(1), 7(c)(2), and 7(c)(3) of the Northwest Power Act. As discussed in section 2.2.1 above, section 7(c)(1)(B) provides that, after July 1, 1985, the rates to DSI customers will be set "at a level which the Administrator determines to be equitable in relation to the retail rates charged by the public body and cooperative customers to their industrial consumers in the region." "Equitable in relation" pursuant to section 7(c)(2) is defined as basing the DSI rate on BPA's "applicable wholesale rates" to its COU customers plus the "typical margins" included by those customers in their retail industrial rates. Section 7(c)(3) provides that the DSI rate is to be adjusted to account for the value of power system reserves provided through contractual rights that allow BPA to restrict portions of the DSI load. This adjustment is made through a Value of Reserves credit. Thus, the rate for the DSIs, the IP rate, is set equal to the applicable wholesale rate, plus the typical margin, plus the VOR credit, subject to the DSI floor rate test and the outcome of the determination of PFp rate protection.

2.2.2.5.1 Applicable Wholesale Rate

The applicable wholesale rate is calculated as the rate(s) at which BPA is selling power to COUs, that is, the PFp rate (for general requirements, as defined in section 7(b)(4) of the Northwest Power Act) and the NR rate (for power used to serve New Large Single Loads). The IP rate begins by being set to the average of the PF and NR rates, weighted by sales to COUs at each rate and reflecting the DSI class load factor. No sales to COUs at the NR rate are projected for this rate period.

2.2.2.5.2 Typical Margin, Value of Reserves, and Net Industrial Margin

As noted above, the DSI rate is set by adding the VOR credit and typical margin to the applicable wholesale rate. The VOR credit is calculated as described in section 4.3.1.1.1. The typical margin is calculated in Appendix A. The typical margin plus the VOR credit yields the net industrial margin. *See* Documentation Table 2.4.1. The net industrial margin is added to the applicable wholesale rate, and the result is multiplied by the forecast DSI load to determine the costs for the IP rate pool.

2.2.2.5.3 IP-PF Link 7(c)(2) Adjustment

The IP-PF Link 7(c)(2) adjustment accounts for the difference between the revenues expected to be recovered from the DSIs at the final IP rate and the costs allocated to the rate. This difference, known as the 7(c)(2) delta, is allocated to non-DSI rates, primarily the PF rate. Because the allocation of the 7(c)(2) delta changes the PF and the NR rates, together forming the applicable wholesale rate upon which the IP rate is based, the 7(c)(2) delta must be recalculated. The interaction between the applicable wholesale rate and the IP rate has been reduced to an algebraic formula to approximate a solution, and then the RAM uses an intrinsic Excel function, "Goal Seek," to converge on a solution for each year of the rate test period. *See* Documentation Table 2.4.4.

2.2.2.5.4 IP Floor Rate Verification

Section 7(c)(2) of the Northwest Power Act requires that the rates to DSI customers shall not be less than the rates in effect for the contract year ending June 30, 1985 (the floor rate). Accordingly, a test is performed to determine if the IP rate is at a level below the 1985 IP rate. If so, an adjustment is made that raises the IP rate to the floor rate and credits other customers with the increased revenue from the DSIs. If the IP rate is set at a level above the floor rate, no floor rate adjustment is necessary.

The first step in calculating the floor rate is to apply the IP-83 Standard rate components to rate period (FY 2018–2019) DSI billing determinants. The resulting revenue figure is divided by total IP rate period energy loads to arrive at an average rate in mills per kilowatthour. This rate is reduced by an Exchange Cost Adjustment and a Deferral Adjustment, which were included in the IP-83 rate but are no longer applicable. Both adjustments are made on a mills per kilowatthour basis.

In addition, the transmission component of the IP-83 rate is removed to allow a power-only floor rate comparison. The floor rate is adjusted for transmission costs by subtracting total transmission costs in mills per kilowatthour from the IP-83 rate in the same manner that the Exchange Cost Adjustment and Deferral Adjustment are removed. The unit transmission component is determined by dividing total transmission costs in the IP-83 rate by the total energy billing determinants for that rate period. *See* Documentation Table 2.4.6.

These calculations result in an "undelivered" IP floor rate. The floor rate is applied to the current rate period DSI billing determinants to determine floor rate revenue. Revenue at the proposed IP rates is compared to the revenue at the floor rate. Because revenue from the proposed IP rate is greater than the floor rate revenue, no floor rate adjustment is necessary. *See* Documentation Tables 2.4.6–7.

2.3 Rate Modeling Iterations

Several iterations—both within RAM2018 and between other models and RAM2018—are required before the ratesetting process is complete. These iterations ensure that the appropriate costs are computed and allocated consistent with the principles of the Northwest Power Act and TRM rate design.

2.3.1 Iterations Internal to the Model

2.3.1.1 Participation in the Residential Exchange Program

For a utility participating in the REP to be eligible to receive REP benefits, the modeling requires that the applicable Base PFx rate be less than a participating utility's ASC. The applicable Base PFx rate is either (1) the Base Tier 1 PFx rate for COUs, or (2) the Base PFx rate for IOUs (the difference being the inclusion of Tier 2 costs in the Base PFx rate for IOUs). If a utility has an ASC less than its applicable Base PFx rate, that utility is ineligible to receive financial benefits through the REP as an "active" exchanger for the upcoming rate period (*see* § 2.2.2.2 above). RAM2018 uses a macro loop feature to test whether, for each year of the exchange period, each utility with an ASC qualifies for REP benefits. If a utility does not qualify, a binary index is used to exclude it, and if it does qualify, the index is set to include it. This test is performed such that the exchange resource costs are calculated including the resources purchased from only REP active participants. It is performed before the Rate Directives Step of the 7(c)(2) linking of the IP and PF rates, the determination of rate protection, and subsequent reallocation of rate protection.

2.3.1.2 Costs of Rate Discounts

The costs of the LDD and IRD are included in the Composite customer charge, but these costs are jointly determined with other aspects of ratemaking, such as REP benefits and IP and NR revenues. Because these revenues change depending on the costs of the LDD and IRD programs, the amounts of these costs are determined through iteration in the model. As explained in sections 2.1.4.3–4, RAM2018 computes the cost of the LDD program by applying the applicable discount percent to the forecast billing determinants, which are then applied to the rates. The IRD program cost is based on a historical percentage and a resulting $/MWh rate discount, which is then applied to internally computed customer charges. For each iteration, the appropriate charges are applied and new discount costs are computed. These new discount costs are allocated in the COSA Step, whereupon the Rate Directives Step and rate design under the TRM are performed again. New charges and rates are computed, which are again applied to the discount calculations. The iterative process continues until convergence.

2.3.1.3 Contract Formula Rates

If a power sales contract rate was agreed to be tied, contractually, to a result of rate modeling, an iterative approach might be required to solve for the amount of revenue to be credited in the COSA Step. No internal iterations are currently required to model contracts at formula rates.

2.3.2 Iterations External to the Model

Some aspects of the ratesetting process are dependent upon the rates computed in RAM2018. Many of these dependencies have been integrated within RAM2018, as described above. Other dependencies are simply too large to incorporate into one model. Thus, external iterations must be performed before rates can be finalized.

2.3.2.1 Consumer-Owned Utility Average System Costs

The ASCs of COUs participating in the REP are based in part on the cost of power purchased from BPA at rates determined in RAM2018. The size of the Refund Amount that a COU will receive is also dependent upon the COU's Tier 1 Cost Allocator (TOCA). These two factors require a recomputation of ASCs for COUs based on the PFp rate level and the Refund Amount. This iteration is manually performed between RAM2018 and the ASC forecast model. Revised ASCs are included in RAM2018, and rate levels are recomputed until the results converge.

2.3.2.2 Risk Analysis and Mitigation: PNRR

The amount of PNRR is the result of an iterative process among four models: RAM2018, RevSim, P-NORM, and ToolKit. *See* Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.2.1.2. The iterative process is initiated with a seed value for PNRR in the revenue requirement used in RAM2018. The resultant rates are used in RevSim and P-NORM to produce distributions of net revenues. These distributions are then used in the ToolKit to produce a new PNRR value for the RAM2018 revenue requirement. Because PNRR for the BP-18 rates is determined to be zero, no iterative process is required to determine rate levels for the BP-18 rates.

2.3.2.3 Revised Revenue Test

The revised revenue test is described in the Power Revenue Requirement Study, BP-18-E-BPA-02, § 3.3. The revised revenue test demonstrates that the BP-18 rates are sufficient to recover the revenue requirement, and no further rate adjustment is needed.

3. RATE DESIGN AND COST ALLOCATION

3.1 Introduction

BPA's rates must follow the ratesetting directives of section 7 of the Northwest Power Act, but, as noted in the legislative history of that Act, the rate directives govern the amount of revenue the Administrator collects from each class of customers, not the rate form. *See, e.g.,* H.R. Rep. No. 96-976, pt. 1, at 69 (2d Sess.1980). Northwest Power Act section 7(e) reserves rate design (how the revenue is collected) to the Administrator.

Section 7(e) states:

> Nothing in this chapter prohibits the administrator from establishing, in rate schedules of general application, a uniform rate or rates for sale of peaking capacity or from establishing time-of-day, seasonal rates, or other rate forms.

16 U.S.C. § 839e(e) (2015). Rate design uses the results of the cost and credit allocations of the COSA, as modified by the rate directives, to develop the rate components that will recover the costs allocated to each rate pool. Thus, rate design is applied after BPA has allocated its total power revenue requirement to five rate pools: Priority Firm Public Power, Priority Firm Exchange Power, New Resource Firm Power, Industrial Firm Power, and Firm Power and Surplus Products and Services. Rate design does not change the amount of the revenue requirement allocated to each of the five rate pools. Rather, rate design determines how the revenue requirement is collected through rates for each of the five rate pools. Rate design resolves the revenue collection within a particular rate pool and distinguishes between different types of service and power consumption of individual wholesale power customers. Rate design is also used to convey price signals to customers to encourage more efficient power usage, differentiating between the relative market values of the products and services BPA offers to its customers.

Based on the results of the Rate Directives Step, RAM2018 designs rates for each rate pool. For the PFx rate, the IP rate, and the NR rate, the rate design can be applied without further processing.

3.2 PFp Rates

The rate design for the PFp rate is established in the TRM. As described in the TRM, the PFp rate design includes two tiers and different products within each tier. The costs and credits are allocated to the Tier 1 and Tier 2 cost pools based upon the principle of cost causation. While the TRM cost allocations do not change the costs allocated to the PFp rate pool, they do assign cost responsibility to the rates paid by customers purchasing the PFp products offered in the CHWM contracts: Slice/Block, Load Following, Block, and Tier 2.

The TRM specifies that all costs and credits constituting BPA's PFp revenue requirement be allocated to one of four customer cost pools: Composite, Non-Slice, Slice, or Tier 2. The Tier 2 cost pool is further divided into Short-Term, Load Growth, VR1-2014, and VR1-2016 cost pools. After reflecting the cost allocations to other rate pools, the end result of the TRM cost allocations is that the total costs allocated to the four customer charge cost pools will equal the total costs allocated to the PFp rate pool after the COSA Step and the Rate Directives Step. Thus, the TRM cost allocations neither increase nor decrease the cost allocations to the PFp rate pool after the Rate Directives Step. A mathematical proof is included in RAM2018 that shows that the revenue requirement allocated to the PFp rate pools in the COSA equals the revenue collected from the seven cost pools under the PFp tiered rate design. *See* Documentation Tables 3.1.7.1–2.

While the TRM cost allocations do not change the costs allocated to the PFp rate pool, they do assign cost responsibility to the rates paid by customers purchasing the three primary products offered in the CHWM contracts: Slice/Block, Load Following, and Block. In addition, the TRM cost allocations recognize that, even though the ratesetting methodology described in this section is performed as if the REP is an actual purchase and sale of power, at this point in the ratesetting process the PFp rate can be determined based on its allocated share of the total REP benefit costs, rather than exchange resource costs and PFx revenues.

The remaining sections in this chapter detail the calculation of PF Public rates consistent with the TRM.

3.2.1 PFp Tier 1 Costs

3.2.1.1 Composite Costs

The Composite cost pool includes all Tier 1 costs and credits that are not otherwise allocated to the Slice and Non-Slice cost pools. The Composite cost pool forms the cost basis for the Composite Customer Charge, which is paid by all preference customers with CHWM contracts. Generally speaking, all costs associated with FBS resource costs, exchange resource costs (net of exchange program revenues), new resource costs, conservation costs, BPA program costs, and power transmission costs not otherwise allocated to the Non-Slice or Slice cost pools are allocated to the Composite cost pool. In addition to the costs from expense and capital programs (as outlined in the Revenue Requirement Study), significant ratemaking costs allocated to the Composite cost pool are as follows:

- Costs of the Irrigation Rate Discount and Low Density Discount programs.
- Net costs associated with the REP:
    - Costs are calculated using the ASC and exchange load for each qualifying REP participant, net of
    - Revenues that are calculated at the PFx Rates, incorporating REP surcharges.
- System augmentation costs required to achieve annual load-resource balance.

See Documentation Table 3.1.6.1.

3.2.1.2 Non-Slice Costs

The Non-Slice cost pool includes only those costs and credits that are specifically and uniquely attributed to the Load Following and Block products (including the Block portion of the Slice/Block product). Tier 1 costs and credits, primarily secondary revenues that are not associated with the Slice product, are allocated to the Non-Slice cost pool. The Non-Slice cost pool forms the cost basis for the Non-Slice customer rate, which is paid by preference customers that have selected the Load Following product or the Block product and customers selecting the Slice/Block product for their Block purchases. Significant Non-Slice costs include:

- Balancing power purchase costs required to serve the monthly/diurnal loads of Load Following customers.
- Hedging costs associated with winter shaping or locational swapping that result in changes to anticipated secondary revenues.
- Transmission costs incurred to deliver secondary sales.
- Costs (or credit) associated with the Composite interest obligation when financial reserves available for Power are less than the $570.3 million starting balance of the reserves at the inception of the Slice product offering.

See Documentation Table 3.1.6.2.

3.2.1.3 Slice Costs

The Slice cost pool includes only those costs and credits that are specifically and uniquely attributed to the Slice product. Tier 1 costs and credits that are associated with the Slice product are allocated to the Slice cost pool. The Slice cost pool forms the cost basis for the Slice customer rate, which is paid by preference customers that have selected the Slice/Block product for their Slice purchases. In the BP-18 rates there are no costs allocated to this cost pool.

See Documentation Tables 3.1.6.1–3.

3.2.2 PFp Tier 2 Costs

Costs and credits that are associated with the sale of power to serve a customer's Above-RHWM Load are allocated to Tier 2 cost pools. The primary costs allocated to a Tier 2 cost pool are the power purchase costs (forecast and actual), including the cost of real power losses, designated by BPA as being for this purpose. In addition to power purchase costs, Tier 2 rates recover Resource Support Services, overhead, and other BPA costs that are not necessarily incurred solely for the purpose of serving Above-RHWM Load but support making such sales. The initial allocation of these other costs is to either the Composite cost pool or the Non-Slice cost pool. Therefore, a portion of these other costs is allocated to Tier 2 cost pools.

Costs allocated to the aggregate Tier 2 cost pool are further allocated to the Tier 2 cost pools. For the BP-18 rates, there are four Tier 2 cost pools: the Short-Term cost pool, the Load Growth cost pool, the VR1-2014 cost pool, and the VR1-2016 cost pool.

3.2.2.1 Tier 2 Power Purchase Costs

BPA made three purchases for Tier 2 rate service for the FY 2018–2019 rate period. Two were made in FY 2012, and one was made in FY 2013. The costs of the FY 2012 purchases were assigned to the Load Growth and Vintage VR1-2014 Tier 2 cost pools at the time of purchase. The cost of the FY 2013 purchase was assigned to the Vintage VR1-2016 Tier 2 cost pool. Any remaining amount of need for these cost pools and for the Short-Term cost pool after the purchases are allocated is valued at the Remarketing Value. *See* § 3.2.2.6. BPA plans on serving the remaining need in FY 2018 with the Federal Base System and making a purchase to meet the remaining amount of need in FY 2019. The average megawatt purchase amounts for each rate pool and their associated power purchase prices are summarized in Documentation Table 3.3.

3.2.2.1.1 Tier 2 Real Power Losses

Power purchased at Tier 2 rates is delivered power and thus must include the cost of real power losses. The cost of real power losses is calculated using the Federal transmission loss factor as described in the Loads and Resources Study, BP-18-E-BPA-03, section 3.1.5. The Federal transmission loss factor represents the generation loss factor and must be adjusted to calculate the equivalent loss factor at the load. The load equivalent is calculated as 1/(1-[Federal transmission loss factor]), which equates to a 3.06 percent real power loss factor for the load in the BP-18 Initial Proposal. The power purchase costs include the cost of energy associated with this real power loss factor.

3.2.2.2 Tier 2 Resource Support Services

A cost for Transmission Scheduling Service (TSS) is added to each Tier 2 cost pool. A TSS Adder is calculated by dividing the operations scheduling costs for the rate period by the total megawatthours actually scheduled in FY 2014 and FY 2015 to produce a yearly $/MWh value. Inputs to this calculation are shown in Documentation Table 3.4. This value is multiplied by the amount of planned Tier 2 sales in each year for each Tier 2 alternative (Short-Term, Load Growth, VR1-2014, and VR1-2016) to produce the annual cost for the TSS Cost Adder included in each cost pool for each year. The Tier 2 TSS Cost Adder is one of the credits to the Composite cost pool summed in the Resource Support Services Revenue Credit. *See* § 3.2.3.1.4. The calculated costs assigned to each cost pool in each year are shown in Documentation Tables 3.5–8.

Service at Tier 2 rates includes Transmission Curtailment Management Service (TCMS), which is a service that addresses transmission curtailment events; *see* § 5.6.1.5. To recover costs associated with TCMS, Tier 2 rates are subject to the Tier 2 Rate TCMS Adjustment, described in section 5.4.5 below. The Tier 2 cost pools do not include any costs associated with financially flattening a resource because there are no variable, non-dispatchable resources assigned to the Tier 2 cost pools for the BP-18 rate period.

3.2.2.3 Tier 2 Overhead Cost Adder

TRM section 6.3.3 describes an Overhead Cost Adder to be included as part of the Tier 2 rates. The overhead cost components used to calculate the Tier 2 Rate Overhead Cost Adder are listed in Documentation Table 3.9. The rate period total of these overhead costs is divided by BPA's total forecast of revenue-producing energy sales (PFp, IP, NR, FPS, Downstream Benefits and Pumping Power, Pre-Subscription, Generation Inputs for Ancillary and Other Services Revenue, and Secondary sales). The result is a $1.16/MWh adder for the rate period. The $/MWh value in each year is multiplied by the amount of planned sales in each year for each Tier 2 alternative (Short-Term, Load Growth, VR1-2014, and VR1-2016) to produce the Overhead Cost Adder included in each Tier 2 cost pool for each year. The Tier 2 Overhead Cost Adder provides the revenue credit to the Composite cost pool (called Tier 2 Overhead Adjustment). *See* § 3.2.5. The specific cost and sales values used in these calculations are shown in Documentation Table 3.10.

3.2.2.4 Tier 2 Risk Adder

TRM section 6.3.1 describes a possible cost adder for risk when BPA has not acquired all the power needed to serve the Tier 2 obligation. In accordance with the Tier 2 Risk Analysis described in the Power and Transmission Risk Study, BP-18-E-BPA-05, section 4.3.2, BPA does not have a discrete risk adder included in the Tier 2 cost pools to cover Tier 2 risks in the FY 2018–2019 rate period. Instead of including a discrete risk adder for the remaining power purchase needs for the Tier 2 cost pools, BPA is using the forecast augmentation price to value the remaining Tier 2 obligation. The augmentation price, which assumes critical water for hydrological modeling, is higher than the market price calculated when assuming average water.

Therefore, an implicit risk premium is included when augmentation prices are used to value Tier 2 obligations. *See* Documentation Tables 3.5–8.

3.2.2.5 Reallocated Power from Remarketing

When power purchased for a Tier 2 rate pool exceeds Above-RHWM Loads, BPA remarkets the excess amounts and reallocates the value of that power to other Tier 2 pools if there is a need. Similarly, BPA remarkets excess non-Federal amounts and reallocates and values that power in the same manner. The remarketing values are determined in accordance with section 3.2.2.6 below.

The treatment of remarketing varies by the type of Above-RHWM service, including individual Tier 2 Cost Pools remarketing the energy. When non-Federal resource and Tier 2 Vintage amounts are remarketed, the value from such reallocations is credited to the individual customers, as required under the CHWM contract and the TRM and as described in section 5.7 below. When remarketing for the Tier 2 Load Growth pool, the value of remarketed energy is credited to the Tier 2 Load Growth pool and not directly to individual customers.

The remarketed Tier 2 energy amounts are first reallocated to another Tier 2 pool with Above-RHWM Loads that exceed the power purchased for that pool, then purchased by BPA for augmentation if there is a need, or deemed surplus power available for resale into the market. *See* TRM § 3.4. Documentation Table 3.11 summarizes the sources of power for meeting the various Tier 2 loads. It includes executed and forecast purchases, remarketed power from other Tier 2 cost pools, and remarketed power from non-Federal resources with DFS.

3.2.2.6 Remarketing Value

The Remarketing Value for a fiscal year is either the forecast Augmentation price for that year or the weighted average price of actual market purchases. The Remarketing Value is used to price any remaining power needed to serve the Tier 2 cost pools (§ 3.2.2.1) and to value all forms of remarketing (Tier 2, non-Federal, and Resource Remarketing Service, § 5.7). If BPA does not purchase power for all or a portion of the remaining need for the Tier 2 cost pools or BPA does not have a remaining need, then the Remarketing Value is the forecast Augmentation price. If BPA does purchase power for all or a portion of the remaining need to serve the Tier 2 cost pools, then the Remarketing Value is based on the weighted average price of the power purchase(s) made plus any additional costs incurred by BPA in purchasing power from other entities. The weighted average price of the power purchase(s) made will be based on power purchases made between October 1, 2016, and May 31, 2017, if any. The Remarketing Value may differ by fiscal year and is based on the Tier 2 power purchase obligations for that applicable fiscal year. *See* Documentation Table 3.12.

3.2.3 PFp Tier 1 Revenue Credits

The Composite and Non-Slice cost pools contain credits for revenues collected from other components of the PFp rates. All of these rate design credits are necessary to ensure that the PFp rates do not over-collect the allocated revenue requirement and that the costs and credits have been allocated as specified in the TRM.

3.2.3.1 Composite Cost Pool Revenue Credits

As stated in section 3.2.1, the Composite cost pool includes all Tier 1 costs and credits that are not otherwise allocated to the Slice and Non-Slice cost pools. As described in section 2.1.6, revenue credits are directly assigned to the TRM cost pool according to cost causation principles at the same time the COSA steps are completed. Significant ratemaking credits allocated to the

Composite cost pool after the ratemaking steps in Chapter 2 are completed include revenues BPA receives from the following:

- DSI customers
- Power sales under the NR rate schedule
- Energy Efficiency Large Project Program
- Resource Support Services

3.2.3.1.1 Revenues from DSI Customers

These are forecast IP rate revenues consistent with sales forecasts from the Power Loads and Resources Study applied to the IP rate as determined in section 4.3.

3.2.3.1.2 Revenues from Power sales under the NR rate schedule

These are forecast NR rate revenues excluding revenues associated with NR Resource Flattening Service (NRFS) and Energy Shaping Service (ESS), as described in section 4.2.

3.2.3.1.3 Revenues Associated with the Energy Efficiency Large Project Program

BPA's Post-2011 Energy Efficiency Review Process led BPA to develop a program to support conservation acquisitions during the Regional Dialogue contract period. The Large Project Program (LPP) is designed to be revenue-neutral to non-participating power customers. LPP financing costs are included in the aggregate debt service in the revenue requirement, and equal and offsetting revenue credits are included in ratemaking. *See* Documentation Table 2.3.1.5.

3.2.3.1.4 Revenues from Resource Support Services

BPA provides RSS and related services, which generate revenue from preference customers. *See* § 5.6. Revenues received from the capacity components of RSS are credited to the Composite cost pool. For transparency purposes, BPA committed in the TRM to apply the applicable RSS to resources serving system augmentation needs (currently Klondike III) and to resources supporting the Tier 2 rates, if appropriate. In these situations, the source of the RSS revenue credit to the Composite cost pool is provided through either an RSS adder to the system augmentation cost or an RSS cost allocated to a Tier 2 cost pool. Revenues provided by the energy components of RSS are credited to the Non-Slice cost pool. Unlike the capacity used to provide RSS, which operationally impacts the Slice/Block, Block, and Load Following products, the provision of RSS energy operationally impacts the Non-Slice products only (including the Block portion of the Slice/Block product).

BPA committed in the TRM to apply RSS to resources serving RHWM Augmentation needs (*i.e.*, Klondike III). The cost of Klondike III, a wind plant, is assigned to Tier 1 Augmentation in the Composite cost pool. The TRM states that RSS pricing will be used to make certain Federal resource acquisitions financially equivalent to a flat block. *See* TRM, BP-12-A-03, § 8. Tier 1 Augmentation is assumed to be in the shape of an annual flat block purchase for ratemaking purposes. *See id.,* § 3.5. Because Klondike III's generation is variable and non-dispatchable, the RSS module of RAM2018 calculates a Diurnal Flattening Service (DFS) capacity charge, a DFS energy charge, a Resource Shaping charge, and a Transmission Scheduling Service (TSS) charge for Klondike III, and the resulting costs are allocated to the Composite cost pool. *See* Documentation Table 3.13.

The total annual RSS revenue credit for FY 2018–2019 is shown in Documentation Table 3.2.

3.2.3.2 Non-Slice Cost Pool Revenue Credits

As stated in section 3.2.1, the Non-Slice cost pool includes all Tier 1 costs and credits that are not otherwise allocated to the Composite and Slice cost pools. As described in section 2.1.6, revenue credits are directly assigned to the TRM cost pool according to cost causation principles as the COSA steps are completed. Significant ratemaking credits allocated to the Non-Slice cost pool after the ratemaking steps in Chapter 2 are completed include revenues BPA receives from the following:

- Secondary Energy (including Firm Surplus Secondary Sales)
- Load Shaping
- Demand
- Resource Shaping Charge
- NR Flattening Service and Energy Shaping Service
- Product Conversion Charge

3.2.3.2.1 Revenues from Secondary Energy

These are revenues associated with non-firm secondary sales and Firm Surplus Secondary Sales, as calculated in the Power Market Price Study and Documentation, BP-18-E-BPA-04, but excluding secondary energy sold under the Slice product as described in PRS section 2.1.6.10.

3.2.3.2.2 Revenues from Load Shaping

The Load Shaping charge is designed to recover costs associated with shaping the firm output of the Tier 1 System Resources to the monthly/diurnal shape of a customer's Tier 1 load. The Load Shaping charge applies to Non-Slice products, Block (including the Block portion of the Slice/Block product), and Load Following, but not the Slice portion of the Slice/Block product. As stated in the TRM, BP-12-A-03, section 5.2, forecast revenue from the Load Shaping charge is credited to the Non-Slice cost pool by means of the Load Shaping Revenue Credit. *See* § 4.1.1.3.

3.2.3.2.3 Revenues from Demand

The Priority Firm Demand charge is designed to send a price signal to a limited portion of a customer's overall demand on BPA and applies to customers purchasing Load Following and Block with Shaping Capacity products. Forecast revenue from the Demand charge is credited to the Non-Slice cost pool by means of the Demand Revenue Credit. *See* TRM, BP-12-A-03, Table 2.D.

3.2.3.2.4 Revenues from the Resource Shaping Charge

All balancing purchase costs, either resource or load, are allocated to the Non-Slice cost pool. The RSC collects additional revenues for balancing purchase costs associated with balancing resources against a flat annual block. *See* §§ 5.6.1.2–3 below. To pair cost allocation with revenue collection of balancing purchase costs, the forecast RSC revenue credit is applied to the Non-Slice cost pool.

BPA committed in the TRM to apply RSC to resources serving system RHWM Augmentation needs (*i.e.*, Klondike III) and to resources supporting the Tier 2 rates in order to make these acquisitions financially equivalent to a flat block. *See* TRM, BP-12-A-03, § 8. In these situations, the source of the RSC revenue credit is provided through either an RSC adder to the system augmentation cost or an RSC adder within a Tier 2 cost pool. The forecast annual RSC revenue credit for FY 2018–2019 is shown in Documentation Table 3.2.

3.2.3.2.5 Revenues from NR Resource Flattening Service and Energy Shaping Service

The New Resource Firm Power rate schedule includes a Resource Flattening Service (NRFS), which is available to Load Following customers applying the actual generation output of a Specified Resource to a New Large Single Load. *See* § 5.6.2.2 below. The New Resource rate schedule also includes the Energy Shaping Service (ESS), which includes a capacity (demand) component. Forecast revenue from the NRFS and the capacity component of the ESS is credited to the Non-Slice cost pool by means of the NR Revenue Credit. We expect no revenues under these services in FY 2018–2019. *See* Documentation Table 2.3.6.

3.2.3.2.6 Revenues from the Product Conversion Charge

Two customers will change from the Slice/Block product to either the Block Only (Seattle City Light) or Load Following (Klickitat PUD) product. The timing of this product change resulted in the need to charge Seattle City Light and Klickitat PUD a Product Conversion Charge. The Product Conversion Charge is billed monthly and effectively prevents these two customers from twice receiving a cash benefit that resulted from Regional Cooperation Debt management actions. The Slice portion of the Slice/Block product received its share of this cash benefit through the Slice True-Up payment in FY 2014 and 2015. The Non-Slice products, including the Block portion of the Slice/Block product, will receive this benefit through lower BP-18 rates. Seattle City Light and Klickitat PUD will pay the lower BP-18 rates and at the same time be billed the Product Conversion Charge. The revenue received from the Product Conversion Charge is a revenue credit applied to the Non-Slice Cost Pool. The calculation of the Product Conversion Charge is shown in Documentation Table 3.14.

3.2.4 Rate Design Adjustments Made Between Tier 1 Cost Pools

Once costs and rate design revenue credits have been balanced with the revenue requirement, additional adjustments to the PFp cost pools are made to the extent necessary to avoid cost shifts among products (Load Following, Block, and Slice/Block) and tiers (Tier 1 and Tier 2). These rate design adjustments move dollars from one cost pool to another through equal credits and debits and do not change the total revenue requirement for PFp. These rate design adjustments include three adjustments made within Tier 1 and one adjustment made between Tier 1 and Tier 2 (§ 3.2.5). The three types of adjustments made within Tier 1 are the (1) Transmission Loss Adjustments; (2) Firm Surplus and Secondary Adjustments from Unused RHWM; and

(3) Balancing Augmentation Load Adjustments. The adjustment made between Tier 1 and Tier 2 is the Tier 2 Overhead Adjustment. *See* § 3.2.5 below. The TRM allocation of these rate design adjustments is shown in Documentation Tables 3.1.6.1–2.

3.2.4.1 Transmission Loss Adjustments

The Transmission Loss Adjustments provide a credit to the Composite cost pool and an equal debit to the Non-Slice cost pool based on Non-Slice transmission losses. The Transmission Loss Adjustments address the different accounting of transmission losses for the Slice/Block and Non-Slice products. The Non-Slice products and the Block portion of the Slice/Block product are delivered to the purchaser's load service area, while the Slice product is delivered to the purchaser at BPA's generation bus bar. The cost of generating the real power losses for the transmission of Non-Slice sales is included in the Composite cost pool. Conversely, the cost of generating the real power losses for the transmission of Slice sales is borne by the purchaser.

The Transmission Loss Adjustments transfer the cost of generating the real power losses for the transmission of Non-Slice PF sales from the Composite cost pool to the Non-Slice cost pool. The Transmission Loss Adjustments are calculated by multiplying the network losses associated with the Non-Slice PF products, including the Block portion of the Slice/Block product, by the average Slice and Non-Slice Tier 1 rate. *See* Documentation Tables 3.1.6.1–2. The calculation and result of the Transmission Loss Adjustments are shown in Documentation Table 3.1.3.

3.2.4.2 Firm Surplus and Secondary Adjustments from Unused RHWM

Unused RHWM occurs when a customer's Forecast Net Requirement is less than its RHWM. The Firm Surplus and Secondary Adjustments from Unused RHWM reallocate costs between the Composite cost pool and the Non-Slice cost pool.

Unused RHWM reduces the need for system augmentation and/or increases firm power available for sale in the market. The reduced augmentation expenses and/or increased firm power market revenues are reflected in three lines on the TRM cost table: (1) Augmentation; (2) Secondary Energy Credit; and (3) Balancing Purchases from RevSim. *See* Documentation Table 3.1.1. The Augmentation line is part of the Composite cost pool, and the Secondary Energy Credit and Balancing Purchases are part of the Non-Slice cost pool. To share the entire benefit of Unused RHWM with all customers, the Composite and Non-Slice cost pools contain a Firm Surplus and Secondary Adjustment (from Unused RHWM), which appears as a credit to the Composite cost pool and an equal and offsetting charge to the Non-Slice cost pool.

The Firm Surplus and Secondary Adjustments have two purposes. The first is to reflect the difference between the value of a flat annual block of system augmentation and the value of the Unused RHWM when the Unused RHWM displaces augmentation. The difference between a flat annual block of system augmentation and the shape of the Unused RHWM is reflected in changes in the assumed balancing purchases and associated costs. These changes in balancing purchase costs are captured in the Non-Slice cost pool. A Firm Surplus and Secondary Adjustment reallocates the change in balancing purchase costs associated with the difference in value from the Non-Slice cost pool to the Composite cost pool.

The second purpose of the Firm Surplus and Secondary Adjustments is to reflect the full value of the Unused RHWM when the Unused RHWM creates firm surplus power. The revenue associated with this change in firm surplus power related to the Unused RHWM is reflected in the secondary revenue credit in the Non-Slice cost pool. A Firm Surplus and Secondary Adjustment reallocates this change in secondary revenues associated with the Unused RHWM from the Non-Slice cost pool to the Composite cost pool.

The value of Unused RHWM consists of portions of RHWM Augmentation, Tier 1 System Firm Critical Output, and an associated portion of secondary energy. Each of these three components is valued at its respective price: the Augmentation price for the RHWM Augmentation component; the market price (as expressed by the Load Shaping rates) for the Tier 1 System Firm Critical Output component; and the market price (as expressed by the average price received for secondary sales) for the secondary component. The value of Unused RHWM (expressed in dollars per megawatthour) also will be calculated for use in the Slice True-Up of the Firm Surplus and Secondary Adjustment line item in the Composite cost pool.
See Documentation Table 3.1.2 for results and calculation of the Firm Surplus and Secondary Adjustments from Unused RHWM and the dollar-per-megawatthour Slice True-Up value of Unused RHWM.

3.2.4.3 Balancing Augmentation Load Adjustments

As explained further in the subsections below, balancing augmentation load is (1) Above-RHWM Load that is forecast to be served at Load Shaping rates; (2) Above-RHWM Load that is no longer forecast to occur (net negative Load Shaping billing determinants); or (3) changes to the Tier 1 System during the applicable 7(i) ratesetting process from that used to establish each customer's allocation of the cost of the Tier 1 System during the applicable RHWM Process.

The sum total of these conditions is either a charge or credit to the Composite cost pool and an offsetting credit or charge, respectively, to the Non-Slice cost pool. *See* Documentation Tables 3.1.6.1–2.

3.2.4.3.1 Above-RHWM Load Forecast to be Served at Load Shaping Rates

This first condition occurs when Above-RHWM Load is forecast to be served at Load Shaping rates either (1) when a Load Following customer's annual Above-RHWM Load is less than 8,760 MWh and the Load Following customer made no alternative election to serve its Above-RHWM Load, or (2) when Above-RHWM Load is determined in the RHWM Process and the load forecast is updated during the rate proceeding to reflect the forecast of a larger load. When either (1) or (2) is true and the amount of system augmentation purchases is equal to or greater than the amount of balancing augmentation load, the acquisition costs attributable to supplying balancing augmentation load are included as a system augmentation expense in the Composite cost pool. The revenue from supplying balancing augmentation load is credited to the Non-Slice cost pool through the Load Shaping charge revenue credit. Without a Balancing Augmentation Load Adjustment, only Non-Slice customers would receive a credit through an increased Load Shaping Charge revenue credit, but both Slice and Non-Slice customers would bear the cost of an increased system augmentation expense. The Balancing Augmentation Load Adjustment corrects this situation with a credit to the Composite cost pool and an equal debit to the Non-Slice cost pool.

This condition causes the sum of Load Shaping billing determinants to be positive. The Balancing Augmentation Load Adjustments to the Composite and Non-Slice cost pools are calculated as the lesser of (1) the sum of the Load Shaping billing determinants for each fiscal year, or (2) the incurred system augmentation amount for each fiscal year. The result is multiplied by the augmentation price for the respective fiscal year.

3.2.4.3.2 Above-RHWM Load No Longer Forecast to Occur

The second condition that creates a change to balancing augmentation occurs when the load forecast decreases from the forecast used in the RHWM Process. When this condition occurs, there is a reduction in system augmentation expenses from what otherwise would have occurred.

The Composite cost pool would have received an implicit reduction in costs due solely to load variation attributable to Non-Slice customer loads. In this case, the Balancing Augmentation Adjustment is a debit to the Composite cost pool and an equal credit to the Non-Slice cost pool.

All other things being equal, this condition causes the sum of the Load Shaping billing determinants to be negative. The Balancing Augmentation Load Adjustments to the Composite and Non-Slice cost pools are calculated as the greater of (1) the sum of the Load Shaping billing determinants for each fiscal year or (2) the avoided augmentation amount (expressed as a negative number) for each fiscal year. The result is multiplied by the augmentation price for the respective fiscal year.

3.2.4.3.3 Changes to the Tier 1 System During the Applicable 7(i) Ratesetting Process

The third condition occurs when the forecast of Tier 1 System output is updated from the Tier 1 System forecast in the RHWM Process. Any difference resulting from the updated calculation of the Tier 1 System output in the rate proceeding will cause either a cost or a credit to be included in the Balancing Augmentation Load Adjustment. The cost or credit is included as an addition to the Balancing Augmentation Adjustment rather than in the Balancing Power Purchase costs computed in RevSim. Tier 1 System Firm Critical Output changes will increase or decrease on an annual average basis the amount of Augmentation required, which is considered Balancing Power Purchases under the TRM.

RevSim computes Balancing Power Purchase costs after load-resource balance has been achieved under critical water. *See* TRM, BP-12-A-03, § 3.3. If the Tier 1 System increases relative to the RHWM Process Tier 1 System output, the Non-Slice cost pool will receive a credit for this additional anticipated energy. Alternatively, if the Tier 1 System decreases, the Non-Slice cost pool will be charged for the reduction in anticipated energy. Customers purchasing the Slice/Block product receive either more or less energy in anticipated Slice deliveries and therefore are compensated by these equal and offsetting costs/credits to the Composite cost pool. *See* Documentation Tables 3.1.6.1–2.

The Balancing Augmentation Load Adjustments to the Composite and Non-Slice cost pools are calculated as the greater of (1) the sum of the difference in the Tier 1 System between the rate proceeding and the RHWM Process for each fiscal year or (2) the avoided augmentation amount for each fiscal year. The result is multiplied by the augmentation price for the respective fiscal year.

3.2.5 Rate Design Adjustment Made Between Tier 1 and Tier 2 Cost Pools

The Tier 2 Overhead Adjustment credits the Composite cost pool for the overhead costs charged to the Tier 2 cost pools. Each of the Tier 2 cost pools includes an Overhead Cost Adder, which reflects a proportionate share of BPA's total overhead costs. *See* § 3.2.2.3. The Tier 2 Overhead Adjustment credited to the Composite cost pool is equal to the sum of the Overhead Cost Adders charged to all of the Tier 2 cost pools. The calculation of the Tier 2 Overhead Adjustment for FY 2018–2019 is shown in Documentation Table 3.9.

3.2.6 Allocation of New Costs and Credits

BPA will allocate New Expenses or New Credits, as defined in the TRM, BP-12-A-03, at xvii, to the cost pools based on the cost allocation principles stated in TRM section 2.1. TRM section 2.3 states that BPA will propose an allocation of the New Expenses and New Credits, if any, to the appropriate cost pools in the next applicable 7(i) process.

For BP-18, BPA identified a need to create a New Expense pursuant to the TRM. "Power 3rd Party Trans & Ancillary Svcs (Composite Cost)" is proposed to be allocated to the Composite cost pool. These costs reflect primarily wheeling expenses incurred to transfer Federal generation from third-party service areas into the BPA system. These costs were mistakenly included in the line item "Power 3rd Party Trans & Ancillary Svcs" in the BP-12 through BP-16 rates. In TRM Table 2, the original cost line read "Third Party Trans & Ancillary Services (Non-Slice cost)." The BP-18 revenue requirement renames "Power 3rd Party Trans & Ancillary Svcs" to "Power 3rd Party Trans & Ancillary Svcs (Non-Slice Cost)" and adds "Power 3rd Party Trans & Ancillary Svcs (Composite Cost)" as a New Expense.

Additional New Expenses include a number of cash obligations associated with the Minimum Required Net Revenue calculation. These obligations are detailed in the Power Revenue Requirement Study, BP-18-E-BPA-02, section 3.1.

New credits for BP-18 include (1) Firm Surplus Secondary Sales Revenues and (2) Product Conversion Adjustment Revenues. In BP-16, firm surplus sales revenues were included in non-firm secondary sales but are separately included as a New Credit in BP-18. *See* Documentation Table 2.3.8. Revenue associated with specific charges to customers switching from Slice/Block to either Block only or Load Following are allocated to the Non-Slice cost pool, consistent with principles of equity.

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4. RATE SCHEDULES

BPA's power rate schedules state the applicability of each rate schedule to products that BPA offers, the rates for the products, the billing determinants to which the rates are applied, and references to sections of the General Rate Schedule Provisions (GRSPs) that apply to each rate schedule. The power rate schedules described in this section are presented in their entirety in the BP-18 Power Rate Schedules and GRSPs, BP-18-E-BPA-10.

4.1 Priority Firm Power (PF-18) Rate

The PF-18 rate charges for firm (continuously available) power to be used within the Pacific Northwest by public bodies, cooperatives, Federal agencies, and investor-owned utilities participating in the Residential Exchange Program. The PF-18 rate schedule is available for the contract purchase of Firm Requirements Power pursuant to section 5(b) of the Northwest Power Act. Utilities participating in the REP under section 5(c) of the Northwest Power Act may purchase PF power pursuant to a Residential Purchase and Sale Agreement (RPSA) or Residential Exchange Program Settlement Implementation Agreement (REPSIA) at the utility's average system cost. *See* Chapter 8.

PF Public charges for firm requirements purchases under CHWM contracts include Tier 1 and Tier 2 charges. Rates for firm requirements purchases under arrangements other than CHWM contracts include the PF Melded rate and the Unanticipated Load Service rates. *See* §§ 4.1.3, 4.1.4, and 4.4.

4.1.1 PFp Tier 1 Charges

The majority of PF Public revenue is collected from firm requirements power purchased at Tier 1 rates. Tier 1 charges (rates and billing determinants) apply to Priority Firm power purchased to meet a customer's RHWM Load. Tier 1 charges include:

- Customer Charges (Composite, Non-Slice, Slice)
- Demand Charge
- Load Shaping Charge
- Product Conversion Adjustment

4.1.1.1 Customer Charges

4.1.1.1.1 Customer Charge Rates

Rates for the Composite, Non-Slice, and Slice customer charges are expressed as dollars per one percentage point of billing determinant (TOCA, Non-Slice TOCA, or Slice percentage, respectively). Each of the three rates is calculated by dividing the total costs allocated to each cost pool (*see* § 3.2.1) by the sum of the respective forecast billing determinants, as described in section 4.1.1.1.2 below. The quotient of that calculation is then divided by 12 to yield a monthly rate per 1 percent of the applicable billing determinant.

The resulting monthly rates are shown in Documentation Table 3.1.6.3.

4.1.1.1.2 Customer Charge Billing Determinants

The **Tier 1 Cost Allocator (TOCA)** is the customer-specific billing determinant applied to the Composite Customer rate. The majority of BPA's costs to be collected through PF rates are allocated among customers through the TOCA. Each customer's annual TOCA percentage is calculated by dividing the lesser of an individual customer's RHWM or its Forecast Net Requirement by the total of the RHWMs for all PFp customers.

The Forecast Net Requirement and RHWM for the individual customer and the sum of RHWMs for all customers are expressed in average annual megawatts. The total of the RHWMs for all customers is shown in PRS Table 1, and the sum of TOCAs used for FY 2018–2019 is shown in Documentation Table 3.1.6.3.

The **Non-Slice TOCA** is the customer-specific billing determinant applied to the Non-Slice Customer rate. The Non-Slice TOCA is equal to a customer's TOCA if the customer is purchasing the Load Following or Block product. The Non-Slice TOCA for customers purchasing the Slice/Block product is computed as the difference between the customer's TOCA and its Slice percentage. The forecast sum of Non-Slice TOCAs used for FY 2018–2019 is shown in Documentation Table 3.1.6.3.

The **Slice percentage** is the customer-specific billing determinant applied to the Slice Customer rate. Initial Slice percentages appear in Exhibit J of each Slice customer's CHWM contract. These percentages can be adjusted each year pursuant to TRM section 3.6, and the final Slice percentage is established in Exhibit K of the customer's CHWM contract.

4.1.1.2 Tier 1 Demand Charge

4.1.1.2.1 Demand Charge Rates

Demand rates are based upon the annual fixed costs (capital and O&M) of the marginal capacity resource, an LMS100 combustion turbine, as determined by the Northwest Power and Conservation Council's (Council) Microfin model 15.2.1. The Microfin model estimates the nominal all-in capital costs of an LMS100 with a 2018 in-service date. The all-in capital cost under these specifications is $1,105/kW as shown in Documentation Table 4.1.

The projected debt payment on the $1,105/kW fixed capital costs is estimated at $63.51/kW/yr, based on a cost of debt of 3.95 percent financed over 30 years. The plant is assumed to be owned by a publicly owned utility with BPA-backed bonds. The cost of debt is estimated with

BPA's FY 2016 Third-Party Tax-Exempt 30-Year Borrowing Rate Forecast. *See* Power Revenue Requirement Study Documentation, BP-18-E-BPA-02A, § 6, FY 2016 Interest Rate and Inflation Forecast Memorandum.

The cost of fixed O&M included in the Demand rate calculation is obtained from the Microfin model. The calculation of the Demand rate uses the Microfin model's 2012 estimate of $11/kW/yr escalated to 2018 and 2019 dollars using the 2010 to 2015 average (5-year) rate of 1.68 percent calculated from the Implicit Price Deflators from the U.S. Bureau of Economic Analysis. The two-year average annual cost for fixed O&M is $12.15/kW/yr.

Insurance and fixed fuel costs are also included in the calculation of the Demand rate. The average annual insurance cost of $2.67/kW/yr is calculated based on 0.25 percent of the mid-year assessed value obtained from the Council's Microfin model. The fixed fuel cost assumed in the Demand rate calculation is $40.89/kW/yr. The fixed fuel cost is estimated using Microfin's vintaged heat rate of 8,541 Btu/kWh applied to the average of the existing eastside and westside Pacific Northwest fixed fuel costs for the applicable fiscal year.

The average annual expense is $119.67/kW. This annual value is shaped into the 12 months of the year using the shape of the Load Shaping rates, resulting in Demand rates specific to each month. *See* Documentation Table 4.1 and the BP-18 Power Rate Schedules, *e.g.,* Schedule PF-18, § 2.1.2.1.

4.1.1.2.2 Demand Charge Billing Determinant

The Demand billing determinant applies to customers purchasing the Load Following and Block with Shaping Capacity products. TRM sections 5.3.1–5 contain a detailed explanation of how to calculate the customer-specific Demand billing determinant, which is only a limited portion of a customer's overall demand on BPA. What follows summarizes the TRM explanation.

Four quantities are used in calculating a PFp customer's Demand charge billing determinant: (1) the Tier 1 Customer's System Peak (CSP); (2) the average amount of a customer's electric load (measured in average kilowatts) that was served at Tier 1 rates during the Heavy Load Hours of a month; (3) the customer's Contract Demand Quantity (CDQ, expressed in kilowatts); and (4) any applicable Super Peak Credit as specified in a customer's CHWM contract.

The Demand billing determinant is determined by measuring a customer's CSP and then subtracting the other three quantities. The Demand billing determinant calculation can never result in a negative billing determinant: if the calculation results in a value less than zero, the billing determinant is deemed to be zero.

Tier 1 CSP is equal to a customer's maximum Actual Hourly Tier 1 Load (measured in kilowatts) during the Heavy Load Hours of a month.

Twelve CDQs are specified for each PFp customer in the customer's CHWM contract.

The Super Peak Credit is determined pursuant to a customer's CHWM contract. The Super Peak Period for FY 2018–2019 is defined in GRSP III.B.30.

There are two possible adjustments that may be made to a customer's Demand billing determinant. The first is an adjustment to offset anomalous recovery load peaks that occur after a customer has had power restored to its service territory following a weather-related system outage or other extreme peak event. The second is an adjustment to offset extreme load changes that have severely adversely affected a customer's load factor. GRSP II.D includes the calculations for applying these adjustments, applicable qualifying criteria, and notice requirements. See section 5.4.3 for more information regarding this adjustment.

4.1.1.3 Tier 1 Load Shaping Charge

4.1.1.3.1 Load Shaping Charge Rates

The PFp rate design includes 24 Load Shaping rates (two diurnal periods—HLH and LLH—for each of 12 months). The Load Shaping rates are set equal to the rate period average marginal cost of power for each monthly/diurnal period as determined in the Power Market Price Study and Documentation, BP-18-E-BPA-04, section 2.4. *See also* Documentation Table 4.2.

See section 5.4.4 for information on the Load Shaping Charge True-Up Adjustment.

4.1.1.3.2 Load Shaping Charge Billing Determinant

The billing determinant for the Load Shaping charge is the difference between (1) a customer's actual load served at Tier 1 rates and (2) the System Shaped Load, which is the customer's annual load reshaped into the monthly/diurnal shape of RHWM Tier 1 System Capability. The Load Shaping billing determinant can have either a positive or a negative value. Pursuant to the TRM, a Load Following customer's Above-RHWM Load that is forecast to be less than 8,760 MWh that is not served with Non-Federal Resources will be served by BPA at the Load Shaping rate and is reflected in this billing determinant. *See* TRM, BP-12-A-03, at 54.

A customer's System Shaped Load is calculated as the RHWM Tier 1 System Capability (*see* § 1.4.2) for each of the 24 monthly/diurnal periods of the fiscal year multiplied by the customer's Non-Slice TOCA. The Load Shaping billing determinants are calculated as the amount of a customer's actual monthly/diurnal load (measured in kilowatthours) to be served at Tier 1 rates minus the customer's System Shaped Load for the same monthly/diurnal period.

Monthly/Diurnal RHWM Tier 1 System Capability. The TRM prescribes that the monthly/diurnal shape of the RHWM Tier 1 System Capability will be used to compute the System Shaped Load for purposes of computing Load Shaping billing determinants. The System Shaped Load is not updated if the RHWM Tier 1 System Capability that was determined in the RHWM Process is updated in the rate proceeding. The system shape is computed to be constant across both years of the rate period and is the average of each year's respective monthly/diurnal megawatthour amount. In a rate period that does not include a leap year, there will be 24 monthly/diurnal amounts for the RHWM Tier 1 System Capability specified in the GRSPs. In a rate period that includes a leap year, there will be 26 amounts, with a unique value for each February to account for the additional day. *See* GRSP II.A.

4.1.1.4 PFp Tier 1 Product Conversion Charge

During the BP-18 period, this charge will apply to Seattle City Light and Klickitat PUD to effectively prevent these two customers from twice receiving a FY 2014 and FY 2015 cash benefit that resulted from Regional Cooperation Debt transactions. See Documentation Table 3.14 for the calculation of each customer's monthly charge.

4.1.2 PFp Tier 2 Charges

Tier 2 charges (rates and billing determinants) apply to Priority Firm power purchased to meet a customer's Above-RHWM Load. Tier 2 charges include:

- Load Shaping Charge
- Short-Term Charge
- Load Growth Charge

- VR1-2014 Charge
- VR1-2016 Charge

See Power Rate Schedules, BP-18-E-BPA-10, Schedule PF-18, § 2.2.

Tier 2 rates are calculated in a module of RAM and are summarized in Documentation Tables 3.5–8. Each rate is calculated by dividing the annual costs allocated to the specific Tier 2 cost pool (*see* § 3.2.2 above) by the billing determinants (based on the annual average megawatt load obligations, excluding real power losses, for each Tier 2 rate alternative) in that same fiscal year.

Each Tier 2 rate is established to recover all the allocated costs associated with the product. Formula rates for Tier 2 Short Term and Load Growth are shown in the Power Rate Schedules, BP-18-E-BPA-10, Schedule PF-18, sections 2.2.2–3. The Tier 2 rates may be adjusted under certain circumstances, as shown in Schedule PF-18 section 2.2.

With the exception of the Tier 2 Load Shaping Charge, the Tier 2 billing determinant is equal to each customer's commitment to purchase from BPA all or a portion of the customer's Above-RHWM Load. Each customer's Tier 2 rate service amount is contractually established for FY 2018–2019. The totals for all customers (by Tier 2 alternative) are summarized in Documentation Table 4.3.

4.1.2.1 Tier 2 Load Shaping Charge

Pursuant to the TRM, a Load Following customer's Above-RHWM Load that is forecast to be less than 8,760 MWh and that is not served with non-Federal resources will be served at Tier 2 rates set equal to the Load Shaping rate. For ease of ratesetting and billing, and since it would create no material difference because the rate for the two is the same, BPA does not separate the Tier 2 Load Shaping billing determinant from the Tier 1 Load Shaping billing determinant. Rather, the Tier 1 Load Shaping billing determinant can technically include power purchased at Tier 1 and Tier 2 rates. *See* § 4.1.1.3 above.

4.1.3 PFp Melded Rates (Non-Tiered Rate)

The PF Melded rate is a non-tiered rate applicable to the sale of Firm Requirements Power under contracts other than CHWM contracts. No sales under the PF Melded rate are forecast during the rate period, FY 2018–2019.

Melded PF Public rates are included in section 3 of the PF rate schedule and consist of 12 HLH Energy rates, 12 LLH Energy rates, and 12 Demand rates. The PFp Melded Energy rates are equal to the PFp Load Shaping rates less a scalar. The scalar is a single mills/kWh value that adjusts the Load Shaping rates so that the PFp Melded Energy rates, in conjunction with the demand revenue, do not collect more or less revenues than the Tier 1 and Tier 2 revenue requirement allocated to the PFp loads. Calculation of the PFp Melded rate components, including the scalar, is shown in Documentation Table 3.1.8.2. The applicable Demand rates are equal to the PFp Tier 1 Demand rates.

4.1.4 Unanticipated Load Service Charge

BPA provides Unanticipated Load Service (ULS) for Load Following customers under the PF rate schedule and provides a similar service under the NR and FPS rates. ULS is described in section 5.10 and GRSP II.M.

4.1.5 PFp Resource Support Services Rates

BPA offers RSS and related services for customers' variable, non-dispatchable non-Federal resources in accordance with the CHWM contract. In general, RSS services are designed to financially convert these resources into a flat annual block of power or the specified monthly/diurnal resource shape found in Exhibit A of the customer's CHWM contract. RSS services available under the PFp rate schedule include the following:

- Diurnal Flattening Service, as discussed in section 5.6.1.1 and GRSP II.I.1.
- Grandfathered Generation Management Service, as discussed in section 5.6.1.7 and GRSP II.I.6.
- Resource Shaping Charge, as discussed in sections 5.6.1.2–3 and GRSP II.I.2.
- Secondary Crediting Service (SCS), as discussed in section 5.6.1.6 and GRSP II.I.3.

The related services include Transmission Scheduling Service, Transmission Curtailment Management Service, and Resource Remarketing Service (RRS). These related services are provided under the FPS rate schedule and are discussed in section 4.4.

4.1.6 Priority Firm Exchange (PFx) Rate

A utility-specific PFx rate applies to each participant in the REP for sales and purchases of exchange energy pursuant to an RPSA (eligible consumer-owned utilities) or an REPSIA (eligible investor-owned utilities).

The 2012 REP Settlement (*see* § 5.12) requires that BPA pay a fixed sum of REP benefits to IOUs eligible for the REP pursuant to a schedule of payments set forth in the 2012 REP Settlement. The yearly fixed sum is included in BPA's revenue requirement and collected in BPA's rates. Each IOU's share of the fixed amount of REP benefits is determined pursuant to the calculations contained in Section 6 of the 2012 REP Settlement. In particular, Section 6.2 of the 2012 REP Settlement describes a series of adjustments BPA is required to make to certain

IOUs' shares of the REP benefits. BPA's implementation of Section 6.2, including the specific calculations BPA used to reach the resulting REP allocations, is shown in Documentation Table 2.4.12.

The PFx rate has two components: (1) two common Base PFx rates (one for COUs with CHWM contracts and another for all other REP participants); and (2) utility-specific REP surcharges. The COUs have a different Base PFx rate because the PFp rate is tiered. Neither component of the PFx rate is diurnally differentiated or contains an additional charge for demand. Each participant's ASC is a single mills/kWh rate applied to all kilowatthours. Likewise, the rate design for each participant's PFx rate is a single mills/kWh rate applied to all kilowatthours.

Base PFx rates are based on the average PF rate immediately prior to the determination of section 7(b)(2) rate protection. The PFx rate applicable to IOUs (and any eligible COU without a CHWM contract) is computed by dividing all costs allocated to the PF rate pool by all PF rate pool loads and then adding a transmission charge for delivering the exchange power to the customer. The PFx rate applicable to COUs with CHWM contracts is calculated in the same manner, except that the costs allocated to Tier 2 cost pools are excluded from the numerator and loads served at Tier 2 rates are excluded from the denominator.

Under the 2012 REP Settlement, the utility-specific 7(b)(3) surcharge to recover the cost of providing 7(b)(2) rate protection continues to be assessed, but the surcharge for IOUs also includes the allocation of the costs of Refund Amounts for FY 2012 through FY 2019. *See* § 2.2.2.3. The amount of 7(b)(2) rate protection costs allocated to the PFx rates is allocated to each REP participant on a pro rata basis using REP benefits calculated using the Base PFx rates (Unconstrained Benefits) as the allocator. The cost of Refund Amounts is allocated to each IOU using IOU Unconstrained Benefits as the allocator; Refund Amounts are not allocated to

COU participants. The total amount allocated to each REP participant is divided by the participant's exchange load to derive its utility-specific 7(b)(3) surcharge.

For each REP participant, the applicable Base PFx rate is added to its utility-specific 7(b)(3) surcharge to determine its utility-specific PFx rate. For each month of the rate period, the participant will submit its exchange load to BPA for the prior month. Under either an RPSA or an REPSIA, a utility-specific PFx rate is applied to BPA's sales of exchange energy and the participating utility's ASC is applied to BPA's purchase of exchange energy, where the exchange energy is equal to the utility's eligible residential and farm load. The difference between the amount BPA pays for exchange "purchases" and the amount BPA receives for exchange "sales" determines the amount of monetary REP benefits BPA pays the utility. BPA will multiply this invoiced exchange load by the difference between the participant's ASC and its PFx rate to calculate the amount of REP benefits payable to the participant. *See* Documentation Table 2.4.11.

4.2 New Resource Firm Power (NR-18) Rate

The NR-18 rate is applicable to sales to investor-owned utilities under Northwest Power Act section 5(b) requirements contracts. The NR-18 rate is also applicable to sales to any public body, cooperative, or Federal agency to the extent such power is used to serve any New Large Single Load, as defined by the Northwest Power Act. The NR-18 rate includes energy and demand rates.

4.2.1 NR Energy Charge

Monthly and diurnal differentiation of NR energy rates is calculated based on the HLH and LLH differentiation of the PFp Load Shaping rates. *See* Documentation Table 3.1.8.4. The NR energy rates are determined by adjusting each PFp Load Shaping rate by an equal scalar until the

NR energy rates recover the allocated NR revenue requirement minus the forecast NR Demand charge revenue. *Id.*

After the scaling process is complete, an REP Surcharge is added to each of the monthly/diurnal energy rates. Section 7(b)(3) of the Northwest Power Act provides that the cost of 7(b)(2) rate protection afforded to preference customers is allocated to all other power sold, which includes power sold at the NR rate. *See* § 2.2.2.4. The cost of rate protection allocated to the NR rate is determined pursuant to the 2012 REP Settlement. *See* Documentation Table 2.4.14 for calculation of the REP Surcharge.

A customer's billing determinant for the NR Energy charge is the total of the customer's NR hourly loads for each diurnal period.

4.2.2 NR Demand Charge

The Demand rates for the NR rate schedule are equal to the PFp Demand rates described in section 4.1.1.2 above. As with the PFp Demand charge, the NR Demand billing determinant is only a portion of the peak demand placed on BPA. The NR Demand billing determinant is equal to the highest NR Hourly Load during HLH less the average hourly HLH energy purchased in that particular month at the NR energy rates.

4.2.3 Unanticipated Load Service Charge

ULS is available under the NR-18 rate schedule for New Large Single Loads and requirements service requested by investor-owned utilities. See section 5.10 and GRSP II.M for details.

4.2.4 NR Services for Non-Federal Resources

NR Services for New Large Single Loads are applicable to Load Following customers serving NLSLs with non-Federal resources. NR Energy Shaping Service is discussed in section 5.6.2.1 and specified in GRSP II.J.1, and NR Resource Flattening Service is discussed in section 5.6.2.2 and specified in GRSP II.J.2.

4.3 Industrial Firm Power (IP-18) Rate

The IP-18 rate schedule is available for firm power sales to DSIs pursuant to section 5(d) of the Northwest Power Act. The IP-18 rate includes energy and demand rates. DSIs purchasing power pursuant to the IP-18 rate schedule are required to provide the Minimum DSI Operating Reserve – Supplemental.

4.3.1 IP Energy Charge

4.3.1.1 IP Energy Rates

The IP rate design includes 24 monthly/diurnal energy rates, two for each month, one each for HLH and LLH. The IP energy rates are shaped using the PFp Melded rates (*see* § 4.1.3 above).

As described below, IP Energy rates are calculated by adjusting the PFp Melded rates by the Value of Reserves (VOR) credit for operating reserves provided by the DSI load, the typical industrial margin, and an REP surcharge. *See* Documentation Table 3.1.8.3.

4.3.1.1.1 IP Adjustment for Value of Reserves Provided

A VOR credit is included in the IP rate, as provided in section 7(c)(3) of the Northwest Power Act. *See* § 2.2.2.5.2 above. The forecast DSI load amount is shown in the Power Loads and Resources Study, BP-18-E-BPA-03, § 2.4. Based on provisions of DSI contracts currently in place, these power sales are assumed to provide interruption reserve rights (operating reserves) to BPA, and therefore the IP rate includes a VOR credit.

The first step for valuing operating reserves provided by DSIs is to determine a marginal price for these reserves. Because the DSI-supplied reserves are used to meet BPA's reserve obligations, the cost of Operating Reserves – Supplemental service is used to establish the marginal value.

The second step in valuing the DSI reserves is to determine the quantity of reserves provided. To calculate this quantity, the total DSI load is reduced to account for wheel-turning load that cannot be curtailed. The wheel-turning load is forecast to be 6 aMW. The interruption reserves provided are 10 percent of the remaining DSI load (55 MW), or 5 MW.

The VOR credit included in the IP-18 rate is 0.879 mills/kWh. See Documentation Table 2.4.1 for calculation of the value of DSI reserves.

4.3.1.1.2 IP Rate Typical Margin

Another component of the IP rate is the typical margin, as provided in section 7(c)(2) of the Northwest Power Act. *See* § 2.2.2.5.2. The typical margin is based generally on the overhead costs that COUs add to the cost of power in setting their retail industrial rates. The typical margin included in the IP-18 rate is 0.748 mills/kWh. The typical margin is calculated in Appendix A.

4.3.1.1.3 REP Surcharge

The final component of the IP rate is the REP Surcharge. Section 7(b)(3) of the Northwest Power Act provides that the cost of 7(b)(2) rate protection afforded to preference customers must be allocated to all other power sold, which includes power sold at the IP rate. *See* § 2.2.2.3. The cost of rate protection allocated to the IP rate is determined pursuant to the 2012 REP Settlement and is included in the IP-18 rate. *See* Documentation Table 2.4.14 for calculation of the REP surcharge.

4.3.1.2 IP Energy Charge Billing Determinant

The customer-specific energy billing determinant is the Energy Entitlement specified in the customer's contract.

4.3.2 IP Demand Charge

The demand rates for the IP rate schedule are equal to the PFp Demand rates described in section 4.1.1.2 above. As with the PFp Demand charge, the IP demand billing determinant is applied to only a portion of the DSI peak demand placed on BPA. The IP demand billing determinant in each billing month is equal to a DSI's highest HLH schedule, or metered amount, minus the average HLH schedule amount, or metered amount, less any applicable Industrial Demand Adjuster. The Industrial Demand Adjuster is a monthly demand (expressed in kilowatts) that is subtracted from the hourly peak schedule amount when calculating the IP demand billing determinant. *See* 2018 Power Rate Schedules and GRSPs, BP-18-E-BPA-10, IP-18 rate schedule, § 2.2.2.

4.4 Firm Power and Surplus Products and Services (FPS-18) Rate

Products and services available under the FPS rate schedule are listed in the next paragraph and described in the FPS-18 rate schedule. Sales under this rate schedule are discretionary: BPA is not obligated to sell any of these products, even if such sales will not displace PF, NR, or IP sales. Products priced under the FPS-18 rate schedule may be sold at market-based or negotiated rates, which may have a demand component, an energy component, or both. Rates and billing determinants for the products and services sold under the FPS rate schedule are either specified by BPA or mutually agreed upon by BPA and the customer.

When available, for use within and outside the Pacific Northwest, the FPS-18 rate schedule has eight categories of products and services:

1. Firm Power (capacity and/or energy), including secondary energy or firm capacity.
2. Capacity Without Energy: stand-alone capacity products.
3. Energy shaping services.
4. Reservations and rights to change services: reservations of power and services, when available, and the rights to change sales and services.
5. Reassignment or remarketing of surplus transmission capacity: Power Services may reassign or remarket its surplus transmission capacity that has been purchased from a transmission provider, including BPA's Transmission Services, consistent with the terms of the transmission provider's Open Access Transmission Tariff.
6. Other capacity, energy, and power scheduling products and services, as available.
7. Services for non-Federal resources:
    a. Transmission Scheduling Service and Transmission Curtailment Management Service, § 5.6.1.5 and GRSP II.I.5.
    b. Forced Outage Reserve Service, § 5.6.1.4 and GRSP II.I.4.
    c. Resource Remarketing Service, § 5.6.1.8 and GRSP II.I.7.
8. Unanticipated Load Service, § 5.10 and GRSP II.M.4.

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5. GENERAL RATE SCHEDULE PROVISIONS

The GRSPs describe the adjustments, charges, and special rate provisions applicable to BPA's rate schedules. The GRSPs also define the power products and services BPA offers and other applicable terms. The GRSPs described in this section are presented in their entirety in the BP-18 Power Rate Schedules and General Rate Schedule Provisions, BP-18-E-BPA-10.

5.1 RHWM Tier 1 System Capability

The Rate Period High Water Mark Tier 1 System Capability (RT1SC) is determined in the RHWM Process outside the rate proceeding, as described in section 1.4 above and the TRM, BP-12-A-03, section 4.2.1.

As described in section 4.1.1.3.2, BPA uses the monthly/diurnal shape of RT1SC and the resulting System Shaped Load in developing the billing determinant for the Load Shaping charge. The billing determinant for the Load Shaping charge is the difference between a customer's actual load served at Tier 1 rates and the customer's annual load used to calculate its TOCA reshaped into the monthly/diurnal shape of RT1SC. The monthly/diurnal RT1SC values for the FY 2018–2019 rate period are shown in GRSP II.A, Table A.

5.2 Risk Adjustments

5.2.1 Power Cost Recovery Adjustment Clause (Power CRAC)

For each year of the rate period, the CRAC may result in an upward rate adjustment to respond to the financial circumstances BPA experiences before BPA can conduct a section 7(i) rate proceeding to adjust its rates. If stated conditions are met, the CRAC will trigger and a rate increase will go into effect beginning on October 1 of the next fiscal year. *See* GRSP II.O and Power and Transmission Risk Study, BP-18-E-BPA-05, § 2.3.

5.2.2 Power Reserves Distribution Clause (Power RDC)

For each year of the rate period, the RDC may result in a reduction in Power reserves for risk as reserves are used to further Power objectives such as debt retirement, incremental capital investment, and rate reduction (which would be accomplished by means of a Dividend Distribution, or DD). The RDC will trigger if (1) financial reserves for risk attributed to Power exceed a defined threshold, and (2) BPA financial reserves for risk exceed a defined threshold. If these two conditions are met, the RDC will trigger, and the Administrator will determine what part of the RDC Amount will be devoted to debt retirement, incremental capital investment, a DD, or other Power Services objectives. If reserves are allocated to a DD, the resulting rate decrease will go into effect beginning on October 1 of the next fiscal year. *See* GRSP II.P and Power and Transmission Risk Study, BP-18-E-BPA-05, § 2.3.

5.2.3 The NFB Mechanisms

NFB stands for **N**ational Marine Fisheries Service (NMFS) **F**ederal Columbia River Power System (FCRPS) **B**iological Opinion (BiOp). Two NFB mechanisms allow BPA to recover additional revenue if financial impacts from a specified set of circumstances in the fish and wildlife arena cause a reduction in Power Services' forecast net revenue. The first mechanism, the NFB Adjustment, could result in an increase in the maximum revenue recoverable under a CRAC in the next fiscal year. The second mechanism, the Emergency NFB Surcharge, could result in a rate increase within the current fiscal year. *See* GRSP II.Q and the Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.3.

5.3 Slice True-Up Adjustment

Slice customers pay their share of BPA's actual costs. Therefore, Slice customers are subject to an annual Slice True-Up Adjustment for expenses, revenue credits, and adjustments allocated to the Composite cost pool and to the Slice cost pool. *See* Chapter 7 and GRSP II.R.

5.4 Discounts and Other Adjustments

5.4.1 Low Density Discount

Pursuant to section 7(d)(1) of the Northwest Power Act, the LDD offers a discount to customers with low system densities that meet the criteria specified in GRSP II.B. As set forth in the TRM, LDD percentages are calculated to provide a discount on power purchased at Tier 1 rates that approximates the discount the customer would have received under non-tiered rates. LDD credits for FY 2018–2019 are listed in Table 4, line 9.

5.4.2 Irrigation Rate Discount

The IRD is a discount to the PFp Tier 1 rates for eligible irrigation load served by customers. The irrigation credit is available to customers with eligible irrigation load set forth in Exhibit D of customers' CHWM contracts. The amount of irrigation credit a customer will receive on its monthly bills during the irrigation season is based on the lesser of the customer's actual Tier 1 energy purchase and the eligible irrigation load amounts in the customer's CHWM contract. The discount will appear as a credit on customer bills to offset Tier 1 charges for eligible irrigation loads. This discount is available to eligible loads during May, June, July, August, and September during the BP-18 rate period. *See* GRSP II.C.

5.4.2.1 Irrigation Rate Discount True-Up and Reimbursement

At the end of each irrigation season, each customer with eligible irrigation load will provide to BPA its measured May-through-September irrigation load amounts, to be used to determine if a true-up and reimbursement to BPA is applicable. If BPA determines that the measured irrigation load amounts are less than the billed irrigation load amounts, then the purchaser must reimburse BPA for the excess IRD credits. Excess IRD credits are calculated as the IRD rate multiplied by the difference between the billed irrigation load and the measured irrigation load.
See GRSP II.C.3.

5.4.2.2 Calculation of the Irrigation Rate Discount

The TRM establishes the method for calculating the IRD. The process begins with a fixed Irrigation Rate Mitigation Program (IRMP) percentage of 37.06 percent. *See* TRM, BP-12-A-03, § 10.3, and BP-12 Power Rates Study Documentation, BP-12-FS-BPA-01A, Table 3.12.

The IRMP percentage is multiplied by the sum of the forecast revenue that irrigation loads will pay through the Composite customer charge, Non-Slice customer charge, and Load Shaping charge, adjusted for any applicable Low Density Discount, divided by the sum of the irrigation loads (expressed in megawatthours) to derive a dollars-per-megawatthour discount. The applicable LDD is calculated as the weighted average LDD of eligible irrigation customers, weighted with eligible irrigation loads. See Documentation Table 5.1 for the calculation of the applicable LDD.

Forecast revenue for irrigation loads is calculated using an IRD TOCA derived by dividing the sum of the irrigation loads (expressed in average megawatts) by the sum of all RHWMs. The IRD TOCA is applied consistent with TRM section 5 for calculation of forecast irrigation revenues from the Composite customer charge, Non-Slice customer charge, and Load Shaping charge. The calculation is shown on Documentation Table 2.3.3.1.

5.4.3 Demand Rate Billing Determinant Adjustment

As described in GRSP II.D, in two limited circumstances BPA may reduce an unusually high demand charge billing determinant and provide some demand billing relief to a customer.

First, when a customer's loads differ significantly from one part of the month to another, the customer may experience overall low average HLH energy use, relatively high customer system peak, and a resulting high demand billing determinant. In this situation, BPA may adjust the billing determinant by calculating partial-month billing determinants and use the higher of the two (or more) partial-month billing determinants for the entire billing month. Example loads include large industrial or irrigation loads that occur during only a part of a month.

Second, when an Uncontrollable Force outage occurs on a customer's system, the restoration of service may result in a spike in usage, called a recovery peak. BPA may reduce the customer system peak established by a recovery peak to the next highest peak of the month and thereby reduce that month's billing determinant.

5.4.4 Load Shaping Charge True-Up Adjustment

As noted in TRM section 5.2.4, at the end of each fiscal year BPA will calculate the Load Shaping Charge True-Up for each Load Following customer. The purpose of the true-up is to avoid charging or crediting the market-based Load Shaping rate for energy within the customer's RHWM rather than charging or crediting the cost-based Tier 1 rate for that energy. BPA applies the true-up when a Load Following customer's TOCA Load or Actual Annual Tier 1 Load is less than its RHWM. The process for calculating the Load Shaping True-Up Adjustment is shown in TRM section 5.2.4., Documentation Table 3.1.8.5, and GRSP II.E.

5.4.4.1 Special Implementation Provision for Load Shaping True-Up

The Load Shaping True-Up Adjustment includes a special implementation provision that applies if two conditions are met: (1) a customer has Above-RHWM Load, and (2) the customer has unused RHWM. If these conditions are met, the customer may be eligible for a Load Shaping True-Up credit in addition to the one described above. The amount of the additional Load Shaping True-Up credit depends on a second calculation. *See* GRSP II.E.3.

The special implementation provision was originally designed to solve a transitional implementation issue caused by setting Above-RHWM Load based on a forecast different from that used to determine a customer's TOCA. This provision also has a longer-term application, because Above-RHWM Load is determined in the RHWM Process (prior to the Initial Proposal of each rate proceeding), and the calculation of a customer's TOCA occurs in the Final Proposal. A consequence of using forecasts prepared at different times is the possibility that a customer has both Above-RHWM Load and unused RHWM.

5.4.5 Tier 2 Rate TCMS Adjustment

The Tier 2 rate schedule includes an adjustment for TCMS-related costs. This adjustment will recover the cost BPA incurs as a result of a transmission event, either a planned transmission outage or a transmission curtailment. The event would occur along the transmission path used to deliver energy associated with the power purchases for the Tier 2 cost pools. That is, it would occur between the Point of Receipt and the Point of Delivery. The adjustment is described in GRSP II.F.

5.4.6 TOCA Adjustment

For each customer purchasing Firm Requirements Power under a CHWM contract, a TOCA for each year of the rate period is calculated in the BP-18 7(i) process. A Load Following customer's TOCA for a fiscal year may be adjusted to account for a significant change in the customer's total load, as detailed in GRSP II.G.1. A Slice/Block or Block customer's TOCA may be adjusted (1) for a fiscal year as part of the CHWM Contract annual Net Requirement process, and (2) within a fiscal year due to a change to the customer's Specified Resource amounts within the same fiscal year, as detailed in GRSP II.G.2. Additionally, a customer's TOCA may be modified for a fiscal year or within a fiscal year if the customer's CHWM and associated RHWM have changed due to load annexations between customers with CHWM contracts.

5.4.7 DSI Reserves Adjustment

In the event that BPA agrees to acquire an additional reserve product from a DSI, this provision (1) establishes the mechanism through which BPA compensates the DSI, and (2) places a cap on the unit price of any supplemental operating reserve product to be purchased to ensure that the reserve acquisition is cost-effective. *See* GRSP II.H.

5.5 Conservation

5.5.1 Conservation Surcharge

Section 7(h) of the Northwest Power Act states that BPA may apply to rates a surcharge recommended by the Northwest Power and Conservation Council pursuant to section 4(f)(2) of the Northwest Power Act. BPA does not currently anticipate applying such a surcharge in the FY 2018–2019 rate period. *See* GRSP II.U.

5.5.2 Large Project Targeted Adjustment Charge

The Large Project Targeted Adjustment Charge (LPTAC) recovers costs BPA incurs by making funds available for the acquisition of conservation through the Large Project Program. At any time during the rate period, a customer may submit a project to BPA for consideration of funding through the LPP. Customers will be charged the True Acquisition Cost associated with the funding. *See* GRSP II.V.

5.6 Resource Support Services and Related Services

BPA offers services to support resources under the PF, NR, and FPS rate schedules. These services are designed to support non-Federal resources. However, there are situations for ratemaking purposes where these services are used to financially flatten Federal resources. *See* § 3.2.3.1.4. The RSS rates relevant to the PFp rate schedule include:

- Diurnal Flattening Service Charges
- Resource Shaping Charge and Resource Shaping Charge Adjustment
- Secondary Crediting Service Charges
- Grandfathered Generation Management Service Reservation Fee

The RSS and related service rates relevant to the NR rate schedule for NLSLs include:

- NR Energy Shaping Service Charges
- NR Resource Flattening Service Charge

The RSS and related rates relevant to the FPS rate schedule include:

- Forced Outage Reserve Service Charges
- Transmission Scheduling Service Charges
- Transmission Curtailment Management Service Charges
- Resource Remarketing Service Credits

Forecast revenue from RSS and related services is used to credit Tier 1 cost pools. *See* Documentation Tables 3.2 and 3.10.

5.6.1 Resource Support Services and Transmission Scheduling Service

5.6.1.1 Diurnal Flattening Service

DFS is an optional service that financially converts the output of a variable, non-dispatchable non-Federal resource to the equivalent flat amount of power within each diurnal period of a month. When DFS charges are coupled with Resource Shaping Charges, the variable output of a generating resource is financially converted to a flat annual block of power. DFS applies to any non-Federal resource the customer applies to its load and any portion of the resource remarketed by BPA.

The RSS module of RAM calculates a unique set of rates and charges for each resource to which DFS is applied. Included in Documentation Table 3.13 are the final rates and charges calculated for the customers that have requested DFS for their resources. PF-18 rate schedule sections 5.1 and 5.2 describe the general rate application of the DFS-related charges. GRSP II.I includes DFS rates and Resource Shaping Charges.

DFS charges include the following elements:

- A DFS capacity charge based on the PFp Tier 1 Demand rate applied to the difference between the calculated firm capacity of the resource and the planned average HLH generation of the resource. This charge reflects the costs of reserving an amount of capacity to smooth the variable generation of a resource into a flat block of power.
- A DFS energy charge based on the potential cost of storing and releasing power using a resource capable of storing energy (pumped storage) to balance the hourly shape of the resource to which DFS is applied. This charge reflects the costs of energy storage to smooth the hourly generation variation into a flat monthly/diurnal block of power.

When DFS is applied to a resource, the Resource Shaping Charges and Adjustment must be added to the DFS charges to complete the financial conversion to a flat annual block of power. *See* §§ 5.6.1.2–3.

Typically, the RSS module of RAM, which computes resource-specific RSS rates, will use scheduled amounts for resources that require e-Tags and meter amounts for "behind-the-meter resources." However, for small resources or small shares of a resource, BPA may apply a meter amount instead of a schedule amount for purposes of pricing RSS if the meter amount produces lower RSS rates and charges.

5.6.1.1.1 DFS Energy Charge

A unique DFS energy rate is developed for each resource to which DFS is applied. The purpose of this rate is to reflect the potential cost of storing and releasing energy to offset the hourly variability of the resource's Exhibit D amounts. The DFS energy billing determinant is the total actual generation. The DFS energy charge, GRSP II.I.1(a), is the product of multiplying the DFS energy rate by the DFS energy billing determinant for each month. Documentation Table 3.13 shows the DFS energy rates for the individual resources.

5.6.1.1.2 DFS Capacity Charge

The DFS capacity charge is a fixed monthly amount calculated as noted in GRSP II.I.1(b)(3) and is based on the monthly PF Tier 1 demand rates, monthly planned amounts in Exhibit D, and the calculated monthly firm capacity of the resource.

The RSS module of RAM calculates the monthly firm capacity amounts for each resource. This calculation represents the lowest level of historical generation in an HLH period for each month after accounting for planned and forced outages. The firm capacity of a resource is the percentile of the forced outage rating calculated from the historical monthly HLH generation levels. For example, a resource with a 5 percent forced outage rating would have a firm capacity amount equal to the 5th percentile of the hourly historical generation amounts for the HLH period of a month.

Each type of generating resource has a standard forced outage rating. This rating represents the average percentage of time that a generating resource is unavailable for load service due to unanticipated breakdown. BPA uses a minimum 5 percent forced outage rating for hydroelectric resources, 7 percent for thermal resources, and 10 percent for all other resources. Customers taking services that have charges including the use of a forced outage rating may request that BPA increase the forced outage rating for their resource, and those with a resource other than a hydroelectric resource may request that BPA decrease the forced outage rating to as low as 7 percent.

The monthly calculated HLH firm capacity of the resource also includes a planned outage adjustment. If the historical hourly data reflects an outage that was planned, the model does a second calculation of the monthly firm capacity amount. This test runs the same calculation as above but calculates the value approximately equal to the forced outage percentile of an hourly sample that does not include the hours that were identified as a planned outage. If the number of planned outage hours is less than 25 percent of the HLH in the month, no further adjustments are made to the value calculated by the planned outage calculation of firm capacity. If the number of planned outage hours is equal to 25 percent of more of the HLH in the month but less than 75 percent of the hours in the month, the planned outage adjusted firm capacity value is reduced by multiplying it by one minus the percentage of planned hours in the month. If the number of planned outage hours in the month is equal to or greater than 75 percent of the HLH in the month, the firm capacity of the resource in that particular month is set to zero.

Documentation Table 3.13 shows the individual DFS capacity charges that are calculated for the individual resources to which DFS is applied.

5.6.1.2 Resource Shaping Charge

The purpose of the Resource Shaping Charge, GRSP II.I.2.(a), is to reflect the value of buying and selling flat monthly/diurnal blocks of power in the market to convert a diurnally flat resource within the month into one that, on a planned basis, is flat across the year. The Resource Shaping rates are set equal to the PFp Tier 1 Load Shaping rates, which represent a proxy market price. On a monthly basis the RSC can be a charge or a credit. The flat monthly Resource Shaping Charges are shown in Documentation Table 3.13 for individual resources.

For Small, Non-Dispatchable Resources (as defined in the CHWM contract), the Resource Shaping Charge will not apply. The actual generation amounts of these resources will be used in the calculation of the Actual Monthly/Diurnal Tier 1 Load when calculating the PFp Tier 1 Load Shaping charge and Demand charge.

5.6.1.3 Resource Shaping Charge Adjustment

The purpose of the RSC Adjustment, GRSP II.I.2.(b), is to capture the cost or value of the energy differences between the Exhibit D amounts and the actual generation of the resource. This adjustment is a true-up of the Resource Shaping Charge and completes the financial conversion to a flat annual block of power by making up for any energy cost differences between planned and actual generation amounts. The RSC Adjustment can result in either a charge or a credit.

5.6.1.4 Forced Outage Reserve Service (FORS)

FORS in GRSP II.I.4 is an optional service for BPA to provide an agreed-upon amount of capacity and energy to a customer’s load with a qualifying resource that experiences a forced outage. FORS is offered under the FPS rate schedule to customers with resources that meet requirements specified in the CHWM contract.

The charges for FORS are intended to reflect the cost of BPA (1) reserving capacity to back up a resource as insurance to cover a potential forced outage, and (2) providing replacement energy should a forced outage occur.

The FORS charges include the following elements:

- A FORS Capacity charge is based on the PFp Tier 1 Demand rate, the calculated firm capacity of the resource for customers whose resource is also taking DFS, and the forced outage rating for the applicable resource. Documentation Table 3.13 shows the FORS Capacity charges calculated for each resource. The calculations regarding firm capacity and forced outage ratings are described above in section 5.6.1.1.2. Additionally, the firm capacity amounts used to calculate the FORS Capacity charges may be adjusted to account for planned outages if such planned outages are included in the DFS Capacity charge.
- A FORS Energy charge designed to pass through the cost of replacement energy that BPA provides during a customer's forced outage. The energy rate is based on a Mid-C index price under two conditions and the amount of energy supplied during a forced outage event.

Additionally, customers with FORS are limited to a maximum amount of energy provided during a Fiscal Year and a Purchase Period, as defined in the CHWM contracts. Such Fiscal Year and Purchase Period limits are calculated in the RSS module of RAM and listed in Exhibit D of the customer's CHWM contract. The Fiscal Year limits are set equal to two times the product of the following: (1) the forced outage rating of the applicable resource, and (2) the sum of the monthly planned amounts in Exhibit D in megawatthours. The Purchase Period limits are set equal to the product of the following: (1) the forced outage rating of the applicable resource; (2) the annual average planned amounts in Exhibit D in megawatthours; and (3) the number of years in the Purchase Period.

5.6.1.5 Transmission Scheduling Service and Transmission Curtailment Management Service

TSS is offered under the FPS rate schedule. It is a required service for customers with resources that meet eligibility requirements specified in the CHWM contract. TSS is a service provided by Power Services to undertake certain scheduling obligations on behalf of the customer. TCMS is an optional service related to TSS that is also offered under the FPS rate schedule for customers with resources that meet eligibility requirements specified in the CHWM contract. TCMS is a feature of TSS under which BPA provides either replacement transmission or replacement energy to customers that have qualifying resources that experience transmission events pursuant to the conditions specified in Exhibit F of the CHWM contract.

If a Load Following customer is served by transfer service or is purchasing DFS or SCS services from BPA, it is required to have the TSS provisions added to its CHWM contract. However, only customers that have a non-Federal resource requiring an e-Tag will be charged for TSS services. Load Following customers that are not contractually required to take TSS can elect this optional service if they wish to have BPA produce the e-Tags for their resources. Without this service the customer must supply replacement transmission or power when the resource's transmission path experiences an outage or curtailment. If it is unable to do so, it may face an Unauthorized Increase charge. *See* GRSP II.N.

Application of TSS to Tier 2 rates is described in section 3.2.2.2 above. Application of the TCMS Adjustment to Tier 2 rates is described in section 5.4.5 above.

5.6.1.5.1 TSS/TCMS Pricing Summary

The charge for TSS reflects the cost of scheduling a resource to its Point of Delivery. The charge for TCMS reflects the cost of providing either replacement transmission or replacement energy when a transmission event occurs. A unique set of charges will be calculated for each resource to which TSS and TCMS are applied. TSS may apply to a resource and TCMS may not, but TCMS is not available to support a resource to which TSS does not apply.

The TSS/TCMS charges, GRSP II.I.5, include the following elements:

- For resources requiring e-Tags, a monthly TSS charge based on the applicable resource's FY 2018–2019 Dedicated Resource amounts listed in Exhibit A of the Load Following CHWM contract.
- A TSS rate that is based on the forecast operations scheduling cost for the rate period (including costs associated with power scheduling preschedule, real-time, and after-the-fact functions) divided by the total megawatthours of power BPA has scheduled in the two most recent historical years. *See* Documentation Table 3.4.
- An Annual Open Access Technology International, Inc. (OATI) registration fee, $200 per customer, which is spread evenly across the customer's resources and billing periods.
- A transaction-based cap for the monthly TSS charge (not including adjustments made to recover the cost of the OATI registration fee). See section 5.6.1.5.2 below for details.
- A TCMS charge for the cost of replacement power that is based on: (1) the cost of replacement power if actually purchased by BPA, or (2) the Powerdex Mid-C hourly index prices when a distinct replacement power purchase was not made by BPA. See section 5.6.1.5.3 below for details.
- A TCMS charge if alternative transmission is provided that is designed to pass through the cost to deliver the customer's resource plus any additional costs, including real power losses, associated with using the replacement transmission.

The RSS module of RAM calculates a TSS rate that is applied to each non-Federal resource receiving service during the rate period. *See* Documentation Table 3.13.

5.6.1.5.2 Transaction-Based Cap Applied to TSS Charge

The TSS Charge, not including adjustments made to recover the cost of the OATI registration fee described above, is subject to a cap. For a Specified Resource or Unspecified Resource Amounts serving Above-RHWM Load, if the annual cost calculated using the TSS rate exceeds $978 when divided by 12, then the monthly charge is capped at $978/month. The cap is the result of multiplying 30 schedules per month (*i.e.*, one schedule per day on average) by the forecast operations scheduling cost for the rate period, divided by the total number of schedules Power Services produced as adjusted to replicate the cap applied in the BP-16 rate period. *See* Documentation Table 3.4.

For Unspecified Resource Amounts serving an NLSL or a 9(c) export decrement obligation, if the annual cost calculated using the TSS rate exceeds $2,934 when divided by 12, then the monthly charge is capped at $2,934/month. This cap follows the same methodology applied to Specified Resources and Unspecified Resource Amounts serving Above-RHWM Load but assumes three daily transactions. It is the result of multiplying 90 schedules per month (*i.e.*, three schedules per day on average) by the forecast operations scheduling cost for the rate period, divided by the total number of schedules Power Services produced as adjusted to replicate the cap applied in the BP-16 rate period. *Id.*

5.6.1.5.3 TCMS Charge if Replacement Power is Provided

If BPA purchases replacement power during a transmission event for a resource supported by TCMS, then the TCMS rate will be based on the costs of such purchased power. If BPA does not make a discrete purchase of replacement power, then the TCMS rate will be based on Powerdex Mid-C hourly index prices. The hourly index prices are scaled up by 110 and 125 percent if the amount of replacement power that BPA supplies meets defined size thresholds. *See* GRSP II.I.5(b). The thresholds are based on the bands used in BPA Transmission's Generation Imbalance (GI) and Energy Imbalance (EI) charges. However, unlike GI and EI, which allow for netting hourly energy amounts across the month, the bands are used to determine the TCMS charge for each hourly transmission event and do not include a crediting component.

5.6.1.6 Secondary Crediting Service

The PF-18 rate schedule includes SCS Charges, GRSP II.I.3, which provide a credit or charge to a Load Following customer that dedicates its entire share of the output of a hydroelectric Existing Resource to its load. The customer will receive a credit for the energy produced by that resource that is in excess of the monthly/diurnal amounts specified in CHWM Contract Exhibit A. The additional generation would increase BPA's revenues because of the increased secondary energy BPA can market, or it would lower BPA's costs because of reduced balancing purchases. The customer will receive a charge for any energy shortfall by the resource from the monthly/diurnal Exhibit A amounts, because BPA's secondary revenues would be lower or BPA's balancing costs would be higher. If a customer does not take this service, it must apply the exact Exhibit A amounts to its load unless the resource is a small, non-dispatchable resource or qualifies for Grandfathered Generation Management Service (GMS).

The charges and credits for SCS are intended to reflect the cost or value of reshaping the customer's resource into its Exhibit A amounts. The SCS charges include the following elements:

- SCS energy charge or credit, priced at the Resource Shaping rate. *See* Documentation Table 3.13.
- An Administrative Charge based on the forced outage rating of the hydro resource, the PFp Tier 1 Demand rate, and the monthly HLH Exhibit A amounts.

GRSP II.I.3.(a) includes the calculation for the SCS Shortfall Energy Charges and Secondary Energy Credits for the individual resources to which SCS is applied.

5.6.1.7 Grandfathered Generation Management Service Reservation Fee

The PF Tier 1 rate includes GMS, which allows a Load Following customer dedicating the entire output of an Existing Resource that received GMS during Subscription to run that resource against its load and offset its Tier 1 load and charges. The only charge specific to GMS is the GMS Reservation Fee, GRSP II.I.6, which is based on the forced outage rating of the applicable resource, the PFp Tier 1 Demand rate, and the resource's firm capacity.

5.6.1.8 Resource Remarketing Service

RRS is available under the FPS rate schedule. It is a service that BPA may make available, at its discretion, to Load Following customers. Under RRS, BPA remarkets non-Federal resources on behalf of customers and provides them with a remarketing credit net of possible remarketing fees for doing so. Further details on RRS are provided in section 5.7.2.4 below.

5.6.2 NR Services for New Large Single Loads

5.6.2.1 NR Energy Shaping Service for New Large Single Loads

The NR-18 rate schedule includes NR Energy Shaping Service (ESS). ESS is offered to Load Following customers serving NLSLs with non-Federal resources. ESS is a service provided by BPA to shape the energy provided by customers to the energy needs of NLSLs. This service allows customers some flexibility in the accuracy of meeting the real-time energy needs of NLSLs. This service includes a capacity component and an energy component. The capacity component applies to the amount of capacity that a customer requests BPA to stand ready to provide to the customer's NLSL(s).

The ESS charges in GRSP II.J.1 include the following elements:

- The energy component credits or debits the customer for energy differences between the energy amounts provided by the customer's non-Federal resource serving its NLSL(s) and the customer's measured NLSL(s).
- Energy charges can be positive or negative and are determined in a two-step process.
- The NR ESS Capacity charge is based on the NR demand rate and the amount of capacity the customer requests from BPA for standing ready to serve its NLSL(s).

NR energy rates will apply to any net monthly energy amounts purchased from BPA. The Unauthorized Increase Charge for demand will apply to actual capacity amounts used in excess of the monthly amounts of capacity included in the customer's request to BPA.

5.6.2.2 NR Resource Flattening Service

The NR Resource Flattening Service (NRFS) is applicable to Load Following customers that apply the generation output of a non-dispatchable Specified Resource to a New Large Single Load. This service financially converts, excluding the cost of capacity, the output of a non-dispatchable Specified Resource to the equivalent flat amount of power within each diurnal period of the month. *See* 2018 Power Rate Schedules and GRSPs, BP-18-E-BPA-10, NR-18 rate schedule and GRSP II.J.2. The capacity costs of diurnally flattening the resources are excluded in NRFS because this service is offered in conjunction with the ESS service, and the capacity costs are included in that service.

The NRFS charges, GRSP II.J.2, include an NRFS energy charge based on the potential cost of storing and releasing power using a resource capable of storing energy (*e.g.*, pumped storage) to balance the hourly shape of the resource. This charge reflects the costs of energy storage to smooth the hourly generation variation into a flat monthly/diurnal block of power.

No customers are forecast to take the NRFS during the BP-18 rate period. GRSP II.J.2 includes the calculation for the NRFS Energy charges for the individual resources if the NRFS is required.

5.7 Resource Remarketing for Individual Customers

The Remarketing credit conveys the value BPA receives when it remarkets (1) committed Tier 2 purchases in excess of need, and (2) non-Federal resources to which Diurnal Flattening Service applies that are temporarily in excess of need. The excess power is created when commitments to purchase are made prior to establishing need in the RHWM Process. *See* GRSP II.K.

5.7.1 Tier 2 Remarketing

5.7.1.1 Tier 2 Remarketing for Load Following Customers

Section 10 of the CHWM contract states that a Load Following customer may elect to have BPA remarket its Tier 2 rate purchase amount in the event its Above-RHWM Load as forecast for an upcoming rate period year is less than the sum of its Tier 2 rate purchase amounts and new resource amounts. The Load Following customer must provide BPA notice of such election by October 31 of the year preceding the rate period for which the customer elects to have BPA remarket its Tier 2 purchase amount.

5.7.1.2 Tier 2 Remarketing for Slice/Block or Block Customers

Section 10 of the CHWM contract states that a Slice/Block or Block customer may elect to have BPA remarket its Tier 2 rate purchase amount in the event its forecast Net Requirement for the upcoming fiscal year is less than the sum of its RHWM and Tier 2 rate purchase amounts. Notice of such election must be provided by August 31 of each fiscal year for the upcoming fiscal year.

5.7.1.3 Calculating the Remarketed Tier 2 Proceeds for Load Following and Slice/Block or Block Customers

Section 6.4 of the TRM states that if BPA remarkets a customer's Tier 2 purchase obligation pursuant to the CHWM contract, BPA will credit the proceeds from the remarketing (net of any remarketing costs) to such customer. The customer must continue to pay for the entire purchase at the appropriate Tier 2 rate.

The remarketed Tier 2 proceeds are computed for Load Following customers using (1) the remarketed amount of Tier 2 service (in megawatthours) plus real power losses, and (2) the Remarketing Value determined in accordance with section 3.2.2.6 above.

After notice is provided by a Slice/Block or Block customer, the remarketed Tier 2 proceeds will be computed for that customer using (1) the remarketed amount of Tier 2 service (in megawatthours) plus real power losses, and (2) the flat annual equivalent market price forecast after the time the notice is provided to BPA, for the applicable fiscal year, plus any additional costs incurred by BPA in purchasing power from other entities.

The annual remarketing proceeds for each customer are divided by 12 to compute a flat monthly credit that will be applied to the customer's bill. Each applicable Load Following customer's forecast of monthly remarketed Tier 2 proceeds is summarized in Documentation Tables 5.2.1–2. Slice/Block and Block customers' monthly remarketed Tier 2 proceeds are calculated in the annual Net Requirements process, which occurs after the 7(i) process concludes.

5.7.2 Non-Federal Resource Remarketing

5.7.2.1 Non-Federal Resource with DFS for Load Following Customers

Section 10 of the CHWM contract states that a customer may elect to remove a new non-Federal resource in the event its Above-RHWM Load, as forecast for an upcoming rate period year, is less than the sum of its Tier 2 rate purchase amounts and New Resource amounts. A Load Following customer must provide BPA notice of such election by October 31 of the year preceding the rate period for which the customer elects to remove its new non-Federal resource. Section 10.5 of the CHWM contract states that BPA shall remarket the amounts of removed resources for which the customer purchases DFS in the same manner BPA remarkets Tier 2 rate purchase amounts. The customer will continue to pay for DFS on the entire resource amount that is applied to load and any portion of the resource remarketed by BPA.

5.7.2.2 Non-Federal Resource with DFS for Slice/Block or Block Customers

Section 10 of the CHWM contract states that a customer may elect to remove a new non-Federal resource in the event its forecast Net Requirement for the upcoming fiscal year is less than the sum of its RHWM, Tier 2 rate purchase amounts, and new resource amounts. Notice of such election must be provided by August 31 of each fiscal year for the upcoming fiscal year. Additionally, Slice/Block and Block customers are responsible for remarketing removed new resource amounts unless such resource is supported with DFS. Section 10.9 of the CHWM contract states that BPA shall remarket the amounts of removed resources for which the customer purchases DFS in the same manner BPA remarkets Tier 2 rate purchase amounts. The customer will continue to pay for DFS on the entire resource amount that is applied to load and any portion of the resource remarketed by BPA.

5.7.2.3 Calculating the DFS Remarketing Proceeds for Load Following and Slice/Block or Block Customers

The DFS remarketing proceeds are computed for Load Following customers using the Remarketing Value determined in accordance with section 3.2.2.6 for the applicable fiscal year. The DFS remarketing proceeds are computed for Slice/Block and Block customers using the flat annual equivalent market price forecast, as determined by BPA after the time the notice to remarket has been received, for the applicable fiscal year, plus any additional costs incurred by BPA in purchasing power from other entities.

For each applicable non-Federal resource to which DFS applies, the billing determinant is (1) the customer's total non-Federal resource, less (2) the amount of the customer's non-Federal resource needed to meet Above-RHWM Load, as reflected in the customer's CHWM contract Exhibit A, when updated.

For each resource, the DFS remarketing credit will be the product of multiplying the DFS remarketing rate by the DFS remarketing billing determinant for each applicable year of the rate period. The annual value is divided by 12 to calculate a flat monthly credit. Documentation Table 5.3 shows the forecast monthly DFS Remarketing Credits that are calculated for the individual resources to which the DFS remarketing is applied for Load Following customers. Slice/Block and Block customers' DFS remarketing credits are calculated in the annual Net Requirements process, which occurs after the 7(i) process concludes.

5.7.2.4 Resource Remarketing Service

Exhibit D of the CHWM contract for Load Following customers offers an optional service for customers that have purchased non-Federal resources in anticipation of future need. At the customer's request and with BPA's agreement, BPA will remarket the excess non-Federal resource amounts on the customer's behalf until the customer's need meets or exceeds the non-Federal resource amount. In order to qualify for this service the customer must also request DFS for the non-Federal resource. The DFS charges will be applicable to both the non-Federal resource amounts the customer dedicates to its load and any portion that BPA remarkets on the customer's behalf.

5.7.2.4.1 RRS Credit

RRS Rate. For each non-Federal resource, the rate will be based on the Remarketing Value determined in accordance with section 3.2.2.6.

RRS Billing Determinant. The RRS billing determinant will be the annual average megawatt Resource Remarketed Amounts in the customer's CHWM contract Exhibit D (when updated).

RRS Credit. For each resource, the RRS Credit will be the product of multiplying the RRS rate by the RRS billing determinant for each applicable year of the rate period. The annual value is divided by 12 to calculate a flat monthly credit.

RRS Fee. The fee for providing RRS to customers is determined on a case-by-case basis.

5.8 Transfer Service

About half of BPA's power customers are served by the transmission systems of third parties (entities other than BPA). Under the CHWM contract, BPA must acquire transmission services from these third-party transmission providers to deliver Federal power to BPA's power customers. This third-party transmission service is commonly referred to as transfer service. For information about transfer service, see Chapter 6 and GRSP II.L.

5.9 Rate Payment Options

5.9.1 Flexible PF Rate Option

The Flexible PF rate option, offered at BPA's discretion, allows PF-18 rates and billing determinants to be modified to accommodate a customer's request to change the way power is charged under the PF-18 rate schedule. *See* GRSP II.W.

5.9.2 Priority Firm Power Shaping Option

If requested, BPA will, to the maximum extent practicable while ensuring timely BPA cost recovery, accommodate individual customer requests to reshape charges within each year of the rate period to mitigate adverse cash flow effects on the customer. Such reshaping of charges must recover the same number of dollars on a net present value basis within the fiscal year as would have been recovered without the reshaping. The reshaping of the payments will be agreed upon between BPA and the customer prior to the start of the rate period. *See* GRSP II.X.

5.9.3 Flexible NR Rate Option

The Flexible NR rate option, offered at BPA's discretion, allows NR-18 rates and billing determinants to be modified to accommodate a customer's request to change the way power is charged under the NR-18 rate schedule. *See* GRSP II.Y.

5.10 Unanticipated Load Service

Unanticipated Load Service applies to any request for Firm Requirements Power received after February 1, 2017, that results in an unanticipated increase in a customer's load placed on BPA during the FY 2018–2019 rate period. Contractual obligations that result from a request for service under section 9(i) of the Northwest Power Act also will be considered ULS. ULS also may apply to a customer that adds load through retail access, including load that was once served by the customer and returns under retail access. *See* GRSP II.M.

5.10.1 PF Unanticipated Load Service

The energy rate is equal to the greatest of the following: (1) the Load Shaping rates; (2) the PF Tier 1 Equivalent rates; or (3) the projected market price calculated after a request for ULS is made. See section 4.1.1.3.1 for a description of the Load Shaping rate and section 5.14 for a description of the PF Tier 1 Equivalent rates. The PF ULS also includes a demand charge. The ULS under the PF-18 rate schedule is specified in GRSP II.M.2.

5.10.2 NR Unanticipated Load Service

The energy rate is equal to the greatest of the following: (1) the Load Shaping rates; (2) the NR energy rates; or (3) the projected market price calculated after a request for ULS is made. See section 4.1.1.3.1 for a description of the Load Shaping rate and section 4.2.1 for a description of the NR energy rates. The NR ULS also includes a demand charge. The ULS under the NR-18 rate schedule is specified in GRSP II.M.3.

5.10.3 FPS Unanticipated Load Service

Under the FPS-18 rate schedule, the Resource Replacement (RR) rate will be applied to Unanticipated Load Service for circumstances that cause an increase in a customer's load placed on BPA not anticipated in the rate case. Such circumstances could include, but are not limited to, delays in the online date of a customer's specified resource for Above-RHWM service; New Specified Resources that are 10 aMW or less and either experience permanent failure during the rate period or fail to come online; and transfer service customers that both (1) cannot secure Firm Network Transmission (NT) from source to sink for their dedicated non-Federal resource to their Above-RHWM Load by the time power deliveries begin under the Regional Dialogue contract, and (2) are expected to face high TCMS charges due to their reliance on Secondary Network Transmission while they pursue Firm Network Transmission. The provision of ULS will be at BPA's sole discretion.

The energy rate is the greater of the RR rate and the projected market price calculated after the time when the request for ULS is made. The RR rate is equal to the Load Shaping rate or the PF Tier 1 Equivalent rate, whichever is greater. See section 4.1.1.3.1 for a description of the Load Shaping rate and section 5.14 for a description of the PF Tier 1 Equivalent rates. The FPS ULS also includes a demand charge. The ULS under the FPS-18 rate schedule is specified in GRSP II.M.4.

5.11 Unauthorized Increase (UAI) Charges

The UAI charge is a penalty charge to customers taking more power from BPA than they are contractually entitled to take. The UAI demand rate is 1.25 times the applicable monthly demand rate. The UAI energy rate is the greater of 150 mills/kWh or two times the highest hourly Powerdex Mid-C Index price for firm power for the month. *See* GRSP II.N.

5.12 Residential Exchange Program Settlement Implementation

The 2012 REP Settlement established a fixed stream of financial benefits payable to the IOUs beginning in FY 2012 and ending in FY 2028. These benefits are allocated among the IOUs based on their specific ASCs, PF Exchange rates, and eligible residential and farm loads (Residential Loads). GRSPs II.S and II.T address two issues specific to the implementation of the 2012 REP Settlement.

Pursuant to the terms of the 2012 REP Settlement, REP Residential Loads are calculated using a two-year monthly average of the IOUs' eligible residential and farm actual loads. The FY 2018 and 2019 Residential Load monthly averages for each IOU are provided in GRSP II.S, Table H.

GRSP II.T addresses the recalculation of the PF Exchange rate in the event of a change to an IOU's ASC. Calculation of the PF Exchange rate is described in detail in section 4.1.6. The PF

Exchange rate calculation is dependent upon, among other factors, the IOUs' Final ASCs. ASCs are determined outside the rate proceeding in an ASC Review Process that BPA conducts pursuant to the 2008 ASC Methodology (ASCM). *See* ASCM, 18 C.F.R. § 301 *et seq*. (2008). Forecast ASCs for participating IOUs and participating COUs are used for establishing rates in the Initial Proposal. *See* Chapter 8. Final ASCs are determined coincident with the Final Proposal and are incorporated therein. An IOU's Final ASC can change after final rates are set, although such changes are rare. In the event of such a change, the PF Exchange rate must be recalculated for each REP participating utility. GRSP II.T describes the process for such recalculation.

5.13 Cost Contributions

Section 7(j) of the Northwest Power Act states that BPA's rate schedules must indicate the approximate cost contributions of different resource categories to BPA's rates for the sale of energy and capacity. The rate schedules also must indicate the cost of resources BPA acquires to meet load growth and the relationship of such cost to BPA's average resource cost. *See* GRSP II.Z.

5.14 PF Tier 1 Equivalent Rates

For use in contracts that have rates tied to a traditional PF HLH/LLH rate design without tiering, the PFp Tier 1 Equivalent rates consist of 12 HLH Energy rates, 12 LLH Energy rates, and 12 Demand rates. The PFp Tier 1 Equivalent Energy rates are equal to the Load Shaping rates less a scalar. The scalar is a single mills/kWh value that adjusts the Load Shaping rates to a level at which the PFp Tier 1 Equivalent Energy rates, in conjunction with the demand revenue, would collect the Tier 1 revenue requirement allocated to the PFp Non-Slice loads (the Composite cost pool plus the Non-Slice cost pool). This mills/kWh value is equivalent to the Load Shaping

True-Up rate. This calculation is shown in Documentation Table 3.1.8.5. The Demand rates are equal to the Tier 1 Demand rates. *See* GRSP II.AA.

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6. TRANSFER SERVICE

6.1 Introduction

More than half of BPA's power customers are served by the transmission systems of third parties; that is, entities other than BPA. Under the Regional Dialogue contracts, BPA must acquire transmission services from these third-party transmission providers to deliver Federal power to BPA's power customers. This third-party transmission service is commonly referred to as transfer service.

Transfer service customers may be subject to one or more separate charges from BPA: (1) the Transfer Service Delivery Charge; (2) the Transfer Service Operating Reserve Charge; and (3) the Transfer Service WECC Charge. Power Rate Schedules and GRSPs, BP-18-E-BP-10, GRSP II.L. In addition to these charges, transfer service customers are responsible for the cost of any distribution upgrades associated with their respective points of delivery, as provided in the Supplemental Direct Assignment Guidelines. *Id*. at GRSP I.E. The Transfer Service Peak Charge is no longer part of the GRSPs because Power Services was not assessed a Peak charge during the BP-16 rate period and will not be charged by Peak in FY 2018–2019. *Id*. at GRSP II.L.

6.2 Supplemental Guidelines

The Supplemental Guidelines for Direct Assignment of Facilities Costs Incurred Under Transfer Agreements address how BPA will recover the costs for facility expansions and upgrades on third-party transmission systems for transfer service customers. The Supplemental Guidelines, in conjunction with the Transmission Services Facility Ownership and Cost Assignment Guidelines, are used to determine whether and in what way specific facility or expansion costs should be assigned to particular transfer service customers. *Id.* at GRSP I.E.

6.3 Transfer Service Delivery Charge

The Transfer Service Delivery Charge in Power GRSP II.L.1 is a charge for low-voltage delivery service of Federal power provided under non-Federal transmission service agreements over a third-party transmission system. *Id*. at GRSP II.L.1. The Transfer Service Delivery Charge applies to power customers that take delivery at voltages below 34.5 kV unless such costs have been directly assigned to the specific customer. The Transfer Service Delivery Charge is a dollars-per-kilowatthour rate levied on customer load at the customer's low-voltage points of delivery (POD) at the time of that customer's system peak. Calculation of the rate is described below.

6.3.1 Transfer Service Delivery Rate Revenue Requirement

The revenue requirement for the Transfer Service Delivery rate is computed by compiling the total low-voltage distribution, use of facility, and delivery charges paid by Power Services to third-party transmission providers in each of FY 2014 and FY 2015. Any known changes for the FY 2018–2019 rate period are added and the average for the two years is calculated.

NorthWestern Energy (NorthWestern) is BPA's only third-party transmission provider that does not charge separately for low-voltage delivery. Instead, NorthWestern rolls all the costs of low-voltage service into its transmission rate that BPA pays for transfer service. To estimate a cost for low-voltage delivery services provided by NorthWestern, the average cost of all other transmission providers' low-voltage charges is applied to the transfer service customer loads served by low-voltage facilities on NorthWestern's system.

BPA's total average cost for low-voltage delivery for FY 2014–2015 is $2,971,178. This cost includes a $720,000 increase in Avista's rates for low-voltage distribution and use of facilities.

6.3.2 Transfer Service Delivery Forecast Load

The average of FY 2014 and FY 2015 customer system peaks is determined by reviewing customer bills and extracting customer load data for the low-voltage PODs at the time of each customer's system peak. The average of the FY 2014 and FY 2015 customer system peaks is 2,285,320 kW.

6.3.3 Transfer Service Delivery Rate Calculation

To calculate the Transfer Service Delivery rate, as shown below, the adjusted FY 2014–2015 average revenue requirement is divided by the average FY 2014–2015 customer system peak:

Distribution, Use-of-Facility, and Low-Voltage Costs:	$2,971,178
BPA Customer System Peak:	2,285,320 kW
Transfer Service Delivery Rate FY 2018–2019:	$1.30 per kW/mo

6.4 Transfer Service Operating Reserve Charge

The Transfer Service Operating Reserve Charge is designed to compensate BPA for the cost of acquiring operating reserves assessed by third-party transmission providers and non-BPA balancing authorities for service to transfer service customers' loads.

Assessment of the Transfer Service Operating Reserve Charge is conditioned on the satisfaction of two criteria:

(1) BPA serves the power customer by transfer service; and

(2) the transfer service customer is not already paying BPA for operating reserves for the customer's load under the ACS-18 rate schedule.

The Transfer Service Operating Reserve rates are the same as the ACS-18 rates for operating reserves that BPA charges customers that have load in the BPA balancing authority area. That is, the Transfer Service Spinning Operating Reserve rate is equal to the ACS-18 Operating

Reserve – Spinning Reserve Service rate, and the Transfer Service Supplemental Operating Reserve Charge is equal to the ACS-18 Operating Reserve – Supplemental Reserve Service rate. The monthly billing determinant for both Transfer Service Operating Reserves charges is the metered load of the customer served by transfer (non-BPA balancing authority area load).

The forecast revenue associated with the Transfer Service Operating Reserve Charge – Spinning Reserve Service is $1.6 million for FY 2018 and $1.6 million for FY 2019. The forecast revenue associated with the Transfer Service Operating Reserve Charge – Supplemental Reserve Service is $1.3 million for FY 2018 and $1.3 million for FY 2019.

6.5 Transfer Services WECC Charge

The Transfer Services WECC Charge applies to all transfer service customer loads located outside of the BPA balancing authority area. The Transfer Service WECC charge is a separate stand-alone charge.

Background on WECC Charge. The Western Electricity Coordinating Council (WECC) develops and assesses a charge to loads located in balancing authority areas within the Western Interconnection to support their regional operations. The charge is based on a Net Energy for Load (NEL) value, which includes all loads within a balancing authority area, including system losses. Each balancing authority submits its NEL to WECC yearly. WECC adds the NEL amounts for all balancing authority areas to identify a total NEL for all loads in the Western Interconnection. The annual revenue requirement for WECC is then divided by the total NEL to establish a $/MWh assessment.

WECC Assessment. The WECC rate is assessed to the individual loads identified in the NEL data submitted by the balancing authority areas. The format of each balancing authority area's

NEL submission to WECC varies across the region. For example, some balancing authority areas identify each individual customer load in their NEL submissions, including both native and non-native load. In the past, for these balancing authority areas WECC would issue an invoice to each customer for the WECC charge. Other balancing authority areas identify and submit single load quantities for their balancing authority areas, with no differentiation between native and non-native loads. In these instances, the balancing authority area receives a single invoice from WECC for all loads in the balancing authority area. BPA's transfer service customer loads are located in balancing authority areas that report in both manners.

BPA's Transfer Services WECC Charge. For FY 2018–2019, WECC will bill Power Services for all NEL quantities reported by the balancing authority areas that are associated with transfer service customer loads outside the BPA balancing authority area. BPA will recover this billed amount from all transfer service customer loads located outside of the BPA balancing authority area through the Transfer Services WECC Charge, regardless of how each balancing authority area reports the transfer service customer's load in its NEL submission.

6.5.1 WECC Charge

6.5.1.1 WECC Revenue Requirement

To forecast the BPA revenue requirement for the Transfer Services WECC rate, total NEL reported to WECC is computed for BPA transfer service customer loads outside BPA's balancing authority area. The 2017 WECC NEL assessment list was used to identify specific transfer service customers by name, their corresponding NEL amounts, and NEL amounts associated with only BPA by the reporting balancing authority areas. All of these NEL amounts are then summed to establish a total transfer service NEL value. The NEL quantities include losses, as do the NEL quantities WECC uses to assess its charges. The 2017 WECC NEL assessment is based on 2015 load information, which is the most current information available for forecasting BPA's WECC assessment for transfer service customers for FY 2018–2019.

The revenue requirement for the Transfer Services WECC rate is computed by summing all individual assessment amounts as calculated by WECC and given to BPA.

6.5.1.2 WECC Rate Calculation

The Transfer Service WECC rate is computed using the WECC revenue requirement and the total of all BPA transfer service customers' load from outside the BPA balancing authority area. Unlike the calculation for the revenue requirement, transfer service customer loads that are in balancing authority areas that do not report separate NELs for BPA transfer service loads are included. Each balancing authority area's NEL value has system losses removed to align with the monthly billing determinant, which does not include losses. The FY 2018–2019 average revenue requirement is divided by the forecast total NEL to calculate the rate.

6.5.2 Transfer Service WECC Billing Determinants

The billing determinant for the transfer service WECC charge is the total monthly kilowatthours of non-BPA balancing authority area transfer load as shown on each transfer service customer's monthly BPA power bill. The MWh units used in this Study are converted to kWh units for the purpose of establishing the rate.

6.6 Southeast Idaho Load Service Five-Year Market Purchases

From 1989 to 2016, BPA used an exchange agreement with PacifiCorp and a transmission wheeling agreement to deliver power to BPA's preference customers in Southeast Idaho. The exchange agreement with PacifiCorp expired in June 2016. Because of limited transmission capability between BPA's system and BPA's Southeast Idaho customers, BPA entered into two five-year fixed-price market purchases starting in July 2016 as part of an interim plan of service for a portion of BPA's transfer customer load located in Southeast Idaho.

The cost of these purchases, $87.7 million for FY 2018–2019, is allocated in two parts. The fixed price of the market purchases, less a market delta (difference), is allocated to balancing purchases, which is assigned to the Non-Slice cost pool. Documentation Table 2.3.1.1, line 28. This cost is $76.8 million for the two-year rate period. The remaining cost of the purchases, the market delta, is allocated to the transfer service budget, which is a component of the Composite cost pool. *Id*., Table 2.3.1.2, line 56. This cost is $10.8 million for the two-year rate period. *Id.,* Table 6.1, line 13, columns B and C.

The market delta reflects the difference in price due to BPA's two market purchases being sourced from resources outside the Mid-Columbia market footprint. The market delta is determined by calculating the difference between the market purchase contract prices and the Intercontinental Exchange (ICE) forward Mid-Columbia power price on the date each of the two transactions was made (May 9, 2014, and September 30, 2014). To calculate the delta, the ICE forward market price for the entire contract term is assumed to be the one in effect at the time each contract was finalized. Due to limitations in the monthly light load ICE market data, values for calculating the deltas from January 2021 through June 2021 were generated by using the January 2020 through June 2020 monthly light-to-heavy ratio percentage multiplied by the 2021 monthly heavy load prices.

For the term of the market purchases, the cost to the transfer service budget (the delta) is fixed at $6.01/MWh for both of the two forward market purchases. Documentation Table 6.2 shows the calculation of the total transfer service cost of $219,386,064 for the two five-year market purchases and the total five-year delta cost of $27,131,407. Documentation Table 6.1 shows the calculation of the monthly and annual delta costs for the duration of the two market purchases.

7. SLICE TRUE-UP

7.1 Slice True-Up Adjustment

Slice customers are subject to an annual Slice True-Up Adjustment for expenses, revenue credits, and adjustments allocated to the Composite cost pool and to the Slice cost pool. The annual Slice True-Up Adjustment will be calculated for each fiscal year as soon as BPA's audited actual financial data are available (usually in November). *See* TRM, BP-12-A-03, § 2.7.

7.2 Composite Cost Pool True-Up

The Composite Cost Pool True-Up is the calculation of the annual Slice True-Up Adjustment for the Composite cost pool for each fiscal year. For each Slice customer, the annual Slice True-Up Adjustment Charge for the Composite cost pool will be calculated as shown in GRSP II.R.1. The dollar amount calculated may be positive or negative. The Composite Cost Pool True-Up Table (GRSP II.R, Table F) shows the forecast expenses, revenue credits, and adjustments that form the basis for the Slice True-Up Adjustment calculation for the Composite cost pool for the applicable fiscal year.

The following sections discuss the treatment of certain expenses, revenue credits, and adjustments included in the Composite Cost Pool True-Up.

7.2.1 System Augmentation Expenses

System augmentation expenses are included in the FY 2018–2019 Composite cost pool. Some of these augmentation expenses are a cost for service to Non-Slice customers' Above-RHWM Load that is served at Load Shaping rates. For a description of these system augmentation expenses, *see* section 3.2.4.3.2.

System augmentation expenses are not subject to the Composite Cost Pool True-Up. However, implicit in the Composite Cost Pool True-Up of the Firm Surplus and Secondary Adjustment (for Unused RHWM) and the DSI Revenue Credit are adjustments that reflect the effects of additional power purchases (or lack thereof) or additional power sales to the market.
Sections 3.2.4.2 and 7.2.3 describe the treatment of the Firm Surplus and Secondary Adjustment (for unused RHWM) for Composite Cost Pool True-Up purposes. Section 7.2.4 below describes the DSI revenue credit.

BPA's purchase of output from the Klondike III resource is a Tier 1 augmentation expense, and the Composite cost pool includes the cost of Resource Support Services and Resource Shaping Charges applicable to Klondike III. Because the RSS and RSC charges financially convert the variable output of Klondike III to a firm annual block of power and are committed to in advance, the augmentation expense and RSS and RSC costs associated with generation output from the Klondike III resource are not subject to the Composite Cost Pool True-Up.

7.2.2 Balancing Augmentation Load Adjustment

The Balancing Augmentation Load Adjustment can result in a positive or negative credit to the Composite cost pool. Section 3.2.4.3 describes the Balancing Augmentation Load Adjustment, the circumstances that would result in a credit, and the circumstances that would result in a negative credit. The Balancing Augmentation Load Adjustment is not subject to the Composite Cost Pool True-Up.

7.2.3 Firm Surplus and Secondary Adjustment (from Unused RHWM)

The Firm Surplus and Secondary Adjustment (from Unused RHWM) is subject to the Composite Cost Pool True-Up. *See* GRSP II.R.1(b). This adjustment reflects the fact that when the sum of actual TOCAs is greater than the sum of forecast TOCAs, additional power is sold to customers at the Composite Customer rate, and it is assumed that BPA incurs additional costs in the form of forgone market sales or increased power purchases. Likewise, when the sum of actual TOCAs is less than the sum of forecast TOCAs, less power is sold to customers at the Composite Customer rate, and it is assumed that BPA sells more power in the market or faces lower power purchase costs.

7.2.4 DSI Revenue Credit

The forecast costs associated with service to the DSIs are included in the Composite cost pool. *See* TRM, BP-12-A-03, § 3.2.1.3. DSI revenues received by BPA are included in the Composite cost pool as credits. The DSI Revenue Credit thus is subject to the Composite Cost Pool True-Up. *See* GRSP II.R.1(c).

The calculation of the DSI Revenue Credit starts with the forecast DSI revenue credit, which is adjusted to calculate the actual DSI revenue credit. When actual DSI sales are greater than the rate case forecast DSI sales, it is assumed that additional power is sold to the DSIs at the IP rate and BPA incurs additional costs in the form of forgone market sales or increased power purchases. The adjustment to the forecast DSI revenue credit reflects both the revenues from the additional power sold to the DSIs and the additional costs that are incurred. Likewise, when actual DSI sales are less than the rate case forecast DSI sales, it is assumed that BPA sells less power to DSIs at the IP rate and sells more power in the market, or it is assumed that such power may be used to meet BPA obligations so that fewer power purchase costs are incurred. The adjustment to the forecast DSI revenue credit reflects these effects. The adjustment also includes any DSI take-or-pay revenues recorded by BPA, if applicable.

7.2.5 Interest Earned on the Bonneville Fund

On the first day of the Slice contract, October 1, 2001, BPA had $495.6 million in financial reserves attributed to the Power function. TRM section 2.5 provides for an interest credit that BPA will allocate to the Composite cost pool based on the pre-FY 2002 (FY 2002 began on October 1, 2001) level of reserves. TRM section 2.5 further provides that future circumstances may occur that make it reasonable and fair to make adjustments to the size of the base amount of financial reserves attributed to the Power function as of October 1, 2001, for purposes of calculating the interest credit allocated to the Composite cost pool.

BPA made several adjustments to the base reserve amount in setting the BP-14 rates, as shown on Table 5. The adjustments reflected in Table 5 are not amounts that have been shared with or collected from Slice customers through a prior Slice True-Up. As a result, these amounts are reflected as adjustments to the size of the base amount of financial reserves. As shown on Table 5, line 30, the revised reserve amount for purposes of calculating the interest credit is $570.26 million. BPA has not made any adjustments to the revised reserve amount from the BP-14 rate proceeding in setting the proposed BP-18 rates. The forecast interest credit for the Composite cost pool is $4.676 million in FY 2018 and $4.961 million in FY 2019.

The interest credit on the financial reserves amount is subject to the Composite Cost Pool True-Up. The actual interest credit calculated on the revised base amount of financial reserves can change from the forecast interest credit if there are changes in the factors used to calculate the forecast interest credit. *See* Power Revenue Requirement Study Documentation, BP-18-E-BPA-02A, section 5, for a description of how the interest credit calculation factors can change.

7.2.6 Prepay Offset Credit

The Prepay Offset Credit represents the interest income earned on the power prepayment funds deposited in the Bonneville Fund in FY 2013 and in applicable fiscal years after FY 2013. The power prepayment funds are being applied toward capital spending on the Federal hydro maintenance program, the cost of which is included in the Composite cost pool. Because BPA received the proceeds of the prepayment program in advance of their expenditure, interest income will accrue in the Bonneville Fund. The Prepay Offset Credit is included in the calculation of net interest expense in the Composite cost pool table, GRSP II.R, Table F. In the Slice True-Up process, the Prepay Offset Credit will be trued up annually to ensure that the amount of credit reflects the actual amount of interest earned on the prepay funds. *See* Power Revenue Requirement Study Documentation, BP-18-E-BPA-02A, Table 5A, for forecast amounts.

7.2.7 Bad Debt Expenses

Bad debt expenses, if any, are allocated between the Composite cost pool and the Non-Slice cost pool, as specified in the TRM, BP-12-A-03, Table 2A. There is no forecast bad debt expense for the FY 2018–2019 period for ratesetting purposes. If a bad debt expense is identified and accounted for in BPA's actual audited financial reports for a given fiscal year, BPA will determine whether the expense should be included in the actual expenses and revenue credits that are allocable to the Composite cost pool in the applicable fiscal year of the rate period. If so, then the expense may be included for purposes of the Composite Cost Pool True-Up, and the bad debt expense would be allocated according to the principle of cost causation, as described generally in the TRM, BP-12-A-03, section 2.1.

Any bad debt expense associated with a sale to any customer that purchased Federal power exclusively at the FPS-16 and FPS-18 rates would be excluded for Composite Cost Pool True-Up purposes. Bad debt expenses associated with sales of power at only these FPS rates are related solely to BPA's sales of surplus power after the inception of the Slice product and not to sales of requirements power. The expenses and revenues from such sales are included in the Non-Slice cost pool. *See* TRM, BP-12-A-03, § 2.2.3.

Any bad debt expense associated with a sale to a customer that purchases power at only the PF or IP rate will be included for purposes of the Composite Cost Pool True-Up. The allocation to the Composite cost pool of any bad debt expense associated with a sale to a customer that purchases power at both the PF rate and the FPS rate, or a sale to a customer that purchases power at both the IP rate and the FPS rate, will be contingent on the circumstances of the particular instance of a full or partial non-payment of a power bill.

Revenue recoveries of bad debt expenses will be included for Composite Cost Pool True-Up purposes if Slice customers paid for the bad debt expense through their Slice True-Up Adjustment Charge.

7.2.8 Settlement and Judgment Amounts

BPA payments or receipts of money related to settlements and judgments will be allocated on a case-by-case basis to either the Composite cost pool or the Non-Slice cost pool. If an amount (payment or receipt) is accounted for in BPA's actual audited financial reports for any given fiscal year (reports are produced after rates are set), BPA will determine whether such amount will be included or excluded for Composite Cost Pool True-Up purposes. Such a determination will be made based on the principle of cost causation. *See id.* § 2.1.

7.2.9 Transmission Costs for Designated BPA System Obligations

Transmission and Ancillary Services expenses are allocated between the Composite cost pool and the Non-Slice cost pool, as specified in the TRM, BP-12-A-03, Table 2A. The Transmission and Ancillary Services expenses associated with Designated BPA System Obligations are allocated to the Composite cost pool. Such Transmission and Ancillary Services expenses are not subject to the Composite Cost Pool True-Up.

Transmission reservations are set aside for non-discretionary obligations (*i.e.*, Designated BPA System Obligations). Because Power Services does not know the actual amounts of transmission usage until the preschedule period for such obligations, the transmission reservations for those obligations are purchased based on the maximum need for the year. Therefore, the forecast cost of the reservations for Designated BPA System Obligations is included in the Composite cost pool, and such costs are not subject to the Composite Cost Pool True-Up.

Any revenues from the resale of transmission that appear to be the result of BPA sales of unused transmission inventory associated with set-aside transmission will be excluded for Composite Cost Pool True-Up purposes. Because the cost of additional transmission purchased (or of using Non-Slice transmission inventory) to serve Designated BPA System Obligations in excess of what was forecast in the ratesetting process is not included in the Composite Cost Pool True-Up, revenues from sales of surplus transmission inventory also are excluded from the Composite Cost Pool True-Up.

7.2.10 Power Services Third-Party Transmission and Ancillary Services

These costs are associated with transmission or losses for Federal generation telemetered into BPA's balancing authority area and delivered under BPA's OATT. These costs are tied to any Federal resources or generation included in the RHWM Tier 1 System Capability and delivered in the Slice product. Therefore, these costs are allocated to the Composite cost pool and are subject to the Composite Cost Pool True-Up. *See* § 3.2.6.

7.2.11 Transmission Loss Adjustment

A transmission loss adjustment is included in the Composite cost pool. Without such an adjustment, Slice customers would pay not only for real power losses (through loss return schedules to BPA) on the transmission of their Slice purchase, but also a proportionate share of losses on the transmission of non-Slice products. *See* section 3.2.4.1 for an explanation of the calculation of this credit.

The transmission loss adjustment is not subject to the Composite Cost Pool True-Up.

7.2.12 Resource Support Services Revenue Credit

A credit for RSS revenue is included in the Composite cost pool. The credit is for revenues earned by uses of capacity to support resources that receive RSS. *See* § 3.2.3.1.4. This revenue credit is not subject to the Composite Cost Pool True-Up.

7.2.13 Generation Inputs for Ancillary and Other Services Revenue Credit

A credit for Generation Inputs for Ancillary and Other Services revenue is included in the Composite cost pool. The credit is for revenues earned from the use of capacity and energy in meeting BPA's Designated System Obligations that are Generation Inputs. Included are revenues from Transmission Services for Generation Imbalance, Energy Imbalance, and Operating Reserves energy. *See* TRM, BP-12-A-03, Table 2, line 120, and Table 3.4, line 44. This revenue credit is subject to the Composite Cost Pool True-up.

7.2.14 Tier 2 Rate Adjustments

Tier 2 rate adjustments are ratesetting adjustments to the Composite cost pool to reflect a share of expenses incurred by Power Services that are allocable to all power sold. *See* § 3.2.2. There are two types of rate adjustments: the Tier 2 overhead cost adder and the Tier 2 transmission scheduling service cost adder.

The Tier 2 overhead cost adder is an adjustment for administrative costs incurred by Power Services. *See* § 3.2.2.3. The Tier 2 overhead cost adder is included in the Composite cost pool. This adjustment is estimated for ratesetting purposes and is not subject to the Composite Cost Pool True-Up.

The Tier 2 Transmission Scheduling Service cost adder is an adjustment for administrative costs incurred by Power Services. For a description of this adjustment, *see* section 3.2.2.2. The forecast of this adjustment is included in the RSS revenue credit. This adjustment is not subject to the Composite Cost Pool True-Up.

7.2.15 Residential Exchange Program Expense

Forecast REP benefits are included in the Composite cost pool for ratesetting purposes. The forecast of REP expense on the Composite Cost Pool True-Up Table is equal to the forecast of REP benefits expected to be paid to REP participants. The forecast REP expense is subject to the Composite Cost Pool True-Up.

7.2.16 Canadian Designated System Obligation Annual Financial Settlements

The Non-Treaty Storage Agreement (NTSA) is an agreement between BPA and B.C. Hydro that allows water transactions to be financially settled between them. The NTSA provides two mechanisms to settle the transaction benefits, which BPA designates as a system obligation:

(1) energy deliveries during the year, and (2) a financial settlement based on the August 31 balance at the end of the fiscal year. The Short-Term Libby Agreement (STLA) and subsequent updates are agreements between the U.S. and Canada that allow water transactions to be financially settled between BPA, acting on behalf of the U.S., and B.C. Hydro, acting on behalf of Canada. The STLA does not have a provision to settle transactions by energy delivery. BPA designates the STLA as a system obligation, and the financial settlement is based on the August 31 balance at the end of the fiscal year. Financial settlements in a fiscal year and the financial accrual amount recorded for the month of September of the same fiscal year are charged or credited to other power purchases, and Slice customers pay their share of the charge or receive their share of the credit through the Composite Cost Pool True-Up Table.

7.2.17 Other Adjustments

Two line items that were added to the Composite cost pool table in the BP-16 rate proceeding will continue to be included.

The first is the "PGE WNP3 Settlement" line item in the MRNR calculation. *See* GRSP II.R, Table F, line 141. In 1998, BPA and PGE entered into a settlement of a WNP-3 Exchange contract. PGE paid BPA $74 million to settle the contract. The funds from the settlement were deposited in the Bonneville Fund in 1998. Although all the funds were received in 1998, for accounting purposes BPA is recognizing these revenues over the remaining life of the contract, starting in 1998 and continuing to the end of the original exchange contract in 2019. This results in $3.524 million per year of revenue. The annual recognition is considered a non-cash transaction because the cash was received with the signing of the settlement in 1998. The line item "PGE WNP3 Settlement" allocates the non-cash revenues from the PGE Settlement to the Composite cost pool. Including this line item ensures that the balance between benefits and costs related to the PGE Settlement will be allocated equitably between Slice and Non-Slice customers. The PGE Settlement is not subject to the Composite Cost Pool True Up.

The second line item is the "Expense Offset" line item in the Other Income, Expense, and Adjustment section of the cost table. *See* GRSP II.R, Table F, line 80. As described in the IPR2 Final Close-out Report (May 2015), BPA plans to use for two purposes cash flows resulting from an extension of maturing CGS debt that is currently related to Debt Service Reassignment. One purpose is to accelerate an existing plan for repayment of Federal appropriations. The other purpose is to mitigate the rate impact of transitioning from a capitalized Energy Efficiency investment program to one that is fully expensed. The cash resulting from these debt management actions is included in the "Expense Offset" line item. Without the new line item, BPA would not be able to mitigate the impact of accelerating appropriations repayment or expensing the Energy Efficiency investment program in a way that ensures the equitable treatment of Slice and Non-Slice customers. The Expense Offset is subject to the Composite Cost Pool True-Up.

Three new line items are added to the MRNR section of the Composite Cost Pool True-Up Table. The first new line item is "Principal Payment of Non-Fed[eral] Debt." *See* GRSP II.R, Table F, line 132. The Principal Payment of Non-Federal Debt includes the amount of cash that BPA is obligated to pay Energy Northwest for Energy Northwest's line of credit used during the previous fiscal year to pay for operating costs.

The second new line item is "Non-Cash Expenses." *See* GRSP II.R, Table F, line 138. This line item represents the amount of the new line of credit that Energy Northwest will take out to cover operating expenses during the applicable fiscal year. Energy Northwest's use of its line of credit allows BPA to free up its cash to accelerate repayment of Federal debt. Line 138 is an offset to

BPA's additional payment of Federal debt. Without this new line item, BPA would not be able to mitigate the impact of accelerating appropriations. The inclusion of line 138 ensures that there is no impact to MRNR for Slice customers.

The third line item is "Customer Proceeds." *See* GRSP II.R, Table F, line 139. This amount is borrowed from the Power Pre-Pay program to pay down additional Federal appropriations. Line 139 is an offset to the additional Federal appropriation payment. Without the new line 139, BPA would not be able to mitigate the impact of accelerating appropriations. The inclusion of line 139 ensures that there is no impact to MRNR for the Slice Customers.

Amounts will not be forecast in the rate proceeding for the three new line items above. The three new line items are subject to the Composite Cost Pool True-Up. An actual amount will be entered into each of the three line items during each of the fiscal years in the rate period, which will represent the cash payments, non-cash expenses, and cash offset amounts.

7.3 Slice Cost Pool True-Up

The Slice Cost Pool True-Up is the calculation of the annual Slice True-Up Adjustment for the Slice cost pool, as described in TRM, BP-12-A-03, section 2.72. Calculation of the Annual Slice Cost Pool True-Up is described in GRSP II.R.2 and is shown in GRSP Table G. Slice expenses and credits are forecast to be zero in FY 2018 and FY 2019. If there are any actual Slice expenses and credits incurred during the rate period, such expenses and credits will be subject to the Slice Cost Pool True-Up.

8. AVERAGE SYSTEM COSTS

8.1 Overview of the Residential Exchange Program (REP)

The REP, established by section 5(c) of the Northwest Power Act, 16 U.S.C. § 839c(c), was designed to provide residential and farm customers of Pacific Northwest utilities a form of access to low-cost Federal power. Under the REP, BPA purchases power from each participating utility at that utility's average system cost (ASC). The ASC ($/MWh or mills/kWh) is a rate determination that is calculated for each utility participating in the REP. (For ratemaking purposes, the power purchased by BPA is called "exchange resources.") BPA offers, in exchange for the power it purchases, to sell the utility an equivalent amount of electric power at BPA's Priority Firm Power Exchange (PFx) rate. (For ratemaking purposes, the power purchased by the utilities is called "exchange loads.")

The "exchange" transfers no actual power to or from BPA; it is an accounting transaction in which dollars are exchanged rather than electric power. However, to ensure proper cost allocations and rate determinations, RAM2018 models the REP as purchases of power by BPA (priced at the participants' respective ASCs) and simultaneous sales of power to the REP participants (priced at the participants' respective PFx rates).

BPA is implementing the 2012 REP Settlement with investor-owned utility (IOU) exchange participants through Residential Exchange Program Settlement Implementation Agreements (REPSIA) and with participating consumer-owned utilities (COU) through Residential Purchase and Sale Agreements (RPSA). Total REP costs are included in rates for FY 2018–2019.

The 2012 REP Settlement established a fixed stream of REP benefits payable to the IOU REP participants beginning in FY 2012 and ending in FY 2028. Individual IOU REP benefit determinations under the 2012 REP Settlement will continue to be calculated as under the traditional REP; that is, BPA will compare each IOU's ASC for FY 2018–2019 with its respective BP-18 PFx rate and, if the difference is positive, multiply the difference by the IOU's exchange load to calculate its REP benefit (in dollars). Similarly, pursuant to the RPSAs with the two COUs participating in the REP, BPA will compare each COU's ASC for FY 2018–2019 with its respective BP-18 PFx rate and, if the difference is positive, multiply the difference by its exchange load to calculate its REP benefit. The COUs' REP benefits are in addition to (*i.e.,* are not included in) the fixed stream of IOU REP benefits under the 2012 REP Settlement. For a forecast of individual utility annual REP benefit payments for FY 2018–2019, see Table 6.

8.2 ASC Determinations

BPA determines participating utilities' ASCs outside the rate proceeding in an ASC Review Process conducted pursuant to the substantive and procedural requirements of the 2008 ASC Methodology (ASCM), 18 C.F.R. § 301, *et seq*. The Federal Energy Regulatory Commission granted final approval to the 2008 ASCM on September 4, 2009.

A utility's ASC for the rate period is calculated by dividing the utility's allowable resource costs and revenues (Contract System Cost) by its allowable load (Contract System Load). The quotient is the utility's rate period ASC. Contract System Cost is the sum of the utility's allowable generation-related and transmission-related costs and overheads; distribution-related costs are not included. Contract System Load is calculated as the total retail sales of a utility as measured at the meter, plus distribution losses, less any New Large Single Loads (NLSLs), if applicable.

Under the 2008 ASCM, the ASC for each utility may change if the utility adds a new resource, retires an existing resource, or adds an NLSL. However, under the 2012 REP Settlement, participating IOUs agreed not to submit ASC revisions based on new resources coming on line or being removed during the Exchange Period (the Exchange Period is the same as the rate period, currently FY 2018–2019). Therefore, for COUs only, the ASC may change if the utility adds a new resource or retires an existing resource during the Exchange Period. The revised ASC takes effect in the month after a new resource comes on line, an existing resource is retired, or a new NLSL begins taking service. Snohomish County PUD has a group of new resources scheduled to come on line during the Exchange Period that will result in a revised ASC for Snohomish at that time. The ASCs for the BP-18 rate period are shown in Documentation Table 8.1.

Under the 2012 REP Settlement, the IOU ASCs that are effective on the first day of the rate period will continue to be in effect throughout the Exchange Period, with the exception of the addition of an NLSL. These "day-one" IOU ASCs are developed for use in establishing rates for the BP-18 rate period. GRSP II.T specifies how the PFx rate applicable to each REP participant will change if a revised ASC takes effect.

The ASCs used in the BP-18 Initial Proposal were determined in the ASC Review Processes and published in the Draft ASC Reports on November 17, 2016. The ASCs reflected in the Draft ASC Reports were based on REP Staff's preliminary assessment of the utilities' ASCs filings. BPA issued Draft ASC Reports for eight utilities: Avista Utilities, Idaho Power Company, NorthWestern Energy, PacifiCorp, Portland General Electric, Puget Sound Energy, Clark County PUD, and Snohomish County PUD. Following completion of the ASC Review Processes, Final ASC Reports will be published at the same time as the BP-18 Final Proposal. The ASCs reflected in the Final ASC Reports will be used in the BP-18 Final Proposal.

8.3 Residential Exchange Program Load

Exchange loads are defined as a utility's qualifying residential and farm consumer loads as determined in accordance with the utility's RPSA or REPSIA.

Under the 2012 REP Settlement, participating IOUs agreed to use a two-year historical average for determining monthly exchange load, referred to as Residential Load, to calculate IOU REP benefits. For the BP-18 rate period, the historical years are calendar year (CY) 2015 and CY 2016. The monthly loads applicable to both years of the BP-18 rate period are shown in GRSP II.S, Table H.

The COU RPSAs do not specify the use of historical exchange loads in computing COU REP benefits; therefore, forecasts are used to estimate COU REP benefits for ratemaking purposes. For the COUs, the FY 2018–2019 exchange load forecasts are based on the exchange load information provided by the COUs in the ASC Review Process. Each COU's exchange load forecast is adjusted for the COU's Tier 1 percentage (if applicable), as required by the TRM. The Tier 1 percentage is defined as BPA's forecast percentage of the COU's load that is expected to be served by purchases of power at Tier 1 rates from BPA and from the COU's Existing Resources for CHWM. COU REP benefits will be paid on actual residential and farm sales as adjusted by the Tier 1 percentage for each COU, as submitted after each month during the rate period. The monthly IOU Residential Loads and monthly forecast COU exchange loads are shown in Documentation Table 8.2.

8.4 REP 7(b)(3) Surcharge Adjustment

The REP 7(b)(3) surcharge is a utility-specific addition to the Base PF Exchange rates that recovers each REP participant's allocated share of rate protection provided pursuant to section 7(b)(2) of the Northwest Power Act. Each REP participant's initial 7(b)(3) surcharge is determined in the section 7(i) rate proceeding based on the Base PFx rates, the ASCs, and the forecast exchange loads of all utilities assumed for ratemaking to participate in the REP. Each REP participant's initial 7(b)(3) surcharge is displayed in section 6.1 of the PF-18 rate schedule. Each 7(b)(3) surcharge is subject to change during the rate period if any participant's ASC changes during the rate period due to the addition of an NLSL in the utility's service territory. For COUs only, the addition or removal of a resource from the participant's resource portfolio will also change its 7(b)(3) surcharge. The procedures for modifying the 7(b)(3) surcharges of all REP participants are codified in GRSP II.T.

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9. REVENUE FORECAST

The revenue forecast calculates the expected revenue from power rates and other sources for the rate period, FY 2018–2019, and the current year, FY 2017. Two revenue forecasts are prepared. The first uses rates from the rate schedules currently in effect (BP-16 rates), and the second uses proposed rates (BP-18 rates). The revenue forecasts are used to test whether current rates and proposed rates will recover the power revenue requirement. If the revenue test shows that revenues at current rates will not generate sufficient revenue to recover the power revenue requirement, new rates are calculated and revenues at proposed rates are generated. *See* Power Revenue Requirement Study, BP-18-E-BPA-02, §§ 3.2–3. Both forecasts are based in the Power Loads and Resources Study, BP-18-E-BPA-03, forecast of firm loads for the current fiscal year and the rate period.

In addition to forecasts of revenues, this chapter of the Study presents power purchase expenses that are directly related to balancing purchases needed to meet load under different water conditions. Power purchases are included in the forecast for FY 2017–2019 and discussed in section 9.5 below.

The revenue forecast includes revenue calculations for the current year, FY 2017, to help estimate the amount of financial reserves available to BPA at the beginning of the rate period. *See* Power Revenue Requirement Study, BP-18-E-BPA-02, § 1.1.

The revenue forecast is divided into four main categories: (1) revenues from gross sales, described in section 9.1 below; (2) miscellaneous revenues, described in section 9.2; (3) revenues from generation inputs for ancillary, control area, and other services, described in section 9.3; and (4) Treasury credits, described in section 9.4.

9.1 Revenue Forecast for Gross Sales

Gross Sales is Power Services' largest category of revenue. There are seven sources of revenue in this category:

1. Priority Firm power sales under the CHWM contracts, described in section 9.1.1
2. Industrial Firm Power sales to DSIs, described in section 9.1.2
3. Scheduling products under the FPS rate, described in section 9.1.3
4. Short-term market sales, described in section 9.1.4
5. Long-term contractual obligations, described in section 9.1.5
6. Canadian entitlement returns, described in section 9.1.6
7. Other sales, described in section 9.1.7

9.1.1 Priority Firm Power Sales under CHWM Contracts

For FY 2017, the revenues from Priority Firm Power sales pursuant to CHWM contracts are calculated using the product of (1) forecast loads documented in Power Loads and Resources Study section 2.2 and accompanying Documentation Table 1.2.1 for energy, Table 1.2.2 for HLH, and Table 1.2.3 for LLH; and (2) PF-16 rates. Revenues from PF sales pursuant to CHWM contracts for FY 2017 are listed in Table 3, lines 3–12, and in Documentation Table 9.1, lines 3–12.

For FY 2018 and FY 2019, revenues from PF sales pursuant to CHWM contracts are computed using the product of (1) forecast loads assuming normal weather, documented in the Power Loads and Resources Study and accompanying Documentation; and (2) the appropriate PF rates derived by RAM2018. Inputs and results for the revenue forecast are managed and calculated pursuant to the CHWM contracts using the Revenue Forecasting Application (RFA). Revenues are reported for Tier 1 Customer charges (Composite, Slice, and Non-Slice), Load Shaping, and

Demand, including the Low Density Discount and Irrigation Rate Discount credits and any additional Tier 2 and/or RSS charges.

9.1.1.1 Composite and Non-Slice Customer Charges

Revenues from each customer for the Composite and Non-Slice Customer charges are based on the customer's TOCA and the customer's contractually specified products. There are no Slice charges for FY 2017–2019. Revenues obtained from the Composite and Non-Slice Customer charges represent the majority of revenues from firm power sales under CHWM contracts for FY 2017–2019. An example calculation of the Composite and Non-Slice charges is shown in Documentation Table 9.2. Composite and Non-Slice revenues for FY 2017–2019 are listed in Table 4, lines 3-4, and Documentation Table 9.2, lines 3-4.

9.1.1.2 Load Shaping Charge

The Load Shaping charge reflects the costs and benefits of shaping the Tier 1 System Capability to the monthly and diurnal shape of a customer's below-RHWM load. A charge to the customer results when the customer's shaped load is greater than its share of the Tier 1 System Output in any month for both HLH and LLH; the customer receives a credit from BPA when the opposite occurs. The Load Shaping charge is described in section 4.1.1.3 above, and an example calculation of the Load Shaping charge is shown in Documentation Table 9.4. Load Shaping revenues for FY 2017–2019 are listed in Table 4, line 6, and Documentation Table 9.2, line 6.

9.1.1.3 Demand Charge

The Demand charge is applicable to customers purchasing Load Following or Block with shaping capacity products; for FY 2017–2019, there are no customers purchasing Block with shaping capacity. The Demand charge is calculated using customer-specific information including actual Customer Tier 1 System Peak, average actual monthly below-RHWM load occurring in HLH, Contract Demand Quantities (CDQs), and Super Peak Credit (if applicable). Calculation of a customer's Demand charge is described in section 4.1.1.2.2, and an example calculation is shown in Documentation Table 9.4. Demand revenues for FY 2017–2019 are listed in Table 4, line 7, and Documentation Table 9.2, line 7.

9.1.1.4 Irrigation Rate Discount (IRD)

The IRD is a rate credit available to eligible customers and provides a fixed rate discount on Tier 1 rates (the discount does not apply to loads served at Tier 2 rates). May through September eligible irrigation loads are identified in each customer's CHWM contract. The methodology for calculating the IRD end-of-year true-up appears in GRSP II.C.3. Forecast credits for irrigation loads are calculated using an IRD that is derived by multiplying the irrigation loads identified in the CHWM contracts by the IRD rate. The IRD is described in section 5.4.2, and an example calculation is shown in Documentation Table 9.5. IRD credits for FY 2017–2019 are listed in Table 4, line 8, and Documentation Table 9.2, line 8.

9.1.1.5 Low Density Discount (LDD)

The LDD is prescribed in section 7(d)(1) of the Northwest Power Act and offers a discount of up to 7 percent for customers that meet the criteria specified in GRSP II.B. As set forth in the TRM, LDD percentages are calculated to provide a discount on power purchased at Tier 1 rates that approximates the discount the customer would have received under non-tiered rates. An example calculation is shown in Documentation Table 9.6. LDD credits for FY 2017–2019 are listed in Table 4, line 9, and Documentation Table 9.2, line 9.

9.1.1.6 Tier 2 and Resource Support Services (RSS)

Tier 2 rates are based on a cost allocation that recovers the cost of BPA service to Above-RHWM load. Tier 2 revenues are based on sales to customers that have elected to have BPA serve their Above-RHWM loads. An example calculation is shown in Documentation Table 9.7. Revenues for FY 2017–2019 are listed in Table 4, line 10, and Documentation Table 9.2, line 10.

RSS revenues are based on known services chosen by customers. Revenues for FY 2017–2019 are listed in Table 4, line 11, and Documentation Table 9.6, line 11.

9.1.2 Industrial Firm Power Sales to Direct Service Industrial Customers

BPA sells power to DSIs at the IP rate. Revenues from the IP rate are computed using the product of (1) forecast loads documented in Power Loads and Resources Study section 2.4 and accompanying Documentation Tables 1.2.1 for energy, 1.2.2 for HLH, and 1.2.3 for LLH; and (2) the appropriate IP rate from RAM2018. For FY 2017, the revenues for DSI customers are calculated using the IP-16 rate. An example calculation is shown in Documentation Table 9.8. Revenues for FY 2017–2019 are listed in Table 4, line 14, and Documentation Table 9.2, line 14.

9.1.3 Scheduling Products under the FPS rate

During FY 2017–2019, BPA is providing power scheduling products and services under the FPS rate documented in section 4.4 to transfer service customers. Revenues from the scheduling products are derived by multiplying the individual customer billing determinant by the appropriate FPS rate. Revenues for FY 2017–2019 are listed in Table 4, line 15, and Documentation Table 9.2, line 15.

9.1.4 Short-Term Market Sales

The revenue forecast includes revenues from the sale of surplus energy, which can be a combination of secondary energy and firm energy in excess of that required to serve firm loads. The wholesale market price effects of a number of factors are considered in determining the forecast of surplus sales revenue. For FY 2017, the surplus energy revenue included in the revenue forecast consists of the average of the surplus energy revenues in forecast months computed during RevSim simulations of 40 games for each of 80 historical water years, for a total of 3,200 games. For FY 2017–2019, the surplus energy revenue is the median of the surplus energy revenues across those 3,200 games. In addition, BPA includes a credit to account for the incremental value of marketing power to extraregional points of delivery. *See* Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.1.1.2.3.

The revenue forecast for short-term market sales is computed using RevSim to calculate monthly HLH and LLH energy surpluses for each of the 3,200 games, applying corresponding market prices developed for each game. Additionally, the short-term market sales forecast contains revenue from contract sales for FY 2017–2019. The contract sales portion consists of DSI sales and sales outside the Pacific Northwest. *See* Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.1.1.2.4. Revenues for FY 2017–2019 are shown in Table 4, line 16, and Documentation Table 9.2, line 16.

9.1.5 Long-Term Contractual Obligations

Long-term obligation contracts include the WNP-3 Exchange Settlements, a wind energy exchange, and capacity and energy exchanges. For FY 2017–2019, revenue from these contractual obligations is calculated pursuant to the individual contracts and then summed and added to the forecast as a group. For FY 2018–2019, only one of the WNP-3 Exchange Settlement contracts remains in effect. Note that the energy exchanges do not generate revenue. Revenue for FY 2017–2019 is listed in Table 4, line 17, and Documentation Table 9.3, line 17.

9.1.6 Canadian Entitlement Return

The Canadian Entitlement Return is an obligation for BPA to deliver power to Canada at the border pursuant to Contract No. 99EO-40003. No revenues are generated from the delivery of this power, but energy amounts are listed in the revenue forecast to represent this system obligation. The average megawatt deliveries for FY 2017–2019 are listed in Table 4, line 17, and Documentation Table 9.3, line 18.

9.1.7 Other Sales

Other sales include forecast revenues from the Slice True-Up and Load Shaping True-Up, which are applicable only for FY 2017. Other sales revenue for FY 2017–2019 is listed in Table 4, line 20, and Documentation Table 9.2, line 23.

9.2 Revenue Forecast for Miscellaneous Revenues

Miscellaneous Revenues include revenues from the Transfer Service charges, Energy Efficiency, Downstream Benefits, U.S. Bureau of Reclamation (Reclamation) power for irrigation, and the Upper Baker project.

The Transfer Service revenue forecast accounts for costs of the delivery of Federal power over non-Federal transmission systems and is described in Chapter 6. Embedded in the Transfer Service revenue forecast are revenues from the Transfer Service Delivery charge, Operating Reserve charge, and WECC charge as described in sections 6.3–5.

Energy Efficiency revenues are received by BPA as reimbursements for costs relating to implementation of various energy efficiency projects. For FY 2017–2019, revenues from Energy Efficiency are calculated by estimating project expenses. While these revenues are wholly offset by the associated expenses, which are recorded on the expense ledger, the expenses are included in the revenue requirement; therefore, the revenues are included in this forecast.

Downstream Benefits are revenues BPA receives from utilities that benefit from the coordinated planning and operation of Corps of Engineers and Reclamation upstream storage reservoirs as part of the Pacific Northwest Coordination Agreement. For FY 2017–2019, revenues from Downstream Benefits are estimated by applying a three-year average from the three most recent studies of downstream benefits conducted by the Northwest Power Pool (NWPP).

Reclamation power for irrigation includes power that has been reserved from the FCRPS for use at Reclamation projects. For revenue forecasting purposes, power that has been reserved for Reclamation irrigation projects is classified as either reserved power or irrigation pumping power. Revenue from reserved power for FY 2017–2019 is forecast in equal monthly amounts based on an annual amount that is aggregated for Reclamation projects. The annual aggregated amounts are forecast based on an average of actual results from the prior three years provided by Reclamation. Revenue from Irrigation Pumping Power for FY 2017–2019 is calculated using the same methodology as reserved power.

Finally, revenues from the Upper Baker project are included. Puget Sound Energy keeps 58,000 acre-feet of flood control at this reservoir, which must be held at a lower level during the winter than it would be without flood control, creating head losses. On behalf of the Corps, BPA compensates Puget by delivering non-firm energy and capacity during the flood control season of November through March. In turn, BPA offsets the value of energy and capacity delivered to Puget from the yearly Treasury payment, and the deduction is listed as a revenue receipt from the Corps.

Miscellaneous revenues for FY 2017–2019 are listed in Table 4, line 22, and Documentation Table 9.3, lines 25–31.

9.3 Revenue Forecast for Generation Inputs for Ancillary, Control Area, and Other Services and Other Inter-Business Line Allocations

Power Services receives revenue from Transmission Services for providing generation inputs for ancillary and control area services. The generation inputs cost allocations were agreed upon in the proposed BP-18 Generation Inputs and Transmission Ancillary and Control Area Services Rates Settlement Agreement. The Settlement sets out the revenue forecast for Regulating Reserves, Balancing Reserve Capacity for Variable Energy Resource Balancing Service (VERBS) Reserves, Dispatchable Energy Resource Balancing Service (DERBS) Reserves, Operating Reserves, Synchronous Condensing, Generation Dropping, Redispatch, Segmentation of Corps and Reclamation network and delivery facilities costs, and station service. *See* Fredrickson & Fisher, BP-18-E-BPA-18, Appendix A, Attachment 3. Revenues are listed in Table 4, line 23, and Documentation Table 9.2, lines 32–46.

9.4 Revenue from Treasury Credits

Revenues are also forecast from two kinds of Treasury credits, or deductions, made from BPA's annual Treasury payment. These credits represent a partial reimbursement by the Treasury for expenses incurred by BPA throughout the year.

9.4.1 Section 4(h)(10)(C) Credits

BPA pays all the costs relating to the obligations of Northwest Power Act section 4(h)(10)(C) regarding protecting, enhancing, and mitigating fish and wildlife in the region. BPA is reimbursed by the U.S. Treasury for 22.3 percent of the replacement power purchases BPA is expected to make due to fish mitigation, as well as an equal percentage of program and capital expenses related to the fish and wildlife programs. The 22.3 percent represents the non-power portion of the total FCRPS costs, which is the responsibility of taxpayers rather than BPA ratepayers. This Treasury credit is treated as Power Services revenue.

Expenses relating to fish and wildlife programs are discussed in the Power Revenue Requirement Study, BP-18-E-BPA-02, section 1.2.1.4. The methodology for estimating the replacement power purchases resulting from changes in hydro system operations to benefit fish and wildlife is described in the Power Loads and Resources Study and Documentation, BP-18-E-BPA-03, section 3.3.1. The cost of the increased purchases is estimated using RevSim and the market price forecast and is included in the Power and Transmission Risk Study, BP-18-E-BPA-05, section 4.1.1.1.5.6, and its Documentation, BP-18-E-BPA-05A, Table 13. Revenue from 4(h)(10)(C) credits is listed in Table 4, line 24, and Documentation Table 9.2, line 47.

9.4.2 Colville Settlement Credits

The Colville Settlement Agreement obligates BPA to make annual payments to the Colville Tribes. BPA receives annual credits from the U.S. Treasury against payments due the U.S. Treasury to defray a portion of the costs of making payments to the Colville Tribes. The Treasury credit for the Colville Settlement in FY 2018 and FY 2019 is set by legislation at $4.6 million per year. Confederated Tribes of the Colville Reservation Grand Coulee Settlement Act, Pub. L. No. 103-436, 108 Stat. 4577 (Nov. 2, 1994) (as amended). The credit is listed in Table 4, line 25, and Documentation Table 9.2, line 48.

9.5 Power Purchase Expense Forecast

Power Services forecasts three types of power purchase expenses: Augmentation Purchases, Balancing Purchases, and Other Power Purchases. Although most expenses, including some power purchase expenses, such as long-term generating resources, are forecast in the Power

Revenue Requirement Study, the power purchase expenses described here are directly related to load, resource, and price assumptions used to develop power rates. Therefore, they are included in the Power Services revenue forecast.

9.5.1 Augmentation Purchase Expense

For planning purposes, the forecast of firm FCRPS output is based upon critical (1937) water conditions. *See* Power Loads and Resources Study, BP-18-E-BPA-03, § 3.1.2.1.3. The forecast annual firm FCRPS output under critical water plus the output of other Federal resources may not be adequate to meet annual average firm loads. Therefore, system augmentation is added to Federal resources to balance firm annual resources with firm annual loads. The Power Loads and Resources Study projects the need to acquire system augmentation of 0 aMW in FY 2018 and 45 aMW in FY 2019 to meet firm loads. *Id.* § 4.3.

The forecast expense for the augmentation is based on projected prices using the AURORAxmp® model assuming critical water conditions. *See* Power and Transmission Risk Study, BP-18-E-BPA-05, § 4.1.1.2.1. Augmentation purchase amounts for FY 2017–2019 are listed in Table 4, line 27, and Documentation Table 9.2, line 50.

9.5.2 Balancing Power Purchases

Balancing power purchases are calculated by RevSim, which finds any monthly HLH and LLH energy deficits by simulations of 40 games in each of the 80 water years, for a total of 3,200 games, and application of the corresponding market prices developed for each game. Similar to the treatment of short-term market sales, the median value for balancing purchases over the 3,200 games is reported for FY 2017 for forecast months and added to actual purchases in past months, and the median value is reported for FY 2017–2019. Total balancing purchase expense for FY 2017–2019 is listed in Table 4, line 28, and Documentation Table 9.2, line 51.

A full description is found in the Power and Transmission Risk Study, BP-18-E-BPA-05, section 4.1.1.2.2 and Table 19.

9.5.3 Other Power Purchases

Other power purchases are primarily committed purchases BPA has made to serve preference customer loads in Southeastern Idaho. In those months and water years in which firm loads exceed resources, Southeast Idaho Load Service (SILS) purchases reduce balancing purchases. Conversely, in those months and water years in which resources are sufficient to serve firm loads, SILS purchases increase the amount of surplus sales. RevSim accounts for the energy relating to SILS purchases in the balancing purchases category. However, the amount of expense is included separately as a balancing purchase cost and composite cost. A full description is found in the Power and Transmission Risk Study, BP-18-E-BPA-05, section 4.1.1.2.2.

The cost of Tier 2 power is also included in other power purchases, as are other miscellaneous contracts. Total other power purchase expense for FY 2017–2019 is listed in Table 4, line 29, and Documentation Table 9.2, line 52.

9.6 Summary of Power Revenues

A detailed summary of power revenues at current and proposed rates is found in Tables 3 and 4 and in Documentation Tables 9.1–2.

POWER RATES TABLES

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Table 1: Rate Period High Water Marks for FY 2018-2019

Table of RHWMs for FY 2018–FY 2019		
A	**B**	**C**
	Preference Customer	**RHWM aMW**
1	Albion, City of	0.392
2	Alder Mutual Light Company	0.539
3	Ashland, City of	20.731
4	Asotin County PUD	0.564
5	Bandon, City of	7.516
6	Benton County PUD	198.349
7	Benton Rural Electric Association	65.662
8	Big Bend Electric Cooperative, Inc.	60.212
9	Blachly-Lane Electric Cooperative	17.333
10	Blaine, City of	8.606
11	Bonners Ferry, City of	5.234
12	Burley, City of	13.838
13	Canby Utility	19.983
14	Cascade Locks, City of	2.339
15	Central Electric Cooperative, Inc.	80.537
16	Central Lincoln People's Utility District	154.158
17	Centralia, City of	23.980
18	Cheney, City of	15.563
19	Chewelah, City of	2.725
20	Clallam County PUD No. 1	74.808
21	Clark Public Utilities	313.382
22	Clatskanie People's Utility District	91.348
23	Clearwater Power Company	23.496

Table of RHWMs for FY 2018–FY 2019		
A	**B**	**C**
	Preference Customer	**RHWM aMW**
24	Columbia Basin Electric Cooperative, Inc.	11.924
25	Columbia Power Cooperative Association	3.183
26	Columbia River People's Utility District	57.315
27	Columbia Rural Electric Cooperative, Inc.	37.088
28	Consolidated Irrigation District #19	0.224
29	Consumers Power, Inc.	44.941
30	Coos-Curry Electric Cooperative, Inc.	40.219
31	Coulee Dam, Town of	1.988
32	Cowlitz County PUD	540.385
33	Declo, City of	0.353
34	DOE National Energy Technology Laboratory	0.451
35	DOE Richland	30.794
36	Douglas Electric Cooperative, Inc.	18.240
37	Drain, City of	1.884
38	East End Mutual Electric Co., Ltd.	2.644
39	Eatonville, Town of	3.314
40	Ellensburg, City of	23.597
41	Elmhurst Mutual Power & Light Company	31.721
42	Emerald People's Utility District	49.156
43	Energy Northwest	2.747
44	Eugene Water and Electric Board	247.067
45	Fairchild Air Force Base	6.004
46	Fall River Rural Electric Cooperative, Inc.	32.598
47	Farmers Electric Company	0.499
48	Ferry County PUD No. 1	11.478

Table of RHWMs for FY 2018–FY 2019		
A	**B**	**C**
	Preference Customer	**RHWM aMW**
49	Flathead Electric Cooperative, Inc.	164.145
50	Forest Grove, City of	26.254
51	Franklin County PUD No. 1	115.468
52	Glacier Electric Cooperative, Inc.	20.975
53	Grant County PUD No. 2 – Grand Coulee	5.108
54	Grays Harbor County PUD No. 1	129.111
55	Harney Electric Cooperative, Inc.	22.387
56	Hermiston, City of	12.729
57	Heyburn, City of	4.740
58	Hood River Electric Cooperative	12.888
59	Idaho County Light & Power Coop.	6.114
60	Idaho Falls Power	78.279
61	Inland Power & Light Company	103.207
62	Jefferson County PUD No. 1	44.448
63	Kalispel Tribe Utility	4.008
64	Kittitas County PUD No. 1	9.547
65	Klickitat County PUD	36.071
66	Kootenai Electric Cooperative, Inc.	50.181
67	Lakeview Light & Power	32.582
68	Lane Electric Cooperative, Inc.	28.636
69	Lewis County PUD No. 1	111.907
70	Lincoln Electric Cooperative, Inc.	13.775
71	Lost River Electric Cooperative, Inc.	9.373
72	Lower Valley Energy	84.657
73	Mason County PUD No. 1	8.843

Table of RHWMs for FY 2018–FY 2019		
A	**B**	**C**
	Preference Customer	**RHWM aMW**
74	Mason County PUD No. 3	78.646
75	McCleary, City of	3.658
76	McMinnville Water and Light	86.763
77	Midstate Electric Cooperative, Inc.	45.995
78	Milton-Freewater, City of	10.287
79	Milton, City of	7.318
80	Minidoka, City of	0.116
81	Mission Valley Power	37.343
82	Missoula Electric Cooperative, Inc.	26.552
83	Modern Electric Water Company	25.863
84	Monmouth, City of	8.229
85	Nespelem Valley Electric Cooperative, Inc.	5.787
86	Northern Lights, Inc.	35.351
87	Northern Wasco County PUD	63.725
88	Ohop Mutual Light Company	9.995
89	Okanogan County Electric Coop, Inc.	6.424
90	Okanogan County PUD No. 1	45.174
91	Orcas Power and Light Cooperative	24.337
92	Oregon Trail Electric Consumers Cooperative, Inc.	77.911
93	Pacific County PUD No. 2	35.744
94	Parkland Light and Water Company	13.842
95	Pend Oreille County PUD No. 1	25.355
96	Peninsula Light Company, Inc.	70.830
97	Plummer, City of	3.882
98	Port Angeles, City of	84.108

Table of RHWMs for FY 2018–FY 2019		
A	**B**	**C**
	Preference Customer	**RHWM aMW**
99	Port of Seattle	17.001
100	Raft River Rural Electric Cooperative, Inc.	36.015
101	Ravalli County Electric Cooperative, Inc.	18.218
102	Richland, City of	101.890
103	Riverside Electric Company	2.335
104	Rupert, City of	9.271
105	Salem Electric	38.070
106	Salmon River Electric Cooperative	30.885
107	Seattle City Light	515.503
108	Skamania County PUD No. 1	15.651
109	Snohomish County PUD No. 1	786.245
110	Soda Springs, City of	2.988
111	South Side Electric, Inc.	6.657
112	Springfield Utility Board	99.089
113	Steilacoom, Town of	4.731
114	Sumas, City of	3.584
115	Surprise Valley Electric Corp.	16.168
116	Tacoma Public Utilities	395.932
117	Tanner Electric Cooperative	10.855
118	Tillamook People's Utility District	55.130
119	Troy, City of	2.005
120	U.S. Dept of the Navy – Bremerton	29.971
121	U.S. Dept of the Navy – Everett	1.503
122	U.S. Dept. of the Navy – Bangor	20.094
123	Umatilla Electric Cooperative	111.406

Table of RHWMs for FY 2018–FY 2019		
A	**B**	**C**
	Preference Customer	**RHWM aMW**
124	Umpqua Indian Utility Cooperative	4.048
126	United Electric Cooperative, Inc.	29.496
127	Vera Water & Power	26.721
128	Vigilante Electric Cooperative, Inc.	18.845
129	Wahkiakum County PUD No. 1	4.925
130	Wasco Electric Cooperative, Inc.	13.181
131	Weiser, City of	6.227
132	Wells Rural Electric Company	94.234
133	West Oregon Electric Cooperative, Inc.	8.345
134	Whatcom County PUD No. 1	26.402
135	Yakama Power	11.447
	Total (equal to the RHWM Tier 1 System Capability)	6944.846

Table 2:
Overview of BP-18 Initial Proposal Rates

Tiered PF Rate Summary

	A	B	C	D
1				
2			% above BP-16	
3	Unbifurcated PF	$45.89	5.9%	
4	PF Public (Tier 1 + Tier 2)	$36.28	3.5%	
5	PF Exchange	$63.39	7.9%	
6	IP	$42.82	2.1%	
7	NR	$79.63	7.9%	
8				
9	**Annual Average $ (1000s)**	**BP-16**	**BP-18**	**Change**
10	**Composite Rate Revenues**	$2,434,131	$2,514,361	3.3%
11	**Non-Slice Rate Revenues**	$(263,920)	$(319,643)	-21.1%
12	**Slice Rate Revenues**	$ -	$ -	
13	**Load Shaping Rate Revenues**	$7,802	$21,391	174.2%
14	**Demand Rate Revenues**	$48,354	$51,673	6.9%
15	**Tier 1 Revenue Requirement**	$2,226,368	$2,267,783	1.9%
16	**Tier 2 Revenue Requirement**	$25,187	$43,198	
17	**Value of Slice Surplus**	$(119,982)	$(122,519)	-2.1%
18	**Lookback Return (credit)**	$(76,538)	$(76,538)	
19	**Net Power Cost to All PF**	$2,055,036	$2,111,924	2.8%
20	**Annual PF Load (w/firm Slice) (GWh)**	60,789	60,318	-0.8%
21	**PF Average Net Cost ($/MWh)**	33.81	35.01	3.6%
22				
23	**Tier 1 Average Net Cost ($/MWh)**	33.75	34.94	3.5%
24	**Tier 2 ($/MWh)**	43.09	44.78	3.9%
25				
26				
27	**Slice Sales**	**BP-16**	**BP-18**	**Change**
28	**Composite+Slice**	$658,874	$684,279	
29	**Tier 1 Average Cost ($/MWh)**	40.67	42.30	4.0%
30	**Value of Slice Surplus+Credits**	$(140,699)	$(143,348)	
31	**Net Cost of Slice Power**	$518,175	$540,931	
32	**Tier 1 Average Net Cost ($/MWh)**	31.99	33.44	4.5%
33				
34				
35	**Non-Slice Sales**	**BP-16**	**BP-18**	**Change**
36	**Composite+NonSlice+Shape+Demand**	$1,567,576	$1,583,679	
37	**Tier 1 Average Cost ($/MWh)**	35.63	36.45	2.3%
38	**Credits**	$(55,820)	$(55,708)	
39	**Net Cost of Non-Slice Power**	$1,511,755	$1,527,971	
40	**Tier 1 Average Net Cost ($/MWh)**	34.37	35.16	2.3%
41				
42				
43	**Tiered PF Rate Components**	**BP-16**	**BP-18**	**Change**
44	**Composite Rate ($/ pct/month)**	$2,062,695	$2,144,110	3.9%
45	**Non-Slice Rate ($/ pct/month)**	$(306,652)	$(374,491)	22.1%

Table 3 - Revenue at Current Rates

	A B C D	E	F	G	H	I	J
1	**Revenues at Current Rates**	**2017**		**2018**		**2019**	
2	**Category**	**$ (000's)**	**aMW**	**$ (000's)**	**aMW**	**$ (000's)**	**aMW**
3	Composite Revenue	$2,421,068	5,063	$2,416,959	6,781	$2,420,816	6,781
4	Non-Slice Revenue	($261,965)	-	($261,453)	-	($262,026)	-
5	Slice	$0	1,862	$0	-	$0	-
6	Load Shaping Revenue	($5,396)	19	$2,808	(3)	$13,266	44
7	Demand Revenue	$47,608	-	$50,764	-	$51,680	-
8	Irrigation Rate Discount	($22,146)	-	($21,093)	-	($21,093)	-
9	Low Density Discount	($36,022)	-	($40,498)	-	($41,292)	-
10	Tier 2	$27,424	75	$39,061	114	$46,511	127
11	RSS (Non-Federal)	$1,676	-	$1,216	-	$1,214	-
12	PF customers (CHWM) sub-total	$2,172,247	7,019	$2,187,765	6,892	$2,209,075	6,952
13	NR sub-total	$0	-	$0	-	$0	-
14	DSIs sub-total	$8,099	312	$21,890	88	$32,172	88
15	FPS sub-total	$2,410	8	$3,920	-	$3,920	-
16	Short-term market sales sub-total	$366,285	1,153	$386,663	1,982	$374,823	1,825
17	Long Term Contractual Obligations sub-total	$35,102	108	$16,524	42	$16,088	48
18	Canadian Entitlement Return	$0	114	$0	468	$0	462
19	Renewable Energy Certificates sub-total	$648	-	$0	-	$0	-
20	Other Sales sub-total	($10,790)	-	$0	-	$0	-
21	**Gross Sales**	**$2,574,002**	**8,716**	**$2,616,762**	**9,473**	**$2,636,078**	**9,375**
22	**Miscellaneous Revenues**	**$29,924**	**178**	**$28,348**	**178**	**$28,353**	**182**
23	**Generation Inputs / Inter-business line**	**$118,991**	**9**	**$94,124**	**9**	**$94,124**	**9**
24	4(h)(10)(c)	$90,636	-	$96,557	-	$97,451	-
25	Colville and Spokane Settlements	$4,600	-	$4,600	-	$4,600	-
26	**Treasury Credits**	**$95,236**	**-**	**$101,157**	**-**	**$102,051**	**-**
27	Augmentation Power Purchase total	$0	-	$0	-	$12,700	45
28	Balancing Power Purchase sub-total	$59,330	135	$56,918	175	$50,723	150
29	Other Power Purchase total	$26,582	67	$38,931	45	$44,726	54
30	**Power Purchases**	**$85,912**	**202**	**$95,849**	**220**	**$108,148**	**248**

Table 4 - Revenues at Proposed Rates

	A B C D	E	F	G	H	I	J
1	**Revenues at Proposed Rates**	**2017**		**2018**		**2019**	
2	**Category**	**$ (000's)**	**aMW**	**$ (000's)**	**aMW**	**$ (000's)**	**aMW**
3	Composite Revenue	$2,421,068	5,063	$2,512,636	6,781	$2,516,645	6,781
4	Non-Slice Revenue	($261,965)	-	($319,293)	-	($319,993)	-
5	Slice	$0	1,862	$0	-	$0	-
6	Load Shaping Revenue	($5,396)	19	$15,933	(3)	$26,850	44
7	Demand Revenue	$47,608	-	$50,764	-	$52,581	-
8	Irrigation Rate Discount	($22,146)	-	($21,112)	-	($21,112)	-
9	Low Density Discount	($36,022)	-	($41,145)	-	($41,944)	-
10	Tier 2	$27,424	75	$40,213	114	$46,178	127
11	RSS (Non-Federal)	$1,676	-	$1,248	-	$1,247	-
12	PF customers (CHWM) sub-total	$2,172,247	7,019	$2,239,246	6,892	$2,260,452	6,952
13	NR sub-total	$0	-	$0	-	$0	-
14	DSIs sub-total	$8,099	312	$22,335	88	$33,505	88
15	FPS sub-total	$2,410	8	$3,920	-	$3,920	-
16	Short-term market sales sub-total	$366,285	1,153	$386,663	1,982	$374,823	1,825
17	Long Term Contractual Obligations sub-total	$35,102	108	$16,524	42	$16,088	48
18	Canadian Entitlement Return	$0	114	$0	468	$0	462
19	Renewable Energy Certificates sub-total	$648	-	$0	-	$0	-
20	Other Sales sub-total	($10,790)	-	$0	-	$0	-
21	**Gross Sales**	**$2,574,002**	**8,716**	**$2,668,687**	**9,473**	**$2,688,787**	**9,375**
22	**Miscellaneous Revenues**	**$29,924**	**178**	**$28,348**	**178**	**$28,353**	**182**
23	**Generation Inputs / Inter-business line**	**$118,991**	**9**	**$94,124**	**9**	**$94,124**	**9**
24	4(h)(10)(c)	$90,636	-	$96,557	-	$97,451	-
25	Colville and Spokane Settlements	$4,600	-	$4,600	-	$4,600	-
26	**Treasury Credits**	**$95,236**	**-**	**$101,157**	**-**	**$102,051**	**-**
27	Augmentation Power Purchase total	$0	-	$0	-	$12,700	45
28	Balancing Power Purchase sub-total	$59,330	135	$56,918	175	$50,723	150
29	Other Power Purchase total	$26,582	67	$38,931	45	$44,726	54
30	**Power Purchases**	**$85,912**	**202**	**$95,849**	**220**	**$108,148**	**248**

Table 5: Adjustments to Financial Reserves Base Amount

1	Unit	Account	Stat Amt	Ref	Line Descr	Reason for adjustment
2	POWER	999044	$ (673,094.63)	AR00114197	Receipt from DOJ	1
3	POWER	999044	$ (104,552.35)	AR00117261	Receipt from FERC	1
4	POWER	999044	$ (53,497.33)	AR00119524	Receipt from DOJ	1
5	POWER	999044	$ (2,789.38)	AR00122086	Receipt from DOJ	1
6	POWER	999044	$ (5.04)	AR00129431	Stock dividend	2
7	POWER	999044	$ (6,667.74)	AR00127956	Receipt from FERC	1
8	POWER	999044	$ (1,528.11)	AR00128358	Receipt from DOJ	1
9	POWER	999044	$ (1,080.25)	AR00143938	Receipt from DOJ	1
10	POWER	999044	$ (2,700.63)	AR00152218	Receipt from DOJ	1
11	POWER	999044	$ (43,791.87)	AR00153347	Receipt from FERC	1
12	POWER	999044	$ (5.04)	AR00144929	Stock dividend	2
13	POWER	999044	$ (5.04)	AR00147994	Stock dividend	2
14	POWER	999044	$ (5.04)	AR00151401	Stock dividend	2
15	POWER	999044	$ (5.04)	AR00156308	Stock dividend	2
16	POWER	999044	$ (5.04)	AR00158673	Stock dividend	2
17	POWER	999044	$ (73,765,314.86)		CAL ISO/PX Receipt	1
18						
19			**$ (74,655,047.39)**			
20						
21	**Reasons for adjustments**					
22	1) BPA's receipt of payments for settlements or judgments pertaining to power marketing transactions that occurred before FY 2002,					
23	2) BPA's receipt of funds as collections of outstanding receivables relating to revenues that occurred before FY 2002,					
24	3) BPA's payment for settlements or judgments pertaining to power marketing transactions that occurred before FY 2002.					
25						
26	Base amount of financial reserves =				$495,600,000	
27						
28	Adjustment to the base amount of financial reserves =				$495,600,000 + $74,655,047	
29						
30	**Resulting amount of financial reserves =**				**$ 570,255,047**	
31						
32	Adjustment amounts, if negative, are added to the base amount of financial reserves, thereby increasing the size of the base amount.					
33	Adjustment amounts, if positive, are subtracted from the base amount of financial reserves, thereby decreasing the size of the base amount.					

Table 6:
Residential Exchange Benefits ($000)

	A	B	C	D
1		**FY 2018**	**FY 2019**	
2	Avista Corporation	$4,160	$4,160	
3	Idaho Power Company	$14,003	$14,003	
4	NorthWestern Energy, LLC	$5,520	$5,520	
5	PacifiCorp	$65,675	$65,675	
6	Portland General Electric Company	$65,562	$65,562	
7	Puget Sound Energy, Inc.	$77,281	$77,281	
8	**Net IOU Exchange**	$232,200	$232,200	**$232,200**
9	**Refund Amt**	$76,538	$76,538	**$76,538**
10				
11	Clark Public Utilities	$6,571	$6,571	
12	Franklin	$ -	$ -	
13	Snohomish County PUD No 1	$3,020	$3,033	
14	**Net COU Exchange**	$9,591	$9,605	**$9,598**
15			Total	**$318,336**

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Appendix A

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Appendix A

7(c)(2) Industrial Margin Study

1. INTRODUCTION

The purpose of this appendix is to describe BPA's calculation of the "typical margin" included by the Administrator's public body and cooperative customers in their retail industrial rates. The resulting margin is added to the PF-18 energy rates, which become the energy rates used in the IP-18 rate for BPA's direct-service industrial customers (DSIs).

Section 7(c)(1)(B) of the Northwest Power Act provides that rates applicable to BPA's DSI customers shall be set "at a level which the Administrator determines to be equitable in relation to the retail rates charged by the public body and cooperative customers to their industrial consumers in the region." Section 7(c)(2) provides that this determination shall be based on "the Administrator's applicable wholesale rates to such public body and cooperative customers and the typical margins included by such public body and cooperative customers in their retail industrial rates." This section further provides that the Administrator shall take into account:

(1) the comparative size and character of the loads served;

(2) the relative costs of electric capacity, energy, transmission, and related delivery facilities provided and other service provisions; and

(3) direct and indirect overhead costs, all as related to the delivery of power to industrial customers.

2. METHODOLOGY

2.1 Administrator's Applicable Wholesale Rates to Public Body and Cooperative Customers

The Administrator's applicable wholesale rates to public body and cooperative customers are the PF-18 demand and energy rates before any 7(b)(2) or floor rate adjustments are applied.

2.2 Typical Margin

The typical margin is based generally on the overhead costs that consumer-owned utilities add to the cost of power in setting their retail industrial rates; *see* § 2.3 below.

2.3 Margin Determination Factors

Comparative Size and Character of the Loads Served. The data base used for the study includes utilities that serve at least one industrial consumer with a peak demand of at least 3.5 MW.

Relative Costs of Electric Capacity, Energy, Transmission, and Related Delivery Facilities Provided and Other Service Provisions. The utility margins in this study are based to the extent possible on utility cost of service analyses and incorporate costs allocated to the industrial consumer class. The utilities segregate these costs into various cost categories, and only those categories considered to be appropriate margin costs are included in the industrial margin calculation.

In the past, BPA has accounted for "other service provisions" through a character of service adjustment for service to the first quartile of DSI load, which was interruptible as defined in the DSIs' power sales contract. Because the DSI contracts no longer include these provisions, this adjustment is not included in this study.

Direct and Indirect Overhead Costs. Cost of service studies and other spreadsheets prepared by the public body and cooperative customers provide information to calculate the per-unit overhead costs associated with service to large industrial consumers.

3. APPLICATION OF THE METHODOLOGY

3.1 Data Base

The data base consists of cost of service information from 33 utilities that have at least one industrial consumer with a peak load of at least 3.5 MW. The data was collected in 2011 from qualifying utilities by the Public Power Council (PPC) under the terms of a confidentiality agreement. Under the terms of that agreement, the names of the individual utilities and their industrial consumers were deleted from the data base, and the names were not publicly disclosed. Furthermore, all parties wishing to evaluate the utility margin data at the PPC offices were required to sign confidentiality agreements. All utility data reported has been identified by a randomly assigned number. Attachment A to this appendix displays each participating utility's individual data.

3.2 Utility Margins

The individual utility margins are based on costs allocated by the utilities to their industrial consumers. The categories of costs include production, transmission, distribution, taxes, and other overhead costs. Derivation of the margin involves three steps. First, an individual margin is determined for each utility in the study. Second, each margin is weighted according to energy sales to derive an overall weighted average margin. Third, the BPA DSI delivery facilities charge is added to replace the distribution costs that otherwise may be included in the margin.

3.3 Summary of Results

The final results of each step in the industrial margin calculation for each utility are shown on the summary table in Attachment A to this appendix. These results were used in the BP-12 rate case. As shown on the summary table, the weighted industrial margin for the BP-12 rate case was 0.685 mills/kWh.

4. THE INDUSTRIAL MARGIN FOR THE BP-18 RATE CASE

BPA did not conduct a new industrial margin survey for the BP-18 rate case. Instead, the industrial margin is escalated for inflation between the start of the BP-12 rate period and the start of the BP-18 rate period. The escalation factor uses the GDP Implicit Price Deflator using actuals from the Bureau of Economic Analysis and forecast from IHS Markit. Accordingly, the BP-12 industrial margin, 0.685 mills/kWh, is multiplied by 1.09. The BP-18 industrial margin is 0.748 mills/kWh.

Summary - 2012 Margin Study Results

Utility Code Number	Test Period Energy (KWh)	Total Cost	Production	Transmission	Distribution	Other	Taxes	Weighted Margin
1	51,410,428					$ 5.67		0.017
2	1,581,923,558					$ 0.04		0.004
3	95,688,000	$ 47.66	$ 36.62	$ -	$ 9.38	$ 0.45	$ 1.21	0.002
5	42,823,202	$ 57.46	$ 36.78	$ 0.85	$ 18.61	$ 0.42	$ 0.80	0.001
6	29,114,880	$ 43.02	$ 34.50	$ 2.36	$ 2.87	$ 0.72	$ 2.57	0.001
7	40,694,000					$ -		0.000
8	405,668,000					$ -		0.000
9	361,407,000	$ 4.78	$ 3.84	$ 0.01	$ 0.72	$ 0.07	$ 0.13	0.002
11	467,121,000	$ 45.11	$ 32.63	$ 5.45	$ 3.18	$ 0.81	$ 3.04	0.022
12	248,035,470	$ 36.22	$ 34.20	$ 0.25	$ 1.36	$ 0.00	$ 0.38	0.000
13	119,932,734	$ 38.94	$ 36.80	$ -	$ 0.04	$ 0.01	$ 2.09	0.000
14	61,910,899	$ 10.77	$ -	$ 0.47	$ 9.79	$ 0.51	$ -	0.002
15	966,012,620					$ 0.02		0.001
16	169,040,000					$ 0.47		0.005
17	352,800,436	$ 41.45	$ 30.46	$ 0.23	$ 10.69	$ 0.06	$ -	0.001
18	5,390,158,000	$ 49.42	$ 40.45	$ 0.90	$ 6.60	$ 0.88	$ 0.58	0.273
20	297,405,000					$ 0.15		0.003
21	340,000,000					$ 0.43		0.008
23	78,758,000	$ 43.69	$ 33.49	$ 0.12	$ 8.23	$ 1.11	$ 0.74	0.005
24	203,423,478	$ 62.26	$ 33.19	$ 4.05	$ 22.70	$ 0.10	$ 2.22	0.001
25	152,608,000	$ 40.67	$ 31.32	$ 0.77	$ 4.29	$ 3.40	$ 0.89	0.030
26	47,700,000	$ 46.82	$ 34.17	$ 0.85	$ 10.86	$ 0.32	$ 0.62	0.001
27	15,897,484					$ 0.32		0.000
28	3,022,602,000					$ 0.54		0.093
29	718,303,000					$ 0.35		0.015
30	808,561,000	$ 51.24	$ 47.77	$ 0.14	$ 0.30	$ 0.04	$ 2.99	0.002
31	223,878,000	$ 36.86	$ 29.79	$ -	$ 5.86	$ 0.71	$ 0.49	0.009
32	750,395,000	$ 54.12	$ 44.55	$ 2.13	$ 0.15	$ 4.19	$ 3.10	0.180
33	194,837,000	$ 46.71	$ 39.37	$ -	$ 4.53	$ 0.01	$ 2.81	0.000
34	21,884,198					$ 5.29		0.007
35	94,165,000	$ 26.69	$ 7.06	$ 0.66	$ 15.48	$ 0.03	$ 3.47	0.000
36	19,516,800					$ 0.03		0.000
37	38,909,777					$ 0.01		0.000
Total:	**17,412,583,964**							**0.685**

Utility Number: # 1

Two industrial customers; rates set through contract.

Customer 1: BPA rate plus $1.09/MWh; 2009 sales (kWh)	=		**31,485,920**
Margin	=		**$ 34,320**
Customer 2: BPA rate plus $21,430/mo; 2009 sales	=		**19,924,508**
Margin	=		**$ 257,160**
Total margin from Customers 1 & 2	=	**$ 291,480**	
Sales to Customers 1 & 2 (kWh)	=	**51,410,428**	

Utility Number: # 2

Large Industrial includes sales under Schedules 14, 15, & 16

	Ave # of customers	Load (kWh)	Monthly basic charge
Schedule 14	3	123,852,000	$ 200
Schedule 15	6	1,223,870,998	$ 500
Schedule 16	10	234,200,560	$ 200
		1,581,923,558	
		Total basic charges/year =	**$ 67,200**

Utility Number: # 3	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Production:	$ 3,503,816	$ 3,503,816					$ 3,503,816
Transmission:	$ -						
Distribution:	$ 66,980			$ 66,980			$ 66,980
Customer Accounts:	$ 20,315				$ 20,315		$ 20,315
Customer Services:	$ 4,599				$ 4,599		$ 4,599
Admin & Genl:	$ 68,093			$ 49,632	$ 18,461		$ 68,093
Taxes:	$ 115,384					$ 115,384	$ 115,384
Depreciation:	$ 779,001			$ 779,001			$ 779,001
Interest:	$ 2,352			$ 2,352			$ 2,352
TOTAL	$ 4,560,540	$ 3,503,816		$ 897,965	$ 43,375	$ 115,384	$ 4,560,540

Utility Number: # 5	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Production:	$ 1,574,999	$ 1,574,999					$ 1,574,999
Transmission:	$ 14,196		$ 14,196				$ 14,196
Distribution:	$ 310,053			$ 310,053			$ 310,053
Customer Accounts:	$ 7,316				$ 7,316		$ 7,316
Meter Reading:	$ 194			$ 194.00			$ 194
Customer Service:	$ 3,456				$ 3,456		$ 3,456
Sales Exp:	$ 2,549				$ 2,549		$ 2,549
Admin & Genl (1):	$ 120,230		$ 5,056	$ 110,429	$ 4,744		$ 120,230
Depreciation:	$ 232,235		$ 10,168	$ 222,067			$ 232,235
Taxes:	$ 34,108					$ 34,108	$ 34,108
Interest:	$ 159,676		$ 6,991	$ 152,685			$ 159,676
Other:	$ 1,731		$ 76	$ 1,655			$ 1,731
TOTAL	$ 2,460,743	$ 1,574,999	$ 36,486	$ 797,084	$ 18,065	$ 34,108	$ 2,460,743

Utility Number: # 6

	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Purchased Power:	$ 1,035,622	$ 1,035,622					$ 1,035,622
Transmission:	$ 712		$ 712	$ -			$ 712
Distribution:	$ 59,107			$ 59,107			$ 59,107
Meter Reading:	$ 18			$ 18			$ 18
Customer Records & Collection:	$ 54			$ 54			$ 54
Misc Customer Service:	$ 87				$ 87		$ 87
A & G:	$ 41,855		$ 497	$ 41,297	$ 61		$ 41,855
Taxes:	$ 74,851					$ 74,851	$ 74,851
Inrerest:	$ 46,721		$ 555	$ 46,166			$ 46,721
Capital Projects:	$ 88,598		$ 67,619		$ 20,979		$ 88,598
Other Deduction (2):	$ (63,872)		$ (758)	$ (63,021)	$ (93)		$ (63,872)
BPA Conservation, Con Aug, other:	$ (31,231)	$ (31,231)					$ (31,231)
TOTAL	$ 1,252,522	$ 1,004,391	$ 68,625	$ 83,621	$ 21,034	$ 74,851	$ 1,252,522

Utility Number: # 7
One industrial customer with a monthly peak of at least 3.5 MW; 2009 load = 40,694 MWh
Monthly Base Charge = $0.00
Demand Charge = $5.75/kW
Energy Charge = $0.0316/kWh

Utility Number: # 8

One industrial customer with a monthly peak of at least 3.5 MW; 2009 load = 405,668 MWh

Monthly Base Charge = $0.00

Industrial rates set by city ordinance

Utility Number: # 9

	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Power Costs:	$ 1,387,888	$ 1,387,888					$ 1,387,888
Transmission:	$ 1,320		$ 1,320				$ 1,320
Distribution:	$ 71,299			$ 71,299			$ 71,299
Customer Accounts:	$ 263				$ 263		$ 263
Public Relations & Info:	$ 11,873				$ 11,873		$ 11,873
Energy Services:	$ 3,159				$ 3,159		$ 3,159
Admin & Genl:	$ 63,036		$ 946	$ 51,079	$ 11,011		$ 63,036
Depreciation:	$ 75,872		$ 1,379	$ 74,493			$ 75,872
Taxes:	$ 48,396					$ 48,396	$ 48,396
Interest:	$ 65,238		$ 1,186	$ 64,052			$ 65,238
TOTAL	$ 1,728,344	$ 1,387,888	$ 4,831	$ 260,923	$ 26,306	$ 48,396	$ 1,728,344

Utility Number: # 11							
	Two Industrial Customers	Production	Transmission	Distribution	Other	Taxes	Sum
Power:	$ 15,244,327	$ 15,244,327					$ 15,244,327
Transmission:	$ 2,544,405		$ 2,544,405				$ 2,544,405
Distribution:	$ 1,481,945			$ 1,481,945			$ 1,481,945
Meter Reading + Cust Records:	$ 5,366			$ 5,366			$ 5,366
Customer Education:	$ 77,324				$ 77,324		$ 77,324
Low Income Assist.:	$ 156,540				$ 156,540		$ 156,540
Electirc Marketing:	$ 142,594				$ 142,594		$ 142,594
Taxes:	$ 1,419,465					$ 1,419,465	$ 1,419,465
TOTAL	$ 21,071,966	$ 15,244,327	$ 2,544,405	$ 1,487,311	$ 376,458	$ 1,419,465	$ 21,071,966

Utility Number: # 12	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Generation:	$ 644,417	$ 644,417					$ 644,417
Purchased Power:	$ 8,379,469	$ 8,379,469					$ 8,379,469
Transmission:	$ 77,781		$ 77,781				$ 77,781
Distribution:	$ 412,110			$ 412,110			$ 412,110
Meter Reading + Customer Records:	$ 9,303			$ 9,303			$ 9,303
Customer Service:	$ 3,113				$ 3,113		$ 3,113
Admin & Genl:	$ 496,109	$ 278,795	$ 33,651	$ 182,317	$ 1,347		$ 496,109
Taxes:	$ 95,106					$ 95,106	$ 95,106
Interest:	$ 341,788	$ 192,595	$ 23,246	$ 125,947			$ 341,788
Capital Projects:	$ 455,818	$ 256,850	$ 31,002	$ 167,966			$ 455,818
Other Revenue:	$ (1,931,751)	$ (1,270,440)	$ (103,488)	$ (560,694)	$ (4,142)		$ (1,938,764)
TOTAL	$ 8,983,263	$ 8,481,687	$ 62,191	$ 336,948	$ 318	$ 95,106	$ 8,976,250

Utility Number: # 13

	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Purchased Power:	$ 3,813,592	$ 3,813,592					$ 3,813,592
Transmission							
Distribution							
Conservation	$ 600,000	$ 600,000					$ 600,000
Meters & Services	$ 4,742			$ 4,742			$ 4,742
Accounting	$ 536				$ 536		$ 536
Customer Related	$ 789				$ 789		$ 789
Revenue Related	$ 250,374					$ 250,374	$ 250,374
TOTAL	$ 4,670,033	$ 4,413,592		$ 4,742	$ 1,325	$ 250,374	$ 4,670,033

Utility Number # 14	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Production:	$ -						
Transmission:	$ 29,120		$ 29,120				$ 29,120
Distribution:	$ 560,614			$ 560,614			$ 560,614
Metering & Billing:	$ 45,398			$ 45,398			$ 45,398
Customer Services:	$ 31,565				$ 31,565		$ 31,565
TOTAL	$ 666,697		$ 29,120	$ 606,012	$ 31,565		$ 666,697

Utility Number: # 15

7 customers in High Voltage General rate class; load = 966,012,620 kWh

Customer Charge per meter per month = **$ 210**

Total customer charges per year = **$ 17,640**

Utility Number: # 16		
1 large industrial customer with peak of at least 3.5 aMW		
Total Insustrial sales in 2009 = 169,040 MWh		
Fixed charge (equivalent to customer charge of $6,557/month; annual cost =	$	78,684

Utility Number: # 17							
	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Purchased Power:	$ 10,747,941	$ 10,747,941					$ 10,747,941
Transmission:	$ 15,940		$ 15,940				$ 15,940
Distribution:	$ 735,733			$ 735,733			$ 735,733
Customer Accnts:	$ 4,917				$ 4,917		$ 4,917
Customer Svcs:	$ 1,963				$ 1,963		$ 1,963
Interest on Debt (2):	$ 398,427		$ 8,449	$ 389,978			$ 398,427
Depreciation (2):	$ 551,528		$ 11,696	$ 539,832			$ 551,528
Additional revenue req.:	$ 2,165,398		$ 45,621	$ 2,105,704	$ 14,073		$ 2,165,398
TOTAL	$ 14,621,847	$ 10,747,941	$ 81,706	$ 3,771,247	$ 20,953		$ 14,621,847

Utility Number: # 18	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Generation:	$ 45,179,704	$ 45,179,704					$ 45,179,704
Purchased Power:	$ 182,460,007	$ 182,460,007					$ 182,460,007
Conservation:	$ 26,968,662	$ 26,968,662					$ 26,968,662
Transmission:	$ 9,881,306		$ 9,881,306				$ 9,881,306
Distribution:	$ 72,213,558			$ 72,213,558			$ 72,213,558
Customer costs:	$ 4,980,734				$ 4,980,734		$ 4,980,734
Low income assistance:	$ 4,680,598				$ 4,680,598		$ 4,680,598
Franchise Adjustments:	$ 3,136,376					$ 3,136,376	$ 3,136,376
Revenue Credits:	$ (83,124,365)	$ (36,590,117)	$ (5,011,314)	$ (36,623,179)	$ (4,899,754)		$ (83,124,365)
TOTAL	$ 266,376,580	$ 218,018,256	$ 4,869,992	$ 35,590,379	$ 4,761,578	$ 3,136,376	$ 266,376,580

Utility Number: # 20

2 large industrial customers with peak of at least 3.5 aMW

Total Industrial sales in 2009 = 297,405 MWh

Margin charges = 0.0195 cents/kWh for first 19.1 aMW in a month, and 0.0098 cents for each kWh thereafter

167,316,000	kWh at 0.0195 cents
130,089,000	kWh at 0.0098 cents

Total margin charges for 2009 = **4,537,534** cents = **$ 45,375**

Utility Number: # 21

Industrial sales in 2010 = 340,000 MWh

Industrial customers in 2010 = 35

Customer cost per month in 2010 = **$349**

Total customer cost = **$146,639**

Utility Number: # 23

	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Purchased Power:	$ 2,626,334	$ 2,626,334					$ 2,626,334
Transmission:							
Distribution:	$ 318,070			$ 318,070			$ 318,070
Customer Services & Accts:	$ 63,752			$ 9,575	$ 54,177		$ 63,752
A & G:	$ 155,355	$ 11,293		$ 130,111	$ 13,951		$ 155,355
Depreciation:	$ 141,272		$ 9,761	$ 112,513	$ 18,998		$ 141,272
Interest:	$ 77,847			$ 77,847			$ 77,847
Taxes:	$ 58,569					$ 58,569	$ 58,569
TOTAL	$3,441,199	$2,637,627	$9,761	$648,116	$87,126	$58,569	$3,441,199

Utility Number: # 24							
	(includes NLSL)	Production	Transmission	Distribution	Other	Taxes	Sum
Production:	$ 6,752,558	$ 6,752,558					$ 6,752,558
Transmission:	$ 414,702		$ 414,702				$ 414,702
Distribution:	$ 2,326,532			$ 2,326,532			$ 2,326,532
Customer Related:	$ 19,242				$ 19,242		$ 19,242
A & G:	$ 448,614		$ 67,395	$ 378,092	$ 3,127		$ 448,614
Depr & Amort:	$ 939,205		$ 142,086	$ 797,119			$ 939,205
Taxes:	$ 451,195					$ 451,195	$ 451,195
Interest:	$ 1,347,794		$ 203,898	$ 1,143,896			$ 1,347,794
Capital Requirements:	$ 232,129		$ 35,117	$ 197,011			$ 232,129
Other Income:	$ (267,290)		$ (40,154)	$ (225,272)	$ (1,863)		$ (267,290)
TOTAL	$ 12,664,681	$ 6,752,558	$ 823,043	$ 4,617,379	$ 20,506	$ 451,195	$ 12,664,681

Utility Number: # 25	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Purchased Power:	$ 4,780,364	$ 4,780,364					$ 4,780,364
Transmission:	$ 69,374		$ 69,374				$ 69,374
Distribution:	$ 393,197			$ 393,197			$ 393,197
Customer Related:	$ 1,729				$ 1,729		$ 1,729
A & G:							
Prop ins/inj & damag:	$ 17,112			$ 17,112			$ 17,112
Cust acct/serv & info/sales rel:	$ 480,913				$ 480,913		$ 480,913
Depreciation:	$ 328,871	$ 18	$ 48,211	$ 244,836	$ 35,806		$ 328,871
Taxes:	$ 135,572					$ 135,572	$ 135,572
TOTAL	$ 6,207,132	$ 4,780,382	$ 117,585	$ 655,145	$ 518,448	$ 135,572	$ 6,207,132

Utility Number: # 26	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Purchased Power:	$ 1,629,832	$ 1,629,832					$ 1,629,832
Transmission:	$ 12,295		$ 12,295				$ 12,295
Distribution:	$ 150,666			$ 150,666			$ 150,666
Customer Related:							
Meter reading & cust. Records:	$ 6,440			$ 6,440			$ 6,440
Customer sales & service:	$ 7,343				$ 7,343		$ 7,343
Depreciation:	$ 129,443		$ 9,395	$ 120,048			$ 129,443
A & G + Other Expense:	$ 185,637		$ 12,914	$ 165,011	$ 7,712		$ 185,637
Taxes:	$ 29,545					$ 29,545	$ 29,545
Interest:	$ 74,929		$ 5,438	$ 69,491			$ 74,929
Other Expenses:	$ 7,009		$ 506	$ 6,200	$ 302		$ 7,008
TOTAL	$2,233,139	$1,629,832	$40,548	$517,856	$15,357	$29,545	$2,233,138

Utility Number: # 27

Utility # 27 has 1 large industrial customer; 2009 load = **15,897,484** kWh

Customer cost per month in 2010 = **$ 418.70**

Total customer cost = $ 5,024.40

Utility Number: # 28

Utility # 28 has 3 large industrial customers; 2009 load = 3,022,602,000 kWh
Margin charges set in contract with each customer; total margin charges in 2009 = $1,619,690

Utility Number: # 29

1 large industrial customer; 2009 load = 718,303 MWh			
Direct costs of contract administration for this customer (2 plants)	=	$	175,442
		$	79,376
		$	**254,818**

Utility Number: # 30

	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Production:	$ 42,669,341	$ 42,669,341					$ 42,669,341
Transmission:	$ -		$ -				$ -
Distribution:	$ 322,009			$ 322,009			$ 322,009
Meter reading + customer records:	$ 2,429			$ 2,429			$ 2,429
Customer related:	$ 1,301				$ 1,301		$ 1,301
A & G:	$ 260,302			$ 259,262	$ 1,040		$ 260,302
Taxes:	$ 2,418,041					$ 2,418,041	$ 2,418,041
Interest:	$ 673,382			$ 673,382			$ 673,382
Capital Projects:	$ 290,096		$ 110,346	$ 145,596	$ 34,154		$ 290,096
Other Revenues:	$ (5,209,277)	$ (4,047,303)		$ (1,157,333)	$ (4,641)		$ (5,209,277)
TOTAL	$ 41,427,624	$ 38,622,038	$ 110,346	$ 245,345	$ 31,854	$ 2,418,041	$ 41,427,624

Utility Number: # 31

	Large Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Production	$ 6,669,764	$ 6,669,764					$ 6,669,764
Transmission							
Fixed Oper Costs (Distn)	$ 406,590			$ 406,590			$ 406,590
on Oper Exp (Cust Svc & Acct)	$ 71,114				$ 71,114		$ 71,114
Admin & Bus Exp	$ 530,588			$ 442,017	$ 88,571		$ 530,588
Taxes	$ 110,812					$ 110,812	$ 110,812
LTGO Debt Servd & Cap	$ 462,840			$ 462,840			$ 462,840
TOTAL	$ 8,251,708	$ 6,669,764	$ -	$ 1,311,447	$ 159,685	$ 110,812	$ 8,251,708

Utility Number: # 32

	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Production:	$ 33,760,238	$ 33,760,238					$ 33,760,238
Transmission:	$ 145,001		$ 145,001				$ 145,001
Distribution:	$ 10,066			$ 10,066			$ 10,066
Customer Services & Accounts:	$ 2,171,387				$ 2,171,387		$ 2,171,387
A & G:	$ 989,157		$ 61,651	$ 4,280	$ 923,226		$ 989,157
Capital Projects:	$ 1,151,312		$ 1,076,576	$ 74,736			$ 1,151,312
Debt Service:	$ 333,697		$ 312,035	$ 21,662			$ 333,697
Direct Assignments:	$ 1,442,631		$ 89,915	$ 6,242	$ 1,346,474		$ 1,442,631
Other Revenue:	$ (1,721,861)	$ (329,663)	$ (86,749)	$ (6,022)	$ (1,299,426)		$ (1,721,860)
Taxes:	$ 2,329,920					$ 2,329,920	$ 2,329,920
TOTAL	$ 40,611,548	$ 33,430,575	$ 1,598,429	$ 110,963	$ 3,141,661	$ 2,329,920	$ 40,611,549

Utility Number: # 33

	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Power:	$ 7,378,831	$ 7,378,831					$ 7,378,831
Conservation:	$ 134,032	$ 134,032					$ 134,032
Distribution:	$ 161,203			$ 161,203			$ 161,203
Customer Related:	$ 714				$ 714		$ 714
A & G:	$ 398,772	$ 180,599		$ 217,211	$ 962		$ 398,772
Broad Band:	$ 93,962	$ 42,554		$ 51,181	$ 227		$ 93,962
Interest:	$ 531,746			$ 531,746			$ 531,746
Cash Flow:	$ 495,596	$ 224,450		$ 269,950	$ 1,196		$ 495,596
Taxes:	$ 547,357					$ 547,357	$ 547,357
Other Revenue:	$ (640,934)	$ (290,272)		$ (349,116)	$ (1,546)		$ (640,934)
TOTAL	$ 9,101,279	$ 7,670,195	$ -	$ 882,175	$ 1,552	$ 547,357	$ 9,101,279

Utility Number: # 34

1 large industrial customer with peak of at least 3.5 aMW

2008 Industrial load = 21,884,198 kWh

Margin = $.00529/kWh

Total margin charges for 2008 = **$ 115,767**

Utility Number: # 35

	Total Utility	Industrial	Production	Transmission	Distribution	Other	Taxes	Sum
Power Production:	$ 2,477,820	$ 318,447	$ 318,447					$ 318,447
Transmission:	$ 428,864	$ 55,117		$ 55,117				$ 55,117
Distribution:	$ 4,226,132	$ 543,138			$ 543,138			$ 543,138
Metering Reading:	$ 571,769	$ 73,483			$ 73,483			$ 73,483
Credit & Billing:	$ 853,653	$ 109,711			$ 109,711			$ 109,711
Information & Advertising:	$ 52,530	$ 6,751				$ 6,751		$ 6,751
Administrative & General Expenses:	$ 4,598,604	$ 591,008	$ 170,068	$ 29,435	$ 387,900	$ 3,605		$ 591,008
Taxes:	$ 2,541,360	$ 326,613					$ 326,613	$ 326,613
Debt Service:	$ 7,940,000	$ 1,020,441	$ 295,443	$ 51,135	$ 673,863			$ 1,020,441
Capital Projects:	$ 6,280,000	$ 807,100	$ 233,675	$ 40,445	$ 532,980			$ 807,100
Total Transfers:	$ 841,720	$ 108,177	$ 31,320	$ 5,421	$ 71,436			$ 108,177
Energy Sales:	$ (9,248,760)	$ (1,188,642)	$ (342,042)	$ (59,201)	$ (780,148)	$ (7,251)		$ (1,188,642)
Other Revenues:	$ (2,006,586)	$ (257,885)	$ (41,976)	$ (60,458)	$ (155,087)	$ (363)		$ (257,884)
TOTAL	$ 19,557,106	$ 2,513,460	$ 664,935	$ 61,895	$ 1,457,276	$ 2,742	$ 326,613	$ 2,513,461

Utility Number: # 36

1 large industrial customer; 2008 load = 19,516,800 kWh

Monthly Customer Charge = **$51.37** Total charges = **$ 616.44**

Utility Number: # 37

1 large industrial customer; 2010 load = 38,909,777 kWh

Customer charge = **$208**