

**2010 BPA Rate Case
Wholesale Transmission Rate Final Proposal**

**2010 ANCILLARY SERVICE AND
CONTROL AREA SERVICES
STUDY AND STUDY DOCUMENTATION**

July 2009

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**ANCILLARY SERVICE AND CONTROL AREA SERVICES
STUDY AND DOCUMENTATION
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COMMONLY USED ACRONYMS

AC	alternating current
AFUDC	Allowance for Funds Used During Construction
AGC	Automatic Generation Control
ALF	Agency Load Forecast (computer model)
aMW	average megawatt
AMNR	Accumulated Modified Net Revenues
ANR	Accumulated Net Revenues
AOP	Assured Operating Plan
ASC	Average System Cost
ATC	Accrual to Cash
BAA	Balancing Authority Area
BASC	BPA Average System Cost
Bcf	billion cubic feet
BiOp	Biological Opinion
BPA	Bonneville Power Administration
Btu	British thermal unit
CAISO	California Independent System Operator
CBFWA	Columbia Basin Fish & Wildlife Authority
CCCT	combined-cycle combustion turbine
cfs	cubic feet per second
CGS	Columbia Generating Station
CHJ	Chief Joseph
C/M	consumers per mile of line ratio for LDD
COB	California-Oregon Border
COE	U.S. Army Corps of Engineers
COI	California-Oregon Intertie
COSA	Cost of Service Analysis
COU	consumer-owned utility
Council	Northwest Power and Conservation Council
CP	Coincidental Peak
CRAC	Cost Recovery Adjustment Clause
CRC	Conservation Rate Credit
CRFM	Columbia River Fish Mitigation
CRITFC	Columbia River Inter-Tribal Fish Commission
CSP	Customer System Peak
CT	combustion turbine
CY	calendar year (January through December)
DC	direct current
DDC	Dividend Distribution Clause
dec	decremental (pertains to generation movement)
DJ	Dow Jones
DO	Debt Optimization

DOE	Department of Energy
DOP	Debt Optimization Program
DSI	direct-service industrial customer or direct-service industry
DSO	Dispatcher Standing Order
EAF	energy allocation factor
ECC	Energy Content Curve
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EN	Energy Northwest, Inc. (formerly Washington Public Power Supply System)
EPA	Environmental Protection Agency
EPP	Environmentally Preferred Power
EQR	Electric Quarterly Report
ESA	Endangered Species Act
F&O	financial and operating reports
FBS	Federal base system
FCRPS	Federal Columbia River Power System
FCRTS	Federal Columbia River Transmission System
FERC	Federal Energy Regulatory Commission
FELCC	firm energy load carrying capability
FPA	Federal Power Act
FPS	Firm Power Products and Services (rate)
FY	fiscal year (October through September)
GAAP	Generally Accepted Accounting Principles
GARD	Generation and Reserves Dispatch (computer model)
GCL	Grand Coulee
GCPs	General Contract Provisions
GEP	Green Energy Premium
GI	Generation Integration
GRI	Gas Research Institute
GRSPs	General Rate Schedule Provisions
GSP	Generation System Peak
GSU	generator step-up transformers
GTA	General Transfer Agreement
GWh	gigawatthour
HLH	heavy load hour
HOSS	Hourly Operating and Scheduling Simulator (computer model)
HYDSIM	Hydro Simulation (computer model)
IDC	interest during construction
inc	incremental (pertains to generation movement)
IOU	investor-owned utility
IP	Industrial Firm Power (rate)
IPR	Integrated Program Review
IRP	Integrated Resource Plan
ISD	incremental standard deviation
ISO	Independent System Operator

JDA	John Day
kaf	thousand (kilo) acre-feet
kcfs	thousand (kilo) cubic feet per second
K/I	kilowatthour per investment ratio for LDD
ksfd	thousand (kilo) second foot day
kV	kilovolt (1000 volts)
kVA	kilo volt-ampere (1000 volt-amperes)
kVAr	kilo-volt ampere reactive
kW	kilowatt (1000 watts)
kWh	kilowatthour
LDD	Low Density Discount
LGIP	Large Generator Interconnection Procedures
LLH	light load hour
LME	London Metal Exchange
LOLP	loss of load probability
LRA	Load Reduction Agreement
m/kWh	mills per kilowatthour
MAE	mean absolute error
Maf	million acre-feet
MCA	Marginal Cost Analysis
MCN	McNary
Mid-C	Mid-Columbia
MIP	Minimum Irrigation Pool
MMBtu	million British thermal units
MNR	Modified Net Revenues
MOA	Memorandum of Agreement
MOP	Minimum Operating Pool
MORC	Minimum Operating Reliability Criteria
MOU	Memorandum of Understanding
MRNR	Minimum Required Net Revenue
MVA	mega-volt ampere
MVAr	mega-volt ampere reactive
MW	megawatt (1 million watts)
MWh	megawatthour
NCD	non-coincidental demand
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)
NIFC	Northwest Infrastructure Financing Corporation
NLSL	New Large Single Load
NOAA Fisheries	National Oceanographic and Atmospheric Administration Fisheries (officially National Marine Fisheries Service)
NOB	Nevada-Oregon Border
NORM	Non-Operating Risk Model (computer model)

Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NPCC	Northwest Power and Conservation Council
NPV	net present value
NR	New Resource Firm Power (rate)
NT	Network Transmission
NTSA	Non-Treaty Storage Agreement
NUG	non-utility generation
NWPP	Northwest Power Pool
OATT	Open Access Transmission Tariff
O&M	operation and maintenance
OMB	Office of Management and Budget
OTC	Operating Transfer Capability
OY	operating year (August through July)
PDP	proportional draft points
PF	Priority Firm Power (rate)
PI	Plant Information
PMA	(Federal) Power Marketing Agency
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
POM	Point of Metering
POR	Point of Receipt
Project Act	Bonneville Project Act
PS	BPA Power Services
PSC	power sales contract
PSW	Pacific Southwest
PTP	Point to Point Transmission (rate)
PUD	public or people's utility district
RAM	Rate Analysis Model (computer model)
RAS	Remedial Action Scheme
Reclamation	U.S. Bureau of Reclamation
RD	Regional Dialogue
REC	Renewable Energy Certificate
REP	Residential Exchange Program
RevSim	Revenue Simulation Model (component of RiskMod)
RFA	Revenue Forecast Application (database)
RFP	Request for Proposal
RiskMod	Risk Analysis Model (computer model)
RiskSim	Risk Simulation Model (component of RiskMod)
RMS	Remote Metering System
RMSE	root-mean squared error
ROD	Record of Decision
RPSA	Residential Purchase and Sale Agreement

RTF	Regional Technical Forum
RTO	Regional Transmission Operator
SCADA	Supervisory Control and Data Acquisition
SCCT	single-cycle combustion turbine
Slice	Slice of the System (product)
SME	subject matter expert
TAC	Targeted Adjustment Charge
TDA	The Dalles
Tcf	trillion cubic feet
TPP	Treasury Payment Probability
Transmission System Act	Federal Columbia River Transmission System Act
TRL	Total Retail Load
TRM	Tiered Rate Methodology
TS	BPA Transmission Services
UAI	Unauthorized Increase
UDC	utility distribution company
URC	Upper Rule Curve
USFWS	U.S. Fish and Wildlife Service
VOR	Value of Reserves
WECC	Western Electricity Coordinating Council (formerly WSCC)
WIT	Wind Integration Team
WPRDS	Wholesale Power Rate Development Study
WREGIS	Western Renewable Energy Generation Information System
WSPP	Western Systems Power Pool

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1. INTRODUCTION

1.1 Purpose

The Ancillary and Control Area Services Rate Study (ACS Rate Study) presents an overview of the Bonneville Power Administration Transmission Services (BPA-TS) ancillary service and control area service rates that were not included in the transmission rate case Partial Settlement Agreement. This study supports the Transmission, Ancillary Service and Control Area Service Rate Schedules, TR-10-A-02-AP03.

BPA-TS sets ancillary and control area services rates for a two-year rate period, fiscal years (FYs) 2010 and 2011. The calculations for the ancillary and control area service rates are shown in Table 1. A summary of the rate level changes is shown in Table 2. Table 3 contains the forecast of ancillary and control area service revenues.

1.2 Overview of the Basis for Rate Development

Factors influencing the level and design of transmission rates are statutory obligations, commitment to comparability, inter-business line issues (which are resolved in the WP-10 sub-docket of the 2010 rate proceeding), and contractual arrangements.

1.2.1 Statutes

In accordance with section 4 of the Federal Columbia River Transmission System Act (Transmission System Act), BPA constructs, operates, and maintains the Federal Columbia River Transmission System (FCRTS) to: (a) integrate and transmit electric power from existing or additional Federal or non-Federal generating units; (b) provide

1 service to BPA customers; (c) provide interregional transmission facilities; and
2 (d) maintain the electrical stability and reliability of the Federal system.

3 16 U.S.C. §838b.

4
5 Section 7(a)(2) of the Northwest Power Act, 16 U.S.C. § 839e(a)(2), sets forth the
6 overall guidelines to be used in establishing rates. Under section 7(a)(2), rates are
7 effective upon confirmation and approval by the Federal Energy Regulatory
8 Commission upon a finding by the Commission that the rates:

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

16
17 Section 9 of the Transmission System Act provides that rates shall be established:

18 (1) with a view to encouraging the widest possible diversified use of electric power at
19 the lowest possible rates consistent with sound business principles; (2) with regard to the
20 recovery of the cost of producing and transmitting electric power, including amortization
21 of the capital investment allocated to power over a reasonable period of years; and (3) at
22 levels that produce such additional revenues as may be required to pay when due the
23 principal, premiums, discounts, expenses, and interest in connection with bonds issued
24 under the Transmission System Act. 16 U.S.C. § 838g. Section 10 of the Transmission

1 System Act allows for uniform rates and specifies that the costs of the Federal
2 transmission system be equitably allocated between Federal and non-Federal power
3 utilizing the system. 16 U.S.C. § 838h.

4
5 Section 212(i) of the Federal Power Act sets forth ratemaking requirements applicable to
6 BPA for transmission rates in connection with transmission service ordered by the
7 Commission. 16 U.S.C. § 824k(i). Section 211A of the Energy Policy Act of 2005 also
8 provides authority for the Commission to require unregulated transmitting utilities to
9 provide transmission service at rates that are comparable to those that the unregulated
10 transmitting utility charges itself. 16 U.S.C. § 824jA.

11 12 **1.2.2 Comparability/Reciprocity**

13 BPA has committed to provide open access transmission services to its customers to the
14 extent that such service is compatible with BPA's statutory authority. In its final rule
15 *Promoting Wholesale Competition Through Open Access Non-Discriminatory*
16 *Transmission Service by Public Utilities; Recovery of Stranded Costs by Public Utilities*
17 *and Transmitting Utilities* (Order 888), the Commission included a reciprocity
18 provision applicable to non-public utilities that own, control, or operate interstate
19 transmission facilities and that take service under a public utility's open access tariff.
20 FERC Stats. and Regs. ¶ 31,036, 31,760-63 (1996). Under the reciprocity provision,
21 public utilities must offer non-jurisdictional utilities open access service if the non-
22 jurisdictional utility offers comparable service in return. Non-jurisdictional utilities
23 may voluntarily submit to the Commission a transmission tariff and a request for a
24 declaratory order that the tariff meets the Commission's reciprocity comparability
25 standards. *Id.* at 31,761. Non-jurisdictional utilities also may submit their rates for a

1 similar finding. In order to find that a non-jurisdictional utility's rates satisfy the
2 Commission's comparability standards, the Commission must have sufficient
3 information to conclude that the rates meet its comparability test; that is, that the rates
4 the non-jurisdictional utility charges itself are comparable to the rates it charges others.
5 *Id.* The Commission retained the reciprocity provisions in the final rule *Preventing*
6 *Undue Discrimination and Preference in Transmission Service*, (Order 890), 72 Fed.
7 Reg. 12266, 12293-12294 (2007).

9 **1.2.3 Inter-businessline Issues**

10 Certain issues that affect the transmission and ancillary service rates have been decided
11 in the WP-10 sub-docket. BPA's Power Services provides a portion of the FCRPS
12 available generation to Transmission Services to enable Transmission Services to meet
13 its various requirements to maintain reliability. Power Services assigns the costs of
14 this generation to the transmission function, which then assigns these costs to
15 transmission rates. The affected Ancillary and Control Area Services are: (1) Wind
16 Balancing Service, which provides balancing services for wind integration;
17 (2) Regulation and Frequency Response Service, which provides the generation
18 capability to follow the moment-to-moment variations of loads in the BPA Balancing
19 Authority Area (BAA) and maintain the power system frequency at 60 Hz in
20 conformance with NERC and WECC reliability standards; (3) Energy Imbalance
21 Service, which is taken when there is a difference between scheduled and actual
22 energy delivered to a load in the BPA BAA during a schedule hour; (4) Operating
23 Reserve – Spinning Reserve Service, which serves load immediately in the event of a
24 system contingency; (5) Operating Reserve – Supplemental Reserve Service, which is
25 available within a short period of time to serve load in the event of a system
26 contingency; and (6) Generation Imbalance Service, which is taken when there is a

1 difference between scheduled and actual energy delivered from generation resources in
2 the BPA BAA during a schedule hour. Other costs that Power Services assigns to the
3 transmission function include costs of synchronous condensing, generation dropping,
4 station service, and segmentation of U.S. Army Corps of Engineers and Bureau of
5 Reclamation transmission facilities. The final transmission rates reflect the
6 Administrator's decisions in the Final Record of Decision.

1 Operating Reserve – Supplemental Reserve Service; and Wind Balancing Service.
2 Resources or loads in the BPA BAA must purchase control area services from TS to
3 the extent they do not otherwise satisfy the reliability obligations that their energy
4 transactions impose on the BPA BAA.

6 **2.2 Regulation and Frequency Response (Regulation) Service**

7 Regulation Service is necessary to provide for the continuous balancing of resources
8 (generation and interchange) with load and for maintaining scheduled interconnection
9 frequency at sixty cycles per second (60 Hz). Regulation Service is accomplished by
10 committing on-line generation whose output is raised or lowered (predominantly through
11 the use of automatic generating control equipment) as necessary to follow the moment-
12 by-moment changes in load. The obligation to maintain this balance between resources
13 and load lies with TS. TS must offer this service when the transmission service is used
14 to serve load within the BPA BAA. The transmission customer must either purchase this
15 service from TS or make comparable alternative arrangements to satisfy its Regulation
16 Service obligation. Customers may be able to satisfy the Regulation Service obligation
17 by providing to TS generation with automatic generation control capabilities.

18
19 The Regulation Service rate in section II.C of the ACS-10 rate schedule provides a
20 capacity charge to be applied to the customer's load in the BPA BAA. The charge is
21 downwardly flexible; any discounts would be offered consistent with section II.F of the
22 General Rate Schedule Provisions (GRSPs).

24 **2.3 Energy Imbalance Service**

25 Energy Imbalance Service is provided for transmission within and into the BPA BAA to
26 serve load in the Balancing Authority Area. Energy Imbalance is the deviation between

1 the scheduled and actual delivery of energy to a load in the BPA BAA over a single
2 hour.

3
4 All transmission customers serving load in the BPA BAA are subject to charges for
5 Energy Imbalance. The Energy Imbalance rate in section II.D of the ACS-10 rate
6 schedule establishes three imbalance deviation bands. Band 1 applies to the portion of
7 the deviation less than the greater of +/- 1.5% of the schedule or +/- 2 MW. If a
8 deviation between a customer's load and schedule stays within band 1, the customer
9 may return the energy at a later time. BPA-TS uses deviation accounts to sum the
10 positive and negative deviations from schedule over heavy load hour (HLH) and light
11 load hour (LLH) periods. At the end of the month, any balance remaining in the
12 accounts must be settled at BPA's incremental cost. The customer will arrange for
13 and schedule the balancing transactions.

14
15 Imbalance deviation band 2 applies to the portion of the deviation greater than band 1
16 but less than +/- 7.5% of the schedule or +/- 10 MW. For each hour the energy taken is
17 greater than the energy scheduled, the charge is 110 percent of BPA's incremental cost.
18 For each hour the energy taken is less than scheduled, the credit is 90 percent of BPA's
19 incremental cost.

20
21 Imbalance deviation band 3 is for the portion of the deviation greater than band 2. For
22 each hour the energy taken is greater than the energy scheduled, the charge is
23 125 percent of BPA's highest incremental cost that occurs during that day. For each
24 hour the energy taken is less than scheduled, the credit is 75 percent of BPA's lowest
25 incremental cost that occurs during that day. BPA's incremental cost will be based on

1 an hourly energy index in the Pacific Northwest (PNW), or an alternative index will be
2 used if there is no adequate hourly index.

3 4 **2.4 Operating Reserve (OR) – Spinning Reserve Service**

5 Spinning Reserve Service is needed to serve load immediately in the event of a system
6 contingency. Spinning Reserve Service may be provided by generating units that are on-
7 line and loaded at less than maximum output. TS must offer this service when the
8 transmission customer uses this service in accordance with applicable NERC, WECC,
9 and NWPP standards. The transmission customer must either purchase this service from
10 BPA-TS or make alternative comparable arrangements to satisfy its Spinning Reserve
11 Service obligation. BPA-TS determines the transmission customer's obligation in
12 accordance with NERC, WECC, and NWPP standards.

13
14 The Spinning Reserve Service rate, section II.E of the ACS-10 rate schedule, includes
15 two components. The first component is a capacity charge that is applied to the
16 customer's Spinning Reserve Requirement. This rate of 8.53 mills per kilowatthour
17 recovers the cost of having generation available to respond to a system contingency.
18 The second Spinning Reserve Service rate component charges the customer for energy
19 actually delivered when a system contingency occurs. The customer has the option of
20 returning the energy at times specified by BPA-TS or purchasing the energy at the
21 hourly market index price that was effective when the contingency occurred.

22
23 BPA-TS determines the current Spinning Reserve Requirement, based on current WECC
24 and NWPP standards, as 2.5 percent of the hydroelectric generation, 2.5 percent of the
25 wind generation, and 3.5 percent of the thermal generation located in the BPA BAA
26 used to serve the transmission customer's firm load. TS will adjust the Spinning Reserve

1 Requirement if the Commission approves the new standard. The Spinning Reserve
2 charge is downwardly flexible; any discounts would be offered consistent with
3 section II.F of the GRSPs.

4
5 Under BPA-TS's Operating Reserves business practice, customers may make an election
6 to self-supply or acquire OR service from a third party. Customers that self-supply or
7 third-party supply OR Spinning Reserve, but default on their self-supply or third-party
8 supply obligations, will pay a default rate of 9.80 mills per kilowatthour.

9
10 **2.5 Operating Reserve – Supplemental Reserve Service**

11 Supplemental Reserve Service is needed to serve load in the event of a system
12 contingency; however, it is not available immediately to serve load, but rather, within a
13 short period of time. Supplemental Reserve Service may be provided by generating
14 units that are on-line but unloaded, by quick-start generation, or by interruptible load.
15 BPA-TS must offer this service when the transmission customer uses this service in
16 accordance with applicable NERC, WECC, and NWPP standards. The transmission
17 customer must either purchase this service from TS or make alternative comparable
18 arrangements to satisfy its Supplemental Reserve Service obligation. TS determines the
19 transmission customer's obligation in accordance with NERC, WECC and NWPP
20 standards.

21
22 The Supplemental Reserve Service rate, section II.F of the ACS-10 rate schedule,
23 includes two components. The first component is a capacity charge that is applied to the
24 customer's Supplemental Reserve Requirement. This rate of 8.24 mills per kilowatthour
25 recovers the cost of having generation available to respond to a system contingency.

26 The second Supplemental Reserve Service rate component charges the customer for

1 energy actually delivered when a system contingency occurs. The customer has the
2 option of returning the energy at times specified by BPA-TS or purchasing the energy at
3 the hourly market index price that was effective when the contingency occurred. In
4 addition, the transmission customer will be responsible for the settlement of delivered
5 energy associated with interruptible imports.

6
7 BPA-TS determines the current Supplemental Reserve Requirement, based on current
8 WECC and NWPP standards, as 2.5 percent of the hydroelectric generation, 2.5 percent
9 of the wind generation, and 3.5 percent of the thermal generation located in the BPA
10 BAA used to serve the transmission customer's firm load. TS will adjust the
11 Supplemental Reserve Requirement when and if WECC and NWPP standards change.
12 The Supplemental Reserve charge is downwardly flexible; any discounts would be
13 offered consistent with section II.F of the GRSPs.

14
15 Under BPA-TS's Operating Reserves business practice, customers may make an election
16 to self-supply or acquire OR service from a third party. Customers that self-supply or
17 third-party supply OR Supplemental Reserve, but default on their self-supply or third-
18 party supply obligations, will pay a default rate of 9.47 mills per kilowatthour.

19

1 **3. CONTROL AREA SERVICE RATE SCHEDULES**

2 **3.1 Regulation and Frequency Response Service**

3 The control area service Regulation and Frequency Response is the same technical
4 service, at the same rate, as the ancillary service so named. The difference is that the
5 control area service is offered to loads in the BPA BAA that may not be taking BPA-
6 TS's basic transmission service. Loads served by generation within BPA's BAA but
7 indirectly connected to BPA's transmission system, or generators "behind the meter,"
8 are an example.

9
10 WECC reliability standards require BPA to maintain sufficient regulating reserves to
11 cover the requirements of all Balancing Authority Area load. Each load in the Balancing
12 Authority Area must purchase an amount of reserves to cover the obligation it imposes
13 upon the Balancing Authority Area. If loads are not otherwise receiving this service, it
14 must be purchased from the BPA BAA. The ACS-10 rate schedule identifies the
15 capacity charge to be applied to load in the BPA BAA.

16
17 **3.2 Generation Imbalance Service**

18 Generation Imbalance Service provides or absorbs energy to meet the difference
19 between scheduled (*i.e.*, generation estimate) and actual generation delivered to the BPA
20 BAA from generators located in the BPA BAA. All generators in the BPA BAA are
21 subject to charges for Generation Imbalance Service if TS provides such service under
22 an interconnection agreement or other arrangement. The Generation Imbalance Service
23 rate in section III.B of the ACS-10 rate schedule establishes three imbalance deviation
24 bands. Band 1 applies to the portion of the deviation less than the greater of +/- 1.5% of
25 the schedule or +/- 2 MW. If the difference between a generator's schedule and its

1 delivery stays within band 1, the customer may return energy at a later time. BPA-TS
2 uses deviation accounts to sum the positive and negative deviations over HLH and LLH
3 periods. At the end of each month, any balance remaining in the accounts must be
4 settled at BPA's incremental cost. The customer will arrange for and schedule the
5 balancing transactions.

6
7 Imbalance deviation band 2 applies to the portion of the deviation greater than band 1
8 but less than the greater of +/- 7.5% of the schedule or +/- 10 MW. For each hour the
9 generation energy delivered is less than the energy scheduled, the charge is 110 percent
10 of BPA's incremental cost. For each hour the generation energy delivered is greater than
11 the energy scheduled, the credit is 90 percent of BPA's incremental cost. Imbalance
12 deviation band 3 is for the portion of the deviation greater than band 2. For each hour
13 the generation energy delivered is less than the energy scheduled, the charge is
14 125 percent of BPA's highest incremental cost that occurs during that day. For each
15 hour the generation energy delivered is greater than the energy scheduled, the credit is
16 75 percent of BPA's lowest incremental cost that occurs during that day. BPA's
17 incremental cost will be based on an hourly energy index in the PNW, or an alternative
18 index will be used if there is no adequate hourly index. Band 3 will not apply to wind
19 resources and new generation resources undergoing testing before commercial operation
20 for up to 90 days.

21 22 **3.3 Operating Reserve – Spinning Reserve Service**

23 The control area service Operating Reserve – Spinning Reserve Service is the same
24 technical service, at the same rate, as the ancillary service so named. In contrast to the
25 ancillary service, the control area service is taken by generators in the BPA BAA that
26 may not have a transmission contract with BPA-TS but have energy transactions that

1 impose a spinning reserve obligation on the BPA BAA. The generator's obligation is
2 determined consistent with NERC, WECC, and NWPP standards. To the extent that
3 Spinning Reserve Service is not otherwise provided to cover the generator's Spinning
4 Reserve obligation (for example, through ancillary service purchases or self-supply), TS
5 provides, and the customer must purchase, this control area service.

6
7 The Spinning Reserve Service rate, section III.C of the ACS-10 rate schedule, includes
8 two components. The first component is a capacity charge that is applied to the
9 customer's Spinning Reserve Requirement. This rate of 8.53 mills per kilowatthour
10 recovers the cost of having generation available to respond to a system contingency.
11 The second Spinning Reserve Service rate component charges the customer for energy
12 actually delivered when a system contingency occurs. The customer has the option of
13 returning the energy at times specified by BPA-TS or purchasing the energy at the
14 hourly market index price that was effective when the contingency occurred.

15
16 TS determines the Spinning Reserve Requirement based on current WECC and NWPP
17 standards as 2.5 percent of the hydroelectric generation, 2.5 percent of the wind
18 generation, and 3.5 percent of the thermal generation located in the BPA BAA used to
19 serve the firm load responsibility. TS will adjust the Spinning Reserve Requirement
20 when and if WECC and NWPP standards change.

21
22 Under BPA-TS's Operating Reserves business practice, customers may make an election
23 to self-supply or acquire OR service from a third party. Customers that self-supply or
24 third-party supply OR Spinning Reserve, but default on their self-supply or third-party
25 supply obligations, will pay a default rate of 9.80 mills per kilowatthour.

1 **3.4 Operating Reserve – Supplemental Reserve Service**

2 The control area service Operating Reserve – Supplemental Reserve Service is the same
3 technical service, at the same rate, as the ancillary service so named. In contrast to the
4 ancillary service, the control area service is taken by generators (in the BPA BAA) that
5 may not have a transmission contract with BPA-TS but have energy transactions that
6 impose a supplemental reserve obligation on the BPA BAA. TS determines the
7 generator’s obligation in accordance with NERC, WECC, and NWPP standards. To the
8 extent that Supplemental Reserve Service is not otherwise provided to cover the
9 generator’s Supplemental Reserve obligation (through ancillary service purchases or
10 self-supply, for example), TS provides, and the customer must purchase, this control
11 area service.

12
13 The Supplemental Reserve Service rate, section III.D of the ACS-10 rate schedule,
14 includes two components. The first component is a capacity charge that is applied to the
15 customer's Supplemental Reserve Requirement. This rate of 8.24 mills per kilowatthour
16 recovers the cost of having generation available to respond to a system contingency.
17 The second Supplemental Reserve Service rate component charges the customer for
18 energy actually delivered when a system contingency occurs. The customer has the
19 option of returning the energy at times specified by TS or purchasing the energy at the
20 hourly market index price that was effective when the contingency occurred. In
21 addition, the transmission customer will be responsible for the settlement of delivered
22 energy associated with interruptible imports.

23
24 BPA-TS determines the current Supplemental Reserve Requirement, based on current
25 WECC and NWPP standards, as 2.5 percent of the hydroelectric generation, 2.5 percent
26 of the wind generation, and 3.5 percent of the thermal generation located in the BPA
27 BAA used to serve the transmission customer's firm load. TS will adjust the Spinning

1 Reserve Requirement when and if WECC and NWPP standards change. The
2 Supplemental Reserve charge is downwardly flexible; any discounts would be offered
3 consistent with section II.F of the GRSPs.

4
5 Under the BPA-TS Operating Reserves business practice, customers may make an
6 election to self-supply or acquire OR service from a third party. Customers that self-
7 supply or third-party supply OR Supplemental Reserve, but default on their self-supply
8 or third-party supply obligations, will pay a default rate of 9.47 mills per kilowatthour.

10 **3.5 Wind Balancing**

11 BPA-TS provides the control area service Wind Balancing Service to wind generators in
12 the BPA BAA. This service is necessary to support the within-hour movement of wind
13 generation from the hourly generation estimate (*i.e.*, schedule).

14
15 Wind Balancing Service is provided by raising or lowering the output of committed on-
16 line generation (predominantly through the use of automatic generating control
17 equipment) as necessary to follow the moment-by-moment changes in wind generation.
18 The obligation to maintain this balance between resources (including wind generation)
19 and load lies with TS. The wind generator must either purchase this service from TS or
20 make alternative comparable arrangements to satisfy its Wind Balancing Service
21 obligation. Small wind generators (*i.e.*, generators with nameplate capacity of 20 MW
22 or less) have a one-time exemption from the Wind Balancing Service that will extend
23 only through September 30, 2010.

24
25 The Wind Balancing Service rate in Section III.E of the ACS-10 rate schedule includes a
26 capacity charge to be applied to the wind generator's installed wind generating capacity

1 in the BPA BAA. Wind Balancing Service is composed of three components: regulation
2 (moment-to-moment variability), following (longer-duration within-hour variability),
3 and imbalance (within-hour variability due to differences between the hourly scheduled
4 amount and hourly average generation). The Wind Balancing Service rate is unbundled
5 to reflect the charge for each of those components to allow for self-supply of one or
6 more of those components.

7
8 The Wind Balancing Service rate schedule includes an adjustment clause under which
9 BPA can increase the rate (including the component rates) and the amount of balancing
10 reserve BPA sets aside for within-hour balancing if one or more participants in the PNW
11 utility industry ask BPA to do so or if BPA is prevented from implementing Dispatcher
12 Standing Order (DSO) 216 or must amend it materially. The Wind Balancing Service
13 rate is based on a 30-minute persistence scheduling assumption and is calculated to be
14 \$1.29/kW-mo. If BPA exercises its discretion to increase the Wind Balancing Service
15 rate (and commensurate amount of balancing reserves) at any point during the rate
16 period, the rate shall not exceed a rate based on a 45-minute persistence scheduling
17 assumption, which is calculated to be \$1.58/kW-mo.

1 **4. ANCILLARY SERVICE RATE METHODOLOGY**

2 **4.1 Ancillary and Control Area Service Rates**

3 The ancillary services segment captures the general costs for Scheduling, Control and
4 Dispatch (SCD); Reactive Supply and Voltage Control from Generation Sources Service
5 (GSR); and generation inputs that BPA-PS supplies to operate the Balancing Authority
6 Area. TS requires transmission customers to take SCD and GSR services from BPA-TS.
7 Both SCD and GSR are included in the Transmission Partial Settlement Agreement,
8 which appears as Appendix A to the TR-10 Record of Decision, TR-10-A-02-AP01.

9
10 TS recovers the costs of generation inputs from the revenues charged for ancillary
11 services taken by transmission customers, and for the equivalent control area services
12 taken by customers in the Balancing Authority Area that do not hold transmission
13 agreements. Generation inputs support Spinning and Supplemental Operating
14 Reserve Services, Regulation and Frequency Response (RFR) Service, and Wind
15 Balancing Service. The generation input costs were determined as part of the WP-10
16 sub-docket of the 2010 rate proceeding and are included in the BPA-PS revenue
17 requirement. The rates for these ancillary services or balancing area services are set
18 to recover the specific associated generation input costs, and the revenues from the
19 rates are passed back to BPA Power Services.

20 **4.2 Regulation and Frequency Response Rate Calculation**

21 The generation input costs for PS to provide regulation are determined to be
22 \$7.699 million as documented in the WP-10 final studies. Generation Inputs Study,
23 WP-10-FS-BPA-08. All transmission customers serving load in the BPA BAA are

1 charged for RFR Service proportional to the energy delivered to load in the
2 balancing authority area on an hour-by-hour basis. RFR loads at the point-of-
3 delivery for transmission customers serving load in the BPA Balancing Authority
4 are forecasted by BPA. These loads are risk-adjusted to take into consideration
5 expected impacts of future economic recessionary conditions. BPA developed a
6 risk-adjusted load forecast from a statistical analysis of the load growth rates. The
7 risk model incorporates estimated load growth rates. The uncertainty in the load
8 growth rates is based on the spread of Gross Domestic Product forecasts from
9 Global Insight. Statistical analysis of the estimated load growth rate and uncertainty
10 yields the forecasted risk-adjusted annual average load for RFR of 5,967 MW in the
11 BPA BAA for the FY 2010-2011 rate period. Dividing the generation input costs
12 for regulation by the average load results in an RFR rate of 0.15 mills per
13 kilowatthour.

14 **4.3 Energy and Generation Imbalance Service**

15 Energy Imbalance Service and Generation Imbalance Service both provide mechanisms
16 for the customer to schedule the return of energy such that the deviation balance (in
17 band 1) at the end of each month is zero. If a customer does not balance the deviation to
18 zero, the balance is settled at the energy index. TS settles deviation balances in bands 2
19 and 3 at the energy index with a 10 percent penalty for band 2 deviations and a
20 25 percent penalty for band 3 deviations. All revenues or credits that TS has for
21 imbalance rates are passed on to PS. Since the net amount on average is typically small,
22 TS does not forecast any revenue or cost associated with these services, and TS
23 identifies no rates other than the energy index noted in the rate schedule for these
24 services.
25
26

1 **4.4 Operating Reserves Rate Calculation**

2 Under current WECC standards, all transmission customers with an Operating
3 Reserve requirement must purchase OR. The methodology and quantity of operating
4 reserves for the FY 2010-2011 period are described in the Generation Inputs Study,
5 WP-10-FS-BPA-08, at Table 1, and are inputs into the rate study. The revenue
6 requirement for OR – Spinning is \$14.689 million and is divided by the spinning
7 reserve billing factor, 196.7 MW, yielding the OR - Spinning rate of 8.53 mills per
8 kilowatthour. The associated default rate of 9.80 mills per kilowatthour is calculated
9 by increasing the normal rate by 15 percent. See Table 1.

10
11 The revenue requirement for OR – Supplemental is \$14.195 million and is divided
12 by the supplemental reserve billing factor, 196.7 MW, yielding the OR –
13 Supplemental rate of 8.24 mills per kilowatthour. The associated default of
14 9.47 mills per kilowatthour is calculated by increasing the normal rate by 15 percent.
15 See Table 1.

16
17 **4.5 Wind Balancing Service Rate**

18 The forecast revenue requirement for BPA-PS to provide Wind Balancing Service is
19 \$47.410 million, as documented in the WP-10 final studies. A wind generator in the
20 BPA BAA is charged for Wind Balancing Service based on its installed capacity of
21 wind generation in the BPA BAA, unless the wind generator is able to self-supply
22 or acquire third-party supply of balancing reserves. TS forecasts the average
23 installed amount of wind generation in the BPA BAA for the FY 2010-2011 rate
24 period to be 3,053 MW. Generation Inputs Study, WP-10-FS-BPA-08, Section 2.
25 Dividing the annual average revenue requirement for wind balancing reserves by
26 the annual average installed wind generation results in a Wind Balancing rate of
27 \$1.29 per kilowatt-month. See Table 1. The forecasted annual revenue requirement

1 is separated into \$1.930 million for regulation, \$9.595 million for following, and
2 \$35.885 million for imbalance, based on the WP-10 final studies. Dividing these
3 figures by annual average installed wind generation capacity results in \$0.05 per
4 kilowatt-month for regulation, \$0.26 per kilowatt-month for following, and
5 \$0.98 per kilowatt-month for imbalance. See Table 1.

6

7 If BPA increases the rate and the amount of reserves for wind balancing under the
8 Wind Balancing Service rate adjustment clause, the annual revenue requirement
9 becomes \$57.806 million, separated into \$1.944 million for regulation, \$9.699
10 million for following, and \$46.163 million for imbalance. Dividing these figures by
11 annual average installed wind generation capacity results in a total Wind Balancing
12 Service rate of \$1.58 per kilowatt-month, separated into \$0.05 per kilowatt-month
13 for regulation, \$0.26 per kilowatt-month for following, and \$1.26 per kilowatt-
14 month for imbalance. See Table 1.

15

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TABLES

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**Table 1
Ancillary Service and Control Area Service Rate Calculation**

	(A) FY10 (\$000)	(B) FY11 (\$000)	(C) FY10/11 (\$000)	(D) Rates	Units
Source					
Regulation & Frequency Response					
1.01 FY10/ 11 Balancing Authority Load Forecast.....	7,595	7,802	7,699		(\$000)
1.02 Rate.....	5,886.6	6,047.2	5,966.9	0.15	MW
1.03					mills/ kWh
Wind Balancing Service					
1.04	38,573	56,247	47,410		(\$000)
1.05	2,483.7	3,621.7	3,052.7	1.29	MW
1.06				0.05	\$/ kW month
1.07				0.26	\$/ kW month
1.08				0.98	\$/ kW month
1.09				1.58	\$/ kW month
1.10				0.05	\$/ kW month
1.11				0.26	\$/ kW month
1.12				1.26	\$/ kW month
1.13					
1.14					
Operating Reserve					
1.15	428.1	358.7	393.4		MW
1.16	214.0	179.3	196.7		MW
1.17	214.0	179.3	196.7		MW
1.18	15,985	13,393	14,689	8.53	(\$000)
1.19				9.80	mills/ kWh
1.20				8.24	mills/ kWh
1.21	15,447	12,943	14,195	9.47	(\$000)
1.22					mills/ kWh
1.23					mills/ kWh
1.24	0	0	0	0	Market Based

1/ Revenue Requirement amounts established in TR-10-FS-BPA-01.

2/ Load Forecast from the Revenue Forecasting Application.

3/ Installed wind estimate from reserve forecast study at WP-10-FS-BPA-08, Section 2.

4/ Reserve Forecast based on 6 months at existing standard (5/ 7), and 18 months on new standard (3/ 3); Reserve Forecast at WP-10-FS-BPA-08, Section 5.

**Table 2
Summary of Ancillary Service and Control Area Service Rate Level Changes**

		(A) Current 2008 Rates	(B) Proposed 2010 Rates
	Regulation and Frequency Response		
2.01	Hourly..... mills/kWh	0.33	0.15
			Source for Column (B) Table 1 line 1.03 (D)
	Wind Balancing Service		
2.02	Monthly..... \$/ kW month	0.68	1.29
			Table 1 line 1.06 (D)
	Operating Reserve		
2.03	Spinning..... mills/kWh	7.93	8.53
2.04	Default.....	9.12	9.80
2.05	Supplemental..... mills/kWh	7.93	8.24
2.06	Default.....	9.12	9.47
			Table 1 line 1.19 (D) Table 1 line 1.20 (D) Table 1 line 1.22 (D) Table 1 line 1.23 (D)

Table 3
Summary of Forecasted Revenue for Ancillary Services and Control Area Services
(\$000's)

	Current Rates			Proposed Rates		
	(A) FY 2010	(B) FY 2011	(C) Average	(D) FY 2010	(E) FY 2011	(F) Average
3.01 Regulation and Frequency Response.....	17,017	17,481	17,249	7,735	7,946	7,840
3.02 Operating Reserve - Spinning.....	14,869	12,458	13,663	15,993	13,400	14,697
3.03 Operating Reserve - Supplemental.....	14,869	12,458	13,663	15,450	12,945	14,197
3.04 Energy Imbalance.....	-	-	-	-	-	-
3.05 Generation Imbalance.....	-	-	-	-	-	-
3.06 Wind Balancing Service.....	20,267	29,553	24,910	38,447	56,063	47,255

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