2010 Initial Transmission Proposal

Study and Documentation for 2010 Ancillary Service and Control Area Services

TR-10-E-BPA-03

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BONNEVILLE POWER ADMINISTRATION

TRANSMISSION SERVICES

2010 INITIAL PROPOSAL

STUDY AND DOCUMENTATION FOR

2010 ANCILLARY SERVICE AND CONTROL AREA SERVICES

TR-10-E-BPA-03

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ANCILLARY SERVICE AND CONTROL AREA SERVICES
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COMMONLY USED ACRONYMS

AC	alternating current
ACS	Ancillary Services and Control Area Services (Rate)
AF	Advance Funding (Rate)
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
BOR	U.S. Bureau of Reclamation
BPA	Bonneville Power Administration
Btu	British thermal unit
CA	Control Area
CAISO	California Independent System Operator
California PX	California Power Exchange
CAS	Control Area Service
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 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
CPTC	Columbia Power Trades Council
CRAC	Cost Recovery Adjustment Clause
CRC	Conservation Rate Credit
CRFM	Columbia River Fish Mitigation
CRITFC	Columbia River Inter-Tribal Fish Commission
CSL	Customer-Served Load
CSP	Customer System Peak

CT	combustion turbine
CY	calendar year (January through December)
DC	direct current
DDC	Dividend Distribution Clause
dec	decremental
DJ	Dow Jones
DO	Debt Optimization
DOE	Department of Energy
DOI	Department of Interior
DOP	Debt Optimization Program
DSI	direct-service industrial customer or direct-service industry
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)
Energy Northwest	Formerly Washington Public Power Supply System Project
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
FCCP	Fish Cost Contingency Fund
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)
FPT	Formula Power Transmission Rate
FTE	Full-time Equivalent
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
GDP	Gross Domestic Product
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
HNF	Hourly Non-Firm
HOSS	Hourly Operating and Scheduling Simulator (computer model)
HYDSIM	Hydro Simulation (computer model)
IDC	interest during construction
IE	Eastern Intertie (Rate)
Im	Montana Intertie (Rate)
inc	incremental
IOU	investor-owned utility
IP	Industrial Firm Power (rate)
IPR	Integrated Program Review
IRP	Integrated Resource Plan
IR	Integration of Resources (Rate)
IS	Southern Intertie)Rate)
ISC	Investment Service Coverage
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	Kilovoltampere 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
MTPL	Monthly Transmission Peak Load
MVAr	megavolt ampere reactive
MW	megawatt (1 million watts)
MWh	megawatthour
NCD	non-coincidental demand
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NF	Nonfirm Energy
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 (formerly 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
NWPPC	Northwest Power Planning Council
OASIS	Open Access Same-time Information System
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)
PA	Public Agency
PBL	Power Business Line
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
PNUCC	Pacific Northwest Utilities Conference Committee
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
RRS	revenue Requirement Study
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
Tariff	Open Access Transmission Tariff
TBL	Transmission Business Line
TCH	Transmission Contract Holder
TDA	The Dalles
TGT	Townsend-Garrison Transmission (Rate)
Tcf	trillion cubic feet
TPP	Treasury Payment Probability
TRAP	Transmission Rick Analysis Processor
Transmission System Act	Federal Columbia River Transmission System Act
TRL	Total Retail Load
TRM	Tiered Rate Methodology
TRS	Transmission Rate Study
TS	BPA Transmission Services
TTSL	Total Transmission system Loading
UAI	Unauthorized Increase

UDC	utility distribution company
UFT	Use of Facilities (Rate)
UIC	Unauthorized Increase Charge
URC	Upper Rule Curve
USBOR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VOR	Value of Reserves
WECC	Western Electricity Coordinating Council (formerly WSCC)
WEFA	Wharton Econometric Forecasting Associates
WIT	Wind Integration Team
WPRDS	Wholesale Power Rate Development Study
WREGIS	Western Renewable Energy Generation Information System
WSCC	Western Systems Coordinating Council
WSPP	Western Systems Power Pool
1CP	One Coincidental Peak
12Cp	Twelve Coincidental Peak

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) proposed ancillary service and control area service rates that were not included in the Partial Transmission Rate Case Settlement Agreement. This study supports the Transmission, Ancillary Service and Control Area Service Rate Schedules, TR-10-E-BPA-02.

BPA-TS proposes to set Ancillary and Control Area Services rates for a two year rate period -- Fiscal Years (FYs) 2010 and 2011. (A fiscal year runs from October 1 through September 30.) The calculations for the Ancillary and Control Area Service rates are shown in Table 1. A summary of the proposed rate level changes are shown in Table 2. Finally, 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 (to be resolved in the 2010 Power Rate Case), 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 service to BPA customers; (c) provide interregional transmission facilities; and (d) maintain the electrical stability and reliability of the Federal system. 16 U.S.C. §838b.

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

- are sufficient to assure repayment of the Federal investment in the Federal Columbia River Power System (FCRPS) over a reasonable number of years after first meeting the Administrator's other costs;
- are based upon the Administrator's total system costs; and
- insofar as transmission rates are concerned, equitably allocate the costs of the Federal transmission system between Federal and non-Federal power utilizing such system.

Section 9 of the Transmission System Act provides that rates shall be established: (1) with a view to encouraging the widest possible diversified use of electric power at the lowest possible rates consistent with sound business principles; (2) with regard to the recovery of the cost of producing and transmitting electric power, including amortization of the capital investment allocated to power over a reasonable period of years; and (3) at levels that produce such additional revenues as may be required to pay when due the principal, premiums, discounts, expenses, and interest in connection with bonds issued

under the Transmission System Act. 16 U.S.C. § 838g. Section 10 of the Transmission System Act allows for uniform rates and specifies that the costs of the Federal transmission system be equitably allocated between Federal and non-Federal power utilizing the system. 16 U.S.C. § 838h.

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

1.2.2 Comparability/Reciprocity

BPA has committed to provide open access transmission services to its customers to the extent that such service is compatible with BPA's statutory authority. In its final rule *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Service by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities* (Order 888), the Commission included a reciprocity provision applicable to non-public utilities that own, control or operate interstate transmission facilities and that take service under a public utility's open access tariff. FERC Stats. and Regs. ¶31,036, 31,760-63 (1996). Under the reciprocity provision, public utilities must offer non-jurisdictional utilities open access service if the non-jurisdictional utility offers comparable service in return. Non-jurisdictional utilities

may voluntarily submit to the Commission a transmission tariff and a request for a declaratory order that the tariff meets the Commission's reciprocity comparability standards. *Id.* at 31,761. Non-jurisdictional utilities may also submit their rates for a similar finding. In order to find that a non-jurisdictional utility's rates satisfy the Commission's comparability standards, the Commission must have sufficient information to conclude that the rates meet its comparability test; that is, that the rates the non-jurisdictional utility charges itself are comparable to the rates it charges others. *Id.* The Commission retained the reciprocity provisions in the final rule *Preventing Undue Discrimination and Preference in Transmission Service*, (Order 890), 72 Fed. Reg. 12266, 12293-12294 (2007).

1.2.3 Inter-businessline Issues

Certain issues that affect the transmission and ancillary service rates are being decided in the power sub-docket rate proceeding. BPA's Power Services provides a portion of the FCRPS's available generation to Transmission Services to enable Transmission Services to meet its various requirements to maintain reliability. Power Services assigns the costs of this generation to the transmission function, which then assigns them to transmission rates. The affected ancillary and control area services are: (1) Within-hour balancing for wind service: provides balancing services for wind integration; (2) Regulation and frequency response service: provides the generation capability to follow the moment-to-moment variations of loads in the BPA Control Area and maintain the power system frequency at 60 Hz in conformance with NERC and WECC reliability standards; (3) Energy imbalance service: taken when there is a

difference between scheduled and actual energy delivered to a load in the BPA Control Area during a schedule hour; (4) Operating reserve – Spinning reserve service: serves load immediately in the event of a system contingency; (5) Operating Reserve − Supplemental Reserve Service: is available within a short period of time to serve load in the event of a system contingency; and (6) Generation Imbalance Service: taken when there is a difference between scheduled and actual energy delivered from generation resources in the BPA Control Area during a schedule hour. Other costs that Power Services assigns to the transmission function include costs of Synchronous Condensing, Generation Dropping, Station Service, and Segmentation of U.S. Army Corps of Engineers and Bureau of Reclamation Transmission Facilities. The final transmission rates will reflect the Administrator's decisions in the final BPA Record of Decision for power rates.

2. ANCILLARY AND CONTROL AREA SERVICE RATE SCHEDULES

2.1 Ancillary Service and Control Area Service Rate Schedule (ACS-10)

The proposed ACS-10 rate schedule includes rates for the six required Ancillary Services and five Control Area services. All transmission contract holders must satisfy the reliability requirements associated with their energy transactions, whether energy is delivered into, out of, within, or through the BPA Balancing Authority Area. Ancillary Services are needed with transmission service to maintain reliability within and among the Balancing Authority Areas affected by the transmission service. As the Transmission Provider, TS is required to provide, and Transmission Customers are required to purchase, the Ancillary Services of Scheduling, System Control and Dispatch, and Reactive Supply and Voltage Control from Generation Sources. Under current NERC/WECC standards, TS is required to offer to provide the following Ancillary Services to Transmission Customers serving load or integrating generation within the BPA Balancing Authority Area: Regulation and Frequency Response; Energy Imbalance; Operating Reserve – Spinning; and Operating Reserve –Supplemental. The Transmission Customer serving load, interconnecting or integrating generation within the BPA Balancing Authority Area is required to acquire these Ancillary Services, whether from the TS, from a third party, or by self-supply.

Control Area Service (CAS) rates apply to transactions in the BPA Balancing Authority Area for which the reliability obligations have not been met through Ancillary Services or some other arrangement. The five CAS rates are Regulation and Frequency Response Service; Generation Imbalance Service; Operating Reserve – Spinning Reserve Service; Operating Reserve – Supplemental Reserve Service; and

Wind Integration - Within-Hour Balancing Service. Resources or loads in the BPA Balancing Authority Area must purchase Control Area Services from TS to the extent they do not otherwise satisfy the reliability obligations that their energy transactions impose on the BPA Balancing Authority Area.

2.2 Regulation and Frequency Response (Regulation) Service

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

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

2.3 Energy Imbalance Service

Energy Imbalance Service is provided for transmission within and into the BPA Balancing Authority Area to serve load in the Balancing Authority Area. Energy Imbalance is the deviation between the scheduled and actual delivery of energy to a load in the BPA Balancing Authority Area over a single hour.

All Transmission Customers serving load in the BPA Balancing Authority Area are subject to charges for Energy Imbalance. The Energy Imbalance rate in section II.D of the ACS-10 rate schedule establishes three imbalance deviation bands. Band 1 applies to the portion of the deviation less than the greater of +/- 1.5% of the schedule or +/- 2 MW. If a deviation between a customer's load and schedule stay within imbalance deviation band 1, the customer may return the energy at a later time. BPA-TS uses deviation accounts to sum the positive and negative deviations from schedule over heavy load hour and light load hour periods. At the end of the month any balance remaining in the accounts must be settled at BPA's incremental cost. The customer will arrange for and schedule the balancing transactions.

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

Finally, Deviation band 3 is for the portion of the deviation greater than band 2. For each hour the energy taken is greater than the energy scheduled, the charge is 125% of BPA's highest incremental that occurs during that day. For each hour the energy taken

is less than schedule, the credit is 75% of BPA's lowest incremental cost that occurs during that day. BPA's incremental cost will be based on an hourly energy index in the PNW, or an alternative index will be used if there is no adequate hourly index.

2.4 Operating Reserve (OR) -- Spinning Reserve Service

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

The Spinning Reserve Service rate, section II.E of the ACS-10 rate schedule, includes two components. The first component is an capacity charge that is applied to the customer's Spinning Reserve Requirement. This rate of 11.14 mills per kilowatthour recovers the cost of having generation available to respond to a system contingency. The second Spinning Reserve Service rate component charges the customer for energy actually delivered when a system contingency occurs. The customer has the option of returning the energy at times specified by BPA-TS, or purchasing the energy at the hourly market index price that was effective when the contingency occurred.

BPA-TS determines the current Spinning Reserve Requirement, based on current WECC and NWPP standards, as 2.5% of the hydroelectric generation, 2.5% of wind

generation and 3.5% of the thermal generation located in the BPA Balancing Authority Area used to serve the transmission customer's firm load. TS will adjust the Spinning Reserve Requirement if the Commission approves the new standard. The Spinning Reserve charge is downwardly flexible; any discounts would be offered consistent with section II.F of the GRSPs.

Finally, under BPA-TS's OR business practice, customers may make an election to self-supply or acquire OR service from a third party. Customers that self-supply or third party supply OR, but default on their self-supply or third-party supply obligations, will pay a default rate of 12.82 mills per kilowatthour.

2.5 Operating Reserve (OR) -- Supplemental Reserve Service

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

The Supplemental Reserve Service rate, section II.F of the ACS-10 rate schedule, includes two components. The first component is a capacity charge that is applied to the

customer's Supplemental Reserve Requirement. This rate of 9.85 mills per kilowatthour recovers the cost of having generation available to respond to a system contingency. Customers who have defaulted on their self-supply or third-party supply obligations will pay a default rate of 11.33 mills per kilowatthour. The second Supplemental Reserve Service rate component charges the customer for energy actually delivered when a system contingency occurs. The customer has the option of returning the energy at times specified by BPA-TS, or purchasing the energy at the hourly market index price that was effective when the contingency occurred. In addition, the transmission customer will be responsible for the settlement of delivered energy associated with interruptible imports.

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

Finally, under BPA-TS's OR business practice, customers may make an election to self-supply or acquire OR service from a third party. Customers that self-supply or third party supply OR, but default on their self-supply or third-party supply obligations, will pay a default rate of 11.33 mills per kilowatthour.

3. CONTROL AREA SERVICE RATE SCHEDULES

3.1 Regulation and Frequency Response Service

The Control Area Service Regulation and Frequency Response is the same technical service, at the same rate, as the Ancillary Service so named. The difference is that the Control Area Service is offered to loads in the BPA Balancing Authority Area that may not be taking BPA-TS's basic transmission service. Loads served by generation within BPA's Balancing Authority Area but indirectly connected to BPA's transmission system, or generations "behind the meter," are an example.

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

3.2 Generation Imbalance Service

Generation Imbalance Service provides or absorbs energy to meet the difference between scheduled (i.e., generation estimate) and actual generation delivered to the BPA Balancing Authority Area from generators located in the BPA Balancing Authority Area. All generators in the BPA Balancing Authority Area are subject to charges for Generation Imbalance Service if TS provides such service under an interconnection agreement or other arrangement. The Generation Imbalance Service rate in section III.B

of the ACS-10 rate schedule establishes three imbalance deviation bands. Band 1 applies to the portion of the deviation less than the greater of +/- 1.5% of the schedule or +/- 2 MW. If the difference between a generator's schedule and its delivery stays within imbalance deviation band 1, the customer may return energy at a later time. BPA-TS uses deviation accounts to sum the positive and negative deviations over heavy and light load hour periods. At the end of each month any balance remaining in the accounts must be settled at BPA's incremental cost. The customer will arrange for and schedule the balancing transactions.

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

3.3 Operating Reserve (OR) -- Spinning Reserve Service

The Control Area Service Operating Reserve – Spinning Reserve Service is the same technical service, at the same rate, as the Ancillary Service so named. In contrast to the Ancillary Service, the Control Area Service is taken by generators in the BPA Balancing Authority Area that may not have a Transmission Contract with BPA-TS, but have energy transactions which impose a spinning reserve obligation on the BPA Balancing Authority Area. The generator's obligation is determined consistent with NERC, WECC, and NWPP standards. To the extent that Spinning Reserve Service is not otherwise provided to cover the generator's Spinning Reserve obligation (for example, through Ancillary Service purchases or self-supply), TS provides, and the customer must purchase, this Control Area Service.

The Spinning Reserve Service rate, section III.C of the ACS-10 rate schedule, includes two components. The first component is an capacity charge that is applied to the customer's Spinning Reserve Requirement. This rate of 11.14 mills per kilowatthour recovers the cost of having generation available to respond to a system contingency. The second Spinning Reserve Service rate component charges the customer for energy actually delivered when a system contingency occurs. The customer has the option of returning the energy at times specified by BPA-TS, or purchasing the energy at the hourly market index price that was effective when the contingency occurred.

TS determines the Spinning Reserve Requirement based on current WECC and NWPP standards as 2.5% of the hydroelectric generation, 2.5% for wind generation, and 3.5% of the thermal generation located in the BPA Balancing Authority Area used to

serve the firm load responsibility. TS will adjust the Spinning Reserve Requirement when and if WSCC and NWPP standards change.

Finally, under BPA-TS's OR business practice, customers may make an election to self-supply or acquire OR service from a third party. Customers that self-supply or third party supply OR, but default on their self-supply or third-party supply obligations, will pay a default rate of 12.82 mills per kilowatthour.

3.4 Operating Reserve (OR) -- Supplemental Reserve Service

The Control Area Service Operating Reserve – Supplemental Reserve Service is the same technical service, at the same rate, as the Ancillary Service so named. In contrast to the Ancillary Service, the Control Area Service is taken by generators (in the BPA Balancing Authority Area) that may not have a Transmission Contract with BPA-TS, but have energy transactions which impose a supplemental reserve obligation on the BPA Balancing Authority Area. TS determine the generator's obligation in accordance with NERC, WECC, and NWPP standards. To the extent that Supplemental Reserve Service is not otherwise provided to cover the generator's Supplemental Reserve obligation (through Ancillary Service purchases or self-supply, for example), TS provides, and the customer must purchase, this Control Area Service.

The Supplemental Reserve Service rate, section III.D of the ACS-10 rate schedule, includes two components. The first component is a capacity charge that is applied to the customer's Supplemental Reserve Requirement. This rate of 9.85 mills per kilowatthour recovers the cost of having generation available to respond to a system contingency. Customers who have defaulted on their self-supply or third-party supply

obligations will pay the default rate of 11.33 mills per kilowatthour. The second Supplemental Reserve Service rate component charges the customer for energy actually delivered when a system contingency occurs. The customer has the option of returning the energy at times specified by TS, or purchasing the energy at the hourly market index price that was effective when the contingency occurred. In addition, the Transmission customer will be responsible for the settlement of delivered energy associated with interruptible imports.

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

Finally, under BPA-TS's OR business practice, customers may make an election to self-supply or acquire OR service from a third party. Customers that self-supply or third party supply OR, but default on their self-supply or third-party supply obligations, will pay a default rate of 11.33 mills per kilowatthour.

3.5 Wind Integration Within-hour Balancing Service (Within-hour Balancing Service)

BPA-TS provides the Control Area Service Wind Integration Within-hour Balancing Service to wind generators in the BPA Balancing Authority Area. This service is

necessary to support the within-hour movement of wind generation from the hourly generation estimate (i.e., schedule).

Within-hour Balancing Service is provided by raising or lowering the output of committed on-line generation (predominantly through the use of automatic generating control equipment) as necessary to follow the moment-by-moment changes in wind generation. The obligation to maintain this balance between resources (including wind generation) and load lies with TS. The wind generator must either purchase this service from TS or make alternative comparable arrangements to satisfy its Within-hour Balancing Service obligation.

The Wind Integration Within-hour Balancing Service rate in Section III.E of the ACS-10 rate schedule includes a capacity charge to be applied to the wind generator's installed wind generating capacity in the BPA Balancing Authority Area.

4. ANCILLARY SERVICE RATE METHODOLOGY

4.1 Ancillary and Control Area Service Rates

The Ancillary Services segment captures the general costs for Scheduling, Control and Dispatch (SCD), Reactive Supply and Voltage Control from Generation Sources Service (GSR), and the costs of generation inputs that BPA-PS supplies to operate the Balancing Authority Area. TS requires transmission customers to take SCD and GSR services from BPA-TS. Both SCD and GSR are included in the Transmission Rate Settlement. *See* Bermejo, *et al*., TR-10-E-BPA-06, Attachment 1.

TS recovers the costs of generation inputs from the revenues charged for Ancillary Services taken by transmission customers, and for the equivalent Control Area Services taken by customers in the Balancing Area who do not hold transmission agreements. Generation inputs support Spinning and Supplemental Operating Reserve (OR) Services, Regulation and Frequency Response (RFR) Service, and Wind Integration Within-Hour Balancing Service (WI). The generation input costs will be determined as part of the 2010 Power Rate Case and will be included in the Revenue Requirement. Generation Inputs Study, WP-10-E-BPA-08. The rates for these Ancillary Services or Balancing Area Services are set to recover the specific associated generation input costs, and the revenues from the rates are passed back to BPA Power Services.

4.2 Regulation and Frequency Response Rate Calculation

The generation input costs for PS to provide regulation are estimated to be $14.489 million per the WP-10 Initial Proposal. Generation Inputs Study, WP-10-E-BPA-

08. All transmission customers serving load in the BPA Balancing Authority Area are charged for Regulation and Frequency Response (RFR) Service proportional to the energy delivered to load in the balancing authority area on an hour-by-hour basis. RFR loads at the point-of-delivery for Transmission Customers serving load in the BPA Balancing Authority are forecast by BPA. These loads are risk-adjusted to take into consideration expected impacts of future economic recessionary conditions. BPA developed a risk-adjusted load forecast from a statistical analysis of the load growth rates. The risk model inputs estimated load growth rates. Then the uncertainty in the load growth rates is based on the spread of Gross Domestic Product forecasts from Global Insight. Statistical analysis of the estimated load growth rate and uncertainty yields the forecasted risk-adjusted annual average load for RFR of 6,196 MW in the BPA Balancing Authority Area for the FY 2010-11 rate period. Dividing the generation input costs for regulation by the average load results in an RFR rate of 0.27 mills per kilowatt month.

4.3 Energy and Generation Imbalance Service

Energy Imbalance Service and Generation Imbalance Service both provide mechanisms for the customer to schedule the return of energy such that the deviation balance (in band 1) at the end of each month is zero. If a customer does not balance the deviation to zero, the balance is settled at energy index. TS settles deviation balances in Bands 2 and 3 at the energy index with a 10% penalty for Band 2 deviations and a 25% penalty for Band 3 deviations. All revenues or credits that TS has for imbalance rates are passes on to PS. Since the net amount on average is typically small TS does not forecast any revenue or

cost associated with these services, and TS identifies no rates other than the energy index noted in the rate schedule for these services.

4.4 Operating Reserves (OR) Rate Calculation

Under current WECC standards, all transmission customers with an Operating Reserve Requirement must purchase OR. The methodology and quantity of operating reserves for the FY 2010-2011 period are described in the Generation Inputs Study, WP-10 -E-BPA-08, at Table 1, and are inputs into the rate study. The revenue requirement for OR – Spinning is $25.042 million. The OR - Spinning rate of 11.14 mills per kilowatt hour is calculated by dividing the OR - Spinning revenue requirement by the spinning reserve billing factor. The annual average billing factor is 256.5 MW for the spinning requirement. The associated default of 12.82 mills per kilowatthour is calculated by increasing the normal rate by 15%.

The revenue requirement for OR- Supplemental is $22.131 million. The OR - Supplemental rate of 9.85 mills per kilowatthour is calculated by dividing the OR - Supplemental revenue requirement by the supplemental reserve billing factor. The annual average billing factor is 256.5 MW for the spinning requirement. The associated default of 11.33 mills per kilowatthour is calculated by increasing the normal rate by 15%.

4.5 Wind Integration Within-Hour Balancing (WI) Service Rate

The forecast revenue requirement for BPA-PS to provide within-hour balancing for wind generation is $122.153 million per the WP-10 Initial Proposal. A wind

generator in the BPA Balancing Authority Area is charged for Within-Hour Balancing Service based on its installed capacity of wind generation in the BPA Balancing Authority Area, unless the wind generator is able to self-supply or acquire third-party supply of balancing reserves. TS forecasts the average installed amount of wind generation in the BPA Balancing Authority Area for the FY 2010/2011 rate period to be 3,742 MW. *See* McManus et al., WP-10-E-BPA-23. Dividing the annual average revenue requirement for WI balancing reserves by the annual average installed wind generation results in a WI rate of $2.72 per kilowatt month.

Table 1
Ancillary Service and Control Area Service Rate Calculation

		Source	(A) FY10 ($000)	(B) FY11 ($000)	(C) FY10/11 ($000)	(D) Rates	Units
1.01	**Regulation & Frequency Response**	Rev Rqmt 2/	14,590	14,590	**14,590**		($000)
1.02	FY10/11 Balancing Authority Load Forecast	Load Forecast 1/	6,089.2	6,302.3	**6,195.7**		MW
1.03	Rate	Row 1.01 / Row 1.02 / 8.760				**0.27**	mills/kWh
1.04	**Within-hour Balancing for Wind**	Rev Rqmt 2/	104,343	139,962	**122,153**		($000)
1.05	Average Installed Wind (MW) during Rate Period	From Studies	3,196.3	4,287.3	**3,741.8**		MW
1.06	Rate	Row 1.04 / Row 1.05 / 12 mo				**2.72**	$/kW month
	Operating Reserve						
1.07	Total Reserve Obligation	From Studies	**504.0**	**522.0**	**513.0**		MW
1.08	Spinning Reserve Obligation	Row 1.07 * 0.5	252.0	261.0	256.5		MW
1.09	Supplemental Reserve Obligation	Row 1.07 * 0.5	252.0	261.0	256.5		MW
1.10	**Operating Reserve - Spinning**	Rev Rqmt 2/	24,603	25,481	**25,042**		($000)
1.11	Rate	Row 1.10 / Row 1.08 / 8.760				**11.14**	mills/kWh
1.12	Default Rate	Row 1.11 * 1.15				**12.82**	mills/kWh
1.13	**Operating Reserve - Supplemental**	Rev Rqmt 2/	21,743	22,519	**22,131**		($000)
1.14	Rate	Row 1.13 / Row 1.09 / 8.760				**9.85**	mills/kWh
1.15	Default Rate	Row 1.14 * 1.15				**11.33**	mills/kWh
1.16	**Generation/Energy Imbalance**	No Rqmt	0	0	0	**Market Based**	

1/ Risk adjusted load forecast

2/ Generation Inputs Cost Allocations are found in the Generation Inputs Study, WP-10-E-BPA-08.

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

		Units	Source for (B)	(A) Current 2008 Rates	(B) Proposed 2010 Rates
	Regulation and Frequency Response				
2.01	Hourly	mills/kWh	Table 1.03 (D)	**0.33**	**0.27**
	Within-hour Balancing for Wind				
2.02	Monthly	$/kW month	Table 1.06 (D)	**0.68**	**2.72**
	Operating Reserve				
2.03	Spinning	mills/kWh	Table 1.11 (D)	**7.93**	**11.14**
2.04	Default		Table 1.12 (D)	**9.12**	**12.82**
2.05	Supplemental	mills/kWh	Table 1.14 (D)	**7.93**	**9.85**
2.06	Default		Table 1.15 (D)	**9.12**	**11.33**

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
0.01	Regulation and Frequency Response	17,603	18,219	17,911	14,339	14,841	14,590
0.02	Operating Reserve - Spinning	17,506	18,131	17,818	24,603	25,481	25,042
0.03	Operating Reserve - Supplemental	17,506	18,131	17,818	21,743	22,519	22,131
0.04		-	-	-	-	-	-
0.05	Generation Imbalance	-	-	-	-	-	-
0.06	Within-hour Balancing for Wind	26,082	34,984	30,533	104,346	139,960	122,153

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