2007 Wholesale Power Rate Case Final Proposal

LOAD RESOURCE STUDY AND DOCUMENTATION

July 2006

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COMMONLY USED ACRONYMS

AC	Alternating Current
AEP	American Electric Power Company, Inc.
AER	Actual Energy Regulation
AFUDC	Allowance for Funds Used During Construction
AGC	Automatic Generation Control
aMW	Average Megawatt
Alcoa	Alcoa Inc.
AMNR	Accumulated Modified Net Revenues
ANR	Accumulated Net Revenues
AOP	Assured Operating Plan
ASC	Average System Cost
Avista	Avista Corporation
BASC	BPA Average System Cost
BiOp	Biological Opinion
BPA	Bonneville Power Administration
Btu	British thermal unit
C&R Discount	Conservation and Renewables Discount
CAISO	California Independent System Operator
CBFWA	Columbia Basin Fish & Wildlife Authority
CCCT	Combined-Cycle Combustion Turbine
CEC	California Energy Commission
CFAC	Columbia Falls Aluminum Company
Cfs	Cubic feet per second
CGS	Columbia Generating Station
COB	California-Oregon Border
COE	U.S. Army Corps of Engineers
Con Aug	Conservation Augmentation
ConMod	Conservation Modernization Program
COSA	Cost of Service Analysis
Council	Northwest Power Planning 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
CT	Combustion Turbine
CY	Calendar Year (Jan-Dec)
DC	Direct Current
DDC	Dividend Distribution Clause
DJ	Dow Jones
DOE	Department of Energy
DOP	Debt Optimization Program
DROD	Draft Record of Decision
DSI	Direct Service Industrial Customer or Direct Service Industry

ECC	Energy Content Curve
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EN	Energy Northwest, Inc.
Energy Northwest, Inc.	Formerly Washington Public Power Supply System (Nuclear)
EPA	Environmental Protection Agency
EPP	Environmentally Preferred Power
EQR	Electric Quarterly Report
ESA	Endangered Species Act
EWEB	Eugene Water & Electric Board
F&O	Financial and Operating Reports
FB CRAC	Financial-Based Cost Recovery Adjustment Clause
FBS	Federal Base System
FCCF	Fish Cost Contingency Fund
FCRPS	Federal Columbia River Power System
FCRTS	Federal Columbia River Transmission System
FERC	Federal Energy Regulatory Commission
FERC SR	Federal Energy Regulatory Commission Special Rule
FELCC	Firm Energy Load Carrying Capability
Fifth Power Plan	Council's Fifth Northwest Conservation and Electric Power Plan
FPA	Federal Power Act
FPS	Firm Power Products and Services (rate)
FY	Fiscal Year (Oct-Sep)
GAAP	Generally Accepted Accounting Principles
GCPs	General Contract Provisions
GEP	Green Energy Premium
GI	Generation Integration
GSR	Generation Supplied Reactive and Voltage Control
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
ICNU	Industrial Customers of Northwest Utilities
ICUA	Idaho Consumer-Owned Utilities Association, Inc.
IOU	Investor-Owned Utility
IP	Industrial Firm Power (rate)
IP TAC	Industrial Firm Power Targeted Adjustment Charge
IPC	Idaho Power Company
ISO	Independent System Operator
JP	Joint Party

JP1	Cowlitz County Public Utility District, Northwest Requirements Utilities and Members, Western Public Agencies Group and Members, Public Power Council, Industrial Customers of Northwest Utilities
JP2	Grant County Public Utility District No. 2, Benton County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma, Western Public Agencies Group and Members, Western Public Agencies Group and Members(Grays Harbor)
JP3	Benton County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Grant County Public Utilities District No. 2, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, Western Public Agencies Group and Members (Grays Harbor)
JP4	Cowlitz County Public Utility District, Eugene Water & Electric Board, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma, Grant County Public Utility District No. 2
JP5	Benton County Public Utility District, Cowlitz County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Grant County Public Utilities District No. 2, Northwest Requirements Utilities and Members, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma, specified members of WA[1]
JP6	Avista Corporation, Idaho Power Corporation, PacifiCorp, Portland General Electric Company, Puget Sound Energy, Inc.
JP7	NONE
JP8	Northwest Energy Coalition, Save Our Wild Salmon
JP9	Alcoa, Inc., Industrial Customers of Northwest Utilities, Public Power Council, Northwest Requirements Utilities and Members, Pacific Northwest Generating Cooperative and Members, PacifiCorp, Western Public Agencies Group and Members, Avista Corporation, Portland General Electric Company

[1] The members of Western Public Agencies Group and Members (WA) that are participating in the JP5 designation include: Benton REA, the cities of Ellensburg and Milton, the towns of Eatonville and Steilacoom, Washington, Alder Mutual Light Co., Elmhurst Mutual Power and Light Co., Lakeview Light and Power Co., Parkland Light and Water Co., Peninsula Light Co., the Public Utility Districts of Grays Harbor, Kittitas, Lewis and Mason Counties, the Public Utility District No. 3 of Mason County, and the Public Utility District No. 2 of Pacific County, Washington.

JP10	Alcoa, Inc., Cowlitz County Public Utility District, Industrial Customers of Northwest Utilities
JP11	Cowlitz County Public Utility District, Eugene Water & Electric Board, Grant County Public Utilities District No. 2, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma
JP12	Alcoa, Inc., Industrial Customers of Northwest Utilities, Public Power Council, Western Public Agencies Group and Members, Northwest Requirements Utilities and Members, Pacific Northwest Generating Cooperative and Members
JP13	Columbia River Inter-Tribal Fish Commission, Confederated Tribes and Bands of the Yakama Nation, Nez Perce Tribe
JP14	Benton County Public Utility District, Cowlitz County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Grant County Public Utilities District No. 2, Industrial Customers of Northwest Utilities, Northwest Requirements Utilities and Members , Public Power Council, Seattle City Light, City of Tacoma, Western Public Agencies Group and Members, Springfield Utility Board, Pacific Northwest Generating Cooperative and Members
JP15	Calpine Corporation, Northwest Independent Power Producers Coalition, PPM Energy, Inc., TransAlta Centralia Generation, LLC
kAf	Thousand Acre Feet
kcfs	kilo (thousands) of cubic feet per second
ksfd	thousand second foot day
kV	Kilovolt (1000 volts)
kW	Kilowatt (1000 watts)
kWh	Kilowatt-hour
LB CRAC	Load-Based Cost Recovery Adjustment Clause
LCP	Least-Cost Plan
LDD	Low Density Discount
LLH	Light Load Hour
LOLP	Loss of Load Probability
m/kWh	Mills per kilowatt-hour
MAC	Market Access Coalition Group
MAf	Million Acre Feet
MCA	Marginal Cost Analysis
Mid-C	Mid-Columbia
MIP	Minimum Irrigation Pool
MMBTUMMBtu	Million British Thermal Units
MNR	Modified Net Revenues
MOA	Memorandum of Agreement
MOP	Minimum Operating Pool

MORC	Minimum Operating Reliability Criteria
MT	Market Transmission (rate)
MVAr	Mega Volt Ampere Reactive
MW	Megawatt (1 million watts)
MWh	Megawatt-hour
NCD	Non-coincidental Demand
NWEC	Northwest Energy Coalition
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Council
NF	Nonfirm Energy (rate)
NFB Adjustment	National Marine Fisheries Service (NMFS) Federal Columbia River Power System (FCRPS) Biological Opinion (BiOp) Adjustment
NLSL	New Large Single Load
NMFS	National Marine Fisheries Service
NOAA Fisheries	National Oceanographic and Atmospheric Administration Fisheries
NOB	Nevada-Oregon Border
NORM	Non-Operating Risk Model
Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NPA	Northwest Power Act
NPCC	Northwest Power and Conservation Council
NPV	Net Present Value
NR	New Resource
NR (rate)	New Resource Firm Power (rate)
NRU	Northwest Requirements Utilities
NTSA	Non-Treaty Storage Agreement
NUG	Non-Utility Generation
NWPP	Northwest Power Pool
NWPPC	Northwest Power Planning Council
OATT	Open Access Transmission Tariff
O&M	Operation and Maintenance
OMB	Office of Management and Budget
OPUC	Oregon Public Utility Commission
ORC	Operating Reserves Credit
OY	Operating Year (Aug-Jul)
PA	Public Agency
PacifiCorp	PacifiCorp
PBL	Power Business Line
PDP	Proportional Draft Points
PF	Priority Firm Power (rate)
PFR	Power Function Review
PGE	Portland General Electric Company
PGP	Public Generating Pool
PMA	Power Marketing Agencies

PNCA	Pacific Northwest Coordination Agreement
PNGC	Pacific Northwest Generating Cooperative
PNRR	Planned Net Revenues for Risk
PNW	Pacific Northwest
POD	Point of Delivery
POI	Point of Integration/Point of Interconnection
POM	Point of Metering
PPC	Public Power Council
PPLM	PP&L Montana, LLC
Project Act	Bonneville Project Act
PSA	Power Sales Agreement
PSC	Power Sales Contract
PSE	Puget Sound Energy
PSW	Pacific Southwest
PTP	Point-to-Point Transmission
PUD	Public or People's Utility District
RAM	Rate Analysis Model (computer model)
RAS	Remedial Action Scheme
Reclamation	Bureau of Reclamation
Renewable Northwest	Renewable Northwest Project
RD	Regional Dialogue
REP	Residential Exchange Program
RFP	Request for Proposal
RiskMod	Risk Analysis Model (computer model)
RiskSim	Risk Simulation Model
RL	Residential Load (rate)
RMS	Remote Metering System
ROD	Record of Decision
RPSA	Residential Purchase and Sale Agreement
RTO	Regional Transmission Operator
SCCT	Single-Cycle Combustion Turbine
Slice	Slice of the System (product)
SME	Subject Matter Expert
SN CRAC	Safety-Net Cost Recovery Adjustment Clause
SOS	Save Our Wild Salmon
SUB	Springfield Utility Board
SUMY	Stepped-Up Multiyear
SWPA	Southwestern Power Administration
TAC	Targeted Adjustment Charge
TBL	Transmission Business Line
Tcf	Trillion Cubic Feet
TPP	Treasury Payment Probability
Transmission System Act	Federal Columbia River Transmission System Act
TRL	Total Retail Load
Tribes	Columbia River Inter-Tribal Fish Commission, Nez Perce, Yakama Nation, collectively

UAI Charge	Unauthorized Increase Charge
UAMPS	Utah Associated Municipal Power Systems
UDC	Utility Distribution Company
UP&L	Utah Power & Light
URC	Upper Rule Curve
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VOR	Value of Reserves
WAPA	Western Area Power Administration
WECC	Western Electricity Coordinating Council (formally called WSCC)
WMG&T	Western Montana Electric Generating and Transmission Cooperative
WPAG	Western Public Agencies Group
WPRDS	Wholesale Power Rate Development Study
WSCC	Western Systems Coordination Council (now WECC)
WSPP	Western Systems Power Pool
WUTC	Washington Utilities and Transportation Commission
Yakama	Confederated Tribes and Bands of the Yakama Nation

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1. INTRODUCTION

The Load Resource Study (Study) represents the compilation of the load and contract obligations, contact purchases, and resource data necessary for developing BPA's wholesale power rates. The results of this Study are used to: (1) provide data to determine resource costs for the Revenue Requirement Study, WP-07-FS-BPA-02; (2) provide data to derive billing determinants for the revenue forecast in the Wholesale Power Rate Development Study (WPRDS), WP-07-FS-BPA-05; (3) provide load and resource data for use in the Risk Analysis Study, WP-07-FS-BPA-04; and (4) provide regional hydro data for use in the secondary revenue forecast for the Market Price Forecast Study, WP-07-FS-BPA-03.

This Study provides a synopsis of BPA's load resource analyses. This Study illustrates how each component is completed, how components relate to each other, and how each component fits into the rate development process. Details and results supporting this Study are contained in the Load Resource Study Documentation, WP-07-FS-BPA-01A.

2. LOAD RESOURCE STUDY

2.1 Overview of Methodology

This Study includes the following interrelated components: (1) a forecast of the Federal system load obligations comprised of BPA's power sales contract (PSC) obligations and other additional BPA contract obligations; (2) Federal system resource estimates that include the output from hydro and other generating resources purchased by BPA and other BPA contract purchases; (3) the Federal system load resource balance that relates Federal system sales, loads and contract obligations to the Federal system generating resources and contract purchases; (4) total Pacific

Northwest (PNW) regional hydro resources; and (5) estimated power purchases megawatts (MW) eligible for 4(h)(10)(C) credit.

2.1.1 Federal System Load Obligations

The Federal system load obligation forecast estimates the firm energy load that BPA expects to serve during the fiscal year[2] (FY) 2007-2009 period under firm requirements PSCs and other BPA contract obligations.

The Federal system PSC forecast is composed of customer group sales forecasts for public body and cooperative utilities and Federal agencies that are collectively called Public Agencies, direct service industrial customers (DSI), investor-owned utilities (IOU), and other BPA power sales contract obligations. These obligations are forecast monthly over the period for the generation system peak (GSP) in MW, energy in average megawatts (aMW), heavy load hour energy in megawatt-hours (HLH MWh), and light load hour energy in megawatt-hours (LLH MWh). This forecast is provided to the Risk Analysis Study, WP-07-FS-BPA-04.

BPA's other contract obligations are comprised of contracts other than those under BPA's firm requirements power sales contract obligations. These obligations include contract sales to utilities, marketers, and power commitments under the Columbia River Treaty. These contract obligations are estimated for monthly energy in aMW, HLH MWh, and LLH MWh. The contract data are provided to the Risk Analysis Study, WP-07-FS-BPA-04.

[2] Fiscal year (FY) is the 12-month period October 1 through September 30. For example FY 2007 is October 1, 2006, through September 30, 2007.

2.1.2 Federal System Resources

BPA markets power from generating resources that include Federal and non-Federal hydro projects, other contracted generating projects, and other BPA hydro-related contracts. The combined output from these projects represents most of the Federal system's firm generating resource capability. BPA's current generation estimates from these projects are incorporated in this Study, WP-07-FS-BPA-01, and are detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A.

Federal system hydro generation is forecast monthly for energy in aMW and is used as input to the Risk Analysis Study, WP-07-FS-BPA-04. The Federal system hydro energy estimate is apportioned to HLH and LLH in the Risk Analysis Study, WP-07-FS-BPA-04. Other non-hydro Federal generation is estimated for monthly energy in aMW, HLH MWh, and LLH MWh and used as input to the Risk Analysis Study, WP-07-FS-BPA-04.

In addition, BPA has other resources that are comprised of contract purchases and exchanges, return energy associated with BPA's capacity contracts, return and exchange energy associated with capacity-for-energy exchanges, power purchases, and power commitments delivered to BPA under the Columbia River Treaty. These contract purchases are estimated for monthly energy in aMW, HLH MWh, and LLH MWh. These data are provided to the Risk Analysis Study, WP-07-FS-BPA-04.

2.1.3 Federal System Load Resource Balance

The Federal load resource balance completes BPA's load and resource picture by comparing Federal system load obligations to Federal system resource output for FY 2007-2009. Federal system load obligations include BPA's PSC obligations and other Federal contract obligations. Federal system resources include BPA's regulated and independent hydro resources under

1937 water conditions, contract purchases, and other non-hydro and non-utility generating (NUG) projects. The result of the Federal system resources less loads yields BPA's estimated Federal system monthly firm energy surplus or deficit. The Federal system surplus/deficit is provided for monthly energy in aMW to the Risk Analysis Study, WP-07-FS-BPA-04.

2.1.4 Pacific Northwest Regional Hydro Generation

The Pacific Northwest (PNW) regional hydro is used for the secondary revenue analysis in the Market Price Forecast Study, WP-07-FS-BPA-03. The regional hydro data include all PNW regional hydro, plus NUG hydro for FY 2007-2009. The larger set of regional regulated and independent hydro generation is estimated for each of the 50 water years of record. The regional NUG hydro generation forecast does not vary by water condition. The PNW regional hydro is presented for monthly energy in aMW for each of the 50 water conditions.

2.1.5 Estimate of 4(h)(10)(C) Credit

BPA funds programs to protect, mitigate, and enhance fish and wildlife affected by Federal hydro operations, as directed by the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act). These program costs are then allocated to hydro project purposes, both for power and non-power uses. The Northwest Power Act directs BPA to annually recoup its funding of non-power purposes via 4(h)(10)(C) credits, so that ratepayers pay only their power share of the fish and wildlife costs. BPA uses a specific methodology for annually determining the amount of 4(h)(10)(C) credit that may be available for ratemaking purposes. The Revenue Requirement Study, WP-07-FS-BPA-02, contains further discussion of the 4(h)(10)(C) credit.

2.2 Federal System Load Obligation Forecast

2.2.1 Overview

The Federal System Load Obligations forecast includes BPA's projected PSC obligations to regional public agencies, IOUs, and DSIs, contractual obligations outside the Pacific Northwest region (exports), and contractual obligations within the Pacific Northwest region (intra-regional transfers-out). The total Federal system load obligations are provided to the Risk Analysis Study, WP-07-FS-BPA-04. Summaries of BPA's forecast of the public agencies, IOU, and DSI PSC obligations are presented in Section 2.2.2 of this Study. BPA's estimate of Federal system load obligations and contract sales components are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System*.

Policies and procedures guiding BPA's firm energy sales in the FY 2007-2009 rate period are presented in BPA's Power Subscription Strategy Administrator's Record of Decision (Subscription Strategy) published December 1998, and BPA's Policy for Power Supply Role for FY 2007-2011, Administrator's Record of Decision (Near-Term ROD) published February 2005. The Subscription Strategy and Near-Term ROD provide the basis for the forecasts of public agencies, IOU, and DSI firm energy power sales contract obligations presented in this Load Resource Study.

2.2.2 Public Agencies Total Retail Load and Sales Forecasts

The public agencies monthly energy sales forecast for those utilities that purchased Full or Partial Service products is based on the sum of the utility-specific sales forecasts routinely produced by BPA analysts. The utility-specific forecasts of total retail load are produced using linear trend models based on historical annual energy load totals. The annual total retail load projections are prorated to monthly figures using historical relationships. These forecasts

comprise projections of monthly energy and peak. The energy figures are split into HLH and LLH segments using recent historical relationships. Monthly peak loads are estimated using average historical load factor relationships of energy to peak.

Estimates of customer-owned dedicated resource generation and contracts purchases are then subtracted from the appropriate customer's total retail load to produce forecasts of net requirements for each utility. These net requirements provide the basis for the sales projections for the Full and Partial products. For those utilities purchasing Slice and Block products, the forecast is the contracted amount which is split into appropriate HLH and LLH segments. These forecasts are then reduced by non-PF agreements.

Slice is a PSC product that provides firm and requirements power and secondary energy to a customer based on its net requirements load for the 10-year period October 1, 2001, through September 30, 2011. It differs from traditional power products in that it is comprised of the following components: (1) firm power deliveries based on the level and shape of the Slice resource stack; and (2) surplus power deliveries on a monthly or seasonal basis as they occur. The Slice product is combined with a sale of a fixed amount of power sold as a Block product.

Slice contracts for power deliveries are based on 22.63 percent of the Slice resource stack. The Slice resource stack is comprised of a set of specific Federal resources and contract purchases, net of a specific set of Federal obligations. This particular set of resources and obligations is used only for the Slice product and is not the same as the Federal system resource stack. The specific set of Federal resources that comprise the Slice resource stack includes: the generation from specific Federal hydro projects, Columbia Generating Station (CGS), Georgia Pacific Corporation's Wauna Mill, Federal Non-Utility Generation, and power deliveries from the Non-Federal Canadian Entitlement Return (CER) for Canada contracts. The specific set of

Federal contract obligations, which are subtracted from the Slice resource stack for this purpose, includes, but is not limited to, deliveries for the CER to Canada (shown as an Export) and Federal pumping loads.

The Slice resource stack used in the Initial Proposal was modified to reflect the expiration of BPA's Idaho Falls' Bulb Turbine acquisition contract on September 30, 2006. The amount of Slice product available for delivery is dependent on the Federal system operating decisions, hydro production that varies by water conditions, and generation from non-hydro Federal resources.

These Federal system Slice resource obligations are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (NGP Slice Sale)* and *(GPU Slice Sale).* These power sales contract forecast estimates are used as inputs in the Risk Analysis Study, WP-07-FS-BPA-04.

The sum of the projected sales for customers purchasing Subscription products comprises the aggregate Priority Firm (PF) sales forecast. This sum is then reduced by an incremental 20 aMW per year to reflect conservation savings from bilateral contracts. Table 2.2.2.1, below, presents the PF sales by product and total PF sales adjusted for conservation savings.

Table 2.2.2.1
PF Sales Forecast by Product
Energy in aMW

	Full	Partial	Block	Slice Block	Slice	TOTAL	Adjusted Total
FY2007	1,939	1,076	1,011	1,213	1,573	6,812	6,792
FY2008	2,003	1,367	680	1,214	1,607	6,870	6,830
FY2009	2,049	1,465	616	1,213	1,593	6,937	6,877

The total PF sales differ slightly from those projected in the Initial Proposal. There are several reasons for the differences. First, BPA updated many of the individual customer forecasts. This update produced both higher and lower sales forecasts for individual customers compared to those used in the Initial Proposal. In total the forecast updates resulted in an increase to the forecast. Second, a new public utility, the City of Weiser, was added to the forecast that was not included in the Initial Proposal because BPA now has a signed PSC. Third, two utilities indicated that they will be adding New Large Single Loads to their PF loads using the renewables exception. Fourth, one customer is changing from a Block contract to a Partial contract with a subsequent change to its purchase quantity assumed in the Initial Proposal. Fifth, there was an update to the conservation decrement for one customer. And finally, the estimates for the Slice obligations changed due to updates to Federal generation in the Federal Slice resource stack projections.

Because the remaining pre-Subscription contracts are not subject to the PF rate schedule, the sales under these contracts are not included in the PF sales forecasts. However, these contracts do represent BPA sales obligations and commit BPA's resource inventories.

The monthly sales forecasts for energy in aMW, HLH MWh, LLH MWh, and demand for the Full Service, Partial Service, Slice/Block, and Block customer groups are presented in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.2, Table 2.2.1, *PF Full and Partial Service Sales Forecast* and Table 2.2.2, *Block/Slice Block Sales Forecast*. The customers purchasing each product (Full Service, Partial Service, Slice/Block, and Block) are listed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.2, Table 2.2.3, *Full Service Customers*, Table 2.2.4, *Partial Service Customers*, Table 2.2.5, *Slice/Slice Block Customers*, and Table 2.2.6, *PF Block Customers*.

2.2.3 Investor-Owned Utilities Sales Forecast

BPA forecasts no power sales to regional IOUs for FY 2007-2009 based on BPA's current contracts with the six regional IOUs. The six IOUs in the PNW region are: Avista Corporation, Idaho Power Company, NorthWestern Energy Division of NorthWestern Corporation (formerly Montana Power Company), PacifiCorp, Portland General Electric Company, and Puget Sound Energy, Inc.

All six regional IOUs signed Residential Exchange Program (REP) Settlement Agreements in the fall of 2000. In the settlement, BPA agreed to provide 2,200 aMW in benefits each year for FY 2007-2011 to be passed through to the IOUs' residential and small farm customers. At BPA's option, these benefits to the IOUs could be either physical power or financial, as documented in the "*Residential Exchange Program Settlement Agreements with Pacific Northwest Investor-Owned Utilities, Administrator's Record of Decision*", dated October 4, 2000.

In the "*Proposed Contracts or Amendments to Existing Contracts with the Regional Investor-Owned Utilities Regarding the Payment of Residential and Small-Farm Consumer Benefits Under the Residential Exchange Program Settlement Agreements FY 2007 through 2011, Administrator's Record of Decision"*, dated May 25, 2004, BPA elected to provide the equivalent of 2,200 aMW per year, as financial benefits to the IOUs during the FY 2007-2011 period. This amount was reduced by 3.1519 aMW to reflect the residential and small farm load annexed by the City of Hermiston from PacifiCorp's service territory. The financial benefits will be calculated based on 2,196.8481 aMW using a mark-to-market methodology. The details of the mark-to-market methodology are presented in the testimony of the Market Price Forecast Study, Petty, *et al.*, WP-07-E-BPA-11. Generally, the methodology calculates the IOU benefits by comparing the difference between a market price and BPA's lowest PF rate multiplied by

2,196.8481 aMW. The level of these financial benefits is further constrained by an annual floor of $100 million and a cap of $300 million.

Some of the IOUs have agreed not to place additional net requirements service, in excess of requirements loads served under Section 5(b) Subscription sales, on BPA at the New Resources (NR-07) rate except in accordance with the terms of the Subscription sales agreement. BPA will meet the net requirements service of IOUs without sales contracts at the NR-07 rate. BPA's forecast does not contain any NR sales to the IOUs at this time.

2.2.4 Direct Service Industry Sales Forecast

Policies adopted in BPA's *"Service to Direct Service Industrial (DSI) Customers for Fiscal Years 2007-2011, Administrator's Record of Decision"*, dated June 30, 2005, and the *"Supplement to Administrator's Record of Decision on Bonneville Power Administration's Service to Direct Service Industrial (DSI) Customers for Fiscal Years 2007-2011"*, dated May 31, 2006, (Supplemental DSI Rod) guided BPA's DSI sales forecast. Key points in this Record of Decision are:

1) The Northwest Power Act permits BPA to offer contracts to meet the DSI loads, but there is no requirement that it do so;
2) BPA is persuaded that the Port Townsend Paper Corporation (Port Townsend) situation is unique among DSIs and will offer a 17 aMW surplus power sales contract to Port Townsend through the local utility; and
3) There is a high likelihood service benefit contracts with DSI smelters will be monetized.

For purposes of this Study, DSI sales are forecasted to be 17 aMW surplus power sales each year to the local preference customer for delivery to Port Townsend during FY 2007-2009. This

delivery is included monthly for energy in aMW for the Federal system, in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (Intra-Regional Transfers (Out))*. The details of this delivery is presented monthly for energy in aMW, HLH MWh, and LLH MWh in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6, Table A-16, *Intra-Regional Transfers (Out)* for the rate period. In addition, BPA will provide financial benefits to the DSI aluminum smelters for up to 560 aMW for market purchases such that the DSI's resultant power cost is not less than the PF rate. This assumption is consistent with the Supplemental DSI Rod.

2.2.5 Other BPA Contract Obligations

BPA provides Federal power to customers under a variety of contract arrangements not included in the Public Agency, IOU, and DSI PSC load obligation forecasts. These contracts are categorized as: (1) power sales; (2) power or energy exchanges; (3) capacity sales or capacity-for-energy exchanges; (4) power payments for services; and (5) power commitments under the Columbia River Treaty. These arrangements are collectively called "Other Contract Obligations" and each can have differing rate structures. These firm obligations are set by individual contracts and are specified or estimated for monthly energy in aMW, HLH MWh, and LLH MWh. These estimates are provided to the Risk Analysis Study, WP-07-FS-BPA-04.

These firm contract obligations are assumed to be served by Federal system firm resources regardless of weather, water, or economic conditions. Federal system contract obligations are summarized for monthly energy in aMW in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (Exports)* and *(Intra-Regional Transfers (Out))*. These contracts are detailed, for monthly energy in aMW, HLH MWh, and LLH MWh in the Load Resource Study Documentation,

WP-07-FS-BPA-01A, Sections 2.4 through 2.6, Table A-2, *Federal Exports* and Table A-16, *Intra-Regional Transfers (Out)* for the rate period. These estimates are provided to the Risk Analysis Study, WP-07-FS-BPA-04.

In the 2002 Final Rate Case Proposal, Federal contract obligations included the Columbia Storage Power Exchange (CSPE) contract deliveries to CSPE members and peaking deliveries to Supplemental and Entitlement Capacity contract participants. These contracts expired March 31, 2003, and are not included in this Study.

2.3 Federal System Resource Forecast

2.3.1 Overview

Federal system resources are comprised of Federal regulated and independent hydro projects, non-Federally-owned independent hydro projects, other non-Federally owned resources (renewable, thermal, wind, and NUG projects), and other Federal contract purchases.

The Federal system regulated hydro resource estimates are derived by BPA's hydro regulation model (HYDSIM) that estimates project generation under 50 water conditions. Federal system independent hydro project generation estimates are not provided by HYDSIM, rather they are provided by the project's owners for 50 water conditions. Other Federal system resources include non-Federal projects for which BPA has acquired the output. These generation estimates are provided either by BPA or the project's owners. BPA has other contract purchases that are considered Federal system resources. They are comprised of the following: (1) contract purchases and exchanges; (2) return energy associated with BPA's capacity contracts; (3) return and exchange energy associated with BPA's capacity-for-energy exchanges; and (4) power commitments delivered to BPA under the Columbia River Treaty. Detailed Federal system generating resource and contract purchase estimates used in BPA's 2007 Wholesale Power Rate

Case Final Proposal are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6. These estimates are also provided to the Risk Analysis Study, WP-07-FS-BPA-04.

2.3.2 Federal System Hydro Generation

Federal system hydro resources are comprised of the generation from regulated and independent hydro projects. The process used for estimating the generation for regulated hydro projects is detailed in Section 2.3.2.1. The methodology for forecasting independent hydro projects generation is described in Section 2.3.2.2. The Federal system also purchases the output from several small NUG hydro projects whose generation estimates are provided by the project's owners and are assumed to not vary by water conditions.

2.3.2.1 Regulated Hydro Generation Forecast

BPA markets the generation from the Federal system regulated hydro projects. The projects themselves are owned and operated by either the Bureau of Reclamation (Reclamation) or the U.S. Army Corps of Engineers (COE).

BPA uses HYDSIM to estimate the Federal system energy production that can be expected from specific hydroelectric power projects in the PNW Columbia River Basin when operating in a coordinated fashion while meeting power and non-power requirements for the 50 water years of record (August 1928 through July 1978). The hydro regulation study uses plant operating characteristics and conditions to determine energy production expected from each specific project. Physical characteristics of each project are provided by annual Pacific Northwest Coordination Agreement (PNCA) data submittals from regional utilities and government agencies involved in the coordination and operation of regional hydro projects. The HYDSIM model incorporates these operating characteristics along with power and non-power requirements

to provide project-by-project monthly energy generation estimates for the Federal system that vary by water year for operating years[3] (OY) 2007-2009. Though the HYDSIM studies are forecasted in operating years, the Federal regulated hydro resources are presented in fiscal year format for consistency within this Study.

This Study includes expected generation increases due to hydro improvements from hydro optimization, turbine runner replacement, and reliability increases through BPA's capital improvements programs at specific Federal regulated hydro projects. These improvements are included in those projects' generation estimates.

BPA's contract to purchase the Packwood Lake hydroelectric project from Energy Northwest (EN) expired on September 30, 2002, and is not included as a Federal system resource in this Study.

BPA updated the hydro regulation studies for each year of the rate period for this Study. The revised variables that characterize the hydro regulation studies include firm loads, firm resources, markets for secondary energy, and project-by-project operating requirements. These variables affect the amount and timing of energy available from the hydro system. In each year of the hydro regulation study, these variables are changed as necessary to reflect current knowledge of each operating year parameter. Sections 2.3.2.1.1 and 2.3.2.1.2 contains additional details on the process of producing the regulated hydro generation estimates for use in this Study.

The Federal system regulated hydro generation for this Study is summarized in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3,

[3] Operating Year (OY) is the 12-month period August 1 through July 31. For example OY 2007 is August 1, 2006, through July 31, 2007.

Loads and Resources-Federal System, (Regulated Hydro). The monthly energy in aMW for the regulated hydro projects is detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.4, Table A-3, *Federal Regulated Hydro Projects*. The combined Federal system regulated and independent hydro energy is passed to the Risk Analysis Study, WP 07-FS-BPA-04. The Federal system hydro energy estimate is apportioned to HLH and LLH in the Risk Analysis Study, WP-07-FS-BPA-04.

2.3.2.1.1 PNCA and Fish Requirements

Since the Initial Proposal, BPA has updated the HYDSIM studies to reflect current assumptions. The HYDSIM studies incorporate power and non-power operating requirements that BPA expects to be in effect during the rate period, including those described by the National Oceanographic and Atmospheric Administration Fisheries (NOAA Fisheries) in their Biological Opinion (BiOp), published November 2004, as modified by Court-Ordered Operations for 2006, the United States Fish and Wildlife Service (USFWS) BiOp, published December 2000, operations described in the Northwest Power and Conservation Council's Fish and Wildlife Program, and other fish mitigation measures. Each hydro regulation study specifies particular hydroelectric project operations for fish, such as seasonal flow augmentation, minimum flow levels for fish, spill for juvenile fish passage, reservoir drawdown limitations, and turbine operation efficiency requirements.

The following are major features of the HYDSIM non-power operating requirements that BPA expects to be in effect and has modeled for the rate period:

1) Surface Passage Improvements: Incorporated specific surface passage improvements at COE projects on the lower Columbia and lower Snake Rivers.
2) Fall Chinook Transport: Incorporated the Lower Snake Fall Chinook Transport study spill requirements at specific COE projects on the lower Columbia and lower Snake

Rivers for FY 2006-2008. For FY 2009, these spill requirements are not included since BPA expects the study to conclude after three years, in FY 2008.

3) Court-Ordered Operations: Incorporated the 2006 Court-Ordered spill in the hydro operations for FY 2007-2009.

4) Residual Hydro Load: Updated the residual hydro load for FY 2007-2009 using regional loads that conform to those published in the 2004 White Book.

Additionally, HYDSIM uses hydro plant operating characteristics in combination with the power and non-power requirements to simulate the coordinated operation of the hydro system. These operating requirements include, but are not limited to, storage content limits determined by rule curves, maximum project draft rates determined by each project, and flow and spill objectives determined by the BiOps as provided by the 2004 PNCA data submittals. Deviations from the PNCA data submittals occur when specific operating decisions have been made subsequent to the date of submission in order to implement the BiOps.

The hydro regulation studies have sets of power and non-power requirements that vary for each year of the rate period. Specific HYDSIM hydro regulation study assumptions are detailed for FY 2007-2009 in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.9, Tables 2.9.1 through 2.9.3, *HYDSIM Hydro Regulation Study Assumptions.*

2.3.2.1.2 Modified Streamflows

The HYDSIM model uses modified streamflows to estimate power generation using historical streamflow conditions. The Actual Energy Regulation (AER) and Operational Hydro regulation studies were developed using the 2000 level of modified streamflows. Modified streamflows contain adjustments to the historic streamflows to account for the effects of irrigation and consumptive diversion demand, return flow, and changes in contents of upstream reservoirs and

lakes. These modified streamflows were developed under a BPA contract funded by the PNCA parties. The modified streamflows are also adjusted to include updated estimates of Grand Coulee irrigation pumping and resulting downstream return flows using data provided by the Reclamation in their 2004 PNCA data submittal. Grand Coulee pumping provides water to the Columbia Basin Project for irrigation. In addition, the HYDSIM inputs were updated to include the 2000 level of irrigation depletion development.

There are two modes of operation for the HYDSIM hydro regulation studies: refill and continuous. Both modes estimate the energy production of the hydro system, however, each treats a project's initial reservoir conditions differently. Continuous hydro regulation studies operate from one water year to another, using the previous water year's final reservoir elevations as the initial reservoir elevations for the next water year. Refill hydro regulation studies operate each water year independent of all other water years, using the same initial reservoir elevations for each water year. Continuous studies are typically used in BPA mid- to long-range planning to provide expected generation estimates for future years. Refill studies are generally incorporated in short-term planning when information on initial reservoir elevations is known. Hydro regulation studies used in this Study were run in continuous mode.

2.3.2.2 Independent Hydro Generation Forecast

Independent hydro projects are dams that are not modeled or regulated in the HYDSIM model. BPA markets the power from independent hydro projects that are owned and operated by the Reclamation, COE, and/or other project owners. Federal system independent hydro generation estimates are provided by individual project owners for the 50 water years (August 1928 through July 1978). These include power purchased from hydro projects owned by Lewis County Public Utility District (Cowlitz Falls) and Mission Valley (Big Creek). The independent hydro

generation forecasts are typically presented in OY, however, they are presented in FY format for consistency within this Study.

For the 2007 Final Rate Case Proposal, the Federal system independent hydro projects were updated to exclude the City of Idaho Falls' Bulb turbine projects, whose contract with BPA expires September 30, 2006. This reduced Federal system independent hydro generation estimates under 1937 critical water conditions by approximately 18 aMW per year for the rate period.

The Federal system independent hydro energy generation estimates used in this Study are summarized in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (Independent Hydro).* The monthly energy in aMW for the independent hydro projects, is detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.4, Table A-4, *Federal Independent Hydro Projects*. The Federal system regulated and independent hydro energy is combined and passed to the Risk Analysis Study, WP-07-FS-BPA-04. The HLH/LLH splits for the Federal system regulated and independent hydro are calculated in the Risk Analysis Study.

2.3.3 Other Federal System Generation

Other Federal system generation includes the purchased output from non-Federally owned projects or project generation directly assigned to BPA. The expected generation from these non-hydro resources is summarized for monthly energy in aMW, in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (Renewables), (Large Thermal),* and *(Non-Utility Generation).*

Other Federal system generation estimates are detailed for monthly energy in aMW, HLH MWh, and LLH MWh as follows: (1) James River Wauna cogeneration project. This project is detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6, Table A-8, *Federal Renewable Resources*; (2) CGS nuclear plant owned by EN which incorporates facility improvements and a two-year refueling cycle. CGS details are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6, Table A-10, *Large Thermal*; (3) other projects which include small hydro (Elwah and Glines Hydro through September 30, 2009, and Dworshak/Clearwater Small Hydropower), wind (Federal system shares of Foote Creek 1, 2, and 4 Wind Projects; Stateline Wind project, Condon Wind Project, and Klondike Phase 1 Wind Project), and a small amount of solar resources (Ashland Solar Project and White Bluffs Solar). These projects are detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6, Table A-24, *Federal Non-Utility Generating Resources by Project*.

The Initial Proposal included the Fourmile Hill Geothermal Project as a Federal system resource beginning in FY 2009. For this Study, the Fourmile Hill project was not included in the Federal system generation because the start date for the project was extended to October 1, 2009, which is outside the rate period. This reduced Federal generation estimates by 50 aMW in FY 2009.

2.3.4 Other Federal System Contract Purchases

BPA purchases power from sellers under a variety of contractual arrangements to meet Federal load obligations. The contracts are categorized as: (1) power purchases; (2) power or energy exchange purchases; (3) capacity sales or capacity-for-energy exchange contracts; and (4) power purchased or assigned to BPA under the Columbia River Treaty. These arrangements are collectively called "Other Contract Purchases."

These firm contract purchases are assumed to be Federal system firm resources regardless of weather, water, or economic conditions. BPA's expected contract purchases are summarized for monthly energy in aMW, in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System*, (*Imports)*, *(Non-Federal Canadian Entitlement Return for Canada)*, and *(Intra-Regional Transfers (In))*. The monthly energy in aMW, HLH MWh, and LLH MWh is detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6, Table A-5, *Federal Imports*, Table A-15, *Canadian Entitlement for Canada*, and Table A-16, *Intra-Regional Transfers (In)* for the rate period. These data are provided to the Risk Analysis Study, WP-07-FS-BPA-04.

In the 2002 Final Rate Case Proposal, Federal resources included power deliveries from Non-Federal Canadian Entitlement Return for CSPE contract members and peaking replacement deliveries from BPA's Supplemental and Entitlement Capacity contract participants. These contracts expired March 31, 2003, and are not included in this Study.

2.4 Federal System Load Resource Balance

2.4.1 Overview

The Federal system load resource balance and the supporting data are a portion of the data used in this Study. The load resource balance compiles the monthly energy amounts of BPA's resources that include hydro, non-hydro resources, and contract purchases; less BPA's load obligations, which are comprised of BPA's power sales contract and other contract obligations. This determines BPA's monthly and annual energy load resource balance. If BPA's resources are greater than load obligations under 1937 critical water conditions, BPA has firm surplus energy. Conversely, if BPA's resources are less than load obligations, then BPA will have to purchase power to meet Federal system energy deficits.

2.4.2 Federal System Energy Load Resource Balance

Table 2.4.2.1 shows the Federal system is expected to be in firm energy load resource balance, under 1937 water conditions, for FY 2007-2009 after including annual augmentation purchases between 170 to 270 aMW.

Table 2.4.2.1
Loads and Resources - Federal System
Federal Firm Energy Surplus/Deficit
Including Estimated Augmentation Purchases
Under 1937 Water Conditions

Energy in aMW	2007	2008	2009
Loads			
Firm Obligations	8,278	8,308	8,324
Resources			
Resources less Transmission Losses	8,099	8,129	8,054
Augmentation Purchases	179	179	270
Net Total Resources	8,278	8,308	8,324
Surplus/Deficit			
Firm Surplus/Deficit	0	0	0

The components of the Federal system load resource balance are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (Total Firm Surplus/Deficit).* Specific augmentation purchase estimates are detailed in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.3, Tables 2.3.1 through 2.3.3, *Loads and Resources-Federal System, (Augmentation Purchases).* The supporting data for the Federal system hydro resources, non-hydro resources, and contracts are shown in tables in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Sections 2.4 through 2.6. The Federal load resource balance and supporting tables are used as input to the Risk Analysis Study, WP-07-FS-BPA-04.

2.5 Regional Hydro Resources

2.5.1 Overview

The Load Resource Study developed total PNW regional hydro resource estimates for FY 2007-2009 to provide input into the AURORA Model for the Market Price Forecast Study, WP-07-FS-BPA-03.

2.5.2 PNW Regional 50 Water Year Hydro Generation

PNW regional hydro resource estimates are one of the inputs into the AURORA Model and are comprised of regulated and independent hydro, plus non-utility generation hydro for FY 2007-2009. Regulated hydro generation estimates for this Study are developed, by month, for each of the 50 water years of record (August 1928 through July 1978) using HYDSIM. Independent hydro generation estimates were provided by the project owners for 50 water years. The hydro data are formatted in FY to be consistent within the Study. Generation estimates for the NUG hydro projects are provided by the individual project owners and do not vary by water conditions. Other than generation estimate updates, the set of regional hydro projects is the same as the Initial Proposal.

The regional regulated, independent, and NUG hydro totals are summarized for 50 water years for FY 2007-2009, and are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.7, Tables 2.7.1 through 2.7.3, *Total PNW Regional Hydro Resources*.

2.6 Estimate of 4(h)(10)(C) Credit

2.6.1 Overview

The Northwest Power Act directs BPA to make expenditures to protect, mitigate, and enhance fish and wildlife affected by the development and operation of Federal hydroelectric projects in

the Columbia River Basin and its tributaries in a manner consistent with programs developed by the Council and other purposes of the Northwest Power Act. BPA recovers through rates the power costs for the Federal dams from which BPA markets power. However, BPA ratepayers are not required to pay for costs allocated to non-power uses of the dams. These non-power uses include flood control, irrigation, recreation, and fish and wildlife. The Northwest Power Act provides a methodology for BPA to annually recoup the portion of costs associated with fish measures that should be allocated to other non-power uses of the dams via 4(h)(10)(C) credits against BPA's Treasury payment. There are three types of 4(h)(10)(C) credits:

1) Direct fish and wildlife program expenditures;
2) Capital expenditures for fish and wildlife; and
3) Replacement power purchase expenditures resulting from changes in hydro system operations to benefit fish and wildlife.

The non-power purpose portion of these costs is currently calculated at 22.3 percent. In this Study, the estimated non-power portion of the 4(h)(10)(C) credit is included as BPA revenue. The calculation of the replacement power purchase expenditures resulting from changes in hydro system operations to benefit fish and wildlife are described in Section 2.6.2.

2.6.2 Estimated Power Purchase Megawatts Eligible for 4(h)(10)(C) Credit

BPA receives a 4(h)(10)(C) credit for any portion of additional power purchases it must make to implement fish and wildlife programs. This is done by comparing power purchase estimates between two HYDSIM hydro regulation studies. The first hydro regulation study, termed "With Fish", models hydro system operations using current requirements for fish mitigation and wildlife enhancement under the 50 historical water conditions (August 1928 through July 1978). The second hydro regulation study, called "Without Fish", models the hydro system assuming no operational changes were made to benefit fish and wildlife using the same 50 historical water conditions. BPA receives a 4(h)(10)(C) credit for a portion of additional power purchases it

must make in order to implement the “With Fish” alternative as compared to the “Without Fish” alternative.

A fundamental principle of the 4(h)(10)(C) credit is that its results are not affected by BPA marketing decisions. To ensure that BPA's surplus/deficit situation in the 4(h)(10)(C) credit calculation is not influenced by BPA marketing decisions, BPA’s load obligations for both hydro regulation study alternatives was assumed equal to the Federal hydro Firm Energy Load Carrying Capability (FELCC) prior to changes in hydro operations for fish and wildlife, under critical water conditions. The Federal load less generation provides Federal surplus/deficit estimates under the “Without Fish” and “With Fish” alternatives and expected power purchases. The difference between power purchases for the “Without Fish” and the “With Fish” alternatives result in the additional power purchases available for 4(h)(10)(C) credit.

The comparison of BPA's period-by-period surplus/deficit situation using the FELCC load obligation assumption for the 50 different streamflow scenarios in the “Without Fish” hydro study was compared to BPA’s surplus/deficit situation using the “With Fish” hydro study. The six possible scenarios for each period and water condition are as follows:

1) “Without Fish” study is deficit and “With Fish” study is more deficit:
   Leads to more purchases in the “With Fish” study.
2) “Without Fish” study is deficit and “With Fish” study is less deficit:
   Leads to fewer purchases in the “With Fish” study.
3) “Without Fish” study is surplus and “With Fish” study is more surplus:
   Leads to more revenues in the “With Fish” study.
4) “Without Fish” study is surplus and “With Fish” study is less surplus:
   Leads to fewer revenues in the “With Fish” study.

5) "Without Fish" study is surplus and "With Fish" study is deficit:

Leads to fewer revenues and more purchases in the "With Fish" study.

6) "Without Fish" study is deficit and "With Fish" study is surplus:

Leads to fewer purchases and more revenues in the "With Fish" study.

Scenarios 1, 2, 5, and 6 result in changing the amount of expected power purchases between the "Without Fish" and "With Fish" hydro study alternatives. The increases and decreases in power purchases between these hydro studies are calculated for each monthly period and water condition. The resulting energy in aMW eligible for 4(h)(10)(C) credit under the 50 water conditions are shown in the Load Resource Study Documentation, WP-07-FS-BPA-01A, Section 2.8, Table 2.8.1, *4(h)(10)(C) Power Purchase Amounts*. These results are used as input to the Risk Analysis Study, WP-07-FS-BPA-04, where AURORA market prices are applied to annual net power purchases for each of the 50 water conditions. Water conditions that result in annual net power purchase costs increases are eligible for 4(h)(10)(C) credit.

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LOAD RESOURCE STUDY DOCUMENTATION

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COMMONLY USED ACRONYMS

AC	Alternating Current
AEP	American Electric Power Company, Inc.
AER	Actual Energy Regulation
AFUDC	Allowance for Funds Used During Construction
AGC	Automatic Generation Control
aMW	Average Megawatt
Alcoa	Alcoa Inc.
AMNR	Accumulated Modified Net Revenues
ANR	Accumulated Net Revenues
AOP	Assured Operating Plan
ASC	Average System Cost
Avista	Avista Corporation
BASC	BPA Average System Cost
BiOp	Biological Opinion
BPA	Bonneville Power Administration
Btu	British thermal unit
C&R Discount	Conservation and Renewables Discount
CAISO	California Independent System Operator
CBFWA	Columbia Basin Fish & Wildlife Authority
CCCT	Combined-Cycle Combustion Turbine
CEC	California Energy Commission
CFAC	Columbia Falls Aluminum Company
Cfs	Cubic feet per second
CGS	Columbia Generating Station
COB	California-Oregon Border
COE	U.S. Army Corps of Engineers
Con Aug	Conservation Augmentation
ConMod	Conservation Modernization Program
COSA	Cost of Service Analysis
Council	Northwest Power Planning 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
CT	Combustion Turbine
CY	Calendar Year (Jan-Dec)
DC	Direct Current
DDC	Dividend Distribution Clause
DJ	Dow Jones
DOE	Department of Energy
DOP	Debt Optimization Program
DROD	Draft Record of Decision
DSI	Direct Service Industrial Customer or Direct Service Industry

ECC	Energy Content Curve
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EN	Energy Northwest, Inc.
Energy Northwest, Inc.	Formerly Washington Public Power Supply System (Nuclear)
EPA	Environmental Protection Agency
EPP	Environmentally Preferred Power
EQR	Electric Quarterly Report
ESA	Endangered Species Act
EWEB	Eugene Water & Electric Board
F&O	Financial and Operating Reports
FB CRAC	Financial-Based Cost Recovery Adjustment Clause
FBS	Federal Base System
FCCF	Fish Cost Contingency Fund
FCRPS	Federal Columbia River Power System
FCRTS	Federal Columbia River Transmission System
FERC	Federal Energy Regulatory Commission
FERC SR	Federal Energy Regulatory Commission Special Rule
FELCC	Firm Energy Load Carrying Capability
Fifth Power Plan	Council's Fifth Northwest Conservation and Electric Power Plan
FPA	Federal Power Act
FPS	Firm Power Products and Services (rate)
FY	Fiscal Year (Oct-Sep)
GAAP	Generally Accepted Accounting Principles
GCPs	General Contract Provisions
GEP	Green Energy Premium
GI	Generation Integration
GSR	Generation Supplied Reactive and Voltage Control
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
ICNU	Industrial Customers of Northwest Utilities
ICUA	Idaho Consumer-Owned Utilities Association, Inc.
IOU	Investor-Owned Utility
IP	Industrial Firm Power (rate)
IP TAC	Industrial Firm Power Targeted Adjustment Charge
IPC	Idaho Power Company
ISO	Independent System Operator
JP	Joint Party

JP1	Cowlitz County Public Utility District, Northwest Requirements Utilities and Members, Western Public Agencies Group and Members, Public Power Council, Industrial Customers of Northwest Utilities
JP2	Grant County Public Utility District No. 2, Benton County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma, Western Public Agencies Group and Members, Western Public Agencies Group and Members(Grays Harbor)
JP3	Benton County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Grant County Public Utilities District No. 2, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, Western Public Agencies Group and Members (Grays Harbor)
JP4	Cowlitz County Public Utility District, Eugene Water & Electric Board, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma, Grant County Public Utility District No. 2
JP5	Benton County Public Utility District, Cowlitz County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Grant County Public Utilities District No. 2, Northwest Requirements Utilities and Members, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma, specified members of WA[1]
JP6	Avista Corporation, Idaho Power Corporation, PacifiCorp, Portland General Electric Company, Puget Sound Energy, Inc.
JP7	NONE
JP8	Northwest Energy Coalition, Save Our *Wild* Salmon
JP9	Alcoa, Inc., Industrial Customers of Northwest Utilities, Public Power Council, Northwest Requirements Utilities and Members, Pacific Northwest Generating Cooperative and Members, PacifiCorp, Western Public Agencies Group and Members, Avista Corporation, Portland General Electric Company

[1] The members of Western Public Agencies Group and Members (WA) that are participating in the JP5 designation include: Benton REA, the cities of Ellensburg and Milton, the towns of Eatonville and Steilacoom, Washington, Alder Mutual Light Co., Elmhurst Mutual Power and Light Co., Lakeview Light and Power Co., Parkland Light and Water Co., Peninsula Light Co., the Public Utility Districts of Grays Harbor, Kittitas, Lewis and Mason Counties, the Public Utility District No. 3 of Mason County, and the Public Utility District No. 2 of Pacific County, Washington.

JP10	Alcoa, Inc., Cowlitz County Public Utility District, Industrial Customers of Northwest Utilities
JP11	Cowlitz County Public Utility District, Eugene Water & Electric Board, Grant County Public Utilities District No. 2, Pacific Northwest Generating Cooperative and Members, Pend Oreille County Public Utility District No. 1, Seattle City Light, City of Tacoma
JP12	Alcoa, Inc., Industrial Customers of Northwest Utilities, Public Power Council, Western Public Agencies Group and Members, Northwest Requirements Utilities and Members, Pacific Northwest Generating Cooperative and Members
JP13	Columbia River Inter-Tribal Fish Commission, Confederated Tribes and Bands of the Yakama Nation, Nez Perce Tribe
JP14	Benton County Public Utility District, Cowlitz County Public Utility District, Eugene Water & Electric Board, Franklin County Public Utility District No. 1, Grant County Public Utilities District No. 2, Industrial Customers of Northwest Utilities, Northwest Requirements Utilities and Members , Public Power Council, Seattle City Light, City of Tacoma, Western Public Agencies Group and Members, Springfield Utility Board, Pacific Northwest Generating Cooperative and Members
JP15	Calpine Corporation, Northwest Independent Power Producers Coalition, PPM Energy, Inc., TransAlta Centralia Generation, LLC
kAf	Thousand Acre Feet
kcfs	kilo (thousands) of cubic feet per second
ksfd	thousand second foot day
kV	Kilovolt (1000 volts)
kW	Kilowatt (1000 watts)
kWh	Kilowatt-hour
LB CRAC	Load-Based Cost Recovery Adjustment Clause
LCP	Least-Cost Plan
LDD	Low Density Discount
LLH	Light Load Hour
LOLP	Loss of Load Probability
m/kWh	Mills per kilowatt-hour
MAC	Market Access Coalition Group
MAf	Million Acre Feet
MCA	Marginal Cost Analysis
Mid-C	Mid-Columbia
MIP	Minimum Irrigation Pool
MMBTUMMBtu	Million British Thermal Units
MNR	Modified Net Revenues
MOA	Memorandum of Agreement
MOP	Minimum Operating Pool

MORC	Minimum Operating Reliability Criteria
MT	Market Transmission (rate)
MVAr	Mega Volt Ampere Reactive
MW	Megawatt (1 million watts)
MWh	Megawatt-hour
NCD	Non-coincidental Demand
NWEC	Northwest Energy Coalition
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Council
NF	Nonfirm Energy (rate)
NFB Adjustment	National Marine Fisheries Service (NMFS) Federal Columbia River Power System (FCRPS) Biological Opinion (BiOp) Adjustment
NLSL	New Large Single Load
NMFS	National Marine Fisheries Service
NOAA Fisheries	National Oceanographic and Atmospheric Administration Fisheries
NOB	Nevada-Oregon Border
NORM	Non-Operating Risk Model
Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NPA	Northwest Power Act
NPCC	Northwest Power and Conservation Council
NPV	Net Present Value
NR	New Resource
NR (rate)	New Resource Firm Power (rate)
NRU	Northwest Requirements Utilities
NTSA	Non-Treaty Storage Agreement
NUG	Non-Utility Generation
NWPP	Northwest Power Pool
NWPPC	Northwest Power Planning Council
OATT	Open Access Transmission Tariff
O&M	Operation and Maintenance
OMB	Office of Management and Budget
OPUC	Oregon Public Utility Commission
ORC	Operating Reserves Credit
OY	Operating Year (Aug-Jul)
PA	Public Agency
PacifiCorp	PacifiCorp
PBL	Power Business Line
PDP	Proportional Draft Points
PF	Priority Firm Power (rate)
PFR	Power Function Review
PGE	Portland General Electric Company
PGP	Public Generating Pool
PMA	Power Marketing Agencies

PNCA	Pacific Northwest Coordination Agreement
PNGC	Pacific Northwest Generating Cooperative
PNRR	Planned Net Revenues for Risk
PNW	Pacific Northwest
POD	Point of Delivery
POI	Point of Integration/Point of Interconnection
POM	Point of Metering
PPC	Public Power Council
PPLM	PP&L Montana, LLC
Project Act	Bonneville Project Act
PSA	Power Sales Agreement
PSC	Power Sales Contract
PSE	Puget Sound Energy
PSW	Pacific Southwest
PTP	Point-to-Point Transmission
PUD	Public or People's Utility District
RAM	Rate Analysis Model (computer model)
RAS	Remedial Action Scheme
Reclamation	Bureau of Reclamation
Renewable Northwest	Renewable Northwest Project
RD	Regional Dialogue
REP	Residential Exchange Program
RFP	Request for Proposal
RiskMod	Risk Analysis Model (computer model)
RiskSim	Risk Simulation Model
RL	Residential Load (rate)
RMS	Remote Metering System
ROD	Record of Decision
RPSA	Residential Purchase and Sale Agreement
RTO	Regional Transmission Operator
SCCT	Single-Cycle Combustion Turbine
Slice	Slice of the System (product)
SME	Subject Matter Expert
SN CRAC	Safety-Net Cost Recovery Adjustment Clause
SOS	Save Our *Wild* Salmon
SUB	Springfield Utility Board
SUMY	Stepped-Up Multiyear
SWPA	Southwestern Power Administration
TAC	Targeted Adjustment Charge
TBL	Transmission Business Line
Tcf	Trillion Cubic Feet
TPP	Treasury Payment Probability
Transmission System Act	Federal Columbia River Transmission System Act
TRL	Total Retail Load
Tribes	Columbia River Inter-Tribal Fish Commission, Nez Perce, Yakama Nation, collectively

UAI Charge	Unauthorized Increase Charge
UAMPS	Utah Associated Municipal Power Systems
UDC	Utility Distribution Company
UP&L	Utah Power & Light
URC	Upper Rule Curve
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VOR	Value of Reserves
WAPA	Western Area Power Administration
WECC	Western Electricity Coordinating Council (formally called WSCC)
WMG&T	Western Montana Electric Generating and Transmission Cooperative
WPAG	Western Public Agencies Group
WPRDS	Wholesale Power Rate Development Study
WSCC	Western Systems Coordination Council (now WECC)
WSPP	Western Systems Power Pool
WUTC	Washington Utilities and Transportation Commission
Yakama	Confederated Tribes and Bands of the Yakama Nation

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1. LOAD RESOURCE OVERVIEW

The Load Resouce Documentation presents the load, sales, contract, and resource data necessary for developing BPA wholesale power rates used in the Load Resource Study, WP-07-FS-BPA-01. This data is used to:

(1) Provide base data to determine resource costs for the Revenue Recovery Study, WP-07-FS-BPA-02;
(2) Provide regional hydro data for use in the secondary revenue forecast for the Market Power Study, WP-07-FS-BPA-03;
(3) Provide base data to derive billing determinants for the revenue forecast in the Wholesale Power Rate Development Study (WPRDS), WP-07-FS-BPA-05; and
(4) Provide load and resource data for use in calculating risk in the Risk Analysis Study, WP-07-FS-BPA-04.

2. DOCUMENTATION FOR THE LOAD RESOURCE STUDY

2.1 Federal System Load Obligations

Bonneville Power Administration (BPA) forecasts power sales contracts to three main customer groups: public body and cooperative utilities and Federal agencies (Public Agencies), investor-owned utilities (IOU), and direct service industrial customers (DSI). These power sales contract forecasts, together with additional inter-regional contracts obligations, termed imports, and intra-regional contractual obligations, constitute the Federal system firm load forecast used in BPA's 2007 Wholesale Power Rate Case Final Proposal Load Resource Study, WP-07-FS-BPA-01A. The following tables document the resulting tables methodologies and assumptions employed in developing BPA's sales forecasts are detailed in the following sections of this Documentation.

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2.2 PUBLIC AGENCIES SALES OBLIGATION FORECAST

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Table 2.2.1
PF Full and Partial Service Sales Forecast

	Full Service			Partial Service			
FY	**HLH (aMW)**	**LLH (aMW)**	**GSP (MW)**	**HLH (aMW)**	**LLH (aMW)**	**GSP (MW)**	**Load Variance**
FY2007	1,194	745	3,153	633	443	1,460	3,272
FY2008	1,235	769	3,258	873	494	2,380	3,823
FY2009	1,263	786	3,321	953	512	2,431	3,996
Month	**HLH (MWh)**	**LLH (MWh)**	**GSP (MW)**	**HLH (MWh)**	**LLH (MWh)**	**GSP (MW)**	**Load Variance**
Oct-06	845,171	519,042	2,571	455,691	309,323	1,356	2,241,194
Nov-06	937,457	585,260	2,788	476,065	341,577	1,359	2,461,414
Dec-06	1,072,308	683,907	2,890	497,028	357,909	1,360	2,739,309
Jan-07	1,102,787	673,620	3,153	526,480	364,807	1,460	2,793,643
Feb-07	932,327	603,682	3,048	462,086	342,457	1,435	2,453,611
Mar-07	930,637	588,232	2,629	479,151	349,050	1,347	2,471,184
Apr-07	838,486	535,719	2,354	450,226	312,479	1,251	2,247,683
May-07	763,950	472,128	2,071	440,992	307,054	1,131	2,264,332
Jun-07	715,292	443,889	2,174	418,335	299,226	1,082	2,215,244
Jul-07	758,578	464,506	2,336	453,931	299,521	1,177	2,342,911
Aug-07	772,289	465,313	2,229	440,656	300,872	1,147	2,305,945
Sep-07	793,112	489,441	2,048	440,859	298,579	1,139	2,125,215
Oct-07	888,735	535,695	2,676	468,296	316,246	1,391	2,321,577
Nov-07	970,920	606,136	2,882	489,079	348,945	1,393	2,536,207
Dec-07	1,108,533	706,802	2,988	747,350	384,317	2,294	3,319,063
Jan-08	1,139,955	696,236	3,258	824,765	412,235	2,380	3,374,007
Feb-08	971,202	626,863	3,146	708,197	397,146	2,359	2,994,166
Mar-08	953,398	616,219	2,717	726,973	385,556	2,122	2,968,458
Apr-08	872,938	545,470	2,432	650,618	353,194	1,916	2,704,869
May-08	790,981	488,224	2,136	616,695	345,262	1,693	2,683,196
Jun-08	736,041	466,001	2,245	579,542	331,143	1,518	2,621,455
Jul-08	793,944	476,039	2,415	619,208	364,802	1,601	2,779,230
Aug-08	795,559	488,303	2,303	619,069	356,680	1,570	2,738,469
Sep-08	825,305	498,962	2,118	614,474	344,905	1,594	2,539,788
Oct-08	906,388	546,701	2,728	676,798	342,738	2,079	2,740,069
Nov-08	981,687	627,377	2,939	741,040	387,356	2,203	3,029,061
Dec-08	1,140,035	712,011	3,046	838,120	394,146	2,344	3,383,209
Jan-09	1,162,858	710,421	3,321	839,202	424,329	2,431	3,437,645
Feb-09	982,795	636,896	3,212	724,634	405,273	2,410	3,037,709
Mar-09	971,939	628,757	2,770	746,781	394,889	2,167	3,023,363
Apr-09	889,715	556,380	2,480	664,933	360,463	1,957	2,753,962
May-09	801,124	505,361	2,178	630,623	351,721	1,730	2,730,003
Jun-09	758,744	470,554	2,289	595,497	334,825	1,549	2,669,071
Jul-09	812,401	487,024	2,463	628,814	376,036	1,633	2,829,446
Aug-09	813,472	499,295	2,349	632,385	364,074	1,602	2,787,949
Sep-09	841,106	508,762	2,160	627,603	351,945	1,627	2,585,618

Table 2.2.2
PF Block/Slice Block Sales Forecast

FY	Block			Slice Block			Load Variance
	HLH (aMW)	LLH (aMW)	GSP (MW)	HLH (aMW)	LLH (aMW)	GSP (MW)	
FY2007	633	378	1,513	683	530	1,579	0
FY2008	424	256	1,514	686	528	1,579	0
FY2009	368	248	850	685	527	1,579	0

Month	HLH (MWh)	LLH (MWh)	GSP (MW)	HLH (MWh)	LLH (MWh)	GSP (MW)	Load Variance
Oct-06	384,800	231,287	1,033	517,088	408,947	1,243	0
Nov-06	471,216	281,376	1,268	569,264	429,376	1,387	0
Dec-06	578,128	339,464	1,513	634,504	514,232	1,544	0
Jan-07	557,936	345,880	1,458	672,011	502,765	1,579	0
Feb-07	500,736	302,976	1,437	588,672	441,504	1,533	0
Mar-07	516,240	306,384	1,347	604,368	436,488	1,399	0
Apr-07	468,800	277,530	1,268	475,200	379,083	1,188	0
May-07	511,920	329,424	1,310	340,873	263,635	922	0
Jun-07	406,848	238,944	1,022	326,618	249,178	966	0
Jul-07	401,024	245,480	1,006	320,451	280,496	994	0
Aug-07	376,704	211,536	908	440,330	327,034	1,179	0
Sep-07	369,024	203,216	983	494,804	407,356	1,253	0
Oct-07	404,222	181,610	1,268	536,224	389,811	1,243	0
Nov-07	492,247	205,472	1,514	569,264	429,376	1,387	0
Dec-07	372,246	207,232	850	634,504	514,232	1,544	0
Jan-08	296,576	198,304	847	672,011	502,765	1,579	0
Feb-08	285,600	187,664	847	612,096	454,032	1,533	0
Mar-08	299,104	200,080	847	582,928	457,928	1,399	0
Apr-08	292,864	194,829	798	493,312	360,971	1,188	0
May-08	295,920	205,248	808	340,873	263,635	922	0
Jun-08	266,000	187,200	708	311,946	263,850	966	0
Jul-08	266,688	180,024	658	335,560	265,387	994	0
Aug-08	226,720	155,144	580	422,234	345,130	1,179	0
Sep-08	222,480	147,584	593	514,192	387,968	1,253	0
Oct-08	223,344	148,362	623	536,224	389,811	1,243	0
Nov-08	254,192	177,008	768	547,963	450,677	1,387	0
Dec-08	305,840	198,856	829	658,208	490,528	1,544	0
Jan-09	296,576	198,304	850	672,011	502,765	1,579	0
Feb-09	275,328	181,728	850	588,672	442,872	1,533	0
Mar-09	299,104	200,080	850	582,928	457,928	1,399	0
Apr-09	292,864	194,829	798	493,312	360,971	1,188	0
May-09	291,456	209,320	824	326,994	277,514	922	0
Jun-09	270,400	182,704	693	326,618	249,178	966	0
Jul-09	266,688	180,024	658	335,560	265,387	994	0
Aug-09	226,720	155,144	580	422,234	345,130	1,179	0
Sep-09	222,480	147,584	593	514,192	387,968	1,253	0

Table 2.2.3
Full Service Customers

Albion, City of	Fairchild AFB	Peninsula Light Company
Alder Mutual	Farmers Elec Coop	Plummer, City of
Ashland, City of	Ferry County PUD #1	Port Angeles, City of
Asotin County PUD #1	Forest Grove, City of	Port of Seattle
Bandon, City of	Harney Elec Coop	Puget Sound Naval Shipyard (Bremerton)
Benton REA	Hermiston, City of	Richland, City of
Big Bend Elec Coop	Heyburn, City of	Riverside Elec Coop
Blaine, City of	Hood River Elec Coop	Rupert, City of
Bonners Ferry, City of	Idaho County L & P	Salem Elec Coop
Burley, City of	Inland P & L	Skamania County PUD #1
Canby, City of	Kittitas County PUD #1	Soda Springs, City of
Cascade Locks, City of	Kootenai Electric Coop	Southern MT G&T
Central MT Elec Power Coop	Lakeview L & P (WA)	Southside Elec Lines
Centralia, City of	Lewis County PUD #1	Steilacoom, Town of
Cheney, City of	Lower Valley P & L	Sumas, Town of
Chewelah, City of	Mason County PUD #1	Surprise Valley Elec Coop
Clallam County PUD #1	Mason County PUD #3	Tanner Elec Coop
Columbia Basin Elec Coop	McCleary, City of	Tillamook PUD #1
Columbia Power Coop	Midstate Elec Coop	U.S. Bureau of Mines
Columbia REA	Milton Freewater, City of	U.S. Naval Station, Everett (Jim Creek)
Columbia River PUD	Milton, Town of	U.S. Naval Submarine Base, (Bangor)
Consol Irrig Dist #19	Minidoka, City of	Umpqua Indian Utility Cooperative
Coulee Dam, City of	Modern Elec Coop	United Electric Coop
Declo, City of	Monmouth, City of	USBIA Wapato
Drain, City of	Nespelem Valley Elec Coop	USDOE-Richland
East End Mutual Electric	Northern Wasco County PUD	Vera Irrigation District
Eatonville, City of	Ohop Mutual Light Company	Wahkiakum County PUD #1
Ellensburg, City of	Orcas P & L	Wasco Elec Coop
Elmhurst Mutual P & L	Oregon Trail Coop	Whatcom County PUD #1
Emerald County PUD	Pacific County PUD #2	Weiser, City of
Energy Northwest	Parkland L & W	Yakama Power

Table 2.2.4
Partial Service Customers

Central Lincoln Co PUD	Flathead Elec Coop	Springfield Uitlity Board
Clark Public Utilities	Klickitat Co PUD	Wells Rural Elec. Coop
Cowlitz Co PUD	McMinnville	

Table 2.2.5
Slice/Slice Block Service Customers

Benton Co PUD	Fall River Elec Coop	Okanogan Co PUD
Blachly-Lane Elec Coop	Franklin Co PUD	Pend Oreille Co PUD
Central Electric Coop	Grays Harbor Co PUD	Raft River Rural Elec Coop
Clatskanie Co PUD	Idaho Falls Power	Salmon River Elec Coop
Clearwater Power	Lane Electric Coop	Seattle City Light
Consumers Power	Lost River Elec Coop	Snohomish Co PUD
Coos-Curry Elec Coop	Northern Lights Elec Coop	Umatilla Elec Coop
Douglas Electric Coop	Okanogan Elec Coop	West Oregon Elec Coop
Eugene Water & Elec Board		

Table 2.2.6
PF Block Service Customers

Grant Co PUD	Tacoma Public Utilities	

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ENERGY ANALYSIS

2.3 FEDERAL SYSTEM LOAD RESOURCE BALANCE-ENERGY ANALYSIS
Monthly Energy in Average Megawatts

Table 2.3.1 FY 2007 Loads and Resources-Federal System 10
Table 2.3.2 FY 2008 Loads and Resources-Federal System 11
Table 2.3.3 FY 2009 Loads and Resources-Federal System 12

Table 2.3.1

Loads and Resources - Federal System
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Non-Utility Obligations															
Fed. Agencies 2002 PSC	114	131	142	145	139	128	114	114	110	111	121	122	122	111	124
USBR 2002 PSC	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
DSI 2002 PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Firm Non-Utility Obligations	208	145	173	215	218	178	320	356	400	398	431	375	382	330	284
Transfers Out															
NGP 2002 PSC	2,669	3,037	3,370	3,428	3,317	2,969	2,800	2,792	2,777	2,887	3,010	2,935	2,935	2,653	2,987
GPU 2002 PSC	2,239	2,628	2,901	2,934	2,878	2,672	2,374	2,368	2,151	1,898	1,867	1,989	1,989	2,186	2,393
NGP 2002 Slice PSC	583	665	648	510	532	561	537	485	518	690	670	690	592	555	590
GPU 2002 Slice PSC	971	1,107	1,079	849	885	935	894	807	862	1,148	1,116	1,150	986	925	983
IOU 2002 PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports	636	632	645	642	640	630	643	644	677	680	676	669	669	661	653
Regional Transfers (Out)	308	609	622	619	564	411	380	378	184	244	243	214	214	253	387
Federal Diversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Transfers Out	7,407	8,677	9,265	8,982	8,815	8,179	7,627	7,473	7,168	7,547	7,584	7,647	7,387	7,233	7,994
Total Firm Obligations	7,615	8,823	9,439	9,197	9,034	8,357	7,947	7,829	7,568	7,945	8,015	8,022	7,768	7,563	8,278
Hydro Resources															
Regulated Hydro	6,105	7,074	6,956	5,379	5,650	5,876	5,595	4,917	5,822	8,064	7,309	7,548	6,362	5,865	6,359
Independent Hydro	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356
Operational Peaking Adj.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Fed CER (Canada)	136	136	136	136	136	136	132	132	132	132	132	132	132	132	134
Total Hydro Resources	6,577	7,480	7,297	5,659	5,938	6,244	6,115	5,521	6,619	8,897	7,851	8,037	6,854	6,365	6,849
Other Resources															
Small Thermal & Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combustion Turbines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewables	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports	250	318	377	300	255	224	227	187	102	123	154	134	134	165	217
Regional Transfers (In)	591	637	571	221	209	187	183	183	177	184	169	194	194	227	296
Large Thermal	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877
Non-Utility Generation	62	79	80	76	70	97	100	100	95	81	68	71	69	53	78
Augmentation Purchases	179	179	179	179	179	179	179	179	179	179	179	179	179	179	179
Augmentation Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Resources	2,103	2,237	2,233	1,804	1,740	1,713	1,715	1,674	929	746	1,589	1,598	1,596	1,645	1,669
Total Resources	8,679	9,718	9,530	7,463	7,678	7,957	7,830	7,195	7,548	9,643	9,440	9,635	8,451	8,010	8,518
Reserves & Maintenance															
Hydro Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small Thermal & Misc. Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contract Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Hydro Maint.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinning Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Trans. Losses	-245	-274	-269	-210	-217	-224	-221	-203	-213	-272	-266	-272	-238	-226	-240
Total Reserves, Maintenance & Losse	-245	-274	-269	-210	-217	-224	-221	-203	-213	-272	-266	-272	-238	-226	-240
Total Net Resources	8,435	9,444	9,261	7,252	7,461	7,732	7,609	6,992	7,336	9,371	9,174	9,363	8,212	7,784	8,278
Total Firm Surplus/Deficit	820	621	-177	-1,945	-1,572	-625	-338	-836	-233	1,426	1,159	1,341	444	221	0

Table 2.3.2

Loads and Resources - Federal System
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Non-Utility Obligations															
Fed. Agencies 2002 PSC	119	137	149	152	146	134	119	119	115	116	126	128	128	116	130
USBR 2002 PSC	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
DSI 2002 PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Firm Non-Utility Obligations	213	151	180	222	225	184	325	361	405	403	437	380	387	335	290
Transfers Out															
NGP 2002 PSC	2,744	3,105	3,441	3,500	3,353	3,030	2,855	2,847	2,828	2,940	3,066	2,988	2,989	2,705	3,046
GPU 2002 PSC	2,209	2,562	2,799	2,829	2,756	2,601	2,333	2,327	1,966	1,885	1,894	2,012	2,012	2,195	2,337
NGP 2002 Slice PSC	584	666	650	511	533	563	538	486	573	760	679	699	600	557	603
GPU 2002 Slice PSC	973	1,110	1,082	851	887	937	896	809	954	1,266	1,130	1,164	999	928	1,004
IOU 2002 PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports	635	629	643	640	638	627	641	633	661	661	659	638	636	632	642
Regional Transfers (Out)	308	609	622	619	557	411	379	379	184	244	243	214	214	253	387
Federal Diversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Transfers Out	7,453	8,681	9,236	8,950	8,724	8,169	7,643	7,481	7,166	7,755	7,671	7,715	7,450	7,270	8,018
Total Firm Obligations	7,667	8,832	9,416	9,172	8,949	8,353	7,967	7,842	7,570	8,158	8,108	8,096	7,837	7,605	8,308
Hydro Resources															
Regulated Hydro	6,120	7,090	6,971	5,393	5,662	5,891	5,609	4,931	5,840	8,082	7,407	7,636	6,437	5,869	6,386
Independent Hydro	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356
Operational Peaking Adj.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Fed CER (Canada)	132	132	132	132	132	132	130	130	130	130	130	130	130	130	131
Total Hydro Resources	6,588	7,492	7,309	5,669	5,947	6,255	6,128	5,533	6,635	8,914	7,947	8,123	6,928	6,367	6,873
Other Resources															
Small Thermal & Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combustion Turbines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewables	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports	200	268	326	299	254	225	225	173	83	101	132	109	111	145	195
Regional Transfers (In)	216	262	197	221	202	187	183	183	177	184	169	194	194	227	202
Large Thermal	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Non-Utility Generation	62	79	80	76	70	97	100	100	95	81	68	71	69	53	77
Augmentation Purchases	179	179	179	179	179	179	179	179	179	179	179	179	179	179	179
Augmentation Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Resources	1,679	1,813	1,809	1,804	1,732	1,714	1,712	1,661	1,556	1,557	1,568	1,573	1,574	1,625	1,676
Total Resources	8,267	9,305	9,118	7,473	7,679	7,969	7,840	7,194	8,191	10,471	9,515	9,696	8,502	7,992	8,550
Reserves & Maintenance															
Hydro Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small Thermal & Misc. Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contract Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Hydro Maint.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinning Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Trans. Losses	-233	-262	-257	-211	-217	-225	-221	-203	-231	-295	-268	-273	-240	-225	-241
Total Reserves, Maintenance & Losse	-233	-262	-257	-211	-217	-225	-221	-203	-231	-295	-268	-273	-240	-225	-241
Total Net Resources	8,034	9,043	8,861	7,262	7,462	7,744	7,619	6,991	7,960	10,175	9,247	9,423	8,262	7,766	8,308
Total Firm Surplus/Deficit	367	210	-555	-1,910	-1,486	-609	-348	-851	389	2,017	1,139	1,327	425	161	0

Table 2.3.3

Loads and Resources - Federal System
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Non-Utility Obligations															
Fed. Agencies 2002 PSC	129	149	162	164	158	145	129	128	124	126	136	138	138	125	140
USBR 2002 PSC	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
DSI 2002 PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Firm Non-Utility Obligations	223	163	193	235	237	195	334	371	414	412	446	390	397	344	301
Transfers Out															
NGP 2002 PSC	2,769	3,135	3,474	3,533	3,420	3,058	2,881	2,872	2,852	2,964	3,092	3,014	3,014	2,728	3,076
GPU 2002 PSC	2,223	2,579	2,816	2,847	2,809	2,624	2,349	2,343	1,980	1,899	1,910	2,027	2,027	2,210	2,356
NGP 2002 Slice PSC	586	668	651	513	535	564	546	494	527	707	700	703	602	550	598
GPU 2002 Slice PSC	976	1,113	1,085	854	890	940	909	823	878	1,178	1,166	1,170	1,002	916	996
IOU 2002 PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports	578	572	582	579	578	571	591	590	618	620	614	713	712	710	610
Regional Transfers (Out)	308	609	622	619	564	411	379	379	184	244	243	214	214	253	387
Federal Diversity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Transfers Out	7,441	8,675	9,230	8,945	8,794	8,168	7,653	7,501	7,040	7,613	7,725	7,840	7,572	7,366	8,023
Total Firm Obligations	7,664	8,839	9,422	9,179	9,032	8,364	7,987	7,871	7,454	8,026	8,171	8,230	7,969	7,710	8,324
Hydro Resources															
Regulated Hydro	6,124	7,096	6,976	5,397	5,666	5,895	5,674	5,004	5,913	8,253	7,643	7,778	6,557	5,878	6,445
Independent Hydro	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356
Operational Peaking Adj.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Fed CER (Canada)	130	130	130	130	130	130	137	137	137	137	137	137	137	137	133
Total Hydro Resources	6,590	7,496	7,312	5,671	5,949	6,257	6,199	5,613	6,714	9,091	8,190	8,272	7,054	6,382	6,935
Other Resources															
Small Thermal & Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combustion Turbines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewables	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports	182	251	304	278	233	204	203	173	83	101	132	109	111	145	184
Regional Transfers (In)	216	262	197	221	209	187	183	183	177	179	159	184	184	217	199
Large Thermal	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877
Non-Utility Generation	62	79	80	76	70	97	100	100	95	81	68	71	69	53	78
Augmentation Purchases	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
Augmentation Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Resources	1,752	1,886	1,878	1,873	1,809	1,783	1,781	1,751	1,001	809	1,649	1,654	1,654	1,706	1,631
Total Resources	8,342	9,382	9,190	7,544	7,758	8,040	7,981	7,364	7,715	9,900	9,839	9,925	8,708	8,088	8,566
Reserves & Maintenance															
Hydro Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small Thermal & Misc. Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contract Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Hydro Maint.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinning Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Trans. Losses	-235	-265	-259	-213	-219	-227	-225	-208	-218	-279	-277	-280	-246	-228	-242
Total Reserves, Maintenance & Losse	-235	-265	-259	-213	-219	-227	-225	-208	-218	-279	-277	-280	-246	-228	-242
Total Net Resources	8,107	9,118	8,931	7,331	7,539	7,814	7,756	7,156	7,498	9,621	9,561	9,645	8,463	7,860	8,324
Total Firm Surplus/Deficit	443	279	-491	-1,848	-1,492	-550	-231	-715	44	1,595	1,390	1,415	494	150	0

ENERGY ANALYSIS

2.4 FEDERAL LOAD RESOURCE STUDY-ENERGY ANALYSIS
Monthly Energy in Average Megawatts
For FY 2007 through 2009

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Table A-2: Federal Exports
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Exports East of Continental Divide															
1 BPA to Other Entities	74	83	96	93	91	81	65	65	65	65	75	73	73	67	77
2 Total Exports to ECD	74	83	96	93	91	81	65	65	65	65	75	73	73	67	77
Exports to Pacific Southwest															
3 BPA to BURB C/N/X	4	3	3	3	3	3	3	3	4	5	5	5	5	5	4
4 BPA to GLEN C/N/X	4	3	3	3	3	3	3	3	5	6	6	6	6	6	4
5 BPA to PASA C/N/X	3	2	2	2	2	2	2	2	3	4	3	4	4	3	3
6 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1
7 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
8 BPA to RVSD CapS	0	5	5	5	5	5	4	5	7	0	0	0	0	0	3
9 BPA to RVSD C/N/X	7	0	0	0	0	0	0	0	0	7	7	7	7	6	3
10 BPA to RVSD C/N/X	11	3	3	3	3	3	3	3	0	0	11	11	11	10	5
11 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	26	26	0	0	0	0	4
12 BPA NW-SW Intertie Losses	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1
13 Total Exports To PSW	29	16	15	16	15	16	14	16	48	51	38	39	39	36	28
Exports to Inland Southwest															
14 BPA to SPP PwrS	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
15 Total Exports To ISW	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
Exports to Canada															
16 BPA to BCHP CanEnt	489	489	489	489	489	489	489	489	489	489	489	483	483	483	488
17 Total Exports To Canada	489	489	489	489	489	489	489	489	489	489	489	483	483	483	488
Exports to Other Entities															
18 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
19 Federal System	636	632	645	642	640	630	643	644	677	680	676	669	669	661	653

Table A-2: Federal Exports
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Exports East of Continental Divide															
1 BPA to Other Entities	77	86	100	96	95	84	67	67	67	67	78	75	75	69	80
2 Total Exports to ECD	77	86	100	96	95	84	67	67	67	67	78	75	75	69	80
Exports to Pacific Southwest															
3 BPA to BURB C/N/X	4	3	3	3	3	3	3	0	0	0	0	0	0	0	2
4 BPA to GLEN C/N/X	4	3	3	3	3	3	3	0	0	0	0	0	0	0	2
5 BPA to PASA C/N/X	3	2	2	2	2	2	2	0	0	0	0	0	0	0	1
6 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1
7 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
8 BPA to RVSD CapS	0	5	5	5	5	5	5	5	7	0	0	0	0	0	3
9 BPA to RVSD C/N/X	7	0	0	0	0	0	0	0	0	7	7	7	6	7	3
10 BPA to RVSD C/N/X	11	3	3	3	3	3	3	3	0	0	11	11	9	11	5
11 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	25	26	0	0	0	0	4
12 BPA NW-SW Intertie Losses	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1
13 Total Exports To PSW	30	16	15	16	15	15	16	8	36	36	23	23	21	23	21
Exports to Inland Southwest															
14 BPA to SPP PwrS	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
15 Total Exports To ISW	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
Exports to Canada															
16 BPA to BCHP CanEnt	483	483	483	483	483	483	483	483	483	483	483	465	465	465	480
17 Total Exports To Canada	483	483	483	483	483	483	483	483	483	483	483	465	465	465	480
Exports to Other Entities															
18 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
19 Federal System	635	629	643	640	638	627	641	633	661	661	659	638	636	632	642

Table A-2: Federal Exports
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Exports East of Continental Divide															
1 BPA to Other Entities	50	55	64	62	60	54	43	43	43	43	51	49	49	45	51
2 Total Exports to ECD	50	55	64	62	60	54	43	43	43	43	51	49	49	45	51
Exports to Pacific Southwest															
3 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1
4 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
5 BPA to RVSD CapS	0	4	5	5	5	5	5	5	6	0	0	0	0	0	3
6 BPA to RVSD C/N/X	7	0	0	0	0	0	0	0	0	7	7	7	6	7	3
7 BPA to RVSD C/N/X	11	3	3	3	3	3	3	3	0	0	11	10	10	11	5
8 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	25	26	0	0	0	0	4
9 BPA NW-SW Intertie Losses	1	0	0	0	0	0	0	0	1	1	1	1	1	1	0
10 Total Exports To PSW	19	7	8	8	8	8	8	8	35	37	23	22	22	23	17
Exports to Inland Southwest															
11 BPA to SPP PwrS	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
12 Total Exports To ISW	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
Exports to Canada															
13 BPA to BCHP CanEnt	465	465	465	465	465	465	465	465	465	465	465	567	567	567	482
14 Total Exports To Canada	465	465	465	465	465	465	465	465	465	465	465	567	567	567	482
Exports to Other Entities															
15 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
16 Federal System	578	572	582	579	578	571	591	590	618	620	614	713	712	710	610

Table A-3: Federal Regulated Hydro Projects
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
6/22/2006
1937 Water Year
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Regulated Hydro Projects															
1 Albeni Falls	36	24	16	17	14	16	18	18	27	44	39	24	19	26	25
2 Bonneville	455	523	548	432	473	462	399	171	205	376	210	209	138	442	382
3 Chief Joseph	995	1,272	1,177	884	891	912	908	884	824	1,344	1,332	1,534	1,291	897	1,070
4 Dworshak	51	51	51	51	50	51	51	53	66	289	440	439	413	179	146
5 Grand Coulee	1,879	2,380	2,138	1,594	1,600	1,570	1,479	1,398	1,416	2,532	2,534	2,882	2,377	1,660	1,948
6 Hungry Horse	85	89	90	92	92	88	67	28	29	31	129	88	74	75	77
7 Ice Harbor	146	99	140	124	149	177	193	219	317	250	136	93	83	144	165
8 John Day	777	920	902	694	759	813	845	708	768	990	783	793	682	742	805
9 Libby	90	89	157	86	85	84	84	83	303	265	437	279	223	119	171
10 Little Goose	148	101	141	128	138	173	207	240	352	274	158	117	106	157	175
11 Lower Granite	144	100	141	128	138	172	146	203	356	255	98	87	85	162	163
12 Lower Monumental	149	99	143	127	153	183	111	143	293	219	112	88	86	151	153
13 McNary	537	605	593	453	496	518	457	286	351	527	380	387	332	517	476
14 The Dalles	614	722	720	569	611	658	632	483	516	668	523	528	454	594	604
Total Regulated Hydro w/Enc.	6,105	7,074	6,956	5,379	5,650	5,876	5,595	4,917	5,822	8,064	7,309	7,548	6,362	5,865	6,359
Total Regulated Hydro w/Enc.															
15 Federal System	6,105	7,074	6,956	5,379	5,650	5,876	5,595	4,917	5,822	8,064	7,309	7,548	6,362	5,865	6,359

Table A-3: Federal Regulated Hydro Projects
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
6/22/2006
1937 Water Year
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Regulated Hydro Projects															
1 Albeni Falls	36	24	16	17	14	16	18	18	27	44	39	24	19	26	25
2 Bonneville	457	524	550	434	474	464	400	172	205	377	210	209	138	442	383
3 Chief Joseph	996	1,274	1,179	885	892	913	909	885	825	1,346	1,333	1,536	1,292	898	1,071
4 Dworshak	51	51	51	51	50	51	51	53	66	289	440	439	413	179	146
5 Grand Coulee	1,884	2,386	2,144	1,599	1,604	1,574	1,482	1,402	1,420	2,537	2,540	2,887	2,381	1,663	1,952
6 Hungry Horse	85	89	90	92	92	88	67	28	29	31	129	88	74	75	77
7 Ice Harbor	147	99	140	125	150	179	194	220	318	251	137	93	83	144	165
8 John Day	778	921	903	695	761	815	846	709	769	991	784	793	682	742	806
9 Libby	90	89	157	86	85	84	84	83	303	265	437	279	223	119	171
10 Little Goose	149	102	141	129	138	174	208	241	355	276	160	117	106	157	176
11 Lower Granite	144	100	141	128	138	173	147	204	359	257	100	87	85	162	164
12 Lower Monumental	150	100	143	127	153	184	112	145	296	221	113	88	86	151	155
13 McNary	538	607	595	454	497	519	458	286	352	528	462	468	402	517	490
14 The Dalles	615	724	721	570	613	659	634	484	517	670	524	528	454	594	605
Total Regulated Hydro w/Enc.	6,120	7,090	6,971	5,393	5,662	5,891	5,609	4,931	5,840	8,082	7,407	7,636	6,437	5,869	6,386
Total Regulated Hydro w/Enc.															
15 Federal System	6,120	7,090	6,971	5,393	5,662	5,891	5,609	4,931	5,840	8,082	7,407	7,636	6,437	5,869	6,386

Table A-3: Federal Regulated Hydro Projects
PNW Loads and Resource Study
2008 - 2009 Fiscal Years 6/22/2006
1937 Water Year
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Regulated Hydro Projects															
1 Albeni Falls	36	24	16	17	14	16	18	18	27	44	39	24	19	26	25
2 Bonneville	457	524	550	434	474	464	400	172	205	377	210	209	138	442	383
3 Chief Joseph	997	1,275	1,180	886	893	914	910	886	826	1,347	1,335	1,539	1,294	899	1,072
4 Dworshak	51	51	51	51	50	51	51	53	66	289	440	439	413	179	146
5 Grand Coulee	1,887	2,390	2,148	1,602	1,607	1,577	1,485	1,404	1,423	2,540	2,544	2,893	2,385	1,665	1,956
6 Hungry Horse	85	89	90	92	92	88	67	28	29	31	129	88	74	75	77
7 Ice Harbor	147	99	140	125	150	179	194	220	318	251	137	93	83	144	165
8 John Day	778	921	903	695	761	815	846	709	769	991	784	793	682	742	806
9 Libby	90	89	157	86	85	84	84	83	303	265	437	279	223	119	171
10 Little Goose	149	102	141	129	138	174	208	241	355	314	226	166	150	157	189
11 Lower Granite	144	100	141	128	138	173	147	204	359	299	226	166	151	162	184
12 Lower Monumental	150	100	143	127	153	184	174	215	365	307	232	166	151	151	189
13 McNary	538	607	595	454	497	519	458	286	352	528	382	395	339	521	478
14 The Dalles	615	724	721	570	613	659	634	484	517	670	524	528	454	594	605
Total Regulated Hydro w/Enc.	6,124	7,096	6,976	5,397	5,666	5,895	5,674	5,004	5,913	8,253	7,643	7,778	6,557	5,878	6,445
Total Regulated Hydro w/Enc.															
15 Federal System	6,124	7,096	6,976	5,397	5,666	5,895	5,674	5,004	5,913	8,253	7,643	7,778	6,557	5,878	6,445

Table A-4: Federal Independent Hydro Projects

PNW Loads and Resource Study

2006 - 2007 Fiscal Years 6/22/2006

1937 Water Year

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Independent Hydro Projects															
1 Anderson Ranch	4	5	11	16	16	5	25	27	11	38	27	25	25	25	17
2 Big Cliff	13	15	7	4	7	7	10	17	21	21	8	7	7	11	11
3 Black Canyon	9	6	7	9	5	8	10	10	10	8	8	3	3	2	7
4 Boise River Diversion	0	0	0	0	0	0	0	2	3	3	3	3	2	2	1
5 Chandler	7	12	13	10	9	13	10	10	8	8	5	5	5	4	9
6 Cougar	25	24	6	4	6	7	8	29	29	29	11	9	18	21	16
7 Cowlitz Falls	6	3	23	10	14	33	48	48	64	66	29	12	12	10	26
8 Detroit	44	46	20	11	18	20	33	66	106	91	30	25	24	42	42
9 Dexter	12	16	4	4	5	5	10	16	17	17	6	4	7	10	10
10 Foster	8	6	14	4	9	21	22	23	23	23	6	4	4	7	12
11 Green Peter	26	16	34	8	1	33	89	45	59	49	10	8	1	29	28
12 Green Springs - USBR	3	3	5	6	6	5	5	5	5	8	9	10	9	6	6
13 Hills Creek	23	27	6	6	4	5	19	31	35	35	14	9	9	25	18
14 Lookout Point	45	47	9	9	12	15	38	64	80	75	24	17	28	42	36
15 Lost Creek	40	26	18	17	12	13	14	15	56	56	46	44	35	24	30
16 Minidoka	12	3	9	3	2	2	14	14	31	31	31	29	29	26	16
17 Packwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Palisades	55	15	15	20	23	27	21	38	95	131	131	130	130	82	63
19 Roza	4	0	5	4	4	13	13	13	13	13	13	13	13	0	8
Total Independent Hydro w/Enc.	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356
Total Independent Hydro W/Enc.															
20 Federal System	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356

Table A-4: Federal Independent Hydro Projects

PNW Loads and Resource Study

2007 - 2008 Fiscal Years 6/22/2006

1937 Water Year

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Independent Hydro Projects															
1 Anderson Ranch	4	5	11	16	16	5	25	27	11	38	27	25	25	25	17
2 Big Cliff	13	15	7	4	7	7	10	17	21	21	8	7	7	11	11
3 Black Canyon	9	6	7	9	5	8	10	10	10	8	8	3	3	2	7
4 Boise River Diversion	0	0	0	0	0	0	0	2	3	3	3	3	2	2	1
5 Chandler	7	12	13	10	9	13	10	10	8	8	5	5	5	4	9
6 Cougar	25	24	6	4	6	7	8	29	29	29	11	9	18	21	16
7 Cowlitz Falls	6	3	23	10	14	33	48	48	64	66	29	12	12	10	26
8 Detroit	44	46	20	11	18	20	33	66	106	91	30	25	24	42	42
9 Dexter	12	16	4	4	5	5	10	16	17	17	6	4	7	10	10
10 Foster	8	6	14	4	9	21	22	23	23	23	6	4	4	7	12
11 Green Peter	26	16	34	8	1	33	89	45	59	49	10	8	1	29	28
12 Green Springs - USBR	3	3	5	6	6	5	5	5	5	8	9	10	9	6	6
13 Hills Creek	23	27	6	6	4	5	19	31	35	35	14	9	9	25	18
14 Lookout Point	45	47	9	9	12	15	38	64	80	75	24	17	28	42	36
15 Lost Creek	40	26	18	17	12	13	14	15	56	56	46	44	35	24	30
16 Minidoka	12	3	9	3	2	2	14	14	31	31	31	29	29	26	16
17 Packwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Palisades	55	15	15	20	23	27	21	38	95	131	131	130	130	82	63
19 Roza	4	0	5	4	4	13	13	13	13	13	13	13	13	0	8
Total Independent Hydro w/Enc.	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356
Total Independent Hydro W/Enc.															
20 Federal System	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356

Table A-4: Federal Independent Hydro Projects

PNW Loads and Resource Study

2008 - 2009 Fiscal Years 6/22/2006

1937 Water Year

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Independent Hydro Projects															
1 Anderson Ranch	4	5	11	16	16	5	25	27	11	38	27	25	25	25	17
2 Big Cliff	13	15	7	4	7	7	10	17	21	21	8	7	7	11	11
3 Black Canyon	9	6	7	9	5	8	10	10	10	8	8	3	3	2	7
4 Boise River Diversion	0	0	0	0	0	0	0	2	3	3	3	3	2	2	1
5 Chandler	7	12	13	10	9	13	10	10	8	8	5	5	5	4	9
6 Cougar	25	24	6	4	6	7	8	29	29	29	11	9	18	21	16
7 Cowlitz Falls	6	3	23	10	14	33	48	48	64	66	29	12	12	10	26
8 Detroit	44	46	20	11	18	20	33	66	106	91	30	25	24	42	42
9 Dexter	12	16	4	4	5	5	10	16	17	17	6	4	7	10	10
10 Foster	8	6	14	4	9	21	22	23	23	23	6	4	4	7	12
11 Green Peter	26	16	34	8	1	33	89	45	59	49	10	8	1	29	28
12 Green Springs - USBR	3	3	5	6	6	5	5	5	5	8	9	10	9	6	6
13 Hills Creek	23	27	6	6	4	5	19	31	35	35	14	9	9	25	18
14 Lookout Point	45	47	9	9	12	15	38	64	80	75	24	17	28	42	36
15 Lost Creek	40	26	18	17	12	13	14	15	56	56	46	44	35	24	30
16 Minidoka	12	3	9	3	2	2	14	14	31	31	31	29	29	26	16
17 Packwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Palisades	55	15	15	20	23	27	21	38	95	131	131	130	130	82	63
19 Roza	4	0	5	4	4	13	13	13	13	13	13	13	13	0	8
Total Independent Hydro w/Enc.	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356
Total Independent Hydro W/Enc.															
20 Federal System	336	270	206	144	153	232	389	472	665	701	410	357	360	368	356

Table A-5: Federal Imports
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Imports From East of Continental Divide															
1 PPL to BPA PwrS	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
2 Total Imports From ECD	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
Imports From Pacific Southwest															
3 BURB to BPA XchgNrg	3	4	5	5	5	5	4	4	3	3	3	3	3	3	4
4 BURB to BPA PkRepl	4	3	3	3	3	3	3	2	4	5	5	5	5	5	4
5 GLEN to BPA XchgNrg	3	4	6	6	6	6	6	3	3	3	3	3	3	3	4
6 GLEN to BPA PkRepl	4	3	3	3	3	3	3	3	5	6	6	6	6	6	4
7 PASA to BPA XchgNrg	2	2	3	3	3	3	3	2	2	2	2	2	2	2	2
8 PASA to BPA PkRepl	3	2	2	2	2	2	2	2	3	4	3	4	4	3	3
9 PASA to BPA XchgNrg	3	3	3	3	3	2	0	0	0	0	0	0	0	3	2
10 PASA to BPA S/N/X	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0
11 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1
12 RVSD to BPA XchgNrg	6	6	6	6	6	6	6	0	0	0	0	0	0	0	3
13 RVSD to BPA PkRepl	0	5	5	5	5	5	5	4	7	0	0	0	0	0	3
14 RVSD to BPA PkRepl	7	0	0	0	0	0	0	0	0	7	7	7	7	6	3
15 RVSD to BPA XchgNrg	0	16	17	16	16	15	17	0	0	0	0	0	0	0	7
16 RVSD to BPA S/Pwr/X	0	10	10	10	9	9	10	0	0	0	0	0	0	0	4
17 RVSD to BPA PkRepl	11	3	3	3	3	3	3	3	0	0	11	11	11	10	5
18 Total Imports From PSW	45	61	65	65	64	61	62	22	26	29	44	45	45	47	50
Imports From Inland Southwest															
19 Other Entities to BPA	50	50	50	0	0	0	0	0	0	0	0	0	0	0	13
20 SPP to BPA PwrS	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
21 Total Imports From ISW	95	95	95	45	45	45	75	75	75	75	75	75	75	75	73
Imports From Canada															
22 BCHP to BPA PwrS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23 Total Imports From Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Imports From Other Entities															
24 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
25 Federal System	250	318	377	300	255	224	227	187	102	123	154	134	134	165	217

Table A-5: Federal Imports
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Imports From East of Continental Divide															
1 PPL to BPA PwrS	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
2 Total Imports From ECD	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
Imports From Pacific Southwest															
3 BURB to BPA XchgNrg	3	4	5	5	5	5	5	0	0	0	0	0	0	0	2
4 BURB to BPA PkRepl	4	3	3	3	3	3	3	0	0	0	0	0	0	0	2
5 GLEN to BPA XchgNrg	3	4	6	6	6	6	6	0	0	0	0	0	0	0	3
6 GLEN to BPA PkRepl	4	3	3	3	3	3	3	0	0	0	0	0	0	0	2
7 PASA to BPA XchgNrg	2	2	3	3	3	3	3	0	0	0	0	0	0	0	2
8 PASA to BPA PkRepl	3	2	2	2	2	2	2	0	0	0	0	0	0	0	1
9 PASA to BPA XchgNrg	3	3	3	3	3	2	0	0	0	0	0	0	0	3	2
10 PASA to BPA S/N/X	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0
11 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1
12 RVSD to BPA XchgNrg	6	6	6	6	6	6	6	0	0	0	0	0	0	0	3
13 RVSD to BPA PkRepl	0	5	5	5	5	5	5	5	7	0	0	0	0	0	3
14 RVSD to BPA PkRepl	7	0	0	0	0	0	0	0	0	7	7	6	7	7	3
15 RVSD to BPA XchgNrg	0	16	17	16	15	16	15	0	0	0	0	0	0	0	7
16 RVSD to BPA S/Pwr/X	0	10	10	9	9	9	9	0	0	0	0	0	0	0	4
17 RVSD to BPA PkRepl	11	3	3	3	3	3	3	3	0	0	11	10	11	11	5
18 Total Imports From PSW	46	61	65	65	63	62	59	8	7	7	23	20	22	27	40
Imports From Inland Southwest															
19 SPP to BPA PwrS	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
20 Total Imports From ISW	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
Imports From Canada															
21 BCHP to BPA PwrS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22 Total Imports From Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Imports From Other Entities															
23 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
24 Federal System	200	268	326	299	254	225	225	173	83	101	132	109	111	145	195

Table A-5: Federal Imports
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[30] 2007 Initial Rate Case

9/14/2005

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Imports From East of Continental Divide															
1 PPL to BPA PwrS	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
2 Total Imports From ECD	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
Imports From Pacific Southwest															
3 PASA to BPA XchgNrg	3	3	3	3	3	2	0	0	0	0	0	0	0	3	2
4 PASA to BPA S/N/X	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0
5 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1
6 RVSD to BPA XchgNrg	6	6	6	6	6	6	6	0	0	0	0	0	0	0	3
7 RVSD to BPA PkRepl	0	4	5	5	5	5	5	5	6	0	0	0	0	0	3
8 RVSD to BPA PkRepl	7	0	0	0	0	0	0	0	0	7	7	6	7	7	3
9 RVSD to BPA XchgNrg	0	17	16	16	16	16	15	0	0	0	0	0	0	0	7
10 RVSD to BPA S/Pwr/X	0	10	9	9	9	9	9	0	0	0	0	0	0	0	4
11 RVSD to BPA PkRepl	11	3	3	3	3	3	3	3	0	0	11	10	11	11	5
12 Total Imports From PSW	28	44	43	43	42	41	38	8	6	7	23	20	22	27	29
Imports From Inland Southwest															
13 SPP to BPA PwrS	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
14 Total Imports From ISW	45	45	45	45	45	45	75	75	75	75	75	75	75	75	60
Imports From Canada															
15 BCHP to BPA PwrS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16 Total Imports From Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Imports From Other Entities															
17 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
18 Federal System	182	251	304	278	233	204	203	173	83	101	132	109	111	145	184

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal System															
1 Georgia-Pacific Paper (Wauna)	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
2 Total Federal System	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
Renewable Resources															
3 Federal System	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal System															
1 Georgia-Pacific Paper (Wauna)	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
2 Total Federal System	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
Renewable Resources															
3 Federal System	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal System															
1 Georgia-Pacific Paper (Wauna)	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
2 Total Federal System	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23
Renewable Resources															
3 Federal System	22	25	26	27	27	26	25	25	22	12	20	20	20	21	23

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Columbia Generating Station: Uranium															
1 BPA - Power Business	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877
2 Columbia Generating Station: Regional Total	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877
Total Large Thermal															
3 Federal System	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Columbia Generating Station: Uranium															
1 BPA - Power Business	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
2 Columbia Generating Station: Regional Total	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total Large Thermal															
3 Federal System	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Columbia Generating Station: Uranium															
1 BPA - Power Business	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877
2 Columbia Generating Station: Regional Total	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877
Total Large Thermal															
3 Federal System	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	355	167	1,000	1,000	1,000	1,000	877

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2006 - 2007 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
BPA Canada															
1 BPA: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Priest Rapids CER for Canada															
2 AVWP to BPA	0.96	0.96	0.96	0.96	0.96	0.96	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.95
3 COPD to BPA	0.45	0.45	0.45	0.45	0.45	0.45	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.44
4 CWPC to BPA	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
5 EWEB to BPA	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.27
6 FGRV to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
7 FREC to BPA	0.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
8 GCPD to BPA	18.17	18.17	18.17	18.17	18.17	18.17	17.67	17.67	17.67	17.67	17.67	17.67	17.67	17.67	17.92
9 ICLP to BPA	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10 KITT to BPA	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
11 KOOT to BPA	0.00	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
12 LREC to BPA	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
13 LVE to BPA	0.00	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
14 MCMN to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
15 MTFR to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
16 NLEC to BPA	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04
17 PGE to BPA	2.19	2.19	2.19	2.19	2.19	2.19	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.16
18 PPL to BPA	2.19	2.19	2.19	2.19	2.19	2.19	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.16
19 PSE to BPA	1.26	1.26	1.26	1.26	1.26	1.26	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.25
20 RREC to BPA	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
21 SCL to BPA	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.16
22 SLEC to BPA	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
23 TPU to BPA	1.19	1.19	1.19	1.19	1.19	1.19	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.17
24 UNEC to BPA	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
25 UNKMKT to BPA	2.08	1.76	1.76	1.76	1.76	1.76	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.76
26 Priest Rapids: Regional Totals	29.30	29.30	29.30	29.30	29.30	29.30	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.90

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts															
Wanapum CER for Canada															
27 AVWP to BPA	2.30	2.30	2.30	2.30	2.30	2.30	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.26
28 COPD to BPA	0.76	0.76	0.76	0.76	0.76	0.76	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.75
29 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 EWEB to BPA	0.64	0.64	0.64	0.64	0.64	0.64	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
31 FGRV to BPA	0.20	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
32 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33 GCPD to BPA	10.22	10.22	10.22	10.22	10.22	10.22	9.93	9.93	9.93	9.93	9.93	9.93	9.93	9.93	10.07
34 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 MCMN to BPA	0.20	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
40 MTFR to BPA	0.20	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
41 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 PGE to BPA	5.24	5.24	5.24	5.24	5.24	5.24	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.16
43 PPL to BPA	5.24	5.24	5.24	5.24	5.24	5.24	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.16
44 PSE to BPA	3.02	3.02	3.02	3.02	3.02	3.02	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.98
45 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51 Wanapum: Regional Totals	28.00	28.00	28.00	28.00	28.00	28.00	27.20	27.20	27.20	27.20	27.20	27.20	27.20	27.20	27.60

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	5.40	5.40	5.40	5.40	5.40	5.40	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.33
53 PSE to BPA	5.40	5.40	5.40	5.40	5.40	5.40	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.33
54 Rock Island P.H. #1: Regional Totals	10.80	10.80	10.80	10.80	10.80	10.80	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.65
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	3.45	3.45	3.45	3.45	3.45	3.45	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.40
56 PSE to BPA	3.45	3.45	3.45	3.45	3.45	3.45	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.40
57 Rock Island P.H. #2: Regional Totals	6.90	6.90	6.90	6.90	6.90	6.90	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.81
Rocky Reach CER for Canada															
58 AVWP to BPA	1.07	1.07	1.07	1.07	1.07	1.07	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.05
59 CHPD to BPA	5.56	5.56	5.56	5.56	5.56	5.56	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.48
60 CLKM to BPA	8.46	8.46	8.46	8.46	8.46	8.46	8.23	8.23	8.23	8.23	8.23	8.23	8.23	8.23	8.35
61 DOPD to BPA	0.99	0.99	0.99	0.99	0.99	0.99	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.98
62 PGE to BPA	4.45	4.45	4.45	4.45	4.45	4.45	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.39
63 PPL to BPA	1.95	1.95	1.95	1.95	1.95	1.95	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.92
64 PSE to BPA	14.32	14.32	14.32	14.32	14.32	14.32	13.93	13.93	13.93	13.93	13.93	13.93	13.93	13.93	14.12
65 Rocky Reach: Regional Totals	36.80	36.80	36.80	36.80	36.80	36.80	35.80	35.80	35.80	35.80	35.80	35.80	35.80	35.80	36.30
Wells CER for Canada															
66 AVWP to BPA	0.79	0.79	0.79	0.79	0.79	0.79	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.78
67 COLV to BPA	1.07	1.07	1.07	1.07	1.07	1.07	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.06
68 DOPD to BPA	6.82	6.82	6.82	6.82	6.82	6.82	6.62	6.62	6.62	6.62	6.62	6.62	6.62	6.62	6.72
69 OKPD to BPA	1.82	1.82	1.82	1.82	1.82	1.82	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.79
70 PGE to BPA	4.61	4.61	4.61	4.61	4.61	4.61	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.55
71 PPL to BPA	1.57	1.57	1.57	1.57	1.57	1.57	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.55
72 PSE to BPA	7.11	7.11	7.11	7.11	7.11	7.11	6.90	6.90	6.90	6.90	6.90	6.90	6.90	6.90	7.01
73 Wells: Regional Totals	23.80	23.80	23.80	23.80	23.80	23.80	23.10	23.10	23.10	23.10	23.10	23.10	23.10	23.10	23.45
Total CER For Canada															
74 Federal System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Public Entities	57.93	58.25	58.25	58.25	58.25	58.25	56.62	56.62	56.62	56.62	56.62	56.62	56.62	56.62	57.41
76 Investor-Owned Entities	67.13	67.13	67.13	67.13	67.13	67.13	65.24	65.24	65.24	65.24	65.24	65.24	65.24	65.24	66.19
77 Other Entities	10.54	10.22	10.22	10.22	10.22	10.22	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	10.11
78 Non-NW Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79 Total CER For Canada	135.60	135.60	135.60	135.60	135.60	135.60	131.81	131.81	131.81	131.81	131.81	131.81	131.81	131.81	133.70

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2007 - 2008 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
BPA Canada															
1 BPA: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Priest Rapids CER for Canada															
2 AVWP to BPA	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93
3 COPD to BPA	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
4 CWPC to BPA	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
5 EWEB to BPA	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
6 FGRV to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
7 FREC to BPA	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
8 GCPD to BPA	17.67	17.67	17.67	17.67	17.67	17.67	17.42	17.42	17.42	17.42	17.42	17.42	17.42	17.42	17.55
9 ICLP to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10 KITT to BPA	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
11 KOOT to BPA	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
12 LREC to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
13 LVE to BPA	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
14 MCMN to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
15 MTFR to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
16 NLEC to BPA	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
17 PGE to BPA	2.13	2.13	2.13	2.13	2.13	2.13	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.12
18 PPL to BPA	2.13	2.13	2.13	2.13	2.13	2.13	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.12
19 PSE to BPA	1.23	1.23	1.23	1.23	1.23	1.23	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.22
20 RREC to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
21 SCL to BPA	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
22 SLEC to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
23 TPU to BPA	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.15
24 UNEC to BPA	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
25 UNKMKT to BPA	1.71	1.71	1.71	1.71	1.71	1.71	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.70
26 Priest Rapids: Regional Totals	28.50	28.50	28.50	28.50	28.50	28.50	28.10	28.10	28.10	28.10	28.10	28.10	28.10	28.10	28.30

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2007 - 2008 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Wanapum CER for Canada															
27 AVWP to BPA	2.23	2.23	2.23	2.23	2.23	2.23	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.21
28 COPD to BPA	0.73	0.73	0.73	0.73	0.73	0.73	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.73
29 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 EWEB to BPA	0.63	0.63	0.63	0.63	0.63	0.63	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
31 FGRV to BPA	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
32 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33 GCPD to BPA	9.93	9.93	9.93	9.93	9.93	9.93	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.86
34 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 MCMN to BPA	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
40 MTFR to BPA	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
41 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 PGE to BPA	5.09	5.09	5.09	5.09	5.09	5.09	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.05
43 PPL to BPA	5.09	5.09	5.09	5.09	5.09	5.09	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.05
44 PSE to BPA	2.94	2.94	2.94	2.94	2.94	2.94	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.92
45 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51 Wanapum: Regional Totals	27.20	27.20	27.20	27.20	27.20	27.20	26.80	26.80	26.80	26.80	26.80	26.80	26.80	26.80	27.00

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2007 - 2008 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	5.25	5.25	5.25	5.25	5.25	5.25	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.23
53 PSE to BPA	5.25	5.25	5.25	5.25	5.25	5.25	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.23
54 Rock Island P.H. #1: Regional Totals	10.50	10.50	10.50	10.50	10.50	10.50	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.45
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	3.35	3.35	3.35	3.35	3.35	3.35	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.33
56 PSE to BPA	3.35	3.35	3.35	3.35	3.35	3.35	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.33
57 Rock Island P.H. #2: Regional Totals	6.71	6.71	6.71	6.71	6.71	6.71	6.63	6.63	6.63	6.63	6.63	6.63	6.63	6.63	6.67
Rocky Reach CER for Canada															
58 AVWP to BPA	1.04	1.04	1.04	1.04	1.04	1.04	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.03
59 CHPD to BPA	5.41	5.41	5.41	5.41	5.41	5.41	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.37
60 CLKM to BPA	8.23	8.23	8.23	8.23	8.23	8.23	8.12	8.12	8.12	8.12	8.12	8.12	8.12	8.12	8.18
61 DOPD to BPA	0.97	0.97	0.97	0.97	0.97	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.96
62 PGE to BPA	4.33	4.33	4.33	4.33	4.33	4.33	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.30
63 PPL to BPA	1.90	1.90	1.90	1.90	1.90	1.90	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.88
64 PSE to BPA	13.93	13.93	13.93	13.93	13.93	13.93	13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.83
65 Rocky Reach: Regional Totals	35.80	35.80	35.80	35.80	35.80	35.80	35.30	35.30	35.30	35.30	35.30	35.30	35.30	35.30	35.55
Wells CER for Canada															
66 AVWP to BPA	0.77	0.77	0.77	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.77
67 COLV to BPA	1.04	1.04	1.04	1.04	1.04	1.04	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
68 DOPD to BPA	6.62	6.62	6.62	6.62	6.62	6.62	6.53	6.53	6.53	6.53	6.53	6.53	6.53	6.53	6.58
69 OKPD to BPA	1.76	1.76	1.76	1.76	1.76	1.76	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.75
70 PGE to BPA	4.48	4.48	4.48	4.48	4.48	4.48	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.45
71 PPL to BPA	1.52	1.52	1.52	1.52	1.52	1.52	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.51
72 PSE to BPA	6.90	6.90	6.90	6.90	6.90	6.90	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.86
73 Wells: Regional Totals	23.10	23.10	23.10	23.10	23.10	23.10	22.80	22.80	22.80	22.80	22.80	22.80	22.80	22.80	22.95
Total CER For Canada															
74 Federal System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Public Entities	56.62	56.62	56.62	56.62	56.62	56.62	55.86	55.86	55.86	55.86	55.86	55.86	55.86	55.86	56.24
76 Investor-Owned Entities	65.24	65.24	65.24	65.24	65.24	65.24	64.36	64.36	64.36	64.36	64.36	64.36	64.36	64.36	64.80
77 Other Entities	9.95	9.95	9.95	9.95	9.95	9.95	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.88
78 Non-NW Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79 Total CER For Canada	131.81	131.81	131.81	131.81	131.81	131.81	130.03	130.03	130.03	130.03	130.03	130.03	130.03	130.03	130.92

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
BPA Canada															
1 BPA: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Priest Rapids CER for Canada															
2 AVWP to BPA	0.92	0.92	0.92	0.92	0.92	0.92	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
3 COPD to BPA	0.43	0.43	0.43	0.43	0.43	0.43	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.44
4 CWPC to BPA	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
5 EWEB to BPA	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26
6 FGRV to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
7 FREC to BPA	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
8 GCPD to BPA	17.42	17.42	17.42	17.42	17.42	17.42	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	17.86
9 ICLP to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10 KITT to BPA	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
11 KOOT to BPA	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05
12 LREC to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
13 LVE to BPA	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
14 MCMN to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
15 MTFR to BPA	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
16 NLEC to BPA	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
17 PGE to BPA	2.10	2.10	2.10	2.10	2.10	2.10	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.15
18 PPL to BPA	2.10	2.10	2.10	2.10	2.10	2.10	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.15
19 PSE to BPA	1.21	1.21	1.21	1.21	1.21	1.21	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.24
20 RREC to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
21 SCL to BPA	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
22 SLEC to BPA	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
23 TPU to BPA	1.14	1.14	1.14	1.14	1.14	1.14	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.17
24 UNEC to BPA	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
25 UNKMKT to BPA	1.69	1.69	1.69	1.69	1.69	1.69	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.73
26 Priest Rapids: Regional Totals	28.10	28.10	28.10	28.10	28.10	28.10	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	28.80

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Wanapum CER for Canada															
27 AVWP to BPA	2.20	2.20	2.20	2.20	2.20	2.20	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.26
28 COPD to BPA	0.72	0.72	0.72	0.72	0.72	0.72	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.74
29 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 EWEB to BPA	0.62	0.62	0.62	0.62	0.62	0.62	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.63
31 FGRV to BPA	0.19	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19
32 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33 GCPD to BPA	9.78	9.78	9.78	9.78	9.78	9.78	10.29	10.29	10.29	10.29	10.29	10.29	10.29	10.29	10.04
34 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 MCMN to BPA	0.19	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19
40 MTFR to BPA	0.19	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19
41 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 PGE to BPA	5.01	5.01	5.01	5.01	5.01	5.01	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.14
43 PPL to BPA	5.01	5.01	5.01	5.01	5.01	5.01	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.14
44 PSE to BPA	2.89	2.89	2.89	2.89	2.89	2.89	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	2.97
45 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51 Wanapum: Regional Totals	26.80	26.80	26.80	26.80	26.80	26.80	28.20	28.20	28.20	28.20	28.20	28.20	28.20	28.20	27.50

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	5.20	5.20	5.20	5.20	5.20	5.20	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.33
53 PSE to BPA	5.20	5.20	5.20	5.20	5.20	5.20	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.33
54 Rock Island P.H. #1: Regional Totals	10.40	10.40	10.40	10.40	10.40	10.40	10.90	10.90	10.90	10.90	10.90	10.90	10.90	10.90	10.65
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	3.32	3.32	3.32	3.32	3.32	3.32	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.40
56 PSE to BPA	3.32	3.32	3.32	3.32	3.32	3.32	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.40
57 Rock Island P.H. #2: Regional Totals	6.63	6.63	6.63	6.63	6.63	6.63	6.98	6.98	6.98	6.98	6.98	6.98	6.98	6.98	6.81
Rocky Reach CER for Canada															
58 AVWP to BPA	1.02	1.02	1.02	1.02	1.02	1.02	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.05
59 CHPD to BPA	5.33	5.33	5.33	5.33	5.33	5.33	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.47
60 CLKM to BPA	8.12	8.12	8.12	8.12	8.12	8.12	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.33
61 DOPD to BPA	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
62 PGE to BPA	4.27	4.27	4.27	4.27	4.27	4.27	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.38
63 PPL to BPA	1.87	1.87	1.87	1.87	1.87	1.87	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.92
64 PSE to BPA	13.73	13.73	13.73	13.73	13.73	13.73	14.43	14.43	14.43	14.43	14.43	14.43	14.43	14.43	14.08
65 Rocky Reach: Regional Totals	35.30	35.30	35.30	35.30	35.30	35.30	37.10	37.10	37.10	37.10	37.10	37.10	37.10	37.10	36.20
Wells CER for Canada															
66 AVWP to BPA	0.76	0.76	0.76	0.76	0.76	0.76	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.78
67 COLV to BPA	1.03	1.03	1.03	1.03	1.03	1.03	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.05
68 DOPD to BPA	6.53	6.53	6.53	6.53	6.53	6.53	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.70
69 OKPD to BPA	1.74	1.74	1.74	1.74	1.74	1.74	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.79
70 PGE to BPA	4.42	4.42	4.42	4.42	4.42	4.42	4.65	4.65	4.65	4.65	4.65	4.65	4.65	4.65	4.54
71 PPL to BPA	1.50	1.50	1.50	1.50	1.50	1.50	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.54
72 PSE to BPA	6.81	6.81	6.81	6.81	6.81	6.81	7.17	7.17	7.17	7.17	7.17	7.17	7.17	7.17	6.99
73 Wells: Regional Totals	22.80	22.80	22.80	22.80	22.80	22.80	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	23.40
Total CER For Canada															
74 Federal System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Public Entities	55.86	55.86	55.86	55.86	55.86	55.86	58.70	58.70	58.70	58.70	58.70	58.70	58.70	58.70	57.28
76 Investor-Owned Entities	64.36	64.36	64.36	64.36	64.36	64.36	67.67	67.67	67.67	67.67	67.67	67.67	67.67	67.67	66.02
77 Other Entities	9.81	9.81	9.81	9.81	9.81	9.81	10.31	10.31	10.31	10.31	10.31	10.31	10.31	10.31	10.06
78 Non-NW Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79 Total CER For Canada	130.03	130.03	130.03	130.03	130.03	130.03	136.68	136.68	136.68	136.68	136.68	136.68	136.68	136.68	133.35

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2006 - 2007 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	101	101	101	101	50	50	49	0	0	0	0	0	0	42
2 BPA To CCPD PwrS	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
3 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 BPA To PPL PwrS	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
5 BPA To PPL CapS	183	229	187	211	199	177	173	173	167	174	159	184	184	194	186
6 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	35	34	0	0	0	6
7 BPA To PSE WP3Set	0	101	101	101	101	50	50	49	0	0	0	0	0	0	42
8 Other Entities To BPA	375	375	374	0	0	0	0	0	0	0	0	0	0	0	94
9 PPL To BPA S/Pwr/X	23	23	0	0	0	0	0	0	0	0	0	0	0	23	6
10 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 PPL To BPA PwrS	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
12 PPL To BPA PkRepl	183	229	187	211	199	177	173	173	167	174	159	184	184	194	186
13 Total Contracts	898	1,245	1,193	841	773	598	563	561	361	428	412	407	409	480	683
Total Contracts Out															
14 Federal System	308	609	622	619	564	411	380	378	184	244	243	214	214	253	387
15 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Investor-Owned Entities	216	262	197	221	209	187	183	183	177	184	169	194	194	227	202
17 Other Entities	375	375	374	0	0	0	0	0	0	0	0	0	0	0	94
18 Total Contracts Out	898	1,245	1,193	841	773	598	563	561	361	428	412	407	409	480	683
Total Contracts In															
19 Federal System	591	637	571	221	209	187	183	183	177	184	169	194	194	227	296
20 Public Entities	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
21 Investor-Owned Entities	291	592	605	602	547	394	363	361	167	227	226	197	197	236	370
22 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Total Contracts In	898	1,245	1,193	841	773	598	563	561	361	428	412	407	409	480	683

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2007 - 2008 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	101	101	101	101	50	50	50	0	0	0	0	0	0	42
2 BPA To CCPD PwrS	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
3 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	35	34	0	0	0	6
4 BPA To PPL CapS	183	229	187	211	192	177	173	173	167	174	159	184	184	194	186
5 BPA To PPL PwrS	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
6 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 BPA To PSE WP3Set	0	101	101	101	101	50	50	50	0	0	0	0	0	0	42
8 PPL To BPA S/Pwr/X	23	23	0	0	0	0	0	0	0	0	0	0	0	23	6
9 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PPL To BPA PkRepl	183	229	187	211	192	177	173	173	167	174	159	184	184	194	186
11 PPL To BPA PwrS	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
12 Total Contracts	523	870	819	841	759	598	562	562	361	428	412	407	409	480	589
Total Contracts Out															
13 Federal System	308	609	622	619	557	411	379	379	184	244	243	214	214	253	387
14 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Investor-Owned Entities	216	262	197	221	202	187	183	183	177	184	169	194	194	227	202
16 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Contracts Out	523	870	819	841	759	598	562	562	361	428	412	407	409	480	589
Total Contracts In															
18 Federal System	216	262	197	221	202	187	183	183	177	184	169	194	194	227	202
19 Public Entities	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
20 Investor-Owned Entities	291	592	605	602	540	394	362	362	167	227	226	197	197	236	370
21 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Total Contracts In	523	870	819	841	759	598	562	562	361	428	412	407	409	480	589

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2008 - 2009 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	101	101	101	101	50	50	50	0	0	0	0	0	0	42
2 BPA To CCPD PwrS	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
3 BPA To PPL PwrS	108	161	215	189	145	117	90	90	0	18	34	13	13	42	94
4 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	35	34	0	0	0	6
5 BPA To PPL CapS	183	229	187	211	199	177	173	173	167	174	159	184	184	194	186
6 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 BPA To PSE WP3Set	0	101	101	101	101	50	50	50	0	0	0	0	0	0	42
8 PPL To BPA PwrS	10	10	10	10	10	10	10	10	10	5	0	0	0	0	7
9 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PPL To BPA PkRepl	183	229	187	211	199	177	173	173	167	174	159	184	184	194	186
11 PPL To BPA S/Pwr/X	23	23	0	0	0	0	0	0	0	0	0	0	0	23	6
12 Total Contracts	523	870	819	841	773	598	562	562	361	423	402	397	399	470	587
Total Contracts Out															
13 Federal System	308	609	622	619	564	411	379	379	184	244	243	214	214	253	387
14 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Investor-Owned Entities	216	262	197	221	209	187	183	183	177	179	159	184	184	217	199
16 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Contracts Out	523	870	819	841	773	598	562	562	361	423	402	397	399	470	587
Total Contracts In															
18 Federal System	216	262	197	221	209	187	183	183	177	179	159	184	184	217	199
19 Public Entities	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
20 Investor-Owned Entities	291	592	605	602	547	394	362	362	167	227	226	197	197	236	370
21 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Total Contracts In	523	870	819	841	773	598	562	562	361	423	402	397	399	470	587

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal Entities															
1 Federal Entities	114	131	142	145	139	128	114	114	110	111	121	122	122	111	124
2 Total Federal Entities	114	131	142	145	139	128	114	114	110	111	121	122	122	111	124
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
4 Total U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	2,239	2,628	2,901	2,934	2,878	2,672	2,374	2,368	2,151	1,898	1,867	1,989	1,989	2,186	2,393
8 Total Generating Public Entities	2,239	2,628	2,901	2,934	2,878	2,672	2,374	2,368	2,151	1,898	1,867	1,989	1,989	2,186	2,393
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	971	1,107	1,079	849	885	935	894	807	862	1,148	1,116	1,150	986	925	983
10 Total Generating Public Entities (Slice)	971	1,107	1,079	849	885	935	894	807	862	1,148	1,116	1,150	986	925	983
Non-Generating Public Entities															
11 Non-Generating Public Entities	2,670	3,037	3,371	3,428	3,318	2,970	2,800	2,792	2,777	2,887	3,011	2,935	2,935	2,654	2,988
12 Total Non-Generating Public Entities	2,670	3,037	3,371	3,428	3,318	2,970	2,800	2,792	2,777	2,887	3,011	2,935	2,935	2,654	2,988
Non-Generating Public Entities (Slice)															
13 Non-Generating Public Entities (Slice)	583	665	648	510	532	561	537	485	518	690	670	690	592	555	590
14 Total Non-Gen. Public Entities (Slice)	583	665	648	510	532	561	537	485	518	690	670	690	592	555	590
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	114	131	142	145	139	128	114	114	110	111	121	122	122	111	124
20 U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	3,210	3,735	3,980	3,783	3,763	3,607	3,268	3,175	3,013	3,046	2,983	3,139	2,976	3,110	3,376
23 Non-Generating Public Entities	3,253	3,702	4,019	3,938	3,849	3,531	3,337	3,276	3,295	3,577	3,681	3,625	3,527	3,209	3,578
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	6,671	7,583	8,172	7,936	7,831	7,317	6,925	6,807	6,708	7,021	7,096	7,139	6,885	6,649	7,238

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal Entities															
1 Federal Entities	119	137	149	152	146	134	119	119	115	116	126	128	128	116	130
2 Total Federal Entities	119	137	149	152	146	134	119	119	115	116	126	128	128	116	130
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
4 Total U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	2,209	2,562	2,799	2,829	2,756	2,601	2,333	2,327	1,966	1,885	1,894	2,012	2,012	2,195	2,337
8 Total Generating Public Entities	2,209	2,562	2,799	2,829	2,756	2,601	2,333	2,327	1,966	1,885	1,894	2,012	2,012	2,195	2,337
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	973	1,110	1,082	851	887	937	896	809	954	1,266	1,130	1,164	999	928	1,004
10 Total Generating Public Entities (Slice)	973	1,110	1,082	851	887	937	896	809	954	1,266	1,130	1,164	999	928	1,004
Non-Generating Public Entities															
11 Non-Generating Public Entities	2,744	3,106	3,442	3,500	3,354	3,031	2,856	2,847	2,829	2,940	3,066	2,989	2,989	2,705	3,047
12 Total Non-Generating Public Entities	2,744	3,106	3,442	3,500	3,354	3,031	2,856	2,847	2,829	2,940	3,066	2,989	2,989	2,705	3,047
Non-Generating Public Entities (Slice)															
13 Non-Generating Public Entities (Slice)	584	666	650	511	533	563	538	486	573	760	679	699	600	557	603
14 Total Non-Gen. Public Entities (Slice)	584	666	650	511	533	563	538	486	573	760	679	699	600	557	603
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	119	137	149	152	146	134	119	119	115	116	126	128	128	116	130
20 U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	3,183	3,672	3,880	3,680	3,643	3,539	3,229	3,137	2,920	3,150	3,025	3,176	3,011	3,123	3,341
23 Non-Generating Public Entities	3,329	3,772	4,092	4,011	3,887	3,594	3,394	3,333	3,402	3,700	3,745	3,688	3,589	3,262	3,650
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	6,725	7,595	8,152	7,913	7,755	7,316	6,948	6,831	6,726	7,254	7,206	7,245	6,987	6,720	7,281

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal Entities															
1 Federal Entities	129	149	162	164	158	145	129	128	124	126	136	138	138	125	140
2 Total Federal Entities	129	149	162	164	158	145	129	128	124	126	136	138	138	125	140
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
4 Total U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	2,223	2,579	2,816	2,847	2,809	2,624	2,349	2,343	1,980	1,899	1,910	2,027	2,027	2,210	2,356
8 Total Generating Public Entities	2,223	2,579	2,816	2,847	2,809	2,624	2,349	2,343	1,980	1,899	1,910	2,027	2,027	2,210	2,356
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	976	1,113	1,085	854	890	940	909	823	878	1,178	1,166	1,170	1,002	916	996
10 Total Generating Public Entities (Slice)	976	1,113	1,085	854	890	940	909	823	878	1,178	1,166	1,170	1,002	916	996
Non-Generating Public Entities															
11 Non-Generating Public Entities	2,770	3,136	3,475	3,534	3,420	3,058	2,881	2,872	2,853	2,965	3,092	3,014	3,014	2,729	3,077
12 Total Non-Generating Public Entities	2,770	3,136	3,475	3,534	3,420	3,058	2,881	2,872	2,853	2,965	3,092	3,014	3,014	2,729	3,077
Non-Generating Public Entities (Slice)															
13 Non-Generating Public Entities (Slice)	586	668	651	513	535	564	546	494	527	707	700	703	602	550	598
14 Total Non-Gen. Public Entities (Slice)	586	668	651	513	535	564	546	494	527	707	700	703	602	550	598
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	129	149	162	164	158	145	129	128	124	126	136	138	138	125	140
20 U.S. Bureau of Reclamation	94	14	31	70	79	50	206	242	290	287	310	252	259	219	160
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	3,199	3,691	3,900	3,700	3,699	3,564	3,257	3,165	2,858	3,077	3,076	3,198	3,029	3,125	3,351
23 Non-Generating Public Entities	3,356	3,804	4,126	4,046	3,955	3,623	3,427	3,367	3,380	3,672	3,792	3,717	3,616	3,279	3,675
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	6,778	7,658	8,219	7,981	7,891	7,382	7,018	6,903	6,652	7,162	7,315	7,305	7,042	6,748	7,327

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

6/22/2006

2006 - 2007 Fiscal Years

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2 Elwah Hydro (BPA)	4	10	11	12	9	9	17	17	9	8	5	8	8	2	9
3 Glines Hydro (BPA)	7	14	16	15	14	14	25	25	30	16	11	16	15	4	15
4 Federal -Total NUG: Hydro	13	26	30	29	26	25	45	45	41	27	19	27	25	9	26
NUG: Renewables															
5 Ashland Solar Project (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Condon Wind Project (BPA)	11	13	12	10	8	15	9	9	9	8	8	7	7	8	10
7 Foote Creek 1 (BPA)	6	6	8	8	8	7	6	6	4	4	2	3	3	4	6
8 Foote Creek 2 (BPA)	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1
9 Foote Creek 4 (BPA)	5	8	8	9	9	6	7	7	5	5	4	3	3	3	6
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	7	5	4	3	5	8	8	8	10	11	11	9	9	8	7
12 Stateline Wind Project (BPA)	20	21	18	15	12	35	25	24	25	25	24	22	21	21	22
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	49	53	50	47	44	72	56	55	53	54	49	44	44	45	51
Total Non-Utility Generating Resources															
15 Federal System	62	79	80	76	70	97	100	100	95	81	68	71	69	53	78

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

2007 - 2008 Fiscal Years

[38] 2007 Final Rate Case

6/22/2006

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2 Elwah Hydro (BPA)	4	10	11	12	9	9	17	17	9	8	5	8	8	2	9
3 Glines Hydro (BPA)	7	14	16	15	13	14	25	25	30	16	11	16	15	4	15
4 Federal -Total NUG: Hydro	13	26	30	29	25	25	45	45	41	27	19	27	25	9	26
NUG: Renewables															
5 Ashland Solar Project (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Condon Wind Project (BPA)	11	13	12	10	9	15	9	9	9	8	8	7	7	8	10
7 Foote Creek 1 (BPA)	6	6	8	8	8	7	6	6	4	4	2	3	3	4	6
8 Foote Creek 2 (BPA)	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1
9 Foote Creek 4 (BPA)	5	8	8	9	9	6	7	7	5	5	4	3	3	3	6
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	7	5	4	3	5	8	8	8	10	11	11	9	9	8	7
12 Stateline Wind Project (BPA)	20	21	18	15	12	35	25	25	25	25	24	21	22	21	22
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	49	53	50	47	45	72	55	56	53	54	49	44	44	45	51
Total Non-Utility Generating Resources															
15 Federal System	62	80	80	77	70	97	100	100	95	81	68	71	70	54	78

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

6/22/2006

2008 - 2009 Fiscal Years

[38] 2007 Final Rate Case

Energy in Megawatts	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Avg
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2 Elwah Hydro (BPA)	4	10	11	12	9	9	17	17	9	8	5	8	8	2	9
3 Glines Hydro (BPA)	7	14	16	15	14	14	25	25	30	16	11	16	15	4	15
4 Federal -Total NUG: Hydro	13	26	30	29	26	25	45	45	41	27	19	27	25	9	26
NUG: Renewables															
5 Ashland Solar Project (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Condon Wind Project (BPA)	11	13	12	10	9	15	9	9	9	8	8	7	7	8	10
7 Foote Creek 1 (BPA)	6	6	8	8	8	7	6	6	4	4	2	3	3	4	6
8 Foote Creek 2 (BPA)	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1
9 Foote Creek 4 (BPA)	5	8	8	9	9	6	7	7	5	5	4	3	3	3	6
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	7	5	4	3	5	8	8	8	10	11	11	9	9	8	7
12 Stateline Wind Project (BPA)	20	21	18	15	12	35	25	25	25	25	24	21	22	21	22
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	49	53	50	47	45	72	55	56	53	54	49	44	44	45	51
Total Non-Utility Generating Resources															
15 Federal System	62	79	80	76	70	97	100	100	95	81	68	71	69	53	78

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HLH MWhs ANALYSIS

2.5 FEDERAL LOAD RESOURCE STUDY-HLH MWhs ANALYSIS
Monthly HLH MWhs Energy
For FY 2007 through 2009

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Table A-2: Federal Exports
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Exports East of Continental Divide															
1 BPA to Other Entities	33,841	36,284	42,206	41,994	36,263	35,423	14,088	14,088	30,166	28,953	35,819	16,666	17,777	30,052	413,621
2 Total Exports to ECD	33,841	36,284	42,206	41,994	36,263	35,423	14,088	14,088	30,166	28,953	35,819	16,666	17,777	30,052	413,621
Exports to Pacific Southwest															
3 BPA to BURB C/N/X	2,850	1,950	1,950	2,025	1,800	2,025	900	975	3,150	3,900	3,900	1,950	2,100	3,750	33,225
4 BPA to GLEN C/N/X	3,167	2,167	2,167	2,250	2,000	2,250	1,000	1,083	3,500	4,334	4,334	2,167	2,333	4,166	36,918
5 BPA to PASA C/N/X	1,900	1,300	1,300	1,350	1,200	1,350	600	650	2,100	2,600	2,600	1,300	1,400	2,500	22,150
6 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	3,318	1,606	1,713	3,211	9,848
7 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	1,659	1,606	0	0	0	0	3,265
8 BPA to RVSD CapS	0	3,520	3,360	3,680	3,200	3,520	1,613	1,747	5,290	0	0	0	0	0	25,930
9 BPA to RVSD C/N/X	5,060	0	0	0	0	0	0	0	0	4,830	5,060	2,547	2,743	4,600	24,840
10 BPA to RVSD C/N/X	7,920	1,980	1,890	2,070	1,800	2,070	900	990	0	0	7,920	3,960	4,320	7,200	43,020
11 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	12,420	11,340	0	0	0	0	23,760
12 BPA NW-SW Intertie Losses	627	328	320	341	300	336	150	163	844	858	814	406	438	763	6,689
13 Total Exports To PSW	21,524	11,245	10,987	11,716	10,300	11,551	5,163	5,608	28,963	29,468	27,946	13,935	15,047	26,190	229,644
Exports to Inland Southwest															
14 BPA to SPP PwrS	18,720	18,000	18,000	18,720	17,280	19,440	14,400	15,600	31,200	31,200	30,000	15,600	16,800	28,800	293,760
15 Total Exports To ISW	18,720	18,000	18,000	18,720	17,280	19,440	14,400	15,600	31,200	31,200	30,000	15,600	16,800	28,800	293,760
Exports to Canada															
16 BPA to BCHP CanEnt	363,933	351,720	363,444	363,444	328,272	363,444	175,372	175,860	363,444	351,720	363,444	173,808	185,395	347,616	4,270,915
17 Total Exports To Canada	363,933	351,720	363,444	363,444	328,272	363,444	175,372	175,860	363,444	351,720	363,444	173,808	185,395	347,616	4,270,915
Exports to Other Entities															
18 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
19 Federal System	438,018	417,249	434,637	435,874	392,115	429,858	209,023	211,156	453,773	441,341	457,209	220,009	235,019	432,658	5,207,940

Table A-2: Federal Exports
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Exports East of Continental Divide															
1 BPA to Other Entities	35,153	37,704	43,855	43,645	37,691	36,821	14,646	14,646	31,323	30,055	37,173	17,301	18,454	31,216	429,683
2 Total Exports to ECD	35,153	37,704	43,855	43,645	37,691	36,821	14,646	14,646	31,323	30,055	37,173	17,301	18,454	31,216	429,683
Exports to Pacific Southwest															
3 BPA to BURB C/N/X	2,925	1,950	1,950	2,025	1,875	1,950	975	0	0	0	0	0	0	0	13,650
4 BPA to GLEN C/N/X	3,250	2,167	2,167	2,250	2,083	2,167	1,083	0	0	0	0	0	0	0	15,167
5 BPA to PASA C/N/X	1,950	1,300	1,300	1,350	1,250	1,300	650	0	0	0	0	0	0	0	9,100
6 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	3,318	1,606	1,713	3,211	9,848
7 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	1,659	1,606	0	0	0	0	3,265
8 BPA to RVSD CapS	0	3,520	3,360	3,680	3,360	3,360	1,760	1,760	5,060	0	0	0	0	0	25,860
9 BPA to RVSD C/N/X	5,290	0	0	0	0	0	0	0	0	4,830	5,290	2,415	2,415	5,060	25,300
10 BPA to RVSD C/N/X	8,280	1,980	1,890	2,070	1,800	1,890	990	990	0	0	8,280	3,960	3,600	7,920	43,650
11 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	11,880	11,340	0	0	0	0	23,220
12 BPA NW-SW Intertie Losses	651	328	320	341	311	320	164	83	558	533	507	239	232	486	5,072
13 Total Exports To PSW	22,346	11,245	10,987	11,716	10,679	10,987	5,622	2,833	19,157	18,309	17,395	8,220	7,959	16,677	174,131
Exports to Inland Southwest															
14 BPA to SPP PwrS	19,440	18,000	18,000	18,720	18,000	18,720	15,600	15,600	31,200	30,000	31,200	15,600	15,600	30,000	295,680
15 Total Exports To ISW	19,440	18,000	18,000	18,720	18,000	18,720	15,600	15,600	31,200	30,000	31,200	15,600	15,600	30,000	295,680
Exports to Canada															
16 BPA to BCHP CanEnt	359,686	347,616	359,203	359,203	336,029	359,203	173,325	173,808	359,203	347,616	359,203	167,364	178,522	334,728	4,214,710
17 Total Exports To Canada	359,686	347,616	359,203	359,203	336,029	359,203	173,325	173,808	359,203	347,616	359,203	167,364	178,522	334,728	4,214,710
Exports to Other Entities															
18 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
19 Federal System	436,625	414,565	432,045	433,284	402,398	425,731	209,193	206,887	440,884	425,980	444,971	208,485	220,535	412,620	5,114,203

Table A-2: Federal Exports
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Exports East of Continental Divide															
1 BPA to Other Entities	22,577	24,125	28,071	27,874	24,062	23,481	9,325	9,325	20,198	19,437	24,097	11,180	11,926	20,055	275,731
2 Total Exports to ECD	22,577	24,125	28,071	27,874	24,062	23,481	9,325	9,325	20,198	19,437	24,097	11,180	11,926	20,055	275,731
Exports to Pacific Southwest															
3 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	3,318	1,606	1,713	3,211	9,848
4 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	1,659	1,606	0	0	0	0	3,265
5 BPA to RVSD CapS	0	3,200	3,680	3,520	3,200	3,520	1,760	1,760	4,830	0	0	0	0	0	25,470
6 BPA to RVSD C/N/X	5,290	0	0	0	0	0	0	0	0	5,060	5,290	2,415	2,415	5,060	25,530
7 BPA to RVSD C/N/X	8,280	1,800	2,070	1,980	1,800	1,980	990	990	0	0	8,280	3,600	3,960	7,920	43,650
8 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	11,340	11,880	0	0	0	0	23,220
9 BPA NW-SW Intertie Losses	407	150	173	165	150	165	83	83	535	556	507	229	243	486	3,929
10 Total Exports To PSW	13,977	5,150	5,923	5,665	5,150	5,665	2,833	2,833	18,364	19,102	17,395	7,849	8,330	16,677	134,912
Exports to Inland Southwest															
11 BPA to SPP PwrS	19,440	17,280	18,720	18,720	17,280	18,720	15,600	15,600	30,000	31,200	31,200	15,600	15,600	30,000	294,960
12 Total Exports To ISW	19,440	17,280	18,720	18,720	17,280	18,720	15,600	15,600	30,000	31,200	31,200	15,600	15,600	30,000	294,960
Exports to Canada															
13 BPA to BCHP CanEnt	346,351	334,728	345,886	345,886	312,413	345,886	166,899	167,364	345,886	334,728	345,886	204,156	217,766	408,312	4,222,145
14 Total Exports To Canada	346,351	334,728	345,886	345,886	312,413	345,886	166,899	167,364	345,886	334,728	345,886	204,156	217,766	408,312	4,222,145
Exports to Other Entities															
15 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
16 Federal System	402,344	381,283	398,600	398,144	358,904	393,751	194,656	195,121	414,447	404,467	418,577	238,786	253,622	475,044	4,927,748

Table A-5: Federal Imports
PNW Loads and Resource Study
2006 - 2007 Fiscal Years 6/222006
[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Imports From East of Continental Divide															
1 PPL to BPA PwrS	45,011	64,320	86,120	78,541	55,680	50,501	17,203	18,637	42	7,571	13,520	2,683	2,890	16,166	458,885
2 Total Imports From ECD	45,011	64,320	86,120	78,541	55,680	50,501	17,203	18,637	42	7,571	13,520	2,683	2,890	16,166	458,885
Imports From Pacific Southwest															
3 BURB to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 BURB to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 GLEN to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 GLEN to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 PASA to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 PASA to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PASA to BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 RVSD to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 RVSD to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 RVSD to BPA S/Pwr/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Imports From PSW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports From Inland Southwest															
19 Other Entities to BPA	20,800	20,000	20,000	0	0	0	0	0	0	0	0	0	0	0	60,800
20 SPP to BPA PwrS	18,720	18,000	18,000	18,720	17,280	19,440	14,400	15,600	31,200	31,200	30,000	15,600	16,800	28,800	293,760
21 Total Imports From ISW	39,520	38,000	38,000	18,720	17,280	19,440	14,400	15,600	31,200	31,200	30,000	15,600	16,800	28,800	354,560
Imports From Canada															
22 BCHP to BPA PwrS	416	416	416	432	384	432	192	208	432	416	416	208	224	400	4,992
23 Total Imports From Canada	416	416	416	432	384	432	192	208	432	416	416	208	224	400	4,992
Imports From Other Entities															
24 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
25 Federal System	84,947	102,736	124,536	97,693	73,344	70,373	31,795	34,445	31,674	39,187	43,936	18,491	19,914	45,366	818,437

Table A-5: Federal Imports
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

6/222006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Imports From East of Continental Divide															
1 PPL to BPA PwrS	46,742	64,320	86,120	78,541	58,000	48,630	18,637	18,637	42	7,280	14,061	2,683	2,683	16,840	463,216
2 Total Imports From ECD	46,742	64,320	86,120	78,541	58,000	48,630	18,637	18,637	42	7,280	14,061	2,683	2,683	16,840	463,216
Imports From Pacific Southwest															
3 BURB to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 BURB to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 GLEN to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 GLEN to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 PASA to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 PASA to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PASA to BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 RVSD to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 RVSD to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 RVSD to BPA S/Pwr/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Imports From PSW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports From Inland Southwest															
19 SPP to BPA PwrS	19,440	18,000	18,000	18,720	18,000	18,720	15,600	15,600	31,200	30,000	31,200	15,600	15,600	30,000	295,680
20 Total Imports From ISW	19,440	18,000	18,000	18,720	18,000	18,720	15,600	15,600	31,200	30,000	31,200	15,600	15,600	30,000	295,680
Imports From Canada															
21 BCHP to BPA PwrS	432	416	416	432	400	416	208	208	432	400	432	208	208	416	5,024
22 Total Imports From Canada	432	416	416	432	400	416	208	208	432	400	432	208	208	416	5,024
Imports From Other Entities															
23 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
24 Federal System	66,614	82,736	104,536	97,693	76,400	67,766	34,445	34,445	31,674	37,680	45,693	18,491	18,491	47,256	763,920

Table A-5: Federal Imports
PNW Loads and Resource Study
2008 - 2009 Fiscal Years 6/222006
[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Imports From East of Continental Divide															
1 PPL to BPA PwrS	46,742	61,747	89,565	78,541	55,680	48,630	18,637	18,637	40	7,571	14,061	2,683	2,683	16,840	462,058
2 Total Imports From ECD	46,742	61,747	89,565	78,541	55,680	48,630	18,637	18,637	40	7,571	14,061	2,683	2,683	16,840	462,058
Imports From Pacific Southwest															
3 PASA to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PASA to BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 RVSD to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 RVSD to BPA XchgNrg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 RVSD to BPA S/Pwr/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 RVSD to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Total Imports From PSW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports From Inland Southwest															
13 SPP to BPA PwrS	19,440	17,280	18,720	18,720	17,280	18,720	15,600	15,600	30,000	31,200	31,200	15,600	15,600	30,000	294,960
14 Total Imports From ISW	19,440	17,280	18,720	18,720	17,280	18,720	15,600	15,600	30,000	31,200	31,200	15,600	15,600	30,000	294,960
Imports From Canada															
15 BCHP to BPA PwrS	432	400	432	432	384	416	208	208	416	416	432	208	208	416	5,008
16 Total Imports From Canada	432	400	432	432	384	416	208	208	416	416	432	208	208	416	5,008
Imports From Other Entities															
17 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
18 Federal System	66,614	79,427	108,717	97,693	73,344	67,766	34,445	34,445	30,456	39,187	45,693	18,491	18,491	47,256	762,026

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal System															
1 Georgia-Pacific Paper (Wauna)	9,273	9,860	10,440	11,415	10,207	11,184	4,861	5,267	9,202	5,104	8,164	4,185	4,507	7,972	111,641
2 Total Federal System	9,273	9,860	10,440	11,415	10,207	11,184	4,861	5,267	9,202	5,104	8,164	4,185	4,507	7,972	111,641
Renewable Resources															
3 Federal System	9,273	9,860	10,440	11,415	10,207	11,184	4,861	5,267	9,202	5,104	8,164	4,185	4,507	7,972	111,641

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal System															
1 Georgia-Pacific Paper (Wauna)	9,629	9,860	10,440	11,415	10,632	10,770	5,267	5,267	9,202	4,908	8,491	4,185	4,185	8,304	112,554
2 Total Federal System	9,629	9,860	10,440	11,415	10,632	10,770	5,267	5,267	9,202	4,908	8,491	4,185	4,185	8,304	112,554
Renewable Resources															
3 Federal System	9,629	9,860	10,440	11,415	10,632	10,770	5,267	5,267	9,202	4,908	8,491	4,185	4,185	8,304	112,554

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal System															
1 Georgia-Pacific Paper (Wauna)	9,629	9,466	10,858	11,415	10,207	10,770	5,267	5,267	8,848	5,104	8,491	4,185	4,185	8,304	111,994
2 Total Federal System	9,629	9,466	10,858	11,415	10,207	10,770	5,267	5,267	8,848	5,104	8,491	4,185	4,185	8,304	111,994
Renewable Resources															
3 Federal System	9,629	9,466	10,858	11,415	10,207	10,770	5,267	5,267	8,848	5,104	8,491	4,185	4,185	8,304	111,994

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Columbia Generating Station: Uranium															
1 BPA - Power Business	416,000	400,000	400,000	416,000	384,000	432,000	192,000	208,000	147,680	69,472	400,000	208,000	224,000	384,000	4,281,152
2 Columbia Generating Station: Regional Total	416,000	400,000	400,000	416,000	384,000	432,000	192,000	208,000	147,680	69,472	400,000	208,000	224,000	384,000	4,281,152
Total Large Thermal															
3 Federal System	416,000	400,000	400,000	416,000	384,000	432,000	192,000	208,000	147,680	69,472	400,000	208,000	224,000	384,000	4,281,152

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Columbia Generating Station: Uranium															
1 BPA - Power Business	432,000	400,000	400,000	416,000	400,000	416,000	208,000	208,000	416,000	400,000	416,000	208,000	208,000	400,000	4,928,000
2 Columbia Generating Station: Regional Total	432,000	400,000	400,000	416,000	400,000	416,000	208,000	208,000	416,000	400,000	416,000	208,000	208,000	400,000	4,928,000
Total Large Thermal															
3 Federal System	432,000	400,000	400,000	416,000	400,000	416,000	208,000	208,000	416,000	400,000	416,000	208,000	208,000	400,000	4,928,000

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Columbia Generating Station: Uranium															
1 BPA - Power Business	432,000	384,000	416,000	416,000	384,000	416,000	208,000	208,000	142,000	69,472	416,000	208,000	208,000	400,000	4,307,472
2 Columbia Generating Station: Regional Total	432,000	384,000	416,000	416,000	384,000	416,000	208,000	208,000	142,000	69,472	416,000	208,000	208,000	400,000	4,307,472
Total Large Thermal															
3 Federal System	432,000	384,000	416,000	416,000	384,000	416,000	208,000	208,000	142,000	69,472	416,000	208,000	208,000	400,000	4,307,472

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2006 - 2007 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
BPA Canada															
1 BPA: Regional Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Priest Rapids CER for Canada															
2 AVWP to BPA	716	692	715	715	646	715	336	337	695	673	695	337	359	673	8,303
3 COPD to BPA	332	321	331	331	299	331	156	156	322	312	322	156	166	312	3,848
4 CWPC to BPA	0	23	24	24	22	24	11	11	23	23	23	11	12	23	254
5 EWEB to BPA	201	194	201	201	181	201	94	94	195	189	195	94	101	189	2,329
6 FGRV to BPA	76	74	76	76	69	76	36	36	74	72	74	36	38	72	886
7 FREC to BPA	0	30	31	31	28	31	14	14	30	29	30	14	15	29	324
8 GCPD to BPA	13,534	13,080	13,516	13,516	12,208	13,516	6,344	6,361	13,146	12,722	13,146	6,361	6,785	12,722	156,956
9 ICLP to BPA	0	8	9	9	8	9	4	4	8	8	8	4	4	8	93
10 KITT to BPA	61	59	61	61	55	61	29	29	59	57	59	29	31	57	709
11 KOOT to BPA	0	40	41	41	37	41	19	19	40	39	40	19	21	39	440
12 LREC to BPA	0	6	7	7	6	7	3	3	6	6	6	3	3	6	69
13 LVE to BPA	0	53	54	54	49	54	26	26	53	51	53	26	27	51	578
14 MCMN to BPA	76	74	76	76	69	76	36	36	74	72	74	36	38	72	886
15 MTFR to BPA	76	74	76	76	69	76	36	36	74	72	74	36	38	72	886
16 NLEC to BPA	0	36	37	37	33	37	17	17	36	35	36	17	19	35	393
17 PGE to BPA	1,633	1,578	1,631	1,631	1,473	1,631	765	767	1,586	1,535	1,586	767	819	1,535	18,936
18 PPL to BPA	1,633	1,578	1,631	1,631	1,473	1,631	765	767	1,586	1,535	1,586	767	819	1,535	18,936
19 PSE to BPA	941	909	940	940	849	940	441	442	914	884	914	442	472	884	10,911
20 RREC to BPA	0	8	9	9	8	9	4	4	8	8	8	4	4	8	93
21 SCL to BPA	118	114	118	118	106	118	55	55	115	111	115	55	59	111	1,367
22 SLEC to BPA	0	6	7	7	6	7	3	3	6	6	6	3	3	6	69
23 TPU to BPA	884	854	883	883	797	883	414	416	859	831	859	416	443	831	10,253
24 UNEC to BPA	0	15	15	15	14	15	7	7	15	14	15	7	8	14	162
25 UNKMKT to BPA	1,548	1,268	1,310	1,310	1,183	1,310	615	617	1,274	1,233	1,274	617	658	1,233	15,450
26 Priest Rapids: Regional Totals	21,829	21,094	21,797	21,797	19,688	21,797	10,230	10,259	21,202	20,518	21,202	10,259	10,943	20,518	253,132

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Wanapum CER for Canada															
27 AVWP to BPA	1,711	1,653	1,708	1,708	1,543	1,708	801	803	1,659	1,606	1,659	803	856	1,606	19,825
28 COPD to BPA	563	544	562	562	508	562	264	264	546	529	546	264	282	529	6,528
29 CWPC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 EWEB to BPA	480	464	479	479	433	479	225	225	465	450	465	225	240	450	5,561
31 FGRV to BPA	146	141	146	146	132	146	68	69	142	137	142	69	73	137	1,692
32 FREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 GCPD to BPA	7,614	7,358	7,604	7,604	6,868	7,604	3,564	3,574	7,386	7,148	7,386	3,574	3,812	7,148	88,245
34 ICLP to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 KITT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 KOOT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37 LREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 LVE to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39 MCMN to BPA	146	141	146	146	132	146	68	69	142	137	142	69	73	137	1,692
40 MTFR to BPA	146	141	146	146	132	146	68	69	142	137	142	69	73	137	1,692
41 NLEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 PGE to BPA	3,901	3,770	3,896	3,896	3,519	3,896	1,826	1,831	3,784	3,662	3,784	1,831	1,953	3,662	45,210
43 PPL to BPA	3,901	3,770	3,896	3,896	3,519	3,896	1,826	1,831	3,784	3,662	3,784	1,831	1,953	3,662	45,210
44 PSE to BPA	2,253	2,177	2,250	2,250	2,032	2,250	1,055	1,058	2,186	2,115	2,186	1,058	1,128	2,115	26,111
45 RREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46 SCL to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47 SLEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48 TPU to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49 UNEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 UNKMKT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51 Wanapum: Regional Totals	20,860	20,160	20,832	20,832	18,816	20,832	9,765	9,792	20,237	19,584	20,237	9,792	10,445	19,584	241,767

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	4,023	3,888	4,018	4,018	3,629	4,018	1,885	1,890	3,906	3,780	3,906	1,890	2,016	3,780	46,645
53 PSE to BPA	4,023	3,888	4,018	4,018	3,629	4,018	1,885	1,890	3,906	3,780	3,906	1,890	2,016	3,780	46,645
54 Rock Island P.H. #1: Regional Totals	8,046	7,776	8,035	8,035	7,258	8,035	3,770	3,780	7,812	7,560	7,812	3,780	4,032	7,560	93,291
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	2,571	2,485	2,568	2,568	2,319	2,568	1,204	1,207	2,495	2,415	2,495	1,207	1,288	2,415	29,807
56 PSE to BPA	2,571	2,485	2,568	2,568	2,319	2,568	1,204	1,207	2,495	2,415	2,495	1,207	1,288	2,415	29,807
57 Rock Island P.H. #2: Regional Totals	5,143	4,970	5,136	5,136	4,639	5,136	2,408	2,415	4,991	4,830	4,991	2,415	2,576	4,830	59,614
Rocky Reach CER for Canada															
58 AVWP to BPA	795	768	794	794	717	794	373	374	772	748	772	374	399	748	9,221
59 CHPD to BPA	4,140	4,001	4,134	4,134	3,734	4,134	1,941	1,946	4,022	3,892	4,022	1,946	2,076	3,892	48,015
60 CLKM to BPA	6,306	6,094	6,297	6,297	5,688	6,297	2,956	2,964	6,126	5,928	6,126	2,964	3,162	5,928	73,135
61 DOPD to BPA	740	715	739	739	668	739	347	348	719	696	719	348	371	696	8,585
62 PGE to BPA	3,317	3,206	3,313	3,313	2,992	3,313	1,555	1,559	3,223	3,119	3,223	1,559	1,663	3,119	38,475
63 PPL to BPA	1,453	1,404	1,451	1,451	1,311	1,451	681	683	1,412	1,366	1,412	683	729	1,366	16,853
64 PSE to BPA	10,665	10,307	10,651	10,651	9,620	10,651	5,000	5,013	10,361	10,027	10,361	5,013	5,348	10,027	123,693
65 Rocky Reach: Regional Totals	27,416	26,496	27,379	27,379	24,730	27,379	12,852	12,888	26,635	25,776	26,635	12,888	13,747	25,776	317,977
Wells CER for Canada															
66 AVWP to BPA	592	572	591	591	534	591	277	278	574	556	574	278	296	556	6,861
67 COLV to BPA	798	771	797	797	720	797	373	374	773	748	773	374	399	748	9,244
68 DOPD to BPA	5,080	4,909	5,073	5,073	4,582	5,073	2,376	2,383	4,924	4,765	4,924	2,383	2,541	4,765	58,851
69 OKPD to BPA	1,355	1,309	1,353	1,353	1,222	1,353	634	635	1,313	1,271	1,313	635	678	1,271	15,694
70 PGE to BPA	3,438	3,323	3,433	3,433	3,101	3,433	1,608	1,612	3,332	3,225	3,332	1,612	1,720	3,225	39,830
71 PPL to BPA	1,168	1,129	1,167	1,167	1,054	1,167	547	548	1,133	1,096	1,133	548	585	1,096	13,537
72 PSE to BPA	5,300	5,122	5,293	5,293	4,780	5,293	2,479	2,486	5,137	4,971	5,137	2,486	2,651	4,971	61,398
73 Wells: Regional Totals	17,731	17,136	17,707	17,707	15,994	17,707	8,293	8,316	17,186	16,632	17,186	8,316	8,870	16,632	205,414
Total CER For Canada															
74 Federal System	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75 Public Entities	43,160	41,938	43,336	43,336	39,142	43,336	20,325	20,382	42,122	40,763	42,122	20,382	21,740	40,763	502,846
76 Investor-Owned Entities	50,011	48,332	49,943	49,943	45,110	49,943	23,422	23,487	48,541	46,975	48,541	23,487	25,053	46,975	579,764
77 Other Entities	7,853	7,362	7,607	7,607	6,871	7,607	3,571	3,581	7,400	7,162	7,400	3,581	3,820	7,162	88,585
78 Non-NW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79 Total CER For Canada	101,024	97,632	100,886	100,886	91,123	100,886	47,318	47,450	98,063	94,900	98,063	47,450	50,613	94,900	1,171,195

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Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
BPA Canada															
1 BPA: Regional Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Priest Rapids CER for Canada															
2 AVWP to BPA	696	673	695	695	651	695	331	332	686	664	686	332	354	664	8,154
3 COPD to BPA	323	312	322	322	302	322	153	154	318	308	318	154	164	308	3,779
4 CWPC to BPA	23	23	23	23	22	23	11	11	23	22	23	11	12	22	273
5 EWEB to BPA	195	189	195	195	182	195	93	93	192	186	192	93	99	186	2,287
6 FGRV to BPA	74	72	74	74	69	74	35	35	73	71	73	35	38	71	870
7 FREC to BPA	30	29	30	30	28	30	14	14	29	28	29	14	15	28	348
8 GCPD to BPA	13,164	12,722	13,146	13,146	12,298	13,146	6,254	6,272	12,962	12,544	12,962	6,272	6,690	12,544	154,124
9 ICLP to BPA	8	8	8	8	8	8	4	4	8	8	8	4	4	8	99
10 KITT to BPA	59	57	59	59	56	59	28	28	59	57	59	28	30	57	696
11 KOOT to BPA	40	39	40	40	38	40	19	19	40	38	40	19	21	38	472
12 LREC to BPA	6	6	6	6	6	6	3	3	6	6	6	3	3	6	75
13 LVE to BPA	53	51	53	53	50	53	25	25	52	51	52	25	27	51	621
14 MCMN to BPA	74	72	74	74	69	74	35	35	73	71	73	35	38	71	870
15 MTFR to BPA	74	72	74	74	69	74	35	35	73	71	73	35	38	71	870
16 NLEC to BPA	36	35	36	36	34	36	17	17	36	34	36	17	18	34	423
17 PGE to BPA	1,588	1,535	1,586	1,586	1,484	1,586	755	757	1,564	1,513	1,564	757	807	1,513	18,594
18 PPL to BPA	1,588	1,535	1,586	1,586	1,484	1,586	755	757	1,564	1,513	1,564	757	807	1,513	18,594
19 PSE to BPA	915	884	914	914	855	914	435	436	901	872	901	436	465	872	10,714
20 RREC to BPA	8	8	8	8	8	8	4	4	8	8	8	4	4	8	99
21 SCL to BPA	115	111	115	115	107	115	54	55	113	109	113	55	58	109	1,342
22 SLEC to BPA	6	6	6	6	6	6	3	3	6	6	6	3	3	6	75
23 TPU to BPA	860	831	859	859	803	859	409	410	847	819	847	410	437	819	10,068
24 UNEC to BPA	15	14	15	15	14	15	7	7	15	14	15	7	8	14	174
25 UNKMKT to BPA	1,276	1,233	1,274	1,274	1,192	1,274	606	608	1,256	1,216	1,256	608	649	1,216	14,940
26 Priest Rapids: Regional Totals	21,230	20,518	21,202	21,202	19,834	21,202	10,087	10,115	20,904	20,230	20,904	10,115	10,789	20,230	248,563

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Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Wanapum CER for Canada															
27 AVWP to BPA	1,662	1,606	1,659	1,659	1,552	1,659	789	791	1,635	1,582	1,635	791	844	1,582	19,448
28 COPD to BPA	547	529	546	546	511	546	260	260	538	521	538	260	278	521	6,404
29 CWPC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 EWEB to BPA	466	450	465	465	435	465	221	222	459	444	459	222	237	444	5,455
31 FGRV to BPA	142	137	142	142	133	142	67	68	140	135	140	68	72	135	1,660
32 FREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 GCPD to BPA	7,396	7,148	7,386	7,386	6,910	7,386	3,512	3,522	7,278	7,043	7,278	3,522	3,756	7,043	86,566
34 ICLP to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 KITT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 KOOT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37 LREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 LVE to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39 MCMN to BPA	142	137	142	142	133	142	67	68	140	135	140	68	72	135	1,660
40 MTFR to BPA	142	137	142	142	133	142	67	68	140	135	140	68	72	135	1,660
41 NLEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 PGE to BPA	3,789	3,662	3,784	3,784	3,540	3,784	1,799	1,804	3,729	3,608	3,729	1,804	1,924	3,608	44,350
43 PPL to BPA	3,789	3,662	3,784	3,784	3,540	3,784	1,799	1,804	3,729	3,608	3,729	1,804	1,924	3,608	44,350
44 PSE to BPA	2,189	2,115	2,186	2,186	2,045	2,186	1,039	1,042	2,153	2,084	2,153	1,042	1,111	2,084	25,614
45 RREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46 SCL to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47 SLEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48 TPU to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49 UNEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 UNKMKT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51 Wanapum: Regional Totals	20,264	19,584	20,237	20,237	18,931	20,237	9,621	9,648	19,939	19,296	19,939	9,648	10,291	19,296	237,168

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Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	3,911	3,780	3,906	3,906	3,654	3,906	1,867	1,872	3,869	3,744	3,869	1,872	1,997	3,744	45,896
53 PSE to BPA	3,911	3,780	3,906	3,906	3,654	3,906	1,867	1,872	3,869	3,744	3,869	1,872	1,997	3,744	45,896
54 Rock Island P.H. #1: Regional Totals	7,823	7,560	7,812	7,812	7,308	7,812	3,734	3,744	7,738	7,488	7,738	3,744	3,994	7,488	91,793
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	2,499	2,415	2,495	2,495	2,334	2,495	1,190	1,193	2,466	2,387	2,466	1,193	1,273	2,387	29,290
56 PSE to BPA	2,499	2,415	2,495	2,495	2,334	2,495	1,190	1,193	2,466	2,387	2,466	1,193	1,273	2,387	29,290
57 Rock Island P.H. #2: Regional Totals	4,997	4,830	4,991	4,991	4,669	4,991	2,380	2,387	4,933	4,774	4,933	2,387	2,546	4,774	58,581
Rocky Reach CER for Canada															
58 AVWP to BPA	773	748	772	772	723	772	368	369	762	737	762	369	393	737	9,056
59 CHPD to BPA	4,027	3,892	4,022	4,022	3,762	4,022	1,914	1,919	3,966	3,838	3,966	1,919	2,047	3,838	47,153
60 CLKM to BPA	6,134	5,928	6,126	6,126	5,731	6,126	2,915	2,923	6,041	5,846	6,041	2,923	3,118	5,846	71,822
61 DOPD to BPA	720	696	719	719	673	719	342	343	709	686	709	343	366	686	8,431
62 PGE to BPA	3,227	3,119	3,223	3,223	3,015	3,223	1,533	1,538	3,178	3,075	3,178	1,538	1,640	3,075	37,785
63 PPL to BPA	1,414	1,366	1,412	1,412	1,321	1,412	672	674	1,392	1,347	1,392	674	718	1,347	16,550
64 PSE to BPA	10,375	10,027	10,361	10,361	9,693	10,361	4,930	4,943	10,216	9,887	10,216	4,943	5,273	9,887	121,474
65 Rocky Reach: Regional Totals	26,671	25,776	26,635	26,635	24,917	26,635	12,673	12,708	26,263	25,416	26,263	12,708	13,555	25,416	312,272
Wells CER for Canada															
66 AVWP to BPA	575	556	574	574	537	574	273	274	567	548	567	274	292	548	6,733
67 COLV to BPA	774	748	773	773	723	773	368	369	763	739	763	369	394	739	9,072
68 DOPD to BPA	4,931	4,765	4,924	4,924	4,606	4,924	2,345	2,352	4,860	4,703	4,860	2,352	2,508	4,703	57,756
69 OKPD to BPA	1,315	1,271	1,313	1,313	1,228	1,313	625	627	1,296	1,254	1,296	627	669	1,254	15,402
70 PGE to BPA	3,337	3,225	3,332	3,332	3,117	3,332	1,587	1,592	3,289	3,183	3,289	1,592	1,698	3,183	39,089
71 PPL to BPA	1,134	1,096	1,133	1,133	1,060	1,133	539	541	1,118	1,082	1,118	541	577	1,082	13,285
72 PSE to BPA	5,144	4,971	5,137	5,137	4,806	5,137	2,447	2,453	5,070	4,907	5,070	2,453	2,617	4,907	60,256
73 Wells: Regional Totals	17,210	16,632	17,186	17,186	16,078	17,186	8,185	8,208	16,963	16,416	16,963	8,208	8,755	16,416	201,593
Total CER For Canada															
74 Federal System	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75 Public Entities	42,179	40,763	42,122	42,122	39,404	42,122	20,052	20,108	41,556	40,216	41,556	20,108	21,448	40,216	493,972
76 Investor-Owned Entities	48,606	46,975	48,541	48,541	45,409	48,541	23,107	23,171	47,887	46,342	47,887	23,171	24,716	46,342	569,234
77 Other Entities	7,410	7,162	7,400	7,400	6,923	7,400	3,521	3,531	7,297	7,062	7,297	3,531	3,766	7,062	86,763
78 Non-NW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79 Total CER For Canada	98,195	94,900	98,063	98,063	91,736	98,063	46,680	46,810	96,740	93,620	96,740	46,810	49,930	93,620	1,149,969

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Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
BPA Canada															
1 BPA: Regional Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Priest Rapids CER for Canada															
2 AVWP to BPA	687	664	686	686	619	686	347	348	720	697	720	348	372	697	8,276
3 COPD to BPA	318	308	318	318	287	318	161	161	334	323	334	161	172	323	3,835
4 CWPC to BPA	23	22	23	23	21	23	12	12	24	23	24	12	12	23	278
5 EWEB to BPA	193	186	192	192	174	192	97	98	202	195	202	98	104	195	2,321
6 FGRV to BPA	73	71	73	73	66	73	37	37	77	74	77	37	40	74	883
7 FREC to BPA	29	28	29	29	26	29	15	15	31	30	31	15	16	30	353
8 GCPD to BPA	12,979	12,544	12,962	12,962	11,708	12,962	6,566	6,584	13,608	13,169	13,608	6,584	7,023	13,169	156,428
9 ICLP to BPA	8	8	8	8	8	8	4	4	9	8	9	4	5	8	101
10 KITT to BPA	59	57	59	59	53	59	30	30	61	59	61	30	32	59	706
11 KOOT to BPA	40	38	40	40	36	40	20	20	42	40	42	20	22	40	479
12 LREC to BPA	6	6	6	6	6	6	3	3	7	6	7	3	3	6	76
13 LVE to BPA	52	51	52	52	47	52	26	27	55	53	55	27	28	53	631
14 MCMN to BPA	73	71	73	73	66	73	37	37	77	74	77	37	40	74	883
15 MTFR to BPA	73	71	73	73	66	73	37	37	77	74	77	37	40	74	883
16 NLEC to BPA	36	34	36	36	32	36	18	18	37	36	37	18	19	36	429
17 PGE to BPA	1,566	1,513	1,564	1,564	1,412	1,564	792	794	1,642	1,589	1,642	794	847	1,589	18,872
18 PPL to BPA	1,566	1,513	1,564	1,564	1,412	1,564	792	794	1,642	1,589	1,642	794	847	1,589	18,872
19 PSE to BPA	902	872	901	901	814	901	456	458	946	915	946	458	488	915	10,874
20 RREC to BPA	8	8	8	8	8	8	4	4	9	8	9	4	5	8	101
21 SCL to BPA	113	109	113	113	102	113	57	57	119	115	119	57	61	115	1,362
22 SLEC to BPA	6	6	6	6	6	6	3	3	7	6	7	3	3	6	76
23 TPU to BPA	848	819	847	847	765	847	429	430	889	860	889	430	459	860	10,218
24 UNEC to BPA	15	14	15	15	13	15	7	7	15	15	15	7	8	15	177
25 UNKMKT to BPA	1,258	1,216	1,256	1,256	1,135	1,256	636	638	1,319	1,277	1,319	638	681	1,277	15,163
26 Priest Rapids: Regional Totals	20,932	20,230	20,904	20,904	18,881	20,904	10,589	10,619	21,946	21,238	21,946	10,619	11,327	21,238	252,278

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Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Wanapum CER for Canada															
27 AVWP to BPA	1,637	1,582	1,635	1,635	1,477	1,635	830	832	1,720	1,665	1,720	832	888	1,665	19,755
28 COPD to BPA	539	521	538	538	486	538	273	274	566	548	566	274	292	548	6,505
29 CWPC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 EWEB to BPA	459	444	459	459	414	459	233	233	483	467	483	233	249	467	5,541
31 FGRV to BPA	140	135	140	140	126	140	71	71	147	142	147	71	76	142	1,686
32 FREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 GCPD to BPA	7,288	7,043	7,278	7,278	6,574	7,278	3,695	3,705	7,658	7,411	7,658	3,705	3,953	7,411	87,934
34 ICLP to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 KITT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 KOOT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37 LREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 LVE to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39 MCMN to BPA	140	135	140	140	126	140	71	71	147	142	147	71	76	142	1,686
40 MTFR to BPA	140	135	140	140	126	140	71	71	147	142	147	71	76	142	1,686
41 NLEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 PGE to BPA	3,734	3,608	3,729	3,729	3,368	3,729	1,893	1,898	3,923	3,797	3,923	1,898	2,025	3,797	45,051
43 PPL to BPA	3,734	3,608	3,729	3,729	3,368	3,729	1,893	1,898	3,923	3,797	3,923	1,898	2,025	3,797	45,051
44 PSE to BPA	2,156	2,084	2,153	2,153	1,945	2,153	1,093	1,096	2,266	2,193	2,266	1,096	1,170	2,193	26,019
45 RREC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46 SCL to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47 SLEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48 TPU to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49 UNEC to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 UNKMKT to BPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51 Wanapum: Regional Totals	19,966	19,296	19,939	19,939	18,010	19,939	10,124	10,152	20,981	20,304	20,981	10,152	10,829	20,304	240,915

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

Continued 2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	3,874	3,744	3,869	3,869	3,494	3,869	1,957	1,962	4,055	3,924	4,055	1,962	2,093	3,924	46,650
53 PSE to BPA	3,874	3,744	3,869	3,869	3,494	3,869	1,957	1,962	4,055	3,924	4,055	1,962	2,093	3,924	46,650
54 Rock Island P.H. #1: Regional Totals	7,748	7,488	7,738	7,738	6,989	7,738	3,913	3,924	8,110	7,848	8,110	3,924	4,186	7,848	93,300
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	2,470	2,387	2,466	2,466	2,228	2,466	1,253	1,256	2,597	2,513	2,597	1,256	1,340	2,513	29,808
56 PSE to BPA	2,470	2,387	2,466	2,466	2,228	2,466	1,253	1,256	2,597	2,513	2,597	1,256	1,340	2,513	29,808
57 Rock Island P.H. #2: Regional Totals	4,939	4,774	4,933	4,933	4,455	4,933	2,506	2,513	5,193	5,026	5,193	2,513	2,680	5,026	59,616
Rocky Reach CER for Canada															
58 AVWP to BPA	763	737	762	762	688	762	386	387	800	775	800	387	413	775	9,197
59 CHPD to BPA	3,971	3,838	3,966	3,966	3,582	3,966	2,011	2,017	4,168	4,034	4,168	2,017	2,151	4,034	47,887
60 CLKM to BPA	6,049	5,846	6,041	6,041	5,456	6,041	3,063	3,072	6,349	6,144	6,349	3,072	3,277	6,144	72,940
61 DOPD to BPA	710	686	709	709	640	709	360	361	745	721	745	361	385	721	8,563
62 PGE to BPA	3,182	3,075	3,178	3,178	2,870	3,178	1,612	1,616	3,340	3,232	3,340	1,616	1,724	3,232	38,373
63 PPL to BPA	1,394	1,347	1,392	1,392	1,257	1,392	706	708	1,463	1,416	1,463	708	755	1,416	16,808
64 PSE to BPA	10,230	9,887	10,216	10,216	9,228	10,216	5,181	5,195	10,737	10,391	10,737	5,195	5,542	10,391	123,364
65 Rocky Reach: Regional Totals	26,299	25,416	26,263	26,263	23,722	26,263	13,319	13,356	27,602	26,712	27,602	13,356	14,246	26,712	317,132
Wells CER for Canada															
66 AVWP to BPA	567	548	567	567	512	567	288	289	596	577	596	289	308	577	6,847
67 COLV to BPA	764	739	763	763	689	763	388	389	804	778	804	389	415	778	9,225
68 DOPD to BPA	4,866	4,703	4,860	4,860	4,390	4,860	2,468	2,475	5,116	4,951	5,116	2,475	2,640	4,951	58,732
69 OKPD to BPA	1,298	1,254	1,296	1,296	1,171	1,296	658	660	1,364	1,320	1,364	660	704	1,320	15,662
70 PGE to BPA	3,294	3,183	3,289	3,289	2,971	3,289	1,671	1,675	3,462	3,351	3,462	1,675	1,787	3,351	39,749
71 PPL to BPA	1,119	1,082	1,118	1,118	1,010	1,118	568	569	1,177	1,139	1,177	569	607	1,139	13,509
72 PSE to BPA	5,077	4,907	5,070	5,070	4,580	5,070	2,575	2,582	5,337	5,165	5,337	2,582	2,755	5,165	61,274
73 Wells: Regional Totals	16,986	16,416	16,963	16,963	15,322	16,963	8,616	8,640	17,856	17,280	17,856	8,640	9,216	17,280	204,997
Total CER For Canada															
74 Federal System	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75 Public Entities	41,612	40,216	41,556	41,556	37,535	41,556	21,073	21,132	43,673	42,264	43,673	21,132	22,541	42,264	501,785
76 Investor-Owned Entities	47,951	46,342	47,887	47,887	43,253	47,887	24,294	24,361	50,347	48,723	50,347	24,361	25,986	48,723	578,349
77 Other Entities	7,307	7,062	7,297	7,297	6,591	7,297	3,700	3,710	7,668	7,420	7,668	3,710	3,957	7,420	88,104
78 Non-NW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79 Total CER For Canada	96,870	93,620	96,740	96,740	87,378	96,740	49,067	49,204	101,688	98,407	101,688	49,204	52,484	98,407	1,168,238

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	34,112	34,112	35,424	31,488	17,712	7,872	8,528	0	0	0	0	0	0	169,248
2 BPA To CCPD PwrS	7,072	6,800	6,800	7,072	6,528	7,344	3,264	3,536	7,072	7,072	6,800	3,536	3,808	6,528	83,232
3 BPA To PPL CapS	98,345	107,732	99,806	107,575	88,709	92,535	43,568	43,568	96,866	94,043	83,544	49,342	53,137	96,424	1,155,193
4 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	14,444	13,441	0	0	0	27,885
5 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 BPA To PPL PwrS	45,011	64,320	86,120	78,541	55,680	50,501	17,203	18,637	42	7,571	13,520	2,683	2,890	16,166	458,885
7 BPA To PSE WP3Set	0	34,112	34,112	35,424	31,488	17,712	7,872	8,528	0	0	0	0	0	0	169,248
8 Other Entities To BPA	156,000	150,000	150,000	0	0	0	0	0	0	0	0	0	0	0	456,000
9 PPL To BPA S/Pwr/X	9,519	9,173	0	0	0	0	0	0	0	0	0	0	0	8,787	27,479
10 PPL To BPA PwrS	4,160	4,000	4,000	4,160	3,840	4,320	1,920	2,080	4,160	4,160	4,000	2,080	2,240	3,840	48,960
11 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 PPL To BPA PkRepl	8,122	27,537	21,018	13,841	22,112	25,333	5,643	5,621	10,345	12,088	26,146	14,806	16,136	15,653	224,402
13 Total Contracts	328,229	437,787	435,968	282,037	239,845	215,456	87,342	90,497	118,484	139,378	147,451	72,447	78,211	147,399	2,820,532
Total Contracts Out															
14 Federal System	150,428	247,076	260,950	264,036	213,893	185,804	79,779	82,797	103,979	123,130	117,305	55,561	59,835	119,119	2,063,691
15 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Investor-Owned Entities	21,801	40,710	25,018	18,001	25,952	29,653	7,563	7,701	14,505	16,248	30,146	16,886	18,376	28,280	300,841
17 Other Entities	156,000	150,000	150,000	0	0	0	0	0	0	0	0	0	0	0	456,000
18 Total Contracts Out	328,229	437,787	435,968	282,037	239,845	215,456	87,342	90,497	118,484	139,378	147,451	72,447	78,211	147,399	2,820,532
Total Contracts In															
19 Federal System	177,801	190,710	175,018	18,001	25,952	29,653	7,563	7,701	14,505	16,248	30,146	16,886	18,376	28,280	756,841
20 Public Entities	7,072	6,800	6,800	7,072	6,528	7,344	3,264	3,536	7,072	7,072	6,800	3,536	3,808	6,528	83,232
21 Investor-Owned Entities	143,356	240,276	254,150	256,964	207,365	178,460	76,515	79,261	96,907	116,058	110,505	52,025	56,027	112,591	1,980,459
22 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Total Contracts In	328,229	437,787	435,968	282,037	239,845	215,456	87,342	90,497	118,484	139,378	147,451	72,447	78,211	147,399	2,820,532

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2007 - 2008 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	34,112	34,112	35,424	32,800	17,056	8,528	8,528	0	0	0	0	0	0	170,560
2 BPA To CCPD PwrS	7,344	6,800	6,800	7,072	6,800	7,072	3,536	3,536	7,072	6,800	7,072	3,536	3,536	6,800	83,776
3 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	13,889	13,978	0	0	0	27,867
4 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 BPA To PPL PwrS	46,742	64,320	86,120	78,541	58,000	48,630	18,637	18,637	42	7,280	14,061	2,683	2,683	16,840	463,216
6 BPA To PPL CapS	98,345	107,732	99,806	107,575	88,709	92,535	43,568	43,568	96,866	94,043	83,544	49,342	53,137	96,424	1,155,193
7 BPA To PSE WP3Set	0	34,112	34,112	35,424	32,800	17,056	8,528	8,528	0	0	0	0	0	0	170,560
8 PPL To BPA PwrS	4,320	4,000	4,000	4,160	4,000	4,160	2,080	2,080	4,160	4,000	4,160	2,080	2,080	4,000	49,280
9 PPL To BPA S/Pwr/X	9,886	9,153	0	0	0	0	0	0	0	0	0	0	0	9,153	28,192
10 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 PPL To BPA PkRepl	8,122	27,537	21,018	13,841	22,112	25,333	5,643	5,621	10,345	12,088	26,146	14,806	16,136	15,653	224,402
12 Total Contracts	174,760	287,767	285,968	282,037	245,221	211,842	90,520	90,497	118,484	138,100	148,960	72,447	77,573	148,870	2,373,046
Total Contracts Out															
13 Federal System	152,432	247,076	260,950	264,036	219,109	182,349	82,797	82,797	103,979	122,012	118,655	55,561	59,357	120,064	2,071,172
14 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Investor-Owned Entities	22,328	40,690	25,018	18,001	26,112	29,493	7,723	7,701	14,505	16,088	30,306	16,886	18,216	28,806	301,874
16 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Contracts Out	174,760	287,767	285,968	282,037	245,221	211,842	90,520	90,497	118,484	138,100	148,960	72,447	77,573	148,870	2,373,046
Total Contracts In															
18 Federal System	22,328	40,690	25,018	18,001	26,112	29,493	7,723	7,701	14,505	16,088	30,306	16,886	18,216	28,806	301,874
19 Public Entities	7,344	6,800	6,800	7,072	6,800	7,072	3,536	3,536	7,072	6,800	7,072	3,536	3,536	6,800	83,776
20 Investor-Owned Entities	145,088	240,276	254,150	256,964	212,309	175,277	79,261	79,261	96,907	115,212	111,583	52,025	55,821	113,264	1,987,396
21 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Total Contracts In	174,760	287,767	285,968	282,037	245,221	211,842	90,520	90,497	118,484	138,100	148,960	72,447	77,573	148,870	2,373,046

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	32,800	35,424	35,424	31,488	17,056	8,528	8,528	0	0	0	0	0	0	169,248
2 BPA To CCPD PwrS	7,344	6,528	7,072	7,072	6,528	7,072	3,536	3,536	6,800	7,072	7,072	3,536	3,536	6,800	83,504
3 BPA To PPL CapS	98,345	107,732	99,806	107,575	88,709	92,535	43,568	43,568	96,866	94,043	83,544	49,342	53,137	96,424	1,155,193
4 BPA To PPL PwrS	46,742	61,747	89,565	78,541	55,680	48,630	18,637	18,637	40	7,571	14,061	2,683	2,683	16,840	462,058
5 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	14,444	13,978	0	0	0	28,422
7 BPA To PSE WP3Set	0	32,800	35,424	35,424	31,488	17,056	8,528	8,528	0	0	0	0	0	0	169,248
8 PPL To BPA S/Pwr/X	9,886	8,787	0	0	0	0	0	0	0	0	0	0	0	9,153	27,826
9 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PPL To BPA PkRepl	8,122	27,537	21,018	13,841	22,112	25,333	5,643	5,621	10,345	12,088	26,146	14,806	16,136	15,653	224,402
11 PPL To BPA PwrS	4,320	3,840	4,160	4,160	3,840	4,160	2,080	2,080	4,000	1,920	0	0	0	0	34,560
12 Total Contracts	174,760	281,772	292,469	282,037	239,845	211,842	90,520	90,497	118,050	137,138	144,800	70,367	75,493	144,870	2,354,460
Total Contracts Out															
13 Federal System	152,432	241,607	267,291	264,036	213,893	182,349	82,797	82,797	103,706	123,130	118,655	55,561	59,357	120,064	2,067,673
14 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Investor-Owned Entities	22,328	40,164	25,178	18,001	25,952	29,493	7,723	7,701	14,345	14,008	26,146	14,806	16,136	24,806	286,788
16 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Contracts Out	174,760	281,772	292,469	282,037	239,845	211,842	90,520	90,497	118,050	137,138	144,800	70,367	75,493	144,870	2,354,460
Total Contracts In															
18 Federal System	22,328	40,164	25,178	18,001	25,952	29,493	7,723	7,701	14,345	14,008	26,146	14,806	16,136	24,806	286,788
19 Public Entities	7,344	6,528	7,072	7,072	6,528	7,072	3,536	3,536	6,800	7,072	7,072	3,536	3,536	6,800	83,504
20 Investor-Owned Entities	145,088	235,079	260,219	256,964	207,365	175,277	79,261	79,261	96,906	116,058	111,583	52,025	55,821	113,264	1,984,169
21 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Total Contracts In	174,760	281,772	292,469	282,037	239,845	211,842	90,520	90,497	118,050	137,138	144,800	70,367	75,493	144,870	2,354,460

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
1 Federal Entities	50,939	56,245	62,026	64,439	55,681	57,335	24,379	24,373	49,675	49,488	54,232	27,318	29,138	47,406	652,672
2 Total Federal Entities	50,939	56,245	62,026	64,439	55,681	57,335	24,379	24,373	49,675	49,488	54,232	27,318	29,138	47,406	652,672
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	40,464	5,694	12,499	29,220	30,349	21,956	40,475	51,039	122,129	120,867	127,118	53,101	58,623	85,997	799,531
4 Total U.S. Bur. of Reclamation	40,464	5,694	12,499	29,220	30,349	21,956	40,475	51,039	122,129	120,867	127,118	53,101	58,623	85,997	799,531
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	983,417	1,120,949	1,269,336	1,294,157	1,141,184	1,185,141	505,817	505,746	949,253	820,468	828,539	434,208	462,809	936,336	12,437,359
8 Total Generating Public Entities	983,417	1,120,949	1,269,336	1,294,157	1,141,184	1,185,141	505,817	505,746	949,253	820,468	828,539	434,208	462,809	936,336	12,437,359
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	478,175	514,871	508,742	398,014	363,977	428,598	183,447	183,204	394,872	567,057	561,018	267,966	271,776	444,607	5,566,324
10 Total Gen. Pub. Entities (Slice)	478,175	514,871	508,742	398,014	363,977	428,598	183,447	183,204	394,872	567,057	561,018	267,966	271,776	444,607	5,566,324
Non-Generating Public Entities															
11 Non-Generating Public Entities	1,213,114	1,328,543	1,509,731	1,560,641	1,337,895	1,337,897	608,064	604,755	1,252,090	1,266,552	1,354,236	653,259	689,715	1,155,945	15,872,437
12 Total Non-Gen. Public Entities	1,213,114	1,328,543	1,509,731	1,560,641	1,337,895	1,337,897	608,064	604,755	1,252,090	1,266,552	1,354,236	653,259	689,715	1,155,945	15,872,437
Non-Generating Public Entities (Slice)															
13 Non-Gen. Public Entities (Slice)	287,120	309,154	305,474	238,987	218,550	257,352	110,151	110,005	237,101	340,490	336,863	160,900	163,188	266,964	3,342,298
14 Total Non-Gen. Pub. Ent. (Slice)	287,120	309,154	305,474	238,987	218,550	257,352	110,151	110,005	237,101	340,490	336,863	160,900	163,188	266,964	3,342,298
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	50,939	56,245	62,026	64,439	55,681	57,335	24,379	24,373	49,675	49,488	54,232	27,318	29,138	47,406	652,672
20 U.S. Bureau of Reclamation	40,464	5,694	12,499	29,220	30,349	21,956	40,475	51,039	122,129	120,867	127,118	53,101	58,623	85,997	799,531
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	1,461,592	1,635,820	1,778,078	1,692,170	1,505,161	1,613,739	689,264	688,950	1,344,125	1,387,525	1,389,557	702,174	734,585	1,380,943	18,003,683
23 Non-Generating Public Entities	1,500,234	1,637,697	1,815,205	1,799,629	1,556,444	1,595,248	718,215	714,760	1,489,191	1,607,041	1,691,100	814,159	852,903	1,422,910	19,214,735
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	3,053,229	3,335,456	3,667,808	3,585,457	3,147,635	3,288,278	1,472,333	1,479,121	3,005,120	3,164,922	3,262,006	1,596,752	1,675,248	2,937,256	38,670,621

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
1 Federal Entities	54,086	58,849	64,957	67,451	59,109	59,034	25,877	25,877	51,869	50,871	57,422	28,119	30,007	50,305	683,832
2 Total Federal Entities	54,086	58,849	64,957	67,451	59,109	59,034	25,877	25,877	51,869	50,871	57,422	28,119	30,007	50,305	683,832
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	41,584	5,694	12,499	29,220	31,610	21,316	43,242	50,992	122,129	117,536	130,529	53,292	55,597	88,699	803,939
4 Total U.S. Bur. of Reclamation	41,584	5,694	12,499	29,220	31,610	21,316	43,242	50,992	122,129	117,536	130,529	53,292	55,597	88,699	803,939
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	1,022,637	1,147,479	1,305,562	1,322,495	1,181,646	1,191,828	520,798	520,881	902,370	827,260	860,778	439,542	468,732	970,569	12,682,577
8 Total Generating Public Entities	1,022,637	1,147,479	1,305,562	1,322,495	1,181,646	1,191,828	520,798	520,881	902,370	827,260	860,778	439,542	468,732	970,569	12,682,577
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	481,506	515,928	509,801	398,985	377,822	427,310	186,143	183,746	433,175	614,082	570,222	271,663	273,500	448,422	5,692,304
10 Total Gen. Public Entities (Slice)	481,506	515,928	509,801	398,985	377,822	427,310	186,143	183,746	433,175	614,082	570,222	271,663	273,500	448,422	5,692,304
Non-Generating Public Entities															
11 Non-Generating Public Entities	1,258,086	1,359,411	1,542,940	1,594,591	1,378,611	1,353,976	626,073	623,114	1,276,682	1,278,797	1,393,772	660,053	697,240	1,190,717	16,234,063
12 Total Non-Gen. Public Entities	1,258,086	1,359,411	1,542,940	1,594,591	1,378,611	1,353,976	626,073	623,114	1,276,682	1,278,797	1,393,772	660,053	697,240	1,190,717	16,234,063
Non-Generating Public Entities (Slice)															
13 Non-Gen. Public Entities (Slice)	289,120	309,789	306,110	239,570	226,863	256,578	111,769	110,330	260,100	368,726	342,390	163,120	164,223	269,255	3,417,943
14 Total Non-Gen. Pub. Ent. Slice)	289,120	309,789	306,110	239,570	226,863	256,578	111,769	110,330	260,100	368,726	342,390	163,120	164,223	269,255	3,417,943
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	54,086	58,849	64,957	67,451	59,109	59,034	25,877	25,877	51,869	50,871	57,422	28,119	30,007	50,305	683,832
20 U.S. Bureau of Reclamation	41,584	5,694	12,499	29,220	31,610	21,316	43,242	50,992	122,129	117,536	130,529	53,292	55,597	88,699	803,939
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	1,504,142	1,663,406	1,815,363	1,721,479	1,559,468	1,619,139	706,941	704,626	1,335,545	1,441,343	1,431,000	711,205	742,232	1,418,991	18,374,881
23 Non-Generating Public Entities	1,547,206	1,669,200	1,849,050	1,834,162	1,605,474	1,610,555	737,842	733,444	1,536,782	1,647,523	1,736,162	823,174	861,462	1,459,972	19,652,006
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	3,147,019	3,397,149	3,741,869	3,652,312	3,255,661	3,310,044	1,513,902	1,514,939	3,046,324	3,257,272	3,355,114	1,615,789	1,689,298	3,017,967	39,514,658

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
1 Federal Entities	58,417	62,820	71,249	73,018	62,999	63,736	27,875	27,876	55,120	55,700	61,867	30,268	32,307	54,232	737,484
2 Total Federal Entities	58,417	62,820	71,249	73,018	62,999	63,736	27,875	27,876	55,120	55,700	61,867	30,268	32,307	54,232	737,484
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	41,584	5,468	12,996	29,220	30,349	21,316	43,242	50,992	118,502	120,867	130,529	53,292	55,597	88,699	802,654
4 Total U.S. Bur. of Reclamation	41,584	5,468	12,996	29,220	30,349	21,316	43,242	50,992	118,502	120,867	130,529	53,292	55,597	88,699	802,654
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	1,044,076	1,138,942	1,339,754	1,329,198	1,163,756	1,204,588	524,850	524,938	898,365	849,833	864,928	443,237	472,778	978,065	12,777,307
8 Total Generating Public Entities	1,044,076	1,138,942	1,339,754	1,329,198	1,163,756	1,204,588	524,850	524,938	898,365	849,833	864,928	443,237	472,778	978,065	12,777,307
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	483,422	515,377	514,141	400,862	366,504	429,168	189,277	187,355	402,904	582,686	589,729	271,570	273,067	439,464	5,645,526
10 Total Gen. Public Entities (Slice)	483,422	515,377	514,141	400,862	366,504	429,168	189,277	187,355	402,904	582,686	589,729	271,570	273,067	439,464	5,645,526
Non-Generating Public Entities															
11 Non-Generating Public Entities	1,270,316	1,360,703	1,572,374	1,610,661	1,379,697	1,366,801	631,912	628,862	1,276,851	1,301,795	1,406,544	665,922	703,591	1,201,604	16,377,634
12 Total Non-Gen. Public Entities	1,270,316	1,360,703	1,572,374	1,610,661	1,379,697	1,366,801	631,912	628,862	1,276,851	1,301,795	1,406,544	665,922	703,591	1,201,604	16,377,634
Non-Generating Public Entities (Slice)															
13 Non-Gen. Public Entities (Slice)	290,271	309,458	308,716	240,697	220,067	257,694	113,651	112,497	241,923	349,874	354,103	163,064	163,963	263,876	3,389,855
14 Total Non-Gen. Pub. Ent. (Slice)	290,271	309,458	308,716	240,697	220,067	257,694	113,651	112,497	241,923	349,874	354,103	163,064	163,963	263,876	3,389,855
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	58,417	62,820	71,249	73,018	62,999	63,736	27,875	27,876	55,120	55,700	61,867	30,268	32,307	54,232	737,484
20 U.S. Bureau of Reclamation	41,584	5,468	12,996	29,220	30,349	21,316	43,242	50,992	118,502	120,867	130,529	53,292	55,597	88,699	802,654
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	1,527,498	1,654,319	1,853,895	1,730,060	1,530,259	1,633,756	714,127	712,292	1,301,268	1,432,519	1,454,657	714,807	745,845	1,417,529	18,422,833
23 Non-Generating Public Entities	1,560,587	1,670,161	1,881,090	1,851,358	1,599,764	1,624,495	745,564	741,359	1,518,775	1,651,669	1,760,647	828,986	867,554	1,465,480	19,767,489
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	3,188,086	3,392,769	3,819,231	3,683,656	3,223,371	3,343,303	1,530,807	1,532,519	2,993,665	3,260,755	3,407,701	1,627,353	1,701,304	3,025,940	39,730,460

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

6/22/2006

2006 - 2007 Fiscal Years

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	1,094	1,052	1,052	1,094	1,010	1,136	505	547	1,094	1,094	1,052	547	589	1,010	12,876
2 Elwah Hydro (BPA)	1,586	4,027	4,584	5,057	3,507	3,703	3,531	3,531	3,848	3,526	2,202	1,731	1,731	895	43,458
3 Glines Hydro (BPA)	2,864	6,028	6,726	6,314	5,379	5,638	5,285	5,285	12,801	6,452	4,317	3,367	3,367	1,533	75,355
4 Federal -Total NUG: Hydro	5,544	11,107	12,363	12,465	9,896	10,477	9,321	9,363	17,743	11,072	7,572	5,644	5,686	3,438	131,690
NUG: Renewables															
5 Ashland Solar Project (BPA)	1	1	0	1	1	1	1	1	2	2	2	1	1	2	15
6 Condon Wind Project (BPA)	4,542	5,071	5,071	4,473	3,182	6,371	1,881	2,038	3,746	3,343	3,317	1,521	1,639	3,432	49,627
7 Foote Creek 1 (BPA)	2,594	2,695	3,419	3,667	2,969	2,760	1,148	1,244	2,042	1,822	1,026	667	718	1,752	28,524
8 Foote Creek 2 (BPA)	190	294	304	556	423	278	203	219	235	250	172	57	61	136	3,378
9 Foote Creek 4 (BPA)	2,083	3,180	3,230	3,800	3,685	2,595	1,369	1,483	2,112	2,258	1,885	646	695	1,464	30,485
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	3,015	1,957	1,415	1,438	1,792	3,780	1,482	1,606	4,461	3,954	4,497	1,687	1,817	3,065	35,966
12 Stateline Wind Project (BPA)	7,826	8,420	6,971	6,482	3,608	14,324	4,227	4,580	9,102	7,911	7,706	3,338	3,594	7,621	95,708
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	20,252	21,618	20,410	20,417	15,659	30,110	10,311	11,170	21,700	19,539	18,604	7,917	8,525	17,471	243,703
Total Non-Utility Generating Resources															
15 Federal System	25,795	32,725	32,773	32,882	25,555	40,587	19,631	20,533	39,443	30,611	26,176	13,561	14,211	20,909	375,393

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study 6/22/2006

2007 - 2008 Fiscal Years

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	1,136	1,052	1,052	1,094	1,052	1,094	547	547	1,094	1,052	1,094	547	547	1,052	12,961
2 Elwah Hydro (BPA)	1,586	4,027	4,584	5,057	3,507	3,703	3,531	3,531	3,848	3,526	2,202	1,731	1,731	895	43,458
3 Glines Hydro (BPA)	2,864	6,028	6,726	6,314	5,379	5,638	5,285	5,285	12,801	6,452	4,317	3,367	3,367	1,533	75,355
4 Federal -Total NUG: Hydro	5,586	11,107	12,363	12,465	9,938	10,435	9,363	9,363	17,743	11,030	7,614	5,644	5,644	3,480	131,774
NUG: Renewables															
5 Ashland Solar Project (BPA)	1	1	0	1	1	1	1	1	2	2	2	1	1	2	15
6 Condon Wind Project (BPA)	4,542	5,071	5,071	4,473	3,296	6,371	1,960	1,960	3,746	3,343	3,317	1,580	1,580	3,432	49,742
7 Foote Creek 1 (BPA)	2,594	2,695	3,419	3,667	3,075	2,760	1,196	1,196	2,042	1,822	1,026	693	693	1,752	28,630
8 Foote Creek 2 (BPA)	190	294	304	556	438	278	211	211	235	250	172	59	59	136	3,393
9 Foote Creek 4 (BPA)	2,083	3,180	3,230	3,800	3,817	2,595	1,426	1,426	2,112	2,258	1,885	671	671	1,464	30,618
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	3,015	1,957	1,415	1,438	1,856	3,780	1,544	1,544	4,461	3,954	4,497	1,752	1,752	3,065	36,030
12 Stateline Wind Project (BPA)	7,826	8,420	6,971	6,482	3,736	14,324	4,403	4,403	9,102	7,911	7,706	3,466	3,466	7,621	95,837
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	20,252	21,618	20,410	20,417	16,219	30,110	10,741	10,741	21,700	19,539	18,605	8,221	8,221	17,471	244,265
Total Non-Utility Generating Resources															
15 Federal System	25,837	32,725	32,773	32,882	26,157	40,545	20,104	20,104	39,443	30,569	26,218	13,866	13,866	20,951	376,039

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

6/22/2006

2008 - 2009 Fiscal Years

[38] 2007 Final Rate Case

Heavy Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	1,136	1,010	1,094	1,094	1,010	1,094	547	547	1,052	1,094	1,094	547	547	1,052	12,919
2 Elwah Hydro (BPA)	1,586	4,027	4,584	5,057	3,507	3,703	3,531	3,531	3,848	3,526	2,202	1,731	1,731	895	43,458
3 Glines Hydro (BPA)	2,864	6,028	6,726	6,314	5,379	5,638	5,285	5,285	12,801	6,452	4,317	3,367	3,367	1,533	75,355
4 Federal -Total NUG: Hydro	5,586	11,065	12,405	12,465	9,896	10,435	9,363	9,363	17,701	11,072	7,614	5,644	5,644	3,480	131,732
NUG: Renewables															
5 Ashland Solar Project (BPA)	1	1	0	1	1	1	1	1	2	2	2	1	1	2	15
6 Condon Wind Project (BPA)	4,542	5,071	5,071	4,473	3,182	6,371	1,960	1,960	3,746	3,343	3,317	1,580	1,580	3,432	49,628
7 Foote Creek 1 (BPA)	2,594	2,695	3,419	3,667	2,969	2,760	1,196	1,196	2,042	1,822	1,026	693	693	1,752	28,524
8 Foote Creek 2 (BPA)	190	294	304	556	423	278	211	211	235	250	172	59	59	136	3,378
9 Foote Creek 4 (BPA)	2,083	3,180	3,230	3,800	3,685	2,595	1,426	1,426	2,112	2,258	1,885	671	671	1,464	30,486
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	3,015	1,957	1,415	1,438	1,792	3,780	1,544	1,544	4,461	3,954	4,497	1,752	1,752	3,065	35,966
12 Stateline Wind Project (BPA)	7,826	8,420	6,971	6,482	3,608	14,324	4,403	4,403	9,102	7,911	7,706	3,466	3,466	7,621	95,708
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	20,252	21,618	20,410	20,417	15,659	30,110	10,741	10,741	21,700	19,539	18,605	8,221	8,221	17,471	243,705
Total Non-Utility Generating Resources															
15 Federal System	25,837	32,683	32,815	32,882	25,555	40,545	20,104	20,104	39,401	30,611	26,218	13,866	13,866	20,951	375,437

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LLH MWhs ANALYSIS

2.6 FEDERAL LOAD RESOURCE STUDY-LLH MWhs ANALYSIS
Monthly LLH MWhs Energy
For FY 2007 through 2009

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Table A-2: Federal Exports
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Exports East of Continental Divide															
1 BPA to Other Entities	21,410	23,281	29,549	26,950	24,918	24,760	9,177	9,177	18,120	17,594	20,151	9,402	10,028	18,046	262,563
2 Total Exports to ECD	21,410	23,281	29,549	26,950	24,918	24,760	9,177	9,177	18,120	17,594	20,151	9,402	10,028	18,046	262,563
Exports to Pacific Southwest															
3 BPA to BURB C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 BPA to GLEN C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 BPA to RVSD CapS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 BPA to RVSD C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 BPA to RVSD C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	6,768	7,344	0	0	0	0	14,112
12 BPA NW-SW Intertie Losses	0	0	0	0	0	0	0	0	203	220	0	0	0	0	423
13 Total Exports To PSW	0	0	0	0	0	0	0	0	6,971	7,564	0	0	0	0	14,535
Exports to Inland Southwest															
14 BPA to SPP PwrS	14,805	14,400	15,480	14,760	12,960	14,040	12,525	11,400	24,600	22,800	25,800	11,400	12,000	25,200	232,170
15 Total Exports To ISW	14,805	14,400	15,480	14,760	12,960	14,040	12,525	11,400	24,600	22,800	25,800	11,400	12,000	25,200	232,170
Exports to Canada															
16 BPA to BCHP CanEnt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Exports To Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports to Other Entities															
18 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
19 Federal System	36,215	37,681	45,029	41,710	37,878	38,800	21,702	20,577	49,691	47,959	45,951	20,802	22,028	43,246	509,268

Table A-2: Federal Exports
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Exports East of Continental Divide															
1 BPA to Other Entities	22,240	24,187	30,699	28,006	25,895	25,731	9,539	9,539	18,815	18,264	20,910	9,761	10,412	18,746	272,743
2 Total Exports to ECD	22,240	24,187	30,699	28,006	25,895	25,731	9,539	9,539	18,815	18,264	20,910	9,761	10,412	18,746	272,743
Exports to Pacific Southwest															
3 BPA to BURB C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 BPA to GLEN C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 BPA to RVSD CapS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 BPA to RVSD C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 BPA to RVSD C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	7,056	7,344	0	0	0	0	14,400
12 BPA NW-SW Intertie Losses	0	0	0	0	0	0	0	0	212	220	0	0	0	0	432
13 Total Exports To PSW	0	0	0	0	0	0	0	0	7,268	7,564	0	0	0	0	14,832
Exports to Inland Southwest															
14 BPA to SPP PwrS	14,085	14,400	15,480	14,760	13,320	14,760	11,325	11,400	24,600	24,000	24,600	11,400	13,200	24,000	231,330
15 Total Exports To ISW	14,085	14,400	15,480	14,760	13,320	14,760	11,325	11,400	24,600	24,000	24,600	11,400	13,200	24,000	231,330
Exports to Canada															
16 BPA to BCHP CanEnt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Exports To Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports to Other Entities															
18 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
19 Federal System	36,325	38,587	46,179	42,766	39,215	40,491	20,864	20,939	50,683	49,829	45,510	21,161	23,612	42,746	518,905

Table A-2: Federal Exports
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Exports East of Continental Divide															
1 BPA to Other Entities	14,282	15,511	19,679	17,911	16,554	16,453	6,081	6,081	12,129	11,808	13,574	6,302	6,722	12,038	175,126
2 Total Exports to ECD	14,282	15,511	19,679	17,911	16,554	16,453	6,081	6,081	12,129	11,808	13,574	6,302	6,722	12,038	175,126
Exports to Pacific Southwest															
3 BPA to PASA C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 BPA to PASA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 BPA to RVSD CapS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 BPA to RVSD C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 BPA to RVSD C/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 BPA to RVSD S/Pwr/X	0	0	0	0	0	0	0	0	7,344	7,056	0	0	0	0	14,400
9 BPA NW-SW Intertie Losses	0	0	0	0	0	0	0	0	220	212	0	0	0	0	432
10 Total Exports To PSW	0	0	0	0	0	0	0	0	7,564	7,268	0	0	0	0	14,832
Exports to Inland Southwest															
11 BPA to SPP PwrS	14,085	15,120	14,760	14,760	12,960	14,760	11,325	11,400	25,800	22,800	24,600	11,400	13,200	24,000	230,970
12 Total Exports To ISW	14,085	15,120	14,760	14,760	12,960	14,760	11,325	11,400	25,800	22,800	24,600	11,400	13,200	24,000	230,970
Exports to Canada															
13 BPA to BCHP CanEnt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Total Exports To Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports to Other Entities															
15 Total Exports To Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports															
16 Federal System	28,367	30,631	34,439	32,671	29,514	31,213	17,406	17,481	45,494	41,875	38,174	17,702	19,922	36,038	420,928

Table A-5: Federal Imports
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Imports From East of Continental Divide															
1 PPL to BPA PwrS	35,598	51,456	74,063	61,926	41,760	36,473	14,963	13,619	33	5,533	11,627	1,961	2,064	14,146	365,222
2 Total Imports From ECD	35,598	51,456	74,063	61,926	41,760	36,473	14,963	13,619	33	5,533	11,627	1,961	2,064	14,146	365,222
Imports From Pacific Southwest															
3 BURB to BPA XchgNrg	1,941	2,695	3,752	3,752	3,389	3,752	1,439	1,309	1,938	1,876	1,938	944	994	1,876	31,595
4 BURB to BPA PkRepl	2,850	1,950	1,950	2,025	1,800	2,025	981	893	3,150	3,900	3,900	1,973	2,076	3,750	33,223
5 GLEN to BPA XchgNrg	2,157	2,994	4,170	4,170	3,766	4,170	2,062	992	2,154	2,084	2,154	1,049	1,105	2,084	35,111
6 GLEN to BPA PkRepl	3,167	2,167	2,167	2,250	2,000	2,250	1,090	993	3,500	4,334	4,334	2,192	2,308	4,166	36,918
7 PASA to BPA XchgNrg	1,294	1,797	2,501	2,501	2,259	2,501	1,238	595	1,292	1,251	1,292	629	663	1,251	21,064
8 PASA to BPA PkRepl	1,900	1,300	1,300	1,350	1,200	1,350	654	596	2,100	2,600	2,600	1,315	1,385	2,500	22,150
9 PASA to BPA XchgNrg	2,593	2,506	2,589	2,589	2,339	1,295	0	0	0	0	0	0	0	2,506	16,415
10 PASA to BPA S/N/X	514	497	513	513	464	238	0	0	0	0	0	0	0	497	3,236
11 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	3,318	1,606	1,713	3,211	9,848
12 RVSD to BPA XchgNrg	4,451	4,113	4,438	4,221	3,896	4,221	2,259	0	0	0	0	0	0	0	27,599
13 RVSD to BPA PkRepl	0	3,520	3,360	3,680	3,200	3,520	1,759	1,601	5,290	0	0	0	0	0	25,930
14 RVSD to BPA PkRepl	5,060	0	0	0	0	0	0	0	0	4,830	5,060	2,577	2,713	4,600	24,840
15 RVSD to BPA XchgNrg	0	11,707	12,585	11,999	10,536	11,414	6,109	0	0	0	0	0	0	0	64,350
16 RVSD to BPA S/Pwr/X	0	6,936	7,456	7,109	6,242	6,762	3,620	0	0	0	0	0	0	0	38,125
17 RVSD to BPA PkRepl	7,920	1,980	1,890	2,070	1,800	2,070	989	901	0	0	7,920	4,034	4,246	7,200	43,020
18 Total Imports From PSW	33,847	44,161	48,671	48,229	42,890	45,568	22,200	7,880	19,424	20,875	32,516	16,319	17,202	33,641	433,424
Imports From Inland Southwest															
19 Other Entities to BPA	16,450	16,000	17,200	0	0	0	0	0	0	0	0	0	0	0	49,650
20 SPP to BPA PwrS	14,805	14,400	15,480	14,760	12,960	14,040	12,525	11,400	24,600	22,800	25,800	11,400	12,000	25,200	232,170
21 Total Imports From ISW	31,255	30,400	32,680	14,760	12,960	14,040	12,525	11,400	24,600	22,800	25,800	11,400	12,000	25,200	281,820
Imports From Canada															
22 BCHP to BPA PwrS	329	304	328	312	288	312	167	152	312	304	328	152	160	320	3,768
23 Total Imports From Canada	329	304	328	312	288	312	167	152	312	304	328	152	160	320	3,768
Imports From Other Entities															
24 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
25 Federal System	101,028	126,321	155,743	125,228	97,898	96,392	49,855	33,052	44,369	49,512	70,271	29,832	31,426	73,306	1,084,234

Table A-5: Federal Imports
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Imports From East of Continental Divide															
1 PPL to BPA PwrS	33,867	51,456	74,063	61,926	42,920	38,343	13,530	13,619	33	5,824	11,086	1,961	2,270	13,472	364,371
2 Total Imports From ECD	33,867	51,456	74,063	61,926	42,920	38,343	13,530	13,619	33	5,824	11,086	1,961	2,270	13,472	364,371
Imports From Pacific Southwest															
3 BURB to BPA XchgNrg	1,936	2,685	3,735	3,735	3,494	3,735	1,803	0	0	0	0	0	0	0	21,123
4 BURB to BPA PkRepl	2,925	1,950	1,950	2,025	1,875	1,950	975	0	0	0	0	0	0	0	13,650
5 GLEN to BPA XchgNrg	2,151	2,983	4,150	4,150	3,882	4,150	2,002	0	0	0	0	0	0	0	23,468
6 GLEN to BPA PkRepl	3,250	2,167	2,167	2,250	2,083	2,167	1,083	0	0	0	0	0	0	0	15,167
7 PASA to BPA XchgNrg	1,291	1,790	2,490	2,490	2,330	2,490	1,202	0	0	0	0	0	0	0	14,083
8 PASA to BPA PkRepl	1,950	1,300	1,300	1,350	1,250	1,300	650	0	0	0	0	0	0	0	9,100
9 PASA to BPA XchgNrg	2,593	2,506	2,589	2,589	2,422	1,295	0	0	0	0	0	0	0	2,506	16,499
10 PASA to BPA S/N/X	514	497	513	513	480	238	0	0	0	0	0	0	0	497	3,253
11 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	3,318	1,606	1,713	3,211	9,848
12 RVSD to BPA XchgNrg	4,251	4,129	4,455	4,238	4,020	4,455	2,051	0	0	0	0	0	0	0	27,599
13 RVSD to BPA PkRepl	0	3,520	3,360	3,680	3,360	3,360	1,754	1,766	5,060	0	0	0	0	0	25,860
14 RVSD to BPA PkRepl	5,290	0	0	0	0	0	0	0	0	4,830	5,290	2,238	2,592	5,060	25,300
15 RVSD to BPA XchgNrg	0	11,654	12,528	11,945	10,780	11,945	5,499	0	0	0	0	0	0	0	64,351
16 RVSD to BPA S/Pwr/X	0	6,859	7,373	7,030	6,344	7,030	3,236	0	0	0	0	0	0	0	37,872
17 RVSD to BPA PkRepl	8,280	1,980	1,890	2,070	1,800	1,890	987	993	0	0	8,280	3,503	4,057	7,920	43,650
18 Total Imports From PSW	34,431	44,019	48,500	48,065	44,120	46,005	21,242	2,759	5,060	4,830	16,888	7,347	8,362	19,194	350,822
Imports From Inland Southwest															
19 SPP to BPA PwrS	14,085	14,400	15,480	14,760	13,320	14,760	11,325	11,400	24,600	24,000	24,600	11,400	13,200	24,000	231,330
20 Total Imports From ISW	14,085	14,400	15,480	14,760	13,320	14,760	11,325	11,400	24,600	24,000	24,600	11,400	13,200	24,000	231,330
Imports From Canada															
21 BCHP to BPA PwrS	313	304	328	312	296	328	151	152	312	320	312	152	176	304	3,760
22 Total Imports From Canada	313	304	328	312	296	328	151	152	312	320	312	152	176	304	3,760
Imports From Other Entities															
23 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
24 Federal System	82,695	110,179	138,372	125,064	100,656	99,436	46,248	27,930	30,005	34,974	52,887	20,859	24,008	56,970	950,283

Table A-5: Federal Imports
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Imports From East of Continental Divide															
1 PPL to BPA PwrS	33,867	54,029	70,618	61,926	41,760	38,343	13,530	13,619	34	5,533	11,086	1,961	2,270	13,472	362,049
2 Total Imports From ECD	33,867	54,029	70,618	61,926	41,760	38,343	13,530	13,619	34	5,533	11,086	1,961	2,270	13,472	362,049
Imports From Pacific Southwest															
3 PASA to BPA XchgNrg	2,593	2,506	2,589	2,589	2,339	1,295	0	0	0	0	0	0	0	2,506	16,415
4 PASA to BPA S/N/X	514	497	513	513	464	238	0	0	0	0	0	0	0	497	3,236
5 PASA to BPA PkRepl	0	0	0	0	0	0	0	0	0	0	3,318	1,606	1,713	3,211	9,848
6 RVSD to BPA XchgNrg	4,268	4,364	4,255	4,255	3,927	4,473	2,059	0	0	0	0	0	0	0	27,601
7 RVSD to BPA PkRepl	0	3,200	3,680	3,520	3,200	3,520	1,754	1,766	4,830	0	0	0	0	0	25,470
8 RVSD to BPA PkRepl	5,290	0	0	0	0	0	0	0	0	5,060	5,290	2,238	2,592	5,060	25,530
9 RVSD to BPA XchgNrg	0	12,292	11,999	11,999	10,536	11,999	5,524	0	0	0	0	0	0	0	64,349
10 RVSD to BPA S/Pwr/X	0	7,186	7,015	7,015	6,159	7,015	3,229	0	0	0	0	0	0	0	37,619
11 RVSD to BPA PkRepl	8,280	1,800	2,070	1,980	1,800	1,980	987	993	0	0	8,280	3,503	4,057	7,920	43,650
12 Total Imports From PSW	20,945	31,844	32,121	31,871	28,424	30,520	13,553	2,759	4,830	5,060	16,888	7,347	8,362	19,194	253,718
Imports From Inland Southwest															
13 SPP to BPA PwrS	14,085	15,120	14,760	14,760	12,960	14,760	11,325	11,400	25,800	22,800	24,600	11,400	13,200	24,000	230,970
14 Total Imports From ISW	14,085	15,120	14,760	14,760	12,960	14,760	11,325	11,400	25,800	22,800	24,600	11,400	13,200	24,000	230,970
Imports From Canada															
15 BCHP to BPA PwrS	313	320	312	312	288	328	151	152	328	304	312	152	176	304	3,752
16 Total Imports From Canada	313	320	312	312	288	328	151	152	328	304	312	152	176	304	3,752
Imports From Other Entities															
17 Total Imports From Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Imports															
18 Federal System	69,209	101,313	117,812	108,870	83,432	83,951	38,559	27,930	30,992	33,697	52,887	20,859	24,008	56,970	850,489

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal System															
1 Georgia-Pacific Paper (Wauna)	7,333	7,888	8,978	9,000	7,655	8,078	4,228	3,849	7,255	3,730	7,021	3,058	3,219	6,975	88,269
2 Total Federal System	7,333	7,888	8,978	9,000	7,655	8,078	4,228	3,849	7,255	3,730	7,021	3,058	3,219	6,975	88,269
Renewable Resources															
3 Federal System	7,333	7,888	8,978	9,000	7,655	8,078	4,228	3,849	7,255	3,730	7,021	3,058	3,219	6,975	88,269

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal System															
1 Georgia-Pacific Paper (Wauna)	6,977	7,888	8,978	9,000	7,868	8,492	3,823	3,849	7,255	3,926	6,694	3,058	3,541	6,643	87,994
2 Total Federal System	6,977	7,888	8,978	9,000	7,868	8,492	3,823	3,849	7,255	3,926	6,694	3,058	3,541	6,643	87,994
Renewable Resources															
3 Federal System	6,977	7,888	8,978	9,000	7,868	8,492	3,823	3,849	7,255	3,926	6,694	3,058	3,541	6,643	87,994

Table A-8: Federal Renewable Resources
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal System															
1 Georgia-Pacific Paper (Wauna)	6,977	8,282	8,561	9,000	7,655	8,492	3,823	3,849	7,609	3,730	6,694	3,058	3,541	6,643	87,916
2 Total Federal System	6,977	8,282	8,561	9,000	7,655	8,492	3,823	3,849	7,609	3,730	6,694	3,058	3,541	6,643	87,916
Renewable Resources															
3 Federal System	6,977	8,282	8,561	9,000	7,655	8,492	3,823	3,849	7,609	3,730	6,694	3,058	3,541	6,643	87,916

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Columbia Generating Station: Uranium															
1 BPA - Power Business	329,000	320,000	344,000	328,000	288,000	312,000	167,000	152,000	116,440	50,768	344,000	152,000	160,000	336,000	3,399,208
2 Columbia Generating Station: Regional Total	329,000	320,000	344,000	328,000	288,000	312,000	167,000	152,000	116,440	50,768	344,000	152,000	160,000	336,000	3,399,208
Total Large Thermal															
3 Federal System	329,000	320,000	344,000	328,000	288,000	312,000	167,000	152,000	116,440	50,768	344,000	152,000	160,000	336,000	3,399,208

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Columbia Generating Station: Uranium															
1 BPA - Power Business	313,000	320,000	344,000	328,000	296,000	328,000	151,000	152,000	328,000	320,000	328,000	152,000	176,000	320,000	3,856,000
2 Columbia Generating Station: Regional Total	313,000	320,000	344,000	328,000	296,000	328,000	151,000	152,000	328,000	320,000	328,000	152,000	176,000	320,000	3,856,000
Total Large Thermal															
3 Federal System	313,000	320,000	344,000	328,000	296,000	328,000	151,000	152,000	328,000	320,000	328,000	152,000	176,000	320,000	3,856,000

Table A-10: Federal Large Thermal
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Columbia Generating Station: Uranium															
1 BPA - Power Business	313,000	336,000	328,000	328,000	288,000	328,000	151,000	152,000	122,120	50,768	328,000	152,000	176,000	320,000	3,372,888
2 Columbia Generating Station: Regional Total	313,000	336,000	328,000	328,000	288,000	328,000	151,000	152,000	122,120	50,768	328,000	152,000	176,000	320,000	3,372,888
Total Large Thermal															
3 Federal System	313,000	336,000	328,000	328,000	288,000	328,000	151,000	152,000	122,120	50,768	328,000	152,000	176,000	320,000	3,372,888

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2006 - 2007 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
BPA Canada															
1 BPA: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Priest Rapids CER for Canada															
2 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 COPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 EWEB to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 FGRV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 GCPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 MCMN to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 MTFR to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Priest Rapids: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada
PNW Loads and Resource Study
Continued 2006 - 2007 Fiscal Years 6/22/2006
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Wanapum CER for Canada															
27 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 COPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 EWEB to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 FGRV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33 GCPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 MCMN to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40 MTFR to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51 Wanapum: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada
PNW Loads and Resource Study
Continued 2006 - 2007 Fiscal Years 6/22/2006
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54 Rock Is. P.H. #1: Reg. Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 Rock Is. P.H. #2: Reg. Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rocky Reach CER for Canada															
58 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60 CLKM to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61 DOPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65 Rocky Reach: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wells CER for Canada															
66 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67 COLV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68 DOPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69 OKPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73 Wells: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total CER For Canada															
74 Federal System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Public Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76 Investor-Owned Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77 Other Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78 Non-NW Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79 Total CER For Canada	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2007 - 2008 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
BPA Canada															
1 BPA: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Priest Rapids CER for Canada															
2 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 COPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 EWEB to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 FGRV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 GCPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 MCMN to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 MTFR to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Priest Rapids: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada
PNW Loads and Resource Study
Continued 2007 - 2008 Fiscal Years 6/22/2006
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Wanapum CER for Canada															
27 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 COPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 EWEB to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 FGRV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33 GCPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 MCMN to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40 MTFR to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51 Wanapum: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada
PNW Loads and Resource Study
Continued 2007 - 2008 Fiscal Years 6/22/2006
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54 Rock Is. P.H. #1: Reg. Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 Rock Is. P.H. #2: Reg. Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rocky Reach CER for Canada															
58 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60 CLKM to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61 DOPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65 Rocky Reach: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wells CER for Canada															
66 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67 COLV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68 DOPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69 OKPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73 Wells: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total CER For Canada															
74 Federal System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Public Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76 Investor-Owned Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77 Other Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78 Non-NW Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79 Total CER For Canada	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada

PNW Loads and Resource Study

2008 - 2009 Fiscal Years

6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
BPA Canada															
1 BPA: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Priest Rapids CER for Canada															
2 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 COPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 EWEB to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 FGRV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 GCPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 MCMN to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 MTFR to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 Priest Rapids: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Continued 2008 - 2009 Fiscal Years 6/22/2006
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Wanapum CER for Canada															
27 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 COPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 CWPC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 EWEB to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 FGRV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32 FREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33 GCPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34 ICLP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 KITT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36 KOOT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37 LREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38 LVE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39 MCMN to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40 MTFR to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 NLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45 RREC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46 SCL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47 SLEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 TPU to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 UNEC to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50 UNKMKT to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51 Wanapum: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-15: Canadian Entitlement Return For Canada
PNW Loads and Resource Study
Continued 2008 - 2009 Fiscal Years 6/22/2006
[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Rock Island P.H. #1 CER for Canada															
52 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54 Rock Is. P.H. #1: Reg. Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock Island P.H. #2 CER for Canada															
55 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 Rock Is. P.H. #2: Reg. Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rocky Reach CER for Canada															
58 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59 CHPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60 CLKM to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61 DOPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65 Rocky Reach: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wells CER for Canada															
66 AVWP to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67 COLV to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68 DOPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69 OKPD to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70 PGE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71 PPL to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72 PSE to BPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73 Wells: Regional Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total CER For Canada															
74 Federal System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Public Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76 Investor-Owned Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77 Other Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78 Non-NW Entities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79 Total CER For Canada	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	38,680	41,106	39,794	36,451	19,414	10,103	9,196	0	0	0	0	0	0	194,744
2 BPA To CCPD PwrS	5,593	5,440	5,848	5,576	4,896	5,304	2,839	2,584	5,576	5,168	5,848	2,584	2,720	5,712	65,688
3 BPA To PPL CapS	37,759	56,976	39,677	49,775	45,234	39,422	18,521	18,643	27,231	31,283	34,621	16,819	17,704	43,279	476,943
4 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	10,556	11,559	0	0	0	22,115
5 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 BPA To PPL PwrS	35,598	51,456	74,063	61,926	41,760	36,473	14,963	13,619	33	5,533	11,627	1,961	2,064	14,146	365,222
7 BPA To PSE WP3Set	0	38,680	41,106	39,794	36,451	19,414	10,103	9,196	0	0	0	0	0	0	194,744
8 Other Entities To BPA	123,375	120,000	128,200	0	0	0	0	0	0	0	0	0	0	0	371,575
9 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PPL To BPA S/Pwr/X	7,529	7,323	0	0	0	0	0	0	0	0	0	0	0	7,689	22,541
11 PPL To BPA PkRepl	127,982	137,171	118,465	143,510	111,830	106,624	56,445	56,590	113,752	113,237	92,019	51,355	54,705	124,050	1,407,735
12 PPL To BPA PwrS	3,290	3,200	3,440	3,280	2,880	3,120	1,670	1,520	3,280	3,040	3,440	1,520	1,600	3,360	38,640
13 Total Contracts	341,126	458,926	451,905	343,655	279,502	229,772	114,644	111,349	149,871	168,816	159,115	74,239	78,794	198,236	3,159,947
Total Contracts Out															
14 Federal System	78,950	191,232	201,800	196,866	164,792	120,027	56,529	53,239	32,839	52,539	63,655	21,364	22,488	63,136	1,319,456
15 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Investor-Owned Entities	138,801	147,694	121,905	146,790	114,710	109,744	58,115	58,110	117,032	116,277	95,459	52,875	56,305	135,099	1,468,916
17 Other Entities	123,375	120,000	128,200	0	0	0	0	0	0	0	0	0	0	0	371,575
18 Total Contracts Out	341,126	458,926	451,905	343,655	279,502	229,772	114,644	111,349	149,871	168,816	159,115	74,239	78,794	198,236	3,159,947
Total Contracts In															
19 Federal System	262,176	267,694	250,105	146,790	114,710	109,744	58,115	58,110	117,032	116,277	95,459	52,875	56,305	135,099	1,840,491
20 Public Entities	5,593	5,440	5,848	5,576	4,896	5,304	2,839	2,584	5,576	5,168	5,848	2,584	2,720	5,712	65,688
21 Investor-Owned Entities	73,357	185,792	195,952	191,290	159,896	114,723	53,690	50,655	27,263	47,371	57,807	18,780	19,768	57,424	1,253,768
22 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Total Contracts In	341,126	458,926	451,905	343,655	279,502	229,772	114,644	111,349	149,871	168,816	159,115	74,239	78,794	198,236	3,159,947

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2007 - 2008 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	38,680	41,106	39,794	37,566	20,070	9,291	9,352	0	0	0	0	0	0	195,859
2 BPA To CCPD PwrS	5,321	5,440	5,848	5,576	5,032	5,576	2,567	2,584	5,576	5,440	5,576	2,584	2,992	5,440	65,552
3 BPA To PPL CapS	37,759	56,976	39,677	49,775	45,234	39,422	18,521	18,643	27,231	31,283	34,621	16,819	17,704	43,279	476,943
4 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	11,111	11,022	0	0	0	22,133
5 BPA To PPL PwrS	33,867	51,456	74,063	61,926	42,920	38,343	13,530	13,619	33	5,824	11,086	1,961	2,270	13,472	364,371
6 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 BPA To PSE WP3Set	0	38,680	41,106	39,794	37,566	20,070	9,291	9,352	0	0	0	0	0	0	195,859
8 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 PPL To BPA PkRepl	127,982	137,171	118,465	143,510	111,830	106,624	56,445	56,590	113,752	113,237	92,019	51,355	54,705	124,050	1,407,735
10 PPL To BPA PwrS	3,130	3,200	3,440	3,280	2,960	3,280	1,510	1,520	3,280	3,200	3,280	1,520	1,760	3,200	38,560
11 PPL To BPA S/Pwr/X	7,162	7,323	0	0	0	0	0	0	0	0	0	0	0	7,323	21,808
12 Total Contracts	215,220	338,926	323,705	343,655	283,108	233,386	111,154	111,661	149,871	170,095	157,605	74,239	79,432	196,764	2,788,820
Total Contracts Out															
13 Federal System	76,946	191,232	201,800	196,866	168,318	123,482	53,199	53,551	32,839	53,658	62,306	21,364	22,967	62,191	1,320,717
14 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 Investor-Owned Entities	138,274	147,694	121,905	146,790	114,790	109,904	57,955	58,110	117,032	116,437	95,299	52,875	56,465	134,573	1,468,103
16 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Total Contracts Out	215,220	338,926	323,705	343,655	283,108	233,386	111,154	111,661	149,871	170,095	157,605	74,239	79,432	196,764	2,788,820
Total Contracts In															
18 Federal System	138,274	147,694	121,905	146,790	114,790	109,904	57,955	58,110	117,032	116,437	95,299	52,875	56,465	134,573	1,468,103
19 Public Entities	5,321	5,440	5,848	5,576	5,032	5,576	2,567	2,584	5,576	5,440	5,576	2,584	2,992	5,440	65,552
20 Investor-Owned Entities	71,625	185,792	195,952	191,290	163,286	117,906	50,632	50,967	27,263	48,218	56,730	18,780	19,975	56,751	1,255,165
21 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Total Contracts In	215,220	338,926	323,705	343,655	283,108	233,386	111,154	111,661	149,871	170,095	157,605	74,239	79,432	196,764	2,788,820

Table A-16: Federal Intra-Regional Transfers

PNW Loads and Resource Study

2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Intra-Regional Transfers															
1 BPA To AVWP WP3Set	0	39,992	39,794	39,794	36,451	20,070	9,291	9,352	0	0	0	0	0	0	194,744
2 BPA To CCPD PwrS	5,321	5,712	5,576	5,576	4,896	5,576	2,567	2,584	5,848	5,168	5,576	2,584	2,992	5,440	65,416
3 BPA To PPL CapS	37,759	56,976	39,677	49,775	45,234	39,422	18,521	18,643	27,231	31,283	34,621	16,819	17,704	43,279	476,943
4 BPA To PPL S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 BPA To PPL S/Pwr/X	0	0	0	0	0	0	0	0	0	10,556	11,022	0	0	0	21,578
6 BPA To PPL PwrS	33,867	54,029	70,618	61,926	41,760	38,343	13,530	13,619	34	5,533	11,086	1,961	2,270	13,472	362,049
7 BPA To PSE WP3Set	0	39,992	39,794	39,794	36,451	20,070	9,291	9,352	0	0	0	0	0	0	194,744
8 BPA To PSE PwrS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 PPL To BPA PwrS	3,130	3,360	3,280	3,280	2,880	3,280	1,510	1,520	3,440	1,440	0	0	0	0	27,120
10 PPL To BPA S/Pwr/X	7,162	7,689	0	0	0	0	0	0	0	0	0	0	0	7,323	22,174
11 PPL To BPA S/N/X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 PPL To BPA PkRepl	127,982	137,171	118,465	143,510	111,830	106,624	56,445	56,590	113,752	113,237	92,019	51,355	54,705	124,050	1,407,735
13 Total Contracts	215,220	344,920	317,204	343,655	279,502	233,386	111,154	111,661	150,305	167,216	154,325	72,719	77,672	193,564	2,772,503
Total Contracts Out															
14 Federal System	76,946	196,701	195,459	196,866	164,792	123,482	53,199	53,551	33,113	52,539	62,306	21,364	22,967	62,191	1,315,474
15 Public Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Investor-Owned Entities	138,274	148,220	121,745	146,790	114,710	109,904	57,955	58,110	117,192	114,677	92,019	51,355	54,705	131,373	1,457,029
17 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Contracts Out	215,220	344,920	317,204	343,655	279,502	233,386	111,154	111,661	150,305	167,216	154,325	72,719	77,672	193,564	2,772,503
Total Contracts In															
19 Federal System	138,274	148,220	121,745	146,790	114,710	109,904	57,955	58,110	117,192	114,677	92,019	51,355	54,705	131,373	1,457,029
20 Public Entities	5,321	5,712	5,576	5,576	4,896	5,576	2,567	2,584	5,848	5,168	5,576	2,584	2,992	5,440	65,416
21 Investor-Owned Entities	71,625	190,989	189,883	191,290	159,896	117,906	50,632	50,967	27,265	47,371	56,730	18,780	19,975	56,751	1,250,058
22 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Total Contracts In	215,220	344,920	317,204	343,655	279,502	233,386	111,154	111,661	150,305	167,216	154,325	72,719	77,672	193,564	2,772,503

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2006 - 2007 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
1 Federal Entities	33,737	38,132	43,774	43,194	37,792	37,706	16,522	16,529	32,171	30,713	35,793	16,741	17,858	32,298	432,960
2 Total Federal Entities	33,737	38,132	43,774	43,194	37,792	37,706	16,522	16,529	32,171	30,713	35,793	16,741	17,858	32,298	432,960
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	29,820	4,556	10,746	23,040	22,736	15,468	33,359	36,235	93,491	85,457	103,660	37,718	40,940	71,690	608,918
4 Total U.S. Bureau of Reclamation	29,820	4,556	10,746	23,040	22,736	15,468	33,359	36,235	93,491	85,457	103,660	37,718	40,940	71,690	608,918
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	684,900	771,173	888,665	888,606	792,585	803,100	346,516	346,710	651,415	546,188	560,681	281,924	301,066	637,225	8,500,753
8 Total Generating Public Entities	684,900	771,173	888,665	888,606	792,585	803,100	346,516	346,710	651,415	546,188	560,681	281,924	301,066	637,225	8,500,753
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	245,257	282,248	294,345	233,470	231,054	267,073	137,401	107,313	246,455	259,751	269,472	145,988	106,994	221,257	3,048,078
10 Total Generating Public Entities (Slice)	245,257	282,248	294,345	233,470	231,054	267,073	137,401	107,313	246,455	259,751	269,472	145,988	106,994	221,257	3,048,078
Non-Generating Public Entities															
11 Non-Generating Public Entities	775,466	858,785	997,840	990,358	892,708	870,631	401,855	400,373	810,120	812,560	885,543	405,711	436,953	752,231	10,291,134
12 Total Non-Generating Public Entities	775,466	858,785	997,840	990,358	892,708	870,631	401,855	400,373	810,120	812,560	885,543	405,711	436,953	752,231	10,291,134
Non-Generating Public Entities (Slice)															
13 Non-Generating Public Entities (Slice)	147,273	169,486	176,750	140,195	138,745	160,374	82,507	64,440	147,993	155,976	161,814	87,664	64,249	132,862	1,830,326
14 Total Non-Generating Public Entities (S	147,273	169,486	176,750	140,195	138,745	160,374	82,507	64,440	147,993	155,976	161,814	87,664	64,249	132,862	1,830,326
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	33,737	38,132	43,774	43,194	37,792	37,706	16,522	16,529	32,171	30,713	35,793	16,741	17,858	32,298	432,960
20 U.S. Bureau of Reclamation	29,820	4,556	10,746	23,040	22,736	15,468	33,359	36,235	93,491	85,457	103,660	37,718	40,940	71,690	608,918
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	930,157	1,053,421	1,183,009	1,122,076	1,023,639	1,070,173	483,917	454,022	897,870	805,938	830,153	427,913	408,061	858,482	11,548,831
23 Non-Generating Public Entities	922,739	1,028,271	1,174,590	1,130,553	1,031,453	1,031,005	484,363	464,813	958,113	968,536	1,047,357	493,375	501,202	885,092	12,121,460
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	1,916,453	2,124,380	2,412,120	2,318,863	2,115,620	2,154,352	1,018,160	971,600	1,981,645	1,890,645	2,016,962	975,747	968,060	1,847,562	24,712,169

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2007 - 2008 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
1 Federal Entities	34,575	39,997	45,890	45,316	40,082	40,423	16,885	16,884	33,628	32,948	36,604	17,876	19,054	32,971	453,135
2 Total Federal Entities	34,575	39,997	45,890	45,316	40,082	40,423	16,885	16,884	33,628	32,948	36,604	17,876	19,054	32,971	453,135
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	28,700	4,556	10,746	23,040	23,368	16,108	30,603	36,271	93,491	88,789	100,248	37,546	43,948	68,988	606,402
4 Total U.S. Bureau of Reclamation	28,700	4,556	10,746	23,040	23,368	16,108	30,603	36,271	93,491	88,789	100,248	37,546	43,948	68,988	606,402
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	623,253	697,121	776,547	782,263	734,755	743,657	316,853	316,902	560,688	529,708	548,620	284,824	303,924	609,818	7,828,931
8 Total Generating Public Entities	623,253	697,121	776,547	782,263	734,755	743,657	316,853	316,902	560,688	529,708	548,620	284,824	303,924	609,818	7,828,931
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	243,637	282,942	295,088	234,082	239,338	270,066	135,595	107,664	276,339	297,337	270,683	147,418	110,094	219,380	3,129,664
10 Total Generating Public Entities (Slice)	243,637	282,942	295,088	234,082	239,338	270,066	135,595	107,664	276,339	297,337	270,683	147,418	110,094	219,380	3,129,664
Non-Generating Public Entities															
11 Non-Generating Public Entities	786,052	877,091	1,017,457	1,009,871	917,006	900,261	403,788	401,785	823,929	838,241	887,572	418,787	450,524	754,710	10,487,075
12 Total Non-Generating Public Entities	786,052	877,091	1,017,457	1,009,871	917,006	900,261	403,788	401,785	823,929	838,241	887,572	418,787	450,524	754,710	10,487,075
Non-Generating Public Entities (Slice)															
13 Non-Generating Public Entities (Slice)	146,300	169,903	177,196	140,563	143,719	162,171	81,423	64,650	165,938	178,547	162,541	88,523	66,110	131,735	1,879,317
14 Total Non-Generating Public Entities (S	146,300	169,903	177,196	140,563	143,719	162,171	81,423	64,650	165,938	178,547	162,541	88,523	66,110	131,735	1,879,317
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	34,575	39,997	45,890	45,316	40,082	40,423	16,885	16,884	33,628	32,948	36,604	17,876	19,054	32,971	453,135
20 U.S. Bureau of Reclamation	28,700	4,556	10,746	23,040	23,368	16,108	30,603	36,271	93,491	88,789	100,248	37,546	43,948	68,988	606,402
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	866,890	980,063	1,071,635	1,016,345	974,093	1,013,723	452,448	424,566	837,027	827,045	819,303	432,242	414,018	829,198	10,958,595
23 Non-Generating Public Entities	932,352	1,046,994	1,194,653	1,150,434	1,060,725	1,062,432	485,211	466,435	989,867	1,016,788	1,050,113	507,309	516,634	886,445	12,366,392
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	1,862,517	2,071,610	2,322,924	2,235,135	2,098,268	2,132,686	985,147	944,156	1,954,013	1,965,570	2,006,269	994,973	993,654	1,817,602	24,384,525

Table A-22: BPA Power Sale Contracts
PNW Loads and Resource Study
2008 - 2009 Fiscal Years
1937 Water Year
[38] 2007 Final Rate Case

6/22/2006

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
1 Federal Entities	37,673	44,345	48,994	49,309	43,309	43,934	18,348	18,347	37,156	34,838	39,487	19,276	20,539	35,661	491,216
2 Total Federal Entities	37,673	44,345	48,994	49,309	43,309	43,934	18,348	18,347	37,156	34,838	39,487	19,276	20,539	35,661	491,216
U.S. Bureau of Reclamation															
3 U.S. Bureau of Reclamation	28,700	4,782	10,248	23,040	22,736	16,108	30,603	36,271	97,118	85,457	100,248	37,546	43,948	68,988	605,794
4 Total U.S. Bureau of Reclamation	28,700	4,782	10,248	23,040	22,736	16,108	30,603	36,271	97,118	85,457	100,248	37,546	43,948	68,988	605,794
Direct Service Industry															
5 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Total Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generating Public Entities															
7 Generating Public Entities	612,244	717,809	755,067	788,734	723,647	747,787	318,327	318,372	574,597	517,667	555,983	286,513	305,622	612,735	7,835,103
8 Total Generating Public Entities	612,244	717,809	755,067	788,734	723,647	747,787	318,327	318,372	574,597	517,667	555,983	286,513	305,622	612,735	7,835,103
Generating Public Entities (Slice)															
9 Generating Public Entities (Slice)	243,830	285,624	292,928	234,262	231,701	270,232	136,874	108,885	250,588	265,602	277,804	149,797	111,783	219,776	3,079,685
10 Total Generating Public Entities (Slice)	243,830	285,624	292,928	234,262	231,701	270,232	136,874	108,885	250,588	265,602	277,804	149,797	111,783	219,776	3,079,685
Non-Generating Public Entities															
11 Non-Generating Public Entities	792,817	897,140	1,012,329	1,018,346	920,112	907,961	407,235	405,155	841,646	832,965	894,016	422,025	453,789	760,453	10,565,990
12 Total Non-Generating Public Entities	792,817	897,140	1,012,329	1,018,346	920,112	907,961	407,235	405,155	841,646	832,965	894,016	422,025	453,789	760,453	10,565,990
Non-Generating Public Entities (Slice)															
13 Non-Generating Public Entities (Slice)	146,416	171,513	175,899	140,671	139,133	162,270	82,191	65,384	150,474	159,490	166,817	89,951	67,124	131,972	1,849,305
14 Total Non-Generating Public Entities (S	146,416	171,513	175,899	140,671	139,133	162,270	82,191	65,384	150,474	159,490	166,817	89,951	67,124	131,972	1,849,305
Investor-Owned Entities															
15 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 Total Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Entities															
17 Other PNW Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Total Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Sales Contracts															
19 Federal Entities	37,673	44,345	48,994	49,309	43,309	43,934	18,348	18,347	37,156	34,838	39,487	19,276	20,539	35,661	491,216
20 U.S. Bureau of Reclamation	28,700	4,782	10,248	23,040	22,736	16,108	30,603	36,271	97,118	85,457	100,248	37,546	43,948	68,988	605,794
21 Direct Service Industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Generating Public Entities	856,074	1,003,433	1,047,995	1,022,996	955,348	1,018,018	455,202	427,256	825,185	783,269	833,786	436,310	417,405	832,511	10,914,788
23 Non-Generating Public Entities	939,233	1,068,653	1,188,228	1,159,017	1,059,246	1,070,231	489,426	470,538	992,120	992,455	1,060,833	511,976	520,913	892,426	12,415,295
24 Investor-Owned Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Other Entities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Total Power Sales Contracts	1,861,680	2,121,214	2,295,465	2,254,363	2,080,639	2,148,292	993,579	952,412	1,951,579	1,896,019	2,034,355	1,005,107	1,002,804	1,829,585	24,427,092

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

2006 - 2007 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	865	842	905	863	757	821	439	400	863	800	905	400	421	884	10,162
2 Elwah Hydro (BPA)	1,125	2,826	3,697	3,709	2,593	2,808	2,508	2,508	2,815	2,566	1,790	1,222	1,222	744	32,131
3 Glines Hydro (BPA)	2,109	4,246	5,288	4,767	3,983	4,415	3,766	3,766	9,288	4,755	3,529	2,404	2,404	1,411	56,132
4 Federal -Total NUG: Hydro	4,099	7,914	9,890	9,338	7,332	8,044	6,713	6,674	12,965	8,120	6,224	4,026	4,047	3,039	98,426
NUG: Renewables															
5 Ashland Solar Project (BPA)	1	0	0	0	1	1	1	1	1	1	2	1	1	1	12
6 Condon Wind Project (BPA)	3,352	4,022	3,915	2,822	2,716	4,773	1,500	1,366	2,745	2,713	2,482	1,032	1,086	2,535	37,059
7 Foote Creek 1 (BPA)	1,826	1,902	2,461	2,632	2,374	2,214	1,007	916	1,282	1,259	632	468	492	1,196	20,662
8 Foote Creek 2 (BPA)	126	216	284	397	377	258	150	137	248	145	107	45	48	96	2,634
9 Foote Creek 4 (BPA)	1,278	2,321	2,354	2,704	2,698	1,933	1,057	963	1,322	1,417	947	368	387	961	20,710
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	2,034	1,297	1,230	1,008	1,574	2,473	1,309	1,191	3,184	3,823	3,881	1,581	1,665	2,563	28,813
12 Stateline Wind Project (BPA)	7,415	6,743	6,651	4,994	4,638	11,590	4,618	4,204	9,215	9,893	9,820	4,428	4,661	7,218	96,085
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	16,031	16,502	16,896	14,557	14,378	23,242	9,642	8,778	17,997	19,251	17,870	7,922	8,340	14,570	205,975
Total Non-Utility Generating Resources															
15 Federal System	20,131	24,415	26,785	23,895	21,710	31,286	16,355	15,451	30,962	27,371	24,094	11,948	12,386	17,609	304,401

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

2007 - 2008 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	823	842	905	863	778	863	397	400	863	842	863	400	463	842	10,141
2 Elwah Hydro (BPA)	1,125	2,826	3,697	3,709	2,593	2,808	2,508	2,508	2,815	2,566	1,790	1,222	1,222	744	32,131
3 Glines Hydro (BPA)	2,109	4,246	5,288	4,767	3,983	4,415	3,766	3,766	9,288	4,755	3,529	2,404	2,404	1,411	56,132
4 Federal -Total NUG: Hydro	4,057	7,914	9,890	9,338	7,353	8,086	6,671	6,674	12,965	8,163	6,182	4,026	4,089	2,997	98,405
NUG: Renewables															
5 Ashland Solar Project (BPA)	1	0	0	0	1	1	1	1	1	1	2	1	1	1	12
6 Condon Wind Project (BPA)	3,352	4,022	3,915	2,822	2,813	4,773	1,428	1,438	2,745	2,713	2,482	982	1,136	2,535	37,156
7 Foote Creek 1 (BPA)	1,826	1,902	2,461	2,632	2,459	2,214	958	965	1,282	1,259	632	445	515	1,196	20,746
8 Foote Creek 2 (BPA)	126	216	284	397	390	258	143	144	248	145	107	43	50	96	2,647
9 Foote Creek 4 (BPA)	1,278	2,321	2,354	2,704	2,794	1,933	1,007	1,013	1,322	1,417	947	350	405	961	20,806
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	2,034	1,297	1,230	1,008	1,630	2,473	1,246	1,254	3,184	3,823	3,881	1,504	1,742	2,563	28,869
12 Stateline Wind Project (BPA)	7,415	6,743	6,651	4,994	4,804	11,590	4,396	4,426	9,215	9,893	9,820	4,212	4,877	7,218	96,251
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	16,031	16,502	16,896	14,557	14,890	23,242	9,179	9,240	17,997	19,251	17,870	7,536	8,726	14,570	206,487
Total Non-Utility Generating Resources															
15 Federal System	20,089	24,415	26,785	23,895	22,244	31,328	15,850	15,914	30,962	27,414	24,052	11,562	12,814	17,567	304,892

Table A-24: Federal Non Utility Generating Resources By Project

PNW Loads and Resource Study

2008 - 2009 Fiscal Years 6/22/2006

[38] 2007 Final Rate Case

Light Load Hours in MwHr	Oct	Nov	Dec	Jan	Feb	Mar	1-Apr	16-Apr	May	Jun	Jul	1-Aug	16-Aug	Sep	Sum
Federal Entities															
NUG: Hydro															
1 Dworshak/Clearwater Sm. Hydropower (BPA)	823	884	863	863	757	863	397	400	905	800	863	400	463	842	10,120
2 Elwah Hydro (BPA)	1,125	2,826	3,697	3,709	2,593	2,808	2,508	2,508	2,815	2,566	1,790	1,222	1,222	744	32,131
3 Glines Hydro (BPA)	2,109	4,246	5,288	4,767	3,983	4,415	3,766	3,766	9,288	4,755	3,529	2,404	2,404	1,411	56,132
4 Federal -Total NUG: Hydro	4,057	7,956	9,848	9,338	7,332	8,086	6,671	6,674	13,007	8,120	6,182	4,026	4,089	2,997	98,384
NUG: Renewables															
5 Ashland Solar Project (BPA)	1	0	0	0	1	1	1	1	1	1	2	1	1	1	12
6 Condon Wind Project (BPA)	3,352	4,022	3,915	2,822	2,716	4,773	1,428	1,438	2,745	2,713	2,482	982	1,136	2,535	37,059
7 Foote Creek 1 (BPA)	1,826	1,902	2,461	2,632	2,374	2,214	958	965	1,282	1,259	632	445	515	1,196	20,662
8 Foote Creek 2 (BPA)	126	216	284	397	377	258	143	144	248	145	107	43	50	96	2,634
9 Foote Creek 4 (BPA)	1,278	2,321	2,354	2,704	2,698	1,933	1,007	1,013	1,322	1,417	947	350	405	961	20,710
10 Fourmile Hill Geothermal (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Klondike Phase 1 (BPA)	2,034	1,297	1,230	1,008	1,574	2,473	1,246	1,254	3,184	3,823	3,881	1,504	1,742	2,563	28,813
12 Stateline Wind Project (BPA)	7,415	6,743	6,651	4,994	4,638	11,590	4,396	4,426	9,215	9,893	9,820	4,212	4,877	7,218	96,085
13 White Bluffs Solar (BPA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 Federal -Total NUG: Renewables	16,031	16,502	16,896	14,557	14,378	23,242	9,179	9,240	17,997	19,251	17,870	7,536	8,726	14,570	205,975
Total Non-Utility Generating Resources															
15 Federal System	20,089	24,457	26,743	23,895	21,710	31,328	15,850	15,914	31,004	27,371	24,052	11,562	12,814	17,567	304,359

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TOTAL PNW REGIONAL HYDRO ANALYSIS

2.7 TOTAL PNW REGIONAL HYDRO RESOURCES
(Includes PNW Regulated, Independent, and NUG Hydro)
Monthly Energy in Average Megawatts using 50-Water Conditions
For FY 2007 through 2009

Table 2.7.1 FY 2007 Total PNW Regional Hydro 104
Table 2.7.2 FY 2008 Total PNW Regional Hydro 105
Table 2.7.3 FY 2009 Total PNW Regional Hydro 106

Table 2.7.1
2006-2007 Fiscal Year
Pacific Northwest Regional Hydro Resources
Includes Regulated, Independent, and NUG Hydro
[38] 2007 Final Rate Case
Energy in Average Maegawatts

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr 1	Apr 16	May	Jun	Jul	Aug 1	Aug 16	Sep	Avg
1929	11,106	13,310	11,990	13,242	10,521	11,249	10,653	10,853	11,499	17,017	13,990	12,585	10,919	10,543	12,248
1930	11,303	12,755	12,908	11,111	12,223	11,110	11,701	11,090	10,875	14,566	14,082	13,136	11,431	10,325	12,078
1931	11,335	12,860	11,139	11,192	10,870	10,832	11,482	10,299	10,206	14,488	13,741	12,165	11,302	10,583	11,656
1932	10,711	12,717	11,943	11,516	10,120	13,820	17,806	19,917	21,077	20,297	16,861	12,696	13,204	11,534	14,367
1933	11,455	13,481	14,171	20,251	15,576	12,682	13,806	14,787	17,721	20,735	18,462	16,447	15,029	12,283	15,571
1934	13,710	16,577	23,385	22,022	20,533	18,518	19,271	19,504	20,801	14,653	14,574	11,810	11,085	9,995	17,133
1935	11,242	13,501	12,913	19,082	19,375	11,218	12,608	15,272	16,617	18,577	16,801	14,784	11,255	10,878	14,764
1936	11,172	12,771	13,217	11,792	10,823	10,901	12,057	17,802	21,982	18,965	13,864	13,143	11,461	10,692	13,618
1937	11,232	12,726	13,214	10,516	9,984	10,740	11,554	10,507	11,730	15,917	13,276	12,576	10,968	10,621	11,897
1938	11,640	13,536	13,574	19,622	13,703	15,901	16,121	18,647	22,644	20,437	16,350	12,641	11,151	11,366	15,671
1939	11,543	12,961	12,774	15,783	11,019	12,553	13,867	15,285	18,247	14,893	14,694	13,683	11,412	10,485	13,506
1940	11,640	12,790	13,238	14,541	12,722	16,206	14,406	17,372	16,339	14,998	13,731	11,539	10,415	10,138	13,601
1941	11,189	12,396	12,971	14,449	11,279	10,515	11,290	9,874	12,994	14,716	12,990	11,369	10,830	11,205	12,199
1942	11,072	11,975	16,044	18,445	13,617	9,623	12,194	14,241	16,239	20,162	17,855	15,206	13,121	10,765	14,431
1943	11,279	13,344	13,468	18,725	17,942	17,600	20,546	20,420	22,356	20,761	18,876	16,010	12,672	11,124	16,692
1944	11,482	13,077	13,734	14,116	10,856	9,679	10,496	9,353	10,598	13,068	12,860	11,506	10,663	10,465	11,745
1945	10,666	12,482	11,822	11,369	11,140	10,511	10,627	10,528	16,615	19,999	14,524	12,880	11,315	10,465	12,689
1946	11,226	13,545	13,509	17,704	14,771	18,625	18,050	19,882	23,425	20,220	17,913	15,479	12,615	11,782	16,311
1947	11,256	13,614	18,786	20,537	19,592	19,118	16,006	17,227	21,097	19,832	17,530	14,014	11,170	11,498	16,839
1948	16,601	15,290	16,645	21,945	14,617	15,297	14,972	19,349	23,363	24,233	18,375	16,703	16,076	12,370	17,690
1949	12,191	13,465	13,160	15,086	13,935	19,306	16,655	20,137	22,722	20,103	13,315	12,670	10,900	10,136	15,300
1950	11,585	13,741	13,101	17,146	20,076	21,098	19,638	19,840	21,035	20,759	18,616	16,038	14,368	12,089	17,016
1951	14,090	16,587	21,159	22,504	21,771	18,660	20,140	20,373	23,156	20,139	18,365	16,421	13,795	12,033	18,652
1952	15,477	13,896	16,754	20,166	16,997	15,311	19,621	20,371	23,517	20,785	16,155	14,119	11,103	11,156	16,902
1953	11,282	12,975	12,029	16,168	18,035	12,701	12,567	15,115	20,217	20,980	18,667	15,683	13,231	11,650	15,250
1954	11,997	13,684	15,799	18,016	19,701	16,412	17,718	17,673	21,952	20,174	18,646	18,531	17,816	16,152	17,367
1955	12,442	14,296	15,460	14,592	11,678	10,233	12,726	13,702	15,791	20,219	18,547	16,769	15,834	11,118	14,491
1956	13,482	15,551	20,048	22,722	17,776	20,343	20,265	20,361	23,289	21,157	18,539	16,442	13,760	11,824	18,345
1957	12,848	13,488	15,113	17,540	13,496	15,964	18,604	18,281	23,544	20,683	15,694	12,574	11,217	11,101	15,818
1958	11,487	13,078	13,542	15,515	17,210	16,000	15,112	18,623	22,972	20,426	15,456	12,460	11,936	11,361	15,509
1959	11,535	14,431	17,828	21,872	19,755	16,107	17,650	16,974	19,922	20,170	18,334	16,087	13,193	16,558	17,372
1960	17,556	17,341	18,837	20,478	13,307	15,384	20,211	20,064	18,252	20,010	16,705	14,485	11,023	11,431	16,849
1961	11,590	13,660	13,788	18,451	18,806	16,831	17,466	15,439	20,319	19,855	16,306	13,314	12,322	10,689	15,797
1962	11,637	13,408	13,099	17,331	13,253	11,153	18,923	20,479	19,803	19,425	16,971	14,638	12,446	11,092	15,035
1963	12,670	14,640	18,030	19,807	15,522	11,811	13,586	13,583	19,266	20,327	16,830	15,458	12,545	11,721	15,684
1964	11,261	13,848	13,353	16,887	12,954	10,902	15,153	15,883	18,045	21,201	18,509	16,704	15,112	12,825	15,101
1965	13,482	13,682	19,727	22,664	21,736	19,024	17,178	20,527	22,574	20,761	16,916	16,304	14,110	11,942	18,047
1966	12,615	13,397	14,476	20,252	12,595	11,541	19,639	16,294	17,328	18,231	17,230	15,890	11,924	10,899	15,036
1967	11,447	13,433	13,933	21,921	20,900	13,982	14,807	13,251	18,758	20,964	18,436	16,337	12,512	11,757	16,165
1968	12,379	13,428	13,856	19,143	18,730	16,163	10,821	12,156	16,509	20,112	18,280	16,290	14,520	13,924	15,785
1969	14,129	15,475	16,995	22,275	19,814	14,864	20,254	20,224	23,530	20,252	17,437	14,198	11,475	11,449	17,441
1970	11,934	13,442	13,096	17,905	15,608	13,169	12,329	13,780	19,699	20,830	16,056	12,565	10,658	10,764	14,764
1971	11,569	14,016	13,727	21,115	21,557	18,253	18,739	20,063	23,243	21,041	18,945	18,188	16,228	12,347	17,702
1972	12,572	13,892	14,641	22,250	21,832	21,497	20,387	19,117	23,136	21,962	18,640	18,508	16,797	13,334	18,430
1973	12,372	13,366	15,700	19,712	11,116	10,877	10,138	11,305	13,331	14,908	13,889	12,300	10,689	9,470	13,080
1974	11,047	12,722	17,495	22,940	21,872	21,347	20,163	20,302	23,106	21,998	18,750	17,761	16,522	12,176	18,402
1975	10,741	13,375	13,727	19,622	15,598	16,945	13,667	15,481	20,446	20,986	19,051	13,724	13,314	12,226	15,901
1976	13,915	16,143	22,662	22,668	19,966	16,555	20,401	20,042	23,497	20,682	18,527	18,706	18,719	17,450	19,250
1977	11,933	12,970	13,094	14,528	10,707	9,541	9,348	8,500	11,150	12,173	11,980	11,767	10,782	9,832	11,509
1978	10,098	12,575	13,348	17,744	15,408	16,581	18,327	15,999	19,556	18,650	18,392	15,937	10,759	11,165	15,336

Table 2.7.2
2007-2008 Fiscal Year
Pacific Northwest Regional Hydro Resources
Includes Regulated, Independent, and NUG Hydro
[38] 2007 Final Rate Case
Energy in Average Maegawatts

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr 1	Apr 16	May	Jun	Jul	Aug 1	Aug 16	Sep	Avg
1929	11,117	13,312	11,992	13,262	10,533	11,265	10,667	10,867	11,517	17,038	14,090	12,665	10,990	10,546	12,272
1930	11,317	12,770	12,909	11,124	12,239	11,126	11,717	11,106	10,892	14,584	14,186	13,223	11,507	10,328	12,104
1931	11,346	12,862	11,141	11,205	10,882	10,847	11,500	10,312	10,224	14,504	13,838	12,250	11,380	10,586	11,680
1932	10,723	12,718	11,944	11,529	10,132	13,841	17,832	19,948	21,110	20,325	16,987	12,782	13,294	11,537	14,398
1933	11,464	13,481	14,174	20,276	15,598	12,697	13,823	14,807	17,746	20,771	18,490	16,560	15,134	12,287	15,596
1934	13,714	16,582	23,401	22,057	20,563	18,544	19,307	19,537	20,830	14,667	14,686	11,892	11,158	9,998	17,166
1935	11,244	13,501	12,914	19,106	19,400	11,231	12,625	15,296	16,642	18,601	16,927	14,889	11,333	10,881	14,793
1936	11,184	12,780	13,220	11,807	10,836	10,918	12,073	17,828	22,019	18,986	13,966	13,232	11,538	10,695	13,646
1937	11,246	12,740	13,215	10,530	9,997	10,756	11,568	10,521	11,748	15,934	13,373	12,663	11,043	10,624	11,922
1938	11,649	13,536	13,575	19,648	13,721	15,924	16,147	18,672	22,678	20,464	16,472	12,721	11,225	11,369	15,701
1939	11,556	12,962	12,776	15,804	11,033	12,571	13,886	15,308	18,277	14,911	14,801	13,778	11,490	10,488	13,534
1940	11,651	12,801	13,239	14,559	12,739	16,231	14,429	17,397	16,367	15,018	13,831	11,618	10,486	10,141	13,628
1941	11,200	12,396	12,975	14,469	11,292	10,531	11,304	9,888	13,014	14,738	13,089	11,448	10,909	11,208	12,224
1942	11,076	11,977	16,052	18,472	13,632	9,637	12,213	14,263	16,265	20,192	17,989	15,311	13,210	10,769	14,463
1943	11,292	13,344	13,471	18,751	17,967	17,627	20,581	20,454	22,390	20,792	18,902	16,120	12,757	11,127	16,718
1944	11,488	13,079	13,738	14,136	10,869	9,693	10,511	9,367	10,616	13,086	12,955	11,583	10,736	10,469	11,769
1945	10,678	12,490	11,828	11,383	11,155	10,527	10,642	10,542	16,643	20,028	14,629	12,961	11,392	10,468	12,716
1946	11,239	13,546	13,511	17,726	14,793	18,651	18,076	19,912	23,459	20,245	18,043	15,586	12,699	11,785	16,345
1947	11,257	13,615	18,799	20,565	19,619	19,144	16,026	17,252	21,131	19,858	17,661	14,113	11,245	11,501	16,872
1948	16,607	15,294	16,653	21,975	14,636	15,318	14,993	19,378	23,402	24,271	18,399	16,815	16,186	12,374	17,718
1949	12,194	13,465	13,163	15,108	13,954	19,337	16,679	20,168	22,758	20,127	13,410	12,751	10,967	10,139	15,328
1950	11,587	13,742	13,102	17,169	20,103	21,129	19,670	19,869	21,064	20,796	18,643	16,146	14,464	12,092	17,042
1951	14,094	16,593	21,173	22,536	21,805	18,688	20,170	20,403	23,190	20,163	18,389	16,533	13,888	12,037	18,680
1952	15,482	13,899	16,763	20,193	17,021	15,335	19,652	20,405	23,556	20,813	16,275	14,216	11,178	11,159	16,935
1953	11,297	12,990	12,036	16,189	18,062	12,718	12,581	15,135	20,246	21,015	18,693	15,788	13,319	11,653	15,276
1954	12,008	13,685	15,804	18,040	19,727	16,432	17,745	17,699	21,984	20,205	18,673	18,540	17,934	16,158	17,390
1955	12,446	14,299	15,465	14,611	11,692	10,246	12,744	13,719	15,813	20,256	18,577	16,884	15,941	11,122	14,514
1956	13,484	15,555	20,061	22,755	17,801	20,374	20,295	20,398	23,329	21,195	18,564	16,553	13,852	11,827	18,375
1957	12,851	13,490	15,120	17,564	13,513	15,985	18,637	18,307	23,582	20,720	15,811	12,657	11,291	11,105	15,849
1958	11,498	13,080	13,544	15,537	17,235	16,022	15,132	18,653	23,008	20,457	15,568	12,544	12,016	11,365	15,540
1959	11,543	14,434	17,838	21,904	19,782	16,129	17,674	16,996	19,949	20,204	18,359	16,198	13,280	16,564	17,398
1960	17,566	17,349	18,849	20,504	13,326	15,406	20,245	20,092	18,278	20,037	16,831	14,586	11,094	11,435	16,882
1961	11,598	13,661	13,790	18,474	18,831	16,855	17,489	15,462	20,347	19,889	16,425	13,402	12,403	10,693	15,828
1962	11,639	13,409	13,099	17,354	13,270	11,169	18,952	20,511	19,830	19,449	17,098	14,737	12,530	11,095	15,065
1963	12,674	14,643	18,039	19,831	15,545	11,830	13,604	13,602	19,298	20,356	16,957	15,564	12,630	11,725	15,717
1964	11,271	13,849	13,356	16,909	12,971	10,917	15,178	15,904	18,072	21,238	18,538	16,817	15,213	12,829	15,125
1965	13,494	13,683	19,742	22,701	21,770	19,053	17,204	20,561	22,610	20,794	17,048	16,416	14,206	11,945	18,086
1966	12,630	13,403	14,485	20,278	12,612	11,558	19,666	16,314	17,354	18,252	17,359	15,998	12,001	10,903	15,069
1967	11,455	13,433	13,936	21,947	20,929	13,999	14,830	13,268	18,783	21,001	18,463	16,449	12,597	11,761	16,190
1968	12,382	13,432	13,862	19,169	18,755	16,185	10,835	12,174	16,533	20,141	18,304	16,403	14,618	13,929	15,809
1969	14,131	15,476	17,000	22,308	19,843	14,890	20,288	20,256	23,568	20,279	17,566	14,294	11,550	11,452	17,476
1970	11,935	13,442	13,095	17,932	15,634	13,187	12,343	13,799	19,727	20,863	16,176	12,646	10,727	10,766	14,793
1971	11,572	14,015	13,727	21,147	21,594	18,281	18,768	20,093	23,282	21,078	18,973	18,309	16,336	12,351	17,731
1972	12,574	13,890	14,645	22,280	21,867	21,532	20,420	19,141	23,175	22,000	18,668	18,534	16,911	13,338	18,456
1973	12,381	13,367	15,706	19,741	11,131	10,892	10,152	11,318	13,351	14,927	13,989	12,382	10,756	9,473	13,105
1974	11,050	12,720	17,501	22,980	21,907	21,379	20,195	20,337	23,143	22,036	18,782	17,882	16,633	12,180	18,434
1975	10,751	13,380	13,731	19,648	15,620	16,971	13,690	15,503	20,476	21,019	19,083	13,816	13,400	12,230	15,926
1976	13,919	16,145	22,676	22,701	19,994	16,581	20,434	20,071	23,535	20,709	18,554	18,716	18,730	17,458	19,271
1977	11,943	12,979	13,106	14,549	10,720	9,554	9,360	8,512	11,167	12,187	12,065	11,848	10,859	9,835	11,533
1978	10,100	12,572	13,349	17,768	15,429	16,608	18,350	16,022	19,585	18,675	18,416	16,042	10,827	11,168	15,357

Table 2.7.3
2008-2009 Fiscal Year
Pacific Northwest Regional Hydro Resources
Includes Regulated, Independent, and NUG Hydro
[38] 2007 Final Rate Case
Energy in Average Maegawatts

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr 1	Apr 16	May	Jun	Jul	Aug 1	Aug 16	Sep	Avg
1929	11,121	13,308	11,989	13,259	10,529	11,260	10,723	10,933	11,580	17,218	14,334	12,883	11,173	10,545	12,333
1930	11,322	12,767	12,906	11,120	12,235	11,121	11,773	11,172	10,956	14,747	14,412	13,407	11,689	10,327	12,161
1931	11,351	12,859	11,139	11,201	10,878	10,842	11,556	10,378	10,290	14,635	13,975	12,331	11,454	10,586	11,718
1932	10,727	12,715	11,942	11,524	10,128	13,835	17,890	19,950	21,178	20,325	17,224	13,004	13,465	11,537	14,441
1933	11,468	13,477	14,173	20,276	15,598	12,692	13,880	14,873	17,814	20,773	18,492	16,767	15,313	12,288	15,622
1934	13,719	16,580	23,403	22,061	20,564	18,541	19,307	19,538	20,900	14,758	14,842	11,999	11,255	9,998	17,201
1935	11,248	13,497	12,912	19,107	19,400	11,226	12,682	15,364	16,710	18,774	17,141	15,038	11,477	10,881	14,848
1936	11,189	12,777	13,217	11,803	10,832	10,913	12,129	17,825	22,088	19,158	14,193	13,426	11,725	10,694	13,701
1937	11,250	12,738	13,212	10,526	9,993	10,751	11,624	10,587	11,813	16,096	13,600	12,797	11,153	10,623	11,973
1938	11,653	13,532	13,572	19,649	13,718	15,920	16,203	18,739	22,746	20,462	16,723	12,962	11,455	11,370	15,752
1939	11,560	12,958	12,772	15,802	11,029	12,566	13,942	15,373	18,345	15,067	15,023	13,896	11,596	10,488	13,585
1940	11,656	12,798	13,236	14,557	12,735	16,227	14,485	17,464	16,433	15,182	14,054	11,763	10,610	10,140	13,682
1941	11,204	12,393	12,973	14,467	11,288	10,526	11,360	9,955	13,080	14,909	13,328	11,676	11,134	11,208	12,287
1942	11,080	11,973	16,051	18,473	13,628	9,632	12,268	14,328	16,331	20,192	18,224	15,530	13,406	10,768	14,510
1943	11,296	13,340	13,467	18,750	17,964	17,623	20,579	20,454	22,459	20,791	18,901	16,355	12,998	11,127	16,743
1944	11,492	13,075	13,735	14,135	10,865	9,688	10,568	9,432	10,680	13,252	13,197	11,809	10,925	10,468	11,830
1945	10,682	12,487	11,826	11,378	11,151	10,522	10,698	10,608	16,707	20,027	14,879	13,194	11,596	10,467	12,764
1946	11,243	13,543	13,507	17,724	14,790	18,648	18,133	19,979	23,460	20,245	18,273	15,807	12,928	11,785	16,387
1947	11,261	13,612	18,797	20,565	19,617	19,141	16,083	17,320	21,143	20,042	17,891	14,342	11,487	11,501	16,932
1948	16,613	15,292	16,651	21,974	14,632	15,314	15,050	19,446	23,403	24,389	18,399	17,042	16,406	12,376	17,751
1949	12,198	13,462	13,160	15,106	13,950	19,334	16,734	20,169	22,758	20,126	13,656	12,985	11,183	10,137	15,369
1950	11,591	13,738	13,098	17,168	20,102	21,127	19,727	19,936	21,132	20,797	18,642	16,381	14,693	12,093	17,071
1951	14,099	16,590	21,173	22,537	21,805	18,684	20,167	20,404	23,191	20,161	18,389	16,753	14,120	12,038	18,699
1952	15,488	13,895	16,761	20,193	17,019	15,331	19,649	20,404	23,558	20,811	16,532	14,448	11,421	11,158	16,976
1953	11,301	12,987	12,033	16,186	18,060	12,713	12,637	15,201	20,314	21,016	18,693	16,016	13,553	11,653	15,305
1954	12,012	13,682	15,802	18,039	19,726	16,429	17,803	17,765	22,052	20,206	18,674	18,552	18,147	16,164	17,410
1955	12,451	14,296	15,464	14,608	11,688	10,242	12,801	13,785	15,879	20,259	18,580	17,102	16,132	11,122	14,541
1956	13,489	15,552	20,061	22,757	17,798	20,371	20,293	20,399	23,330	21,197	18,564	16,776	14,088	11,827	18,394
1957	12,855	13,486	15,118	17,564	13,509	15,980	18,695	18,374	23,583	20,722	16,052	12,898	11,525	11,104	15,893
1958	11,502	13,076	13,540	15,535	17,232	16,019	15,187	18,719	23,008	20,458	15,809	12,787	12,255	11,364	15,585
1959	11,547	14,431	17,836	21,906	19,781	16,125	17,732	17,063	20,017	20,205	18,360	16,414	13,513	16,569	17,428
1960	17,572	17,347	18,848	20,504	13,323	15,402	20,246	20,092	18,346	20,036	17,052	14,807	11,310	11,435	16,925
1961	11,602	13,658	13,788	18,474	18,829	16,852	17,548	15,532	20,416	19,891	16,639	13,548	12,543	10,692	15,869
1962	11,643	13,405	13,096	17,354	13,266	11,164	19,011	20,512	19,898	19,635	17,330	14,965	12,752	11,095	15,125
1963	12,679	14,640	18,038	19,831	15,541	11,826	13,661	13,670	19,365	20,451	17,196	15,787	12,860	11,725	15,774
1964	11,276	13,845	13,353	16,908	12,969	10,912	15,233	15,971	18,138	21,239	18,540	17,043	15,440	12,831	15,154
1965	13,499	13,680	19,741	22,702	21,769	19,050	17,260	20,560	22,629	20,792	17,323	16,648	14,448	11,945	18,133
1966	12,635	13,400	14,483	20,278	12,609	11,553	19,724	16,382	17,423	18,416	17,566	16,130	12,146	10,902	15,121
1967	11,459	13,430	13,933	21,948	20,930	13,995	14,889	13,336	18,848	21,002	18,464	16,665	12,815	11,761	16,219
1968	12,386	13,428	13,860	19,169	18,753	16,182	10,891	12,212	16,600	20,140	18,305	16,618	14,853	13,932	15,837
1969	14,136	15,473	16,999	22,309	19,842	14,886	20,287	20,257	23,570	20,279	17,796	14,525	11,772	11,452	17,513
1970	11,939	13,439	13,092	17,931	15,632	13,182	12,400	13,868	19,793	20,862	16,441	12,892	10,964	10,765	14,845
1971	11,576	14,012	13,723	21,147	21,594	18,277	18,824	20,160	23,284	21,079	18,973	18,530	16,557	12,351	17,754
1972	12,578	13,886	14,643	22,280	21,867	21,531	20,420	19,208	23,176	22,120	18,669	18,544	17,127	13,339	18,478
1973	12,386	13,364	15,704	19,740	11,126	10,887	10,208	11,385	13,416	15,091	14,217	12,554	10,912	9,471	13,161
1974	11,054	12,716	17,499	22,983	21,909	21,376	20,194	20,338	23,143	22,116	18,785	18,109	16,854	12,182	18,459
1975	10,755	13,376	13,728	19,648	15,618	16,968	13,746	15,570	20,543	21,019	19,084	14,070	13,653	12,230	15,957
1976	13,924	16,143	22,676	22,702	19,994	16,577	20,432	20,137	23,536	20,707	18,556	18,728	18,741	17,464	19,275
1977	11,948	12,976	13,103	14,547	10,715	9,549	9,369	8,543	11,208	12,313	12,200	11,927	10,949	9,834	11,566
1978	10,104	12,568	13,344	17,766	15,425	16,605	18,406	16,090	19,652	18,864	18,415	16,271	11,012	11,167	15,400

ESTIMATED PURCHASE MW ELIGIBLE FOR 4(h)(10)C CREDIT

2.8 ESTIMATED PURCHASE MW ELIGIBLE FOR 4(h)(10)C CREDIT Monthly Energy in Average Megawatts using 50-Water Conditions

Table 2.8.1 4(h)(10)C Power Purchase Amounts 108

Table 2.8.1
4(h)(10)(C) Power Purchase Amounts
Energy in Average Megawatts

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1929	1,151	610	2,117	1,577	2,991	1,451	1,738	2,912	-340	-707	-482	351
1930	583	387	1,581	3,506	1,560	1,328	1,207	2,871	-219	-591	-305	242
1931	212	457	2,162	3,468	2,661	1,773	1,268	3,092	-47	-354	-191	-608
1932	380	667	2,019	3,484	1,519	-197	0	0	0	0	5	0
1933	815	1,109	1,071	0	0	702	0	0	0	0	0	0
1934	38	0	0	0	0	0	0	0	-367	-435	-125	459
1935	817	1,274	2,051	0	0	1,685	0	0	0	0	-80	144
1936	652	579	1,656	2,506	2,689	1,535	183	0	0	0	-114	341
1937	527	492	1,583	3,468	2,698	1,454	1,176	2,493	-202	-802	-1,065	19
1938	173	1,010	1,638	0	696	0	0	0	0	0	-340	0
1939	698	697	1,780	462	2,813	806	-114	0	-25	-383	-20	356
1940	576	631	1,313	1,056	1,783	0	0	0	-163	-628	7	308
1941	257	865	1,337	666	2,797	1,805	1,569	988	0	-602	207	-409
1942	416	1,056	0	0	189	2,192	163	0	0	0	0	271
1943	767	1,097	1,750	0	0	0	0	0	0	0	0	282
1944	1,045	807	1,775	801	2,782	2,294	2,175	3,112	1,108	-503	-598	235
1945	219	584	2,331	3,333	2,448	2,022	759	0	0	-321	-987	-125
1946	558	873	1,788	0	287	0	0	0	0	0	0	0
1947	1,165	958	0	0	0	0	0	0	0	0	0	0
1948	0	53	0	0	255	0	0	0	0	0	0	0
1949	567	912	1,617	488	867	0	0	0	0	-465	-377	253
1950	297	864	1,984	0	0	0	0	0	0	0	0	0
1951	22	0	0	0	0	0	0	0	0	0	0	0
1952	0	875	0	0	0	-24	0	0	0	0	-13	207
1953	617	539	1,970	516	0	982	-12	0	0	0	0	0
1954	646	868	426	0	0	0	0	0	0	0	0	0
1955	540	546	71	783	2,562	1,881	58	0	0	0	0	275
1956	388	157	0	0	0	0	0	0	0	0	0	0
1957	526	973	927	0	1,606	0	0	0	0	0	-434	154
1958	924	743	1,998	910	0	0	0	0	0	0	-107	0
1959	969	651	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	1,510	0	0	0	0	0	-5	0
1961	816	1,014	1,021	0	0	0	-244	0	0	0	-362	278
1962	853	1,312	1,779	0	1,171	1,165	0	0	0	0	0	202
1963	346	405	0	0	315	1,318	199	0	0	0	0	0
1964	916	618	1,575	0	1,175	1,546	0	0	0	0	0	0
1965	0	752	0	0	0	0	0	0	0	0	0	0
1966	343	798	478	0	1,448	1,519	-332	0	0	0	0	253
1967	762	819	1,554	0	0	0	145	0	0	0	0	0
1968	739	998	1,280	0	0	0	1,103	0	0	0	0	0
1969	0	22	0	0	0	0	0	0	0	0	-192	32
1970	787	643	1,688	0	0	503	-87	0	0	0	-48	390
1971	912	403	1,883	0	0	0	0	0	0	0	0	0
1972	597	879	832	0	0	0	0	0	0	0	0	0
1973	502	879	435	0	2,579	1,870	1,788	1,225	-426	-787	-386	692
1974	425	1,467	0	0	0	0	0	0	0	0	0	0
1975	1,483	760	1,685	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	651	784	1,694	513	3,033	2,476	2,432	2,605	1,373	-241	-1,047	497
1978	535	548	1,542	-175	0	0	0	0	0	0	219	218

HYDSIM HYDRO REGUALTION STUDY ASSUMPTIONS

2.9 HYDSIM HYDRO REGULATION STUDY ASSUMPTIONS

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2.9.1 HYDSIM Assumptions for 2007

Date Requested: March 24, 2006 **STUDY NUMBER:** Fin04RateC_07

Requested By: BPA

Due Date: May 31, 2006

Purpose of Study: This is a continuous study of the system operation under the 2004 NMFS and 2000 USFWS Biological Opinions for 2007 rate case study.

Directory of Study: **AER Step:**
Q:\RATES\06\04RATE_07\AER
OPER Step:
Q:\RATES\06\04RATE_07\OPER

Name of Regulator: **Jennie Tran**

AER STEP

- This AER Step is used to determine the project minimum elevations (or maximum draft) using load equal to OY04 Firm Energy Load Carrying Capability (FELCC) and unlimited secondary market. Minimum elevations from the AER Step will be input into the Operational Step.
- This is a **continuous** study mostly based on the OY04 PNCA data submittal. The study will begin on August 1, 1928 and end on July 31, 1978, a 50-year study (OPERATING YEAR AU1, 2003 – JUL 2004; THEREFORE, THE COORDINATED SYSTEM GENERATION WILL NOT INCLUDE THE TACOMA PROJECTS, as well as Brownlee, Oxbow, and Hells Canyon).
- **Stream Flow:** The 50 years Stream flows used are from "Modified Streamflows 2000 Level of Irrigation". They contain 2000 level irrigation depletion's. Adjustments to these 2000 level modified stream flows are due to the Bureau of Reclamation's updated **Grand Coulee pumping schedule** for the Columbia Basin Project. This pumping schedule is included in the BOR's February 1, 2003 preliminary PNCA data submittal. No adjustments are made for **NTSA** storage and release. The inflows to Brownlee are adjusted by the BOR's regulation of the Upper Snake projects to release up to 487 kaf provided by Pat McGrane dated 12/7/04 (acquisition of an additional 60 kaf in Apr-Aug from high lift pumps downstream of Milner).
- **Plant Data:** The OY04 plant data will be used.
- **Loads:** All FELCC is taken from the OY04 Critical Period study run by the Northwest Power Pool (NWPP). The NWPP study has a one-year critical period (August 16, 1936 through March 31, 1937). Thus, only one year of FELCC values are used for all water conditions. This study reflects coordination between PNCA parties in meeting PNCA FELCC. Therefore, generation from projects owned by non-PNCA parties (Brownlee, Oxbow, Hells Canyon, and Canadian projects) are not used to meet PNCA FELCC in these studies. Also in this study, Tacoma's generating projects are no longer included in the PNCA's Coordinated System FELCC computation. August, May, June, and July FELCC comes from the PNCA Final Regulation, which includes flow augmentation target flows at McNary and Lower Granite. FELCC plus Hydro-Independent generation from 1936-37 is the system total generation. Then, the system total generation will be reduced by 50 years from the new set of hydro-independent generation (Q:\HYDSIM\DATA\PNCA\HI\HI_70YR_CS_102804.HYMOD) to produce 50 years of FELCC. There will be an unlimited secondary market.

- **Unit Outages:** The unit outages for non-Federal projects are from the PNCA OY04. For Federal projects the unit outages were based on the actual average outages from 1999-2001, and these outages were adjusted to exclude unusual outages.
- **Initial Contents:** Storage reservoirs are initialized to full on 1 August 1928, with the following exceptions of the Mica, Arrow, Duncan, Dworshak, Coulee, Horse and Libby. Canadian projects are initialized to the starting content in August 1 of 1929 from the DOP06. The Federal project's initial conditions are the 50-year average July 31 ending content from the 03BIOP2004_Oper study. The lower Snake projects are initialized to their MOP elevations in July: Ice Harbor 437.0 feet (193.4 ksfd), Lower Monumental 537.0 feet (180.5 ksfd), Little Goose 633.0 feet (260.5 ksfd), and Lower Granite 733.0 feet (225.0 ksfd).
- **CRC Rule Curves:** Critical Rule Curves (CRC) are in accordance with PNCA 2004 adopted system critical rule curves. They are as follows: 1st year = OY04 CRC1; 2nd year = empty; 3rd year = empty; and 4th year = empty.
- **Flood Control Rule Curves:** The Corps of Engineers provided the Variable flow (VARQ) Horse/Libby flood control curves on February 6, 2006. The curves are based on Kuehl-Moffit forecast; shift from Dworshak (not Brownlee) to Coulee; 3.6/4.08 Arrow/Mica split; and VARQ at Horse and Libby. Variable flow flood control in December at Libby is computed by BPA based on Kuehl-Moffit Jan1 April-August forecast at Libby. The flood control target draft at Libby from full in December is 1.4 Maf if the forecast is less than 5500 Kaf and 2.0 Maf if the forecast is greater than or equal 5900 Kaf. The straight line interpolation between
  1.4 – 2.0 Maf flood control draft from full when the forecast is in between 5500-5900 Kaf. The Mica, Arrow, Duncan projects' flood control requirements will be the same as used in the DOP06 study which has 5.1/2.08 Arrow/Mica split; and non-shifted VARQ at Horse (Q:\hydsim\dat\pnca\vurc\vq121001_syn52_ns_hgh.hymod). The flood control curves for Coulee are adjusted for the amount of storage capability available below URC on April 30 each year for Mica, Arrow and Duncan to more closely reflect the methodology used in real-time operations.
- **ECC Curves:** VECC's are calculated using OY04 Power Discharge Requirements (PDR's), distribution factors and forecast errors which are used in PNCA planning. The Grand Coulee ECC lower limits are 1225 feet (420.5 ksfd) in January-April 30 and 1240 feet (843.9 ksfd) in May. The Canadian DOP06 VECC's are based on Kuehl-Moffitt forecast, 5.1/2.08 Arrow/Mica split, non-shifted VarQ flood control at Horse only. The VECCs for the Federal projects are based on the Kuehl-Moffitt volume forecast (Kuehl-Moffitt Report dated July 1986).

Project Specific Data:

- **Mica, Duncan and Arrow** will be on their DOP06 operation. The Canadian Treaty projects are fixed to the 50-year DOP06 Treaty Storage Regulation run by BPA. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Libby** can be drafted to meet FELCC in September-November as long as it does not draft below December Variable URC or 2411.0 feet (1502.4 ksfd). In January through mid-April, Libby is operated on minimum flow (4,000 cfs) or VARQ flood control objectives as defined in the BiOP. It should be noted that Libby does violate URC for Corra Linn's IJC operation. Sturgeon and Bull Trout flow requirements in May-July based on May 1 April-August Kuehl-Moffit forecast at Libby are as follows:

Final FWS Biological Opinion, Dec 2000, Table 11; with interpolated volumes from Meeting at Seattle District, 25-26 March 2002.

Libby May1 Apr-Aug Kuehl-Moffit forecast Interval (MAF)	**Sturgeon flow May-Jun (KAF)**
<4800	0
4800-5400	800
5400-6350	800-1120
6350-6900	1120-1200
6900-8500	1200
8500-8900	1200-1600
>8900	1600

Libby May 1 Apr-Aug Kuehl-Moffit forecast Interval (MAF)	**Bull Trout flow in Jul-Aug (KCFS)**
<4800	6.0
4800-6000	7.0
6000-6700	8.0
6700-8100	9.0
8100-8900	9.0
>8900	9.0

Libby is operated during May-June for Sturgeon and in July-August for Bull Trout in all years. The project draft limit for McNary flow augmentation is 2439 feet (2061.3 ksfd) in June-August. It can draft below 2439 feet to meet Bull Trout flow objective. Libby's maximum outflow from mid-April through August is powerhouse hydraulic capacity without spill unless a higher outflow is required to maintain the required VARQ flood control space. Libby should not draft below the variable computed straight line content between June 30 and August draft limit of 2061.3 ksfd (2439 feet) during July and August to minimize occurrences of a second peak flow in the summer.

- **Hungry Horse** can not draft below IRC curves 3545 feet (1370.1 ksfd), 3545 feet (1370.1 ksfd), 3542 feet (1336.0 ksfd), and 3533 feet (1235.4 ksfd) during September through December, respectively. From January through March, Hungry Horse operates to the higher of variable IRC or Biological Rule Curve objectives but below a maximum content calculated to reduce the possibility of forced spill. The Biological rule curves are calculated using assumed inflows that are exceeded 75 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at flood control elevation on April 10. In April through June, Hungry Horse operates on or near flood control. On July 31, August 15 and August 31, Hungry Horse draft limit is 3560, 3550 and 3540.0 feet (1548.5, 1428.3 and 1313.2 ksfd) for BIOP flow augmentation. Hungry Horse will be operated to meet the Columbia Falls minimum flow between 3200 cfs and 3500 cfs based on the April to August volume runoff between 1190 kaf and 1790 kaf at Hungry Horse. The outflow at Hungry Horse is limited to maximum turbine capacity of 12,048 cfs and no spill is allowed unless required to maintain the required flood control space. Hungry Horse will violate upper rule curve to keep its maximum outflow to 20 kcfs or below.
- **Albeni Falls** is operated to 2062.5 feet (582.4 ksfd) in June – August, 2061.5 feet (535.7 ksfd) in September, 2056 feet (279.0 ksfd) in October, 2055 feet (234.7 ksfd) in November – March, 2055.5 feet (256.9 ksfd) in April 15, 2056.0 feet (279.0 ksfd) in April 30, and 2058.8 feet (409.7 ksfd) in May.
- **Grand Coulee** is operated to meet FELCC September through December subject to the draft limits of 1283 feet (2329.7 ksfd), 1283 feet (2329.7 ksfd), 1275 feet (2027.7 ksfd), and

1270 feet (1839.2 ksfd). In January through March, Coulee is operated to the higher of winter draft limits [1260 feet (1491.5 ksfd), 1250 feet (1159.1 ksfd), 1240 feet (843.9 ksfd), respectively] or the Biological Rule Curve (fish VECC). The Biological Rule Curve reflects the expected April 10th URC and storage needed for the appropriate Vernita Bar minimum flow requirement. Grand Coulee is then operated to these minimum storage points. The Biological rule curves are calculated using assumed inflows which are exceeded 85 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at VARQ flood control elevation on April 10. On April 15, Coulee is operated on flood control. From April 30 through May, Grand Coulee may be drafted to the lower of flood control or 1280 feet (2216.3 ksfd) to support Priest Rapids and McNary flow augmentation targets. In Jun – Au1, Grand Coulee draft limits are 1288 feet (2531.9 ksfd), 1285 feet (2408.2 ksfd), 1280 feet (2216.4 ksfd), respectively to support Priest Rapids and McNary flow augmentation targets. In Au2, the draft limit for BIOP flow augmentation is 1278 feet (2140.9 ksfd) if the July 1 April-August volume runoff at The Dalles is less than 92 Maf, otherwise the draft limit is 1280 feet (2216.4 ksfd). At-site minimum flow is equal to 30,000 cfs. Grand Coulee is subject to a draw down limit of 1.5 feet per day when Coulee is above 1260 feet, 1.3 feet per day when Coulee between 1260 and 1240 feet, and 1.0 feet per day when Coulee is below 1240 feet. During the flow augmentation period, Grand Coulee will release no more water than necessary to meet the minimum flow requirements.

- **Vernita Bar** minimum flows for December through May vary by water condition, with minimum flows established as the lower of a) 68% of the largest of the October or November flow at Wanapum or b) 70,000 cfs. Values less than 70,000 cfs are rounded to the nearest 5,000 cfs. The minimum protection level flow at Vernita Bar in any period will be no less than 36,000 cfs.
- **Priest Rapids**: From April 10 to June 30 Priest Rapids has a flow augmentation target of 135,000 cfs for Steelhead. The April 1 to April 9 the minimum flow for Priest Rapids is the same as the Vernita Bar minimum for each year.
- **Brownlee** In September and October, the reservoir operates to 2050 feet (320.4 ksfd),and 2035 feet (242.0 ksfd), respectively in anticipation of providing a minimum discharge of 9,000 cfs in October – November, and a maximum discharge of 20,000 cfs in October (the average of 30,000 cfs in the first half and 9,000 cfs to 13,000 cfs in the second half of the month), and 9,000 cfs in November at Hells Canyon.. At the end of December and January, the reservoir is operated at 2070 feet (443.2 ksfd) and 2060 feet (379.5 ksfd). The project drafts by the end of February, March, April 15 and April 30 to elevation 2050 feet (320.4 ksfd), 2045 feet (293.8 ksfd), 2040 feet (267.2 ksfd) and 2034.5 feet (239.6 ksfd), respectively. In May and June, the project refills to elevations 2058.4 feet (369.8 ksfd) and 2077 feet (491.7 ksfd) full. The project remains full through August.
- **Dworshak** is on minimum flow of 1300 cfs all periods or flood control objectives as defined in the BiOP, with the exception of April through August when it operates to meet Lower Granite flow augmentation targets. On April 15-August 31 Dworshak may draft to elevation 1520 feet (395.8 ksfd) to support Lower Granite flow augmentation targets. However, the NMFS BIOP place a higher priority on refilling Dworshak on June 30, so Dworshak will be operated on minimum flow or flood control during April-June. Dworshak's outflow is limited to 14,000 cfs in the flow augmentation periods and is limited to 25,000 cfs in all other periods for downstream flood control. During the flow augmentation period, Dworshak will release no more water than necessary to meet the minimum flow requirements.
- **Lower Snake** projects will be **operated at MOP** in accordance with the COE data submittal and the 1995 BiOp. As identified in the BiOp, the Corps will operate Little Goose, Lower Monumental, and Ice Harbor within one foot of minimum operating pool (MOP) during the period from approximately April 3 through August 31. Lower Granite will operate within one foot of MOP from approximately April 3 through November 15 (Ap1-Oct in HYDSIM modeling). MOP for Lower Granite, Little Goose, Lower Monumental and Ice Harbor is elevation 733 (225.0 ksfd), 633 (260.5 ksfd), 537 (180.5 ksfd) and 437 feet

(193.4 ksfd), respectively. During the rest of the year Lower Granite, Little Goose, Lower Monumental and Ice Harbor will operate at elevation 738 (245.8 ksfd), 638 (285.1 ksfd), 540 (190.1 ksfd) and 440 feet (204.8 ksfd), respectively.

- The four lower Snake River projects (Lower Granite, Little Goose, Lower Monumental and Ice Harbor) and the four lower Columbia River projects (McNary, John Day, The Dalles and Bonneville) each are required to operate their turbines within **1% of peak efficiency** during the period of March through November. This requirement is reflected in a hydro availability file, which limits the maximum generation capability of each project in each of the fourteen periods. No other hydro outages assumed.
- Generation at these eight projects (Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville) is reduced further with the inclusion of **Juvenile Bypass 2004 expected Fish Spill Plan**. Juvenile Bypass Fish Spill at Federal projects (values less than one are percent of outflow and values greater than one are cfs), limited by Spill Caps, is as shown below. The spill caps represent completed modifications at spillways currently planned and which are used as hydro regulation modeling caps, not instantaneous. Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville have a minimum turbine flow of 11500, 11500, 11500, 8500, 50000, 50000, 50000, and 30000 cfs respectively.
- **Juvenile Bypass Spill and Dissolved Gas Caps from OY04 PNCA Planning:** There will be no Juvenile Bypass Spill requirement at Lower Granite, Little Goose, and Lower Monumental if April-July forecast at Lower Granite is less than 17.5 Maf. Once spill has started it will continue through June 20 even though subsequent forecasts may drop below 17.5 Maf.

	Spill	Instant. Spill Cap (120% TDG)	Min Turb	Days	Hour Ending
LWG	19 kcfs	19 kcfs	11.5 kcfs	Apr 3 - Jun 20;	All Hours
LGS	15 kcfs	15 kcfs	11.5 kcfs	Apr 3 - Jun 20	All Hours
LMN	45% or 50% of flow	40 kcfs	11.5 kcfs	Apr 3 - Jun 20	All hours
IHR	45 kcfs	72.5 kcfs	8.5 kcfs	Apr 3 - Aug 31	0500-1800
	105 kcfs				1800-0500
MCN	120% TDG	85 kcfs	50 kcfs	Apr 10 - Jun 30	All Hours
JDA	60% flow or 140 kcfs	140 kcfs	50 kcfs	Apr 10 - May 14	1800 – 0600
				May 15 - Jul 31	1900 – 0600
				Aug 1- Aug 31	1800 - 0600
TDA	40% flow	107 kcfs	50 kcfs	Apr 10 - Aug 31	All hours
BON	75 kcfs	150 kcfs	30 kcfs	Apr 10 - Aug 31	1900 – 0600
	105 kcfs			Apr 10 - Aug 31	0600-1900

- **Lower Columbia fall spawning** flow objectives (at Bonneville) are as follows: From November 1 through April 10 provide 125 kcfs (allow to exceed Chum flow if the projects operate to fish VECCs). The priority for releasing water from upstream reservoirs for this flow augmentation is Grand Coulee, Libby, and Hungry Horse. The draft limits for Chum flow in November-December are 1275 feet (2027.6 ksfd) and 1270 feet (1839.2 ksfd) at

Coulee. The variable draft limit for Chum flow at Libby in December is in the range of 2411 feet (1502.2 ksfd) to 2426.6 feet (1804.7 ksfd) based on the Jan1 Apr-Aug forecast at Libby.

- Use a **sliding scale flow augmentation target** of from 220,000 to 260,000 cfs **at McNary** based on The Dalles April 1, April-August volume runoff. A straight-line interpolation will be used for flow targets for volume forecasts between 80 and 92 Maf in the April 10 through June 30 period. The AP1 period value is prorated at 9 days at 155,000 cfs and 6 days at from 220,000 to 260,000 cfs. Maximum and minimum targets are 260,000 cfs and 220,000 cfs, respectively. July and both halves of August flow targets are 200,000 cfs. The priority for releasing water from upstream reservoirs for flow augmentation is Grand Coulee, Libby and Hungry Horse.
- **Lower Granite** also has **sliding scale flow augmentation targets**. When Lower Granite April 1, April-July runoff forecast is less than 16 Maf, then the April 3 through June 20 flow target is 85,000 cfs, and the June 21 through August 31 is 50,000 cfs. When the April 1 Lower Granite April through July forecast is greater than 20 Maf, then the April 3 through June 20 target flow is 100,000 cfs. In June 21 through August 31, when the forecast is greater than 28 Maf, the flow target is 55,000 cfs. The spring flow targets are interpolated for forecasts between 16 and 20 Maf and the summer flow targets are interpolated for forecasts between 16 and 28 Maf.
- **John Day** is operated at 262.5 feet (127.8 ksfd) from April through September. From October through March, John Day operates to elevation 265 feet (191.0 ksfd).
- Juvenile **Bypass spills at non-Federal** projects will be as described below and as was submitted for OY04 PNCA planning.

PROJECT SPILL FOR FISH IN
PERCENT OF REGULATED FLOW (%)

PROJECTS:	Apr1	Apr2	May	Jun	Jul	Aug1	Aug2
Wells	0.0	6.5	6.5	0.0	6.5	2.5	0.0
Rocky Reach	0.01	15.0	21.0	13.0	15.0	15.0	0.0
Rock Island	0.01	20.0	20.0	20.0	20.0	20.0	0.0
Wanapum	0.0	43.0	43.0	46.0	49.0	49.0	49.0
Priest Rapids	0.0	61.0	61.0	50.0	39.0	39.0	39.0

- **Kootenay Lake** shall be operated as necessary, up to free flow, to maintain the lake level below the IJC rule curve and the calculated "allowable elevation at Queens Bay". This is implemented using the 5-step method developed by BPA and the Corps. After August 31, the lake level may be raised to elevation 1745.32 feet at the Queens Bay gage. This maximum elevation at Queens Bay is in effect through January 7. After January 7 the lake will be lowered to elevation 1744 feet on February 1, elevation 1742.4 feet on March 1, and 1739.32 feet on April 1. April through August 31, after the lake exceeds elevation 1739.32 feet at the Queens Bay gage, the lake shall be operated using the "allowable elevation" calculation to determine the Queens Bay maximum allowable elevation until the elevation at the Nelson gage drafts back to elevation 1743.32 feet.

OPER STEP

- All AER step criteria apply unless specifically amended below.
- **Loads:** The system is run to 2007 Coordinated System firm loads from BPA's 2004 White Book. A secondary market of 9,000 aMW is used in every period, every year.
- **Flood Control Rule Curves:** no change in flood control at Mica and Duncan from the AER step. Arrow flood control is updated to 3.6/4.08 Arrow/Mica split set (from VQ06feb06_syn34_NS.hymod) in order to have more space available for 1 MAF flow augmentation.
- **Non-Federal** projects are run to the contents that resulted in the AER step. It is believed that this will allow the Federal projects to fill without requiring the non-Federal projects to draft to meet load**.**
- **Lower Columbia fall spawning** flow objectives (at Bonneville) are as follows: From November 1 through December 31 provide 125 kcfs, and January 1 through March 31 provides 115 kcfs (allow to exceed Chum flow if the projects operate to fish VECCs). Grand Coulee, Libby, and Hungry Horse will release water (in that order) to meet the Lower Columbia fall spawning salmon flow objectives at Bonneville in November and December. Each reservoir has been assigned a lower draft limit only in November and December so that each will draft no lower than the draft limit before the next priority reservoir is used.
- **Lower Columbia Spring/Summer Flow Augmentation:** The January-April 15 operation of the Federal reservoirs is to achieve the Biop April 10 URC objective. Hungry Horse, Grand Coulee, and Dworshak are on minimum flow from April through June 30 in all water years (No spring flow targets required at Priest Rapid, Lower Granite, and McNary projects). This operation is intended to **maximize storage in the Federal projects by June 30 to maximize the water available for summer flow augmentation**. During the April-June period, these projects will release above minimum outflow only as needed to meet flood control requirements. Grand Coulee will draft below flood control if required to meet the Vernita Bar flow requirement. The BiOp summer flow target of 200 kcfs at MCN is in effect but only Grand Coulee will respond to it in July while Libby and Hungry Horse will release water to reduce occurrences of a second peak in flows without regard to the level of flow achieved at MCN.

Project Specific Data:

- **Mica, Duncan and Arrow** operations are fixed to the 50-year DOP06 Treaty Storage Regulation run by BPA with the exception of Arrow in some periods. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Arrow:** store up to 1 Maf at Arrow for flow augmentation in January and release 15% in May, 15% in June, and 70% in July. The flow augmentation will all be released by July 31.
- **Libby:** has a maximum outflow of 26,500 cfs in all periods. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 2061.3 ksfd (2439 feet). In years when the May1 Libby forecast for the Apr-Aug period results in a bull trout minimum for July and August of 9,000 cfs, the minimum July 31 content will be 2360 ksfd to assure the 9,000 cfs can be provided without drafting below elevation 2439 feet by the end of August. Operating to the July 31 point will have highest priority unless outflow would exceed 26,500 cfs. In August, draft to 2061 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 26,500 cfs. This operation will minimize occurrences of a second peak flow in the summer.

- **Hungry Horse** is operated to the VARQ flood control in September through December at 3560.0 feet (1548.5 ksfd), 3555.7 feet (1497.0 ksfd), 3555.7 feet (1497.0 ksfd), and 3549.2 feet (1418.7 ksfd) respectively, unless the project is trying to meet the minimum flow requirement at Columbia Falls. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 1313.2 ksfd (3540 ft.). If computed July 31 content is below 1360 ksfd (3544 feet) then do not allow Horse to draft below 1360 ksfd in July to avoid Horse drafting below 3540 feet by the end of August. Operating to the July 31 point will have highest priority unless outflow would exceed 14,000 cfs. In August, draft to 1313.2 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 14,000 cfs. This operation will minimize occurrences of a second peak flow in the summer.
- **Albeni Falls** draft Albeni to 2051 feet (57.6 ksfd) by November 30 and maintain at this elevation through April.
- **Grand Coulee's** operates to 1285 and 1288 feet (2408.3 ksfd, 2531.9 ksfd) in September and October, respectively. During the November through December periods, Coulee can not draft below draft limits of 1275 and 1270 feet (2027.7 ksfd, and 1839.2 ksfd). When the July 1 April-August volume runoff at The Dalles is greater than 92 MAF, Grand Coulee is operated as low as 1285.0, 1280.0, and 1280.0 feet (2408.3, 2216.4, and 2216.4 ksfd) in July through August, respectively, to meet the McNary flow augmentation targets. When the July 1 April-August volume runoff at The Dalles is 92 MAF or less, Grand Coulee is operated as low as 1285.0, 1278.0 and 1278.0 feet (2408.3, 2140.9 and 2140.9 ksfd) in July through August, respectively, to meet the McNary flow augmentation targets. At-site minimum flow is 50,000 cfs for peaking purposes.
- **Columbia Basin Irrigation Project Pumping (Banks Lake)** will be reduced by the equivalent of 5 feet (65.5 ksfd) in August in years when it is needed to meet the McNary flow augmentation target of 200 kcfs. Additional water is pumped in the following January-April period to return the Banks Lake elevation to its original level.
- **Dworshak**: Minimum flow will be 1,300 cfs in all periods. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 497.0 ksfd (1535 ft.). Operating to the July 31 point will have highest priority unless outflow would exceed 14,000 cfs. In August, draft to 497.0 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 14,000 cfs. Dworshak will be drafted in September without exceeding a maximum outflow of 7,650 cfs and the draft limit of 1520 feet (395.8 ksfd). (7,650 cfs derived by assuming the project discharge is 14 kcfs in the first half of the month and 1,300 cfs in the second half of the month).

- **Juvenile Bypass Spill and Dissolved Gas Caps:**

Final04RateC_07 spill criteria									
	MAR	AP1	AP2	MAY	JUN	JUL	AG1	AG2	Modeling Cap (cfs)
LWG - (cfs)		17,333	20,000	20,000	19,333	18,000	18,000	18,000	47,000
LGS - (cfs)		0.260	0.300	0.300	0.300	0.300	0.300	0.300	45,000
LMN - (cfs)		26,000	30,000	30,000	25,667	17,000	17,000	17,000	40,000
IHR - (% of outflow)		0.260	0.300	0.300	0.300	0.300	0.300	0.300	90,000
MCN(a) - (% of outflow)		0.080	0.200	0.200	0.133	0.500	0.500	0.500	185,000
(b) - (cfs)		18,500	46,250	46,250	61,667				
JDA - (% of outflow)		0.120	0.300	0.300	0.300	0.300	0.300	0.300	160,000
TDA - (% of outflow)		0.160	0.400	0.400	0.400	0.400	0.400	0.400	150,000
BON - (cfs)	6,452 or 9,677	40,000	100,000	100,000	100,000	97,500	97,500	97,500	130,000

Project Specific Spill and Gas Caps

LWG:	Apr 3-Jun 20	20 kcfs.
	Jun 21-Aug 31	18 kcfs, 24 hours; 47 kcfs gas cap.
LGS:	Apr 3-Aug 31	30% of flow, 24 hours; 45 kcfs gas cap.
LMN:	Apr 3-Jun 20	40 kcfs vs. 20 kscfs.
	Jun 21-Aug 31	17 kcfs, 24 hours; 40 kcfs gas cap.
IHR:	Apr 3-Aug 31	30% of flow, 24 hours; 90 kcfs gas cap.
MCN:	Apr 10-Jun 20	40% of flow, 24 hours vs. gas gap at night.
	Jun 21-Jun 30	Gas cap at night.
	Jul 1-Aug 31	40% of flow, 24 hours vs. 60% of flow, 24 hours; 185 kcfs gas cap.
JDA:	Apr 10-May 15	60% of flow, 12 hours.
	May 16-Aug 31	30% of flow, 24 hours; 160 kcfs gas cap.
TDA:	Apr 10-Aug 31	40% of flow, 24 hours; 150 kcfs gas cap.
BON:	4 days in March	50 kcfs if forecast is less than 90 Maf; otherwise 75 kcfs, 24 hours.
	Apr 10-Jun 30	100 kcfs.
	Jul 1-Aug 31	75 kcfs daytime and 120 kcfs night time; 130 kcfs cap.

- **Overgeneration Spill:** Additional spill up to the gas cap (125% %TDG) listed below at the following projects if lack of the secondary market during Jan-Aug. Here is the spill priority list:

ICE: 125 kcfs
MCN: 230 kcfs
JDA: 240 kcfs
TDA: 250 kcfs
BON: 205 kcfs
LMN: 55 kcfs
LGS: 80 kcfs
LWG: 90 kcfs
CHJ: 33 kcfs
GCL: 75 kcfs

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2.9.2 HYDSIM Assumptions for 2008

Date Requested: March 24, 2006 **STUDY NUMBER:** Fin04RateC_08

Requested By: BPA

Due Date: May 31, 2006

Purpose of Study: This is a continuous study of the system operation under the 2004 NMFS and 2000 USFWS Biological Opinions for 2008 rate case study.

Directory of Study: **AER Step:**
Q:\RATES\06\04RATE_07\AER
OPER Step:
Q:\RATES\06\04RATE_08\OPER

Name of Regulator: **Jennie Tran**

AER STEP

- This AER Step is used to determine the project minimum elevations (or maximum draft) using load equal to OY04 Firm Energy Load Carrying Capability (FELCC) and unlimited secondary market. Minimum elevations from the AER Step will be input into the Operational Step.
- This is a **continuous** study mostly based on the OY04 PNCA data submittal. The study will begin on August 1, 1928 and end on July 31, 1978, a 50-year study (OPERATING YEAR AU1, 2003 – JUL 2004; THEREFORE, THE COORDINATED SYSTEM GENERATION WILL NOT INCLUDE THE TACOMA PROJECTS, as well as Brownlee, Oxbow, and Hells Canyon).
- **Stream Flow:** The 50 years Stream flows used are from "Modified Streamflows 2000 Level of Irrigation". They contain 2000 level irrigation depletion's. Adjustments to these 2000 level modified stream flows are due to the Bureau of Reclamation's updated **Grand Coulee pumping schedule** for the Columbia Basin Project. This pumping schedule is included in the BOR's February 1, 2003 preliminary PNCA data submittal. No adjustments are made for **NTSA** storage and release. The inflows to Brownlee are adjusted by the BOR's regulation of the Upper Snake projects to release up to 487 kaf provided by Pat McGrane dated 12/7/04 (acquisition of an additional 60 kaf in Apr-Aug from high lift pumps downstream of Milner).
- **Plant Data:** The OY04 plant data will be used.
- **Loads:** All FELCC is taken from the OY04 Critical Period study run by the Northwest Power Pool (NWPP). The NWPP study has a one-year critical period (August 16, 1936 through March 31, 1937). Thus, only one year of FELCC values are used for all water conditions. This study reflects coordination between PNCA parties in meeting PNCA FELCC. Therefore, generation from projects owned by non-PNCA parties (Brownlee, Oxbow, Hells Canyon, and Canadian projects) are not used to meet PNCA FELCC in these studies. Also in this study, Tacoma's generating projects are no longer included in the PNCA's Coordinated System FELCC computation. August, May, June, and July FELCC comes from the PNCA Final Regulation, which includes flow augmentation target flows at McNary and Lower Granite. FELCC plus Hydro-Independent generation from 1936-37 is the system total generation. Then, the system total generation will be reduced by 50 years from the new set of hydro-independent generation (Q:\HYDSIM\DATA\PNCA\HI\HI_70YR_CS_102804.HYMOD) to produce 50 years of FELCC. There will be an unlimited secondary market.

- **Unit Outages:** The unit outages for non-Federal projects are from the PNCA OY04. For Federal projects the unit outages were based on the actual average outages from 1999-2001, and these outages were adjusted to exclude unusual outages.
- **Initial Contents:** Storage reservoirs are initialized to full on 1 August 1928, with the following exceptions of the Mica, Arrow, Duncan, Dworshak, Coulee, Horse and Libby. Canadian projects are initialized to the starting content in August 1 of 1929 from the DOP06. The Federal project's initial conditions are the 50-year average July 31 ending content from the 03BIOP2004_Oper study. The lower Snake projects are initialized to their MOP elevations in July: Ice Harbor 437.0 feet (193.4 ksfd), Lower Monumental 537.0 feet (180.5 ksfd), Little Goose 633.0 feet (260.5 ksfd), and Lower Granite 733.0 feet (225.0 ksfd).
- **CRC Rule Curves:** Critical Rule Curves (CRC) are in accordance with PNCA 2004 adopted system critical rule curves. They are as follows: 1st year = OY04 CRC1; 2nd year = empty; 3rd year = empty; and 4th year = empty.
- **Flood Control Rule Curves:** The Corps of Engineers provided the Variable flow (VARQ) Horse/Libby flood control curves on February 6, 2006. The curves are based on Kuehl-Moffit forecast; shift from Dworshak (not Brownlee) to Coulee; 3.6/4.08 Arrow/Mica split; and VARQ at Horse and Libby. Variable flow flood control in December at Libby is computed by BPA based on Kuehl-Moffit Jan1 April-August forecast at Libby. The flood control target draft at Libby from full in December is 1.4 Maf if the forecast is less than 5500 Kaf and 2.0 Maf if the forecast is greater than or equal 5900 Kaf. The straight line interpolation between
  1.4 – 2.0 Maf flood control draft from full when the forecast is in between 5500 – 5900 Kaf. The Mica, Arrow, Duncan projects' flood control requirements will be the same as used in the DOP06 study which has 5.1/2.08 Arrow/Mica split; and non-shifted VARQ at Horse (Q:\hydsim\dat\pnca\vurc\vq121001_syn52_ns_hgh.hymod). The flood control curves for Coulee are adjusted for the amount of storage capability available below URC on April 30 each year for Mica, Arrow and Duncan to more closely reflect the methodology used in real-time operations.
- **ECC Curves:** VECC's are calculated using OY04 Power Discharge Requirements (PDR's), distribution factors and forecast errors which are used in PNCA planning. The Grand Coulee ECC lower limits are 1225 feet (420.5 ksfd) in January-April 30 and 1240 feet (843.9 ksfd) in May. The Canadian DOP06 VECC's are based on Kuehl-Moffitt forecast, 5.1/2.08 Arrow/Mica split, non-shifted VarQ flood control at Horse only. The VECCs for the Federal projects are based on the Kuehl-Moffitt volume forecast (Kuehl-Moffitt Report dated July 1986).

Project Specific Data:

- **Mica, Duncan and Arrow** will be on their DOP06 operation. The Canadian Treaty projects are fixed to the 50-year DOP06 Treaty Storage Regulation run by BPA. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Libby** can be drafted to meet FELCC in September-November as long as it does not draft below December Variable URC or 2411.0 feet (1502.4 ksfd). In January through mid-April, Libby is operated on minimum flow (4,000 cfs) or VARQ flood control objectives as defined in the BiOP. It should be noted that Libby does violate URC for Corra Linn's IJC operation. Sturgeon and Bull Trout flow requirements in May-July based on May 1 April-August Kuehl-Moffit forecast at Libby are as follows:

Final FWS Biological Opinion, Dec 2000, Table 11; with interpolated volumes from Meeting at Seattle District, 25-26 March 2002.

Libby May1 Apr-Aug Kuehl-Moffit forecast Interval (MAF)	**Sturgeon flow May-Jun (KAF)**
<4800	0
4800-5400	800
5400-6350	800-1120
6350-6900	1120-1200
6900-8500	1200
8500-8900	1200-1600
>8900	1600

Libby May 1 Apr-Aug Kuehl-Moffit forecast Interval (MAF)	**Bull Trout flow in Jul-Aug (KCFS)**
<4800	6.0
4800-6000	7.0
6000-6700	8.0
6700-8100	9.0
8100-8900	9.0
>8900	9.0

Libby is operated during May-June for Sturgeon and in July-August for Bull Trout in all years. The project draft limit for McNary flow augmentation is 2439 feet (2061.3 ksfd) in June-August. It can draft below 2439 feet to meet Bull Trout flow objective. Libby's maximum outflow from mid-April through August is powerhouse hydraulic capacity without spill unless a higher outflow is required to maintain the required VARQ flood control space. Libby should not draft below the variable computed straight line content between June 30 and August draft limit of 2061.3 ksfd (2439 feet) during July and August to minimize occurrences of a second peak flow in the summer.

- **Hungry Horse** can not draft below IRC curves 3545 feet (1370.1 ksfd), 3545 feet (1370.1 ksfd), 3542 feet (1336.0 ksfd), and 3533 feet (1235.4 ksfd) during September through December, respectively. From January through March, Hungry Horse operates to the higher of variable IRC or Biological Rule Curve objectives but below a maximum content calculated to reduce the possibility of forced spill. The Biological rule curves are calculated using assumed inflows that are exceeded 75 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at flood control elevation on April 10. In April through June, Hungry Horse operates on or near flood control. On July 31, August 15 and August 31, Hungry Horse draft limit is 3560, 3550 and 3540.0 feet (1548.5, 1428.3 and 1313.2 ksfd) for BIOP flow augmentation. Hungry Horse will be operated to meet the Columbia Falls minimum flow between 3200 cfs and 3500 cfs based on the April to August volume runoff between 1190 kaf and 1790 kaf at Hungry Horse. The outflow at Hungry Horse is limited to maximum turbine capacity of 12,048 cfs and no spill is allowed unless required to maintain the required flood control space. Hungry Horse will violate upper rule curve to keep its maximum outflow to 20 kcfs or below.
- **Albeni Falls** is operated to 2062.5 feet (582.4 ksfd) in June – August, 2061.5 feet (535.7 ksfd) in September, 2056 feet (279.0 ksfd) in October, 2055 feet (234.7 ksfd) in November – March, 2055.5 feet (256.9 ksfd) in April 15, 2056.0 feet (279.0 ksfd) in April 30, and 2058.8 feet (409.7 ksfd) in May.

- **Grand Coulee** is operated to meet FELCC September through December subject to the draft limits of 1283 feet (2329.7 ksfd), 1283 feet (2329.7 ksfd), 1275 feet (2027.7 ksfd), and 1270 feet (1839.2 ksfd). In January through March, Coulee is operated to the higher of winter draft limits [1260 feet (1491.5 ksfd), 1250 feet (1159.1 ksfd), 1240 feet (843.9 ksfd), respectively] or the Biological Rule Curve (fish VECC). The Biological Rule Curve reflects the expected April 10th URC and storage needed for the appropriate Vernita Bar minimum flow requirement. Grand Coulee is then operated to these minimum storage points. The Biological rule curves are calculated using assumed inflows which are exceeded 85 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at VARQ flood control elevation on April 10. On April 15, Coulee is operated on flood control. From April 30 through May, Grand Coulee may be drafted to the lower of flood control or 1280 feet (2216.3 ksfd) to support Priest Rapids and McNary flow augmentation targets. In Jun – Au1, Grand Coulee draft limits are 1288 feet (2531.9 ksfd), 1285 feet (2408.2 ksfd), 1280 feet (2216.4 ksfd), respectively to support Priest Rapids and McNary flow augmentation targets. In Au2, the draft limit for BIOP flow augmentation is 1278 feet (2140.9 ksfd) if the July 1 April-August volume runoff at The Dalles is less than 92 Maf, otherwise the draft limit is 1280 feet (2216.4 ksfd). At-site minimum flow is equal to 30,000 cfs. Grand Coulee is subject to a draw down limit of 1.5 feet per day when Coulee is above 1260 feet, 1.3 feet per day when Coulee between 1260 and 1240 feet, and 1.0 feet per day when Coulee is below 1240 feet. During the flow augmentation period, Grand Coulee will release no more water than necessary to meet the minimum flow requirements.
- **Vernita Bar** minimum flows for December through May vary by water condition, with minimum flows established as the lower of a) 68% of the largest of the October or November flow at Wanapum or b) 70,000 cfs. Values less than 70,000 cfs are rounded to the nearest 5,000 cfs. The minimum protection level flow at Vernita Bar in any period will be no less than 36,000 cfs.
- **Priest Rapids**: From April 10 to June 30 Priest Rapids has a flow augmentation target of 135,000 cfs for Steelhead. The April 1 to April 9 the minimum flow for Priest Rapids is the same as the Vernita Bar minimum for each year.
- **Brownlee** In September and October, the reservoir operates to 2050 feet (320.4 ksfd), and 2035 feet (242.0 ksfd), respectively in anticipation of providing a minimum discharge of 9,000 cfs in October – November, and a maximum discharge of 20,000 cfs in October (the average of 30,000 cfs in the first half and 9,000 cfs to 13,000 cfs in the second half of the month), and 9,000 cfs in November at Hells Canyon.. At the end of December and January, the reservoir is operated at 2070 feet (443.2 ksfd) and 2060 feet (379.5 ksfd). The project drafts by the end of February, March, April 15 and April 30 to elevation 2050 feet (320.4 ksfd), 2045 feet (293.8 ksfd), 2040 feet (267.2 ksfd) and 2034.5 feet (239.6 ksfd), respectively. In May and June, the project refills to elevations 2058.4 feet (369.8 ksfd) and 2077 feet (491.7 ksfd) full. The project remains full through August.
- **Dworshak** is on minimum flow of 1300 cfs all periods or flood control objectives as defined in the BiOP, with the exception of April through August when it operates to meet Lower Granite flow augmentation targets. On April 15-August 31 Dworshak may draft to elevation 1520 feet (395.8 ksfd) to support Lower Granite flow augmentation targets. However, the NMFS BIOP place a higher priority on refilling Dworshak on June 30, so Dworshak will be operated on minimum flow or flood control during April-June. Dworshak's outflow is limited to 14,000 cfs in the flow augmentation periods and is limited to 25,000 cfs in all other periods for downstream flood control. During the flow augmentation period, Dworshak will release no more water than necessary to meet the minimum flow requirements.
- **Lower Snake** projects will be **operated at MOP** in accordance with the COE data submittal and the 1995 BiOp. As identified in the BiOp, the Corps will operate Little Goose,

Lower Monumental, and Ice Harbor within one foot of minimum operating pool (MOP) during the period from approximately April 3 through August 31. Lower Granite will operate within one foot of MOP from approximately April 3 through November 15 (Ap1-Oct in HYDSIM modeling). MOP for Lower Granite, Little Goose, Lower Monumental and Ice Harbor is elevation 733 (225.0 ksfd), 633 (260.5 ksfd), 537 (180.5 ksfd) and 437 feet (193.4 ksfd), respectively. During the rest of the year Lower Granite, Little Goose, Lower Monumental and Ice Harbor will operate at elevation 738 (245.8 ksfd), 638 (285.1 ksfd), 540 (190.1 ksfd) and 440 feet (204.8 ksfd), respectively.

- The four lower Snake River projects (Lower Granite, Little Goose, Lower Monumental and Ice Harbor) and the four lower Columbia River projects (McNary, John Day, The Dalles and Bonneville) each are required to operate their turbines within **1% of peak efficiency** during the period of March through November. This requirement is reflected in a hydro availability file, which limits the maximum generation capability of each project in each of the fourteen periods. No other hydro outages assumed.
- Generation at these eight projects (Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville) is reduced further with the inclusion of **Juvenile Bypass 2004 expected Fish Spill Plan**. Juvenile Bypass Fish Spill at Federal projects (values less than one are percent of outflow and values greater than one are cfs), limited by Spill Caps, is as shown below. The spill caps represent completed modifications at spillways currently planned and which are used as hydro regulation modeling caps, not instantaneous. Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville have a minimum turbine flow of 11500, 11500, 11500, 8500, 50000, 50000, 50000, and 30000 cfs respectively.
- **Juvenile Bypass Spill and Dissolved Gas Caps from OY04 PNCA Planning:** There will be no Juvenile Bypass Spill requirement at Lower Granite, Little Goose, and Lower Monumental if April-July forecast at Lower Granite is less than 17.5 Maf. Once spill has started it will continue through June 20 even though subsequent forecasts may drop below 17.5 Maf.

	Spill	Instant. Spill Cap (120% TDG)	Min Turb	Days	Hour Ending
LWG	19 kcfs	19 kcfs	11.5 kcfs	Apr 3 - Jun 20;	All Hours
LGS	15 kcfs	15 kcfs	11.5 kcfs	Apr 3 - Jun 20	All Hours
LMN	45% or 50% of flow	40 kcfs	11.5 kcfs	Apr 3 - Jun 20	All hours
IHR	45 kcfs	72.5 kcfs	8.5 kcfs	Apr 3 - Aug 31	0500-1800
	105 kcfs				1800-0500
MCN	120% TDG	85 kcfs	50 kcfs	Apr 10 - Jun 30	All Hours
JDA	60% flow or 140 kcfs	140 kcfs	50 kcfs	Apr 10 - May 14	1800 – 0600
				May 15 - Jul 31	1900 – 0600
				Aug 1- Aug 31	1800 - 0600
TDA	40% flow	107 kcfs	50 kcfs	Apr 10 - Aug 31	All hours
BON	75 kcfs	150 kcfs	30 kcfs	Apr 10 - Aug 31	1900 – 0600
	105 kcfs			Apr 10 - Aug 31	0600-1900

- **Lower Columbia fall spawning** flow objectives (at Bonneville) are as follows: From November 1 through April 10 provide 125 kcfs (allow to exceed Chum flow if the projects operate to fish VECCs). The priority for releasing water from upstream reservoirs for this flow augmentation is Grand Coulee, Libby, and Hungry Horse. The draft limits for Chum flow in November-December are 1275 feet (2027.6 ksfd) and 1270 feet (1839.2 ksfd) at Coulee. The variable draft limit for Chum flow at Libby in December is in the range of 2411 feet (1502.2 ksfd) to 2426.6 feet (1804.7 ksfd) based on the Jan1 Apr-Aug forecast at Libby.
- Use a **sliding scale flow augmentation target** of from 220,000 to 260,000 cfs **at McNary** based on The Dalles April 1, April-August volume runoff. A straight-line interpolation will be used for flow targets for volume forecasts between 80 and 92 Maf in the April 10 through June 30 period. The AP1 period value is prorated at 9 days at 155,000 cfs and 6 days at from 220,000 to 260,000 cfs. Maximum and minimum targets are 260,000 cfs and 220,000 cfs, respectively. July and both halves of August flow targets are 200,000 cfs. The priority for releasing water from upstream reservoirs for flow augmentation is Grand Coulee, Libby and Hungry Horse.
- **Lower Granite** also has **sliding scale flow augmentation targets**. When Lower Granite April 1, April-July runoff forecast is less than 16 Maf, then the April 3 through June 20 flow target is 85,000 cfs, and the June 21 through August 31 is 50,000 cfs. When the April 1 Lower Granite April through July forecast is greater than 20 Maf, then the April 3 through June 20 target flow is 100,000 cfs. In June 21 through August 31, when the forecast is greater than 28 Maf, the flow target is 55,000 cfs. The spring flow targets are interpolated for forecasts between 16 and 20 Maf and the summer flow targets are interpolated for forecasts between 16 and 28 Maf.
- **John Day** is operated at 262.5 feet (127.8 ksfd) from April through September. From October through March, John Day operates to elevation 265 feet (191.0 ksfd).
- Juvenile **Bypass spills at non-Federal** projects will be as described below and as was submitted for OY04 PNCA planning.

PROJECT SPILL FOR FISH IN
PERCENT OF REGULATED FLOW (%)

PROJECTS:	Apr1	Apr2	May	Jun	Jul	Aug1	Aug2
Wells	0.0	6.5	6.5	0.0	6.5	2.5	0.0
Rocky Reach	0.01	15.0	21.0	13.0	15.0	15.0	0.0
Rock Island	0.01	20.0	20.0	20.0	20.0	20.0	0.0
Wanapum	0.0	43.0	43.0	46.0	49.0	49.0	49.0
Priest Rapids	0.0	61.0	61.0	50.0	39.0	39.0	39.0

- **Kootenay Lake** shall be operated as necessary, up to free flow, to maintain the lake level below the IJC rule curve and the calculated "allowable elevation at Queens Bay". This is implemented using the 5-step method developed by BPA and the Corps. After August 31, the lake level may be raised to elevation 1745.32 feet at the Queens Bay gage. This maximum elevation at Queens Bay is in effect through January 7. After January 7 the lake will be lowered to elevation 1744 feet on February 1, elevation 1742.4 feet on March 1, and 1739.32 feet on April 1. April through August 31, after the lake exceeds elevation 1739.32 feet at the Queens Bay gage, the lake shall be operated using the "allowable elevation" calculation to determine the Queens Bay maximum allowable elevation until the elevation at the Nelson gage drafts back to elevation 1743.32 feet.

OPER STEP

- All AER step criteria apply unless specifically amended below.
- **Loads:** The system is run to 2008 Coordinated System firm loads from BPA's 2004 White Book. A secondary market of 9,000 aMW is used in every period, every year.
- **Flood Control Rule Curves:** no change in flood control at Mica and Duncan from the AER step. Arrow flood control is updated to 3.6/4.08 Arrow/Mica split set (from VQ06feb06_syn34_NS.hymod) in order to have more space available for 1 MAF flow augmentation.
- **Non-Federal** projects are run to the contents that resulted in the AER step. It is believed that this will allow the Federal projects to fill without requiring the non-Federal projects to draft to meet load**.**
- **Lower Columbia fall spawning** flow objectives (at Bonneville) are as follows: From November 1 through December 31 provide 125 kcfs, and January 1 through March 31 provides 115 kcfs (allow to exceed Chum flow if the projects operate to fish VECCs). Grand Coulee, Libby, and Hungry Horse will release water (in that order) to meet the Lower Columbia fall spawning salmon flow objectives at Bonneville in November and December. Each reservoir has been assigned a lower draft limit only in November and December so that each will draft no lower than the draft limit before the next priority reservoir is used.
- **Lower Columbia Spring/Summer Flow Augmentation:** The January-April 15 operation of the Federal reservoirs is to achieve the Biop April 10 URC objective. Hungry Horse, Grand Coulee, and Dworshak are on minimum flow from April through June 30 in all water years (No spring flow targets required at Priest Rapid, Lower Granite, and McNary projects). This operation is intended to **maximize storage in the Federal projects by June 30 to maximize the water available for summer flow augmentation**. During the April-June period, these projects will release above minimum outflow only as needed to meet flood control requirements. Grand Coulee will draft below flood control if required to meet the Vernita Bar flow requirement. The BiOp summer flow target of 200 kcfs at MCN is in effect but only Grand Coulee will respond to it in July while Libby and Hungry Horse will release water to reduce occurrences of a second peak in flows without regard to the level of flow achieved at MCN.

Project Specific Data:

- **Mica, Duncan and Arrow** operations are fixed to the 50-year DOP06 Treaty Storage Regulation run by BPA with the exception of Arrow in some periods. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Arrow:** store up to 1 Maf at Arrow for flow augmentation in January and release 15% in May, 15% in June, and 70% in July. The flow augmentation will all be released by July 31.
- **Libby:** has a maximum outflow of 26,500 cfs in all periods. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 2061.3 ksfd (2439 feet). In years when the May1 Libby forecast for the Apr-Aug period results in a bull trout minimum for July and August of 9,000 cfs, the minimum July 31 content will be 2360 ksfd to assure the 9,000 cfs can be provided without drafting below elevation 2439 feet by the end of August. Operating to the July 31 point will have highest priority unless outflow would exceed 26,500 cfs. In August, draft to 2061 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 26,500 cfs. This operation will minimize occurrences of a second peak flow in the summer.

- **Hungry Horse** is operated to the VARQ flood control in September through December at 3560.0 feet (1548.5 ksfd), 3555.7 feet (1497.0 ksfd), 3555.7 feet (1497.0 ksfd), and 3549.2 feet (1418.7 ksfd) respectively, unless the project is trying to meet the minimum flow requirement at Columbia Falls. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 1313.2 ksfd (3540 ft.). If computed July 31 content is below 1360 ksfd (3544 feet) then do not allow Horse to draft below 1360 ksfd in July to avoid Horse drafting below 3540 feet by the end of August. Operating to the July 31 point will have highest priority unless outflow would exceed 14,000 cfs. In August, draft to 1313.2 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 14,000 cfs. This operation will minimize occurrences of a second peak flow in the summer.
- **Albeni Falls** draft Albeni to 2051 feet (57.6 ksfd) by November 30 and maintain at this elevation through April.
- **Grand Coulee's** operates to 1285 and 1288 feet (2408.3 ksfd, 2531.9 ksfd) in September and October, respectively. During the November through December periods, Coulee can not draft below draft limits of 1275 and 1270 feet (2027.7 ksfd, and 1839.2 ksfd). When the July 1 April-August volume runoff at The Dalles is greater than 92 MAF, Grand Coulee is operated as low as 1285.0, 1280.0, and 1280.0 feet (2408.3, 2216.4, and 2216.4 ksfd) in July through August, respectively, to meet the McNary flow augmentation targets. When the July 1 April-August volume runoff at The Dalles is 92 MAF or less, Grand Coulee is operated as low as 1285.0, 1278.0 and 1278.0 feet (2408.3, 2140.9 and 2140.9 ksfd) in July through August, respectively, to meet the McNary flow augmentation targets. At-site minimum flow is 50,000 cfs for peaking purposes.
- **Columbia Basin Irrigation Project Pumping (Banks Lake)** will be reduced by the equivalent of 5 feet (65.5 ksfd) in August in years when it is needed to meet the McNary flow augmentation target of 200 kcfs. Additional water is pumped in the following January-April period to return the Banks Lake elevation to its original level.
- **Dworshak**: Minimum flow will be 1,300 cfs in all periods. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 497.0 ksfd (1535 ft.). Operating to the July 31 point will have highest priority unless outflow would exceed 14,000 cfs. In August, draft to 497.0 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 14,000 cfs. Dworshak will be drafted in September without exceeding a maximum outflow of 7,650 cfs and the draft limit of 1520 feet (395.8 ksfd). (7,650 cfs derived by assuming the project discharge is 14 kcfs in the first half of the month and 1,300 cfs in the second half of the month).

- **Juvenile Bypass Spill and Dissolved Gas Caps:**

Final04RateC_08 spill criteria									
	MAR	AP1	AP2	MAY	JUN	JUL	AG1	AG2	Modeling Cap (cfs)
LWG - (cfs)		17,333	20,000	20,000	19,333	18,000	18,000	18,000	47,000
LGS - (cfs)		0.260	0.300	0.300	0.300	0.300	0.300	0.300	45,000
LMN - (cfs)		26,000	30,000	30,000	25,667	17,000	17,000	17,000	40,000
IHR - (% of outflow)		0.260	0.300	0.300	0.300	0.300	0.300	0.300	90,000
MCN(a) - (% of outflow)		0.080	0.200	0.200	0.133	0.400	0.400	0.400	185,000
(b) - (cfs)		18,500	46,250	46,250	61,667				
JDA - (% of outflow)		0.120	0.300	0.300	0.300	0.300	0.300	0.300	160,000
TDA - (% of outflow)		0.160	0.400	0.400	0.400	0.400	0.400	0.400	150,000
BON - (cfs)	6,452 or 9,677	40,000	100,000	100,000	100,000	97,500	97,500	97,500	130,000

Project Specific Spill and Gas Caps

LWG:	Apr 3-Jun 20	20 kcfs.
	Jun 21-Aug 31	18 kcfs, 24 hours, 47 kcfs gas cap.
LGS:	Apr 3-Aug 31	30% of flow, 24 hours, 45 kcfs gas cap.
LMN:	Apr 3-Jun 20	40 kcfs vs. 20 kcfs.
	Jun 21-Aug 31	17 kcfs, 24 hours, 40 kcfs gas cap.
IHR:	Apr 3-Aug 31	30% of flow, 24 hours, 90 kcfs gas cap.
MCN:	Apr10-Jun 20	40% of flow 24 hours vs. gas gap at night.
	Jun 21-Jun 30	Gas cap at night.
	Jul 1-Aug 31	40% of flow, 24 hours; 185 kcfs gas cap.
JDA:	Apr 10-May 15	60% of flow, 12 hours;
	May 16-Aug 3	30% of flow, 24 hours; 160 kcfs gas cap.
TDA:	Apr 10-Aug 31	40% of flow 24 hours, 150 kcfs gas cap.
BON:	4 days in March	50 kcfs if forecast is less than 90 Maf; otherwise 75 kcfs, 24 hours.
	Apr 10-Jun 30	100 kcfs.
	Jul 1-Aug 31	75 kcfs daytime and 120 kcfs night time; 130 kcfs cap.

- **Overgeneration Spill:** Additional spill up to the gas cap (125% %TDG) listed below at the following projects if lack of the secondary market during Jan-Aug. Here is the spill priority list:

ICE: 125 kcfs
MCN: 230 kcfs
JDA: 240 kcfs
TDA: 250 kcfs
BON: 205 kcfs
LMN: 55 kcfs
LGS: 80 kcfs
LWG: 90 kcfs
CHJ: 33 kcfs
GCL: 75 kcfs

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2.9.3 HYDSIM Assumptions for 2009

Date Requested: March 24, 2006 **STUDY NUMBER:** Fin04RateC_09

Requested By: BPA

Due Date: May 31, 2006

Purpose of Study: This is a continuous study of the system operation under the 2004 NMFS and 2000 USFWS Biological Opinions for 2009 rate case study.

Directory of Study: **AER Step:**
Q:\RATES\06\04RATE_07\AER
OPER Step:
Q:\RATES\06\04RATE_09\OPER

Name of Regulator: **Jennie Tran**

AER STEP

- This AER Step is used to determine the project minimum elevations (or maximum draft) using load equal to OY04 Firm Energy Load Carrying Capability (FELCC) and unlimited secondary market. Minimum elevations from the AER Step will be input into the Operational Step.
- This is a **continuous** study mostly based on the OY04 PNCA data submittal. The study will begin on August 1, 1928 and end on July 31, 1978, a 50-year study (OPERATING YEAR AU1, 2003 – JUL 2004; THEREFORE, THE COORDINATED SYSTEM GENERATION WILL NOT INCLUDE THE TACOMA PROJECTS, as well as Brownlee, Oxbow, and Hells Canyon).
- **Stream Flow:** The 50 years Stream flows used are from "Modified Streamflows 2000 Level of Irrigation". They contain 2000 level irrigation depletion's. Adjustments to these 2000 level modified stream flows are due to the Bureau of Reclamation's updated **Grand Coulee pumping schedule** for the Columbia Basin Project. This pumping schedule is included in the BOR's February 1, 2003 preliminary PNCA data submittal. No adjustments are made for **NTSA** storage and release. The inflows to Brownlee are adjusted by the BOR's regulation of the Upper Snake projects to release up to 487 kaf provided by Pat McGrane dated 12/7/04 (acquisition of an additional 60 kaf in Apr-Aug from high lift pumps downstream of Milner).
- **Plant Data:** The OY04 plant data will be used.
- **Loads:** All FELCC is taken from the OY04 Critical Period study run by the Northwest Power Pool (NWPP). The NWPP study has a one-year critical period (August 16, 1936 through March 31, 1937). Thus, only one year of FELCC values are used for all water conditions. This study reflects coordination between PNCA parties in meeting PNCA FELCC. Therefore, generation from projects owned by non-PNCA parties (Brownlee, Oxbow, Hellss Canyon, and Canadian projects) are not used to meet PNCA FELCC in these studies. Also in this study, Tacoma's generating projects are no longer included in the PNCA's Coordinated System FELCC computation. August, May, June, and July FELCC comes from the PNCA Final Regulation, which includes flow augmentation target flows at McNary and Lower Granite. FELCC plus Hydro-Independent generation from 1936-37 is the system total generation. Then, the system total generation will be reduced by 50 years from the new set of hydro-independent generation (Q:\HYDSIM\DATA\PNCA\HI\HI_70YR_CS_102804.HYMOD) to produce 50 years of FELCC. There will be an unlimited secondary market.

- **Unit Outages:** The unit outages for non-Federal projects are from the PNCA OY04. For Federal projects the unit outages were based on the actual average outages from 1999-2001, and these outages were adjusted to exclude unusual outages.
- **Initial Contents:** Storage reservoirs are initialized to full on 1 August 1928, with the following exceptions of the Mica, Arrow, Duncan, Dworshak, Coulee, Horse and Libby. Canadian projects are initialized to the starting content in August 1 of 1929 from the DOP06. The Federal project's initial conditions are the 50-year average July 31 ending content from the 03BIOP2004_Oper study. The lower Snake projects are initialized to their MOP elevations in July: Ice Harbor 437.0 feet (193.4 ksfd), Lower Monumental 537.0 feet (180.5 ksfd), Little Goose 633.0 feet (260.5 ksfd), and Lower Granite 733.0 feet (225.0 ksfd).
- **CRC Rule Curves:** Critical Rule Curves (CRC) are in accordance with PNCA 2004 adopted system critical rule curves. They are as follows: 1st year = OY04 CRC1; 2nd year = empty; 3rd year = empty; and 4th year = empty.
- **Flood Control Rule Curves:** The Corps of Engineers provided the Variable flow (VARQ) Horse/Libby flood control curves on February 6, 2006. The curves are based on Kuehl-Moffit forecast; shift from Dworshak (not Brownlee) to Coulee; 3.6/4.08 Arrow/Mica split; and VARQ at Horse and Libby. Variable flow flood control in December at Libby is computed by BPA based on Kuehl-Moffit Jan1 April-August forecast at Libby. The flood control target draft at Libby from full in December is 1.4 Maf if the forecast is less than 5500 Kaf and 2.0 Maf if the forecast is greater than or equal 5900 Kaf. The straight line interpolation between
  1.4 – 2.0 Maf flood control draft from full when the forecast is in between 5500 – 5900 Kaf. The Mica, Arrow, Duncan projects' flood control requirements will be the same as used in the DOP06 study which has 5.1/2.08 Arrow/Mica split; and non-shifted VARQ at Horse (Q:\hydsim\dat\pnca\vurc\vq121001_syn52_ns_hgh.hymod). The flood control curves for Coulee are adjusted for the amount of storage capability available below URC on April 30 each year for Mica, Arrow and Duncan to more closely reflect the methodology used in real-time operations.
- **ECC Curves:** VECC's are calculated using OY04 Power Discharge Requirements (PDR's), distribution factors and forecast errors which are used in PNCA planning. The Grand Coulee ECC lower limits are 1225 feet (420.5 ksfd) in January-April 30 and 1240 feet (843.9 ksfd) in May. The Canadian DOP06 VECC's are based on Kuehl-Moffitt forecast, 5.1/2.08 Arrow/Mica split, non-shifted VarQ flood control at Horse only. The VECCs for the Federal projects are based on the Kuehl-Moffitt volume forecast (Kuehl-Moffitt Report dated July 1986).

Project Specific Data:

- **Mica, Duncan and Arrow** will be on their DOP06 operation. The Canadian Treaty projects are fixed to the 50-year DOP06 Treaty Storage Regulation run by BPA. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Libby** can be drafted to meet FELCC in September-November as long as it does not draft below December Variable URC or 2411.0 feet (1502.4 ksfd). In January through mid-April, Libby is operated on minimum flow (4,000 cfs) or VARQ flood control objectives as defined in the BiOP. It should be noted that Libby does violate URC for Corra Linn's IJC operation. Sturgeon and Bull Trout flow requirements in May-July based on May 1 April-August Kuehl-Moffit forecast at Libby are as follows:

Final FWS Biological Opinion, Dec 2000, Table 11; with interpolated volumes from Meeting at Seattle District, 25-26 March 2002.

Libby May1 Apr-Aug Kuehl-Moffit forecast Interval (MAF)	Sturgeon flow May-Jun (KAF)
<4800	0
4800-5400	800
5400-6350	800-1120
6350-6900	1120-1200
6900-8500	1200
8500-8900	1200-1600
>8900	1600

Libby May 1 Apr-Aug Kuehl-Moffit forecast Interval (MAF)	Bull Trout flow in Jul-Aug (KCFS)
<4800	6.0
4800-6000	7.0
6000-6700	8.0
6700-8100	9.0
8100-8900	9.0
>8900	9.0

Libby is operated during May-June for Sturgeon and in July-August for Bull Trout in all years. The project draft limit for McNary flow augmentation is 2439 feet (2061.3 ksfd) in June-August. It can draft below 2439 feet to meet Bull Trout flow objective. Libby's maximum outflow from mid-April through August is powerhouse hydraulic capacity without spill unless a higher outflow is required to maintain the required VARQ flood control space. Libby should not draft below the variable computed straight line content between June 30 and August draft limit of 2061.3 ksfd (2439 feet) during July and August to minimize occurrences of a second peak flow in the summer.

- **Hungry Horse** can not draft below IRC curves 3545 feet (1370.1 ksfd), 3545 feet (1370.1 ksfd), 3542 feet (1336.0 ksfd), and 3533 feet (1235.4 ksfd) during September through December, respectively. From January through March, Hungry Horse operates to the higher of variable IRC or Biological Rule Curve objectives but below a maximum content calculated to reduce the possibility of forced spill. The Biological rule curves are calculated using assumed inflows that are exceeded 75 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at flood control elevation on April 10. In April through June, Hungry Horse operates on or near flood control. On July 31, August 15 and August 31, Hungry Horse draft limit is 3560, 3550 and 3540.0 feet (1548.5, 1428.3 and 1313.2 ksfd) for BIOP flow augmentation. Hungry Horse will be operated to meet the Columbia Falls minimum flow between 3200 cfs and 3500 cfs based on the April to August volume runoff between 1190 kaf and 1790 kaf at Hungry Horse. The outflow at Hungry Horse is limited to maximum turbine capacity of 12,048 cfs and no spill is allowed unless required to maintain the required flood control space. Hungry Horse will violate upper rule curve to keep its maximum outflow to 20 kcfs or below.
- **Albeni Falls** is operated to 2062.5 feet (582.4 ksfd) in June – August, 2061.5 feet (535.7 ksfd) in September, 2056 feet (279.0 ksfd) in October, 2055 feet (234.7 ksfd) in November – March, 2055.5 feet (256.9 ksfd) in April 15, 2056.0 feet (279.0 ksfd) in April 30, and 2058.8 feet (409.7 ksfd) in May.

- **Grand Coulee** is operated to meet FELCC September through December subject to the draft limits of 1283 feet (2329.7 ksfd), 1283 feet (2329.7 ksfd), 1275 feet (2027.7 ksfd), and 1270 feet (1839.2 ksfd). In January through March, Coulee is operated to the higher of winter draft limits [1260 feet (1491.5 ksfd), 1250 feet (1159.1 ksfd), 1240 feet (843.9 ksfd), respectively] or the Biological Rule Curve (fish VECC). The Biological Rule Curve reflects the expected April 10th URC and storage needed for the appropriate Vernita Bar minimum flow requirement. Grand Coulee is then operated to these minimum storage points. The Biological rule curves are calculated using assumed inflows which are exceeded 85 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at VARQ flood control elevation on April 10. On April 15, Coulee is operated on flood control. From April 30 through May, Grand Coulee may be drafted to the lower of flood control or 1280 feet (2216.3 ksfd) to support Priest Rapids and McNary flow augmentation targets. In Jun – Au1, Grand Coulee draft limits are 1288 feet (2531.9 ksfd), 1285 feet (2408.2 ksfd), 1280 feet (2216.4 ksfd), respectively to support Priest Rapids and McNary flow augmentation targets. In Au2, the draft limit for BIOP flow augmentation is 1278 feet (2140.9 ksfd) if the July 1 April-August volume runoff at The Dalles is less than 92 Maf, otherwise the draft limit is 1280 feet (2216.4 ksfd). At-site minimum flow is equal to 30,000 cfs. Grand Coulee is subject to a draw down limit of 1.5 feet per day when Coulee is above 1260 feet, 1.3 feet per day when Coulee between 1260 and 1240 feet, and 1.0 feet per day when Coulee is below 1240 feet. During the flow augmentation period, Grand Coulee will release no more water than necessary to meet the minimum flow requirements.
- **Vernita Bar** minimum flows for December through May vary by water condition, with minimum flows established as the lower of a) 68% of the largest of the October or November flow at Wanapum or b) 70,000 cfs. Values less than 70,000 cfs are rounded to the nearest 5,000 cfs. The minimum protection level flow at Vernita Bar in any period will be no less than 36,000 cfs.
- **Priest Rapids**: From April 10 to June 30 Priest Rapids has a flow augmentation target of 135,000 cfs for Steelhead. The April 1 to April 9 the minimum flow for Priest Rapids is the same as the Vernita Bar minimum for each year.
- **Brownlee** In September and October, the reservoir operates to 2050 feet (320.4 ksfd),and 2035 feet (242.0 ksfd), respectively in anticipation of providing a minimum discharge of 9,000 cfs in October – November, and a maximum discharge of 20,000 cfs in October (the average of 30,000 cfs in the first half and 9,000 cfs to 13,000 cfs in the second half of the month), and 9,000 cfs in November at Hells Canyon.. At the end of December and January, the reservoir is operated at 2070 feet (443.2 ksfd) and 2060 feet (379.5 ksfd). The project drafts by the end of February, March, April 15 and April 30 to elevation 2050 feet (320.4 ksfd), 2045 feet (293.8 ksfd), 2040 feet (267.2 ksfd) and 2034.5 feet (239.6 ksfd), respectively. In May and June, the project refills to elevations 2058.4 feet (369.8 ksfd) and 2077 feet (491.7 ksfd) full. The project remains full through August.
- **Dworshak** is on minimum flow of 1300 cfs all periods or flood control objectives as defined in the BiOP, with the exception of April through August when it operates to meet Lower Granite flow augmentation targets. On April 15-August 31 Dworshak may draft to elevation 1520 feet (395.8 ksfd) to support Lower Granite flow augmentation targets. However, the NMFS BIOP place a higher priority on refilling Dworshak on June 30, so Dworshak will be operated on minimum flow or flood control during April-June. Dworshak's outflow is limited to 14,000 cfs in the flow augmentation periods and is limited to 25,000 cfs in all other periods for downstream flood control. During the flow augmentation period, Dworshak will release no more water than necessary to meet the minimum flow requirements.
- **Lower Snake** projects will be **operated at MOP** in accordance with the COE data submittal and the 1995 BiOp. As identified in the BiOp, the Corps will operate Little Goose, Lower Monumental, and Ice Harbor within one foot of minimum operating pool (MOP)

during the period from approximately April 3 through August 31. Lower Granite will operate within one foot of MOP from approximately April 3 through November 15 (Ap1-Oct in HYDSIM modeling). MOP for Lower Granite, Little Goose, Lower Monumental and Ice Harbor is elevation 733 (225.0 ksfd), 633 (260.5 ksfd), 537 (180.5 ksfd) and 437 feet (193.4 ksfd), respectively. During the rest of the year Lower Granite, Little Goose, Lower Monumental and Ice Harbor will operate at elevation 738 (245.8 ksfd), 638 (285.1 ksfd), 540 (190.1 ksfd) and 440 feet (204.8 ksfd), respectively.

- The four lower Snake River projects (Lower Granite, Little Goose, Lower Monumental and Ice Harbor) and the four lower Columbia River projects (McNary, John Day, The Dalles and Bonneville) each are required to operate their turbines within **1% of peak efficiency** during the period of March through November. This requirement is reflected in a hydro availability file, which limits the maximum generation capability of each project in each of the fourteen periods. No other hydro outages assumed.
- Generation at these eight projects (Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville) is reduced further with the inclusion of **Juvenile Bypass 2004 expected Fish Spill Plan**. Juvenile Bypass Fish Spill at Federal projects (values less than one are percent of outflow and values greater than one are cfs), limited by Spill Caps, is as shown below. The spill caps represent completed modifications at spillways currently planned and which are used as hydro regulation modeling caps, not instantaneous. Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville have a minimum turbine flow of 11500, 11500, 11500, 8500, 50000, 50000, 50000, and 30000 cfs respectively.
- **Juvenile Bypass Spill and Dissolved Gas Caps from OY04 PNCA Plannning:** There will be no Juvenile Bypass Spill requirement at Lower Granite, Little Goose, and Lower Monumental if April-July forecast at Lower Granite is less than 17.5 Maf. Once spill has started it will continue through June 20 even though subsequent forecasts may drop below 17.5 Maf.

	Spill	Instant. Spill Cap (120% TDG)	Min Turb	Days	Hour Ending
LWG	19 kcfs	19 kcfs	11.5 kcfs	Apr 3 - Jun 20;	All Hours
LGS	15 kcfs	15 kcfs	11.5 kcfs	Apr 3 - Jun 20	All Hours
LMN	45% or 50% of flow	40 kcfs	11.5 kcfs	Apr 3 - Jun 20	All hours
IHR	45 kcfs	72.5 kcfs	8.5 kcfs	Apr 3 - Aug 31	0500-1800
	105 kcfs				1800-0500
MCN	120% TDG	85 kcfs	50 kcfs	Apr 10 - Jun 30	All Hours
JDA	60% flow or 140 kcfs	140 kcfs	50 kcfs	Apr 10 - May 14	1800 – 0600
				May 15 - Jul 31	1900 – 0600
				Aug 1- Aug 31	1800 - 0600
TDA	40% flow	107 kcfs	50 kcfs	Apr 10 - Aug 31	All hours
BON	75 kcfs	150 kcfs	30 kcfs	Apr 10 - Aug 31	1900 – 0600
	105 kcfs			Apr 10 - Aug 31	0600-1900

- **Lower Columbia fall spawning** flow objectives (at Bonneville) are as follows: From November 1 through April 10 provide 125 kcfs (allow to exceed Chum flow if the projects operate to fish VECCs). The priority for releasing water from upstream reservoirs for this flow augmentation is Grand Coulee, Libby, and Hungry Horse. The draft limits for Chum flow in November-December are 1275 feet (2027.6 ksfd) and 1270 feet (1839.2 ksfd) at Coulee. The variable draft limit for Chum flow at Libby in December is in the range of 2411 feet (1502.2 ksfd) to 2426.6 feet (1804.7 ksfd) based on the Jan1 Apr-Aug forecast at Libby.

- Use a **sliding scale flow augmentation target** of from 220,000 to 260,000 cfs **at McNary** based on The Dalles April 1, April-August volume runoff. A straight-line interpolation will be used for flow targets for volume forecasts between 80 and 92 Maf in the April 10 through June 30 period. The AP1 period value is prorated at 9 days at 155,000 cfs and 6 days at from 220,000 to 260,000 cfs. Maximum and minimum targets are 260,000 cfs and 220,000 cfs, respectively. July and both halves of August flow targets are 200,000 cfs. The priority for releasing water from upstream reservoirs for flow augmentation is Grand Coulee, Libby and Hungry Horse.
- **Lower Granite** also has **sliding scale flow augmentation targets**. When Lower Granite April 1, April-July runoff forecast is less than 16 Maf, then the April 3 through June 20 flow target is 85,000 cfs, and the June 21 through August 31 is 50,000 cfs. When the April 1 Lower Granite April through July forecast is greater than 20 Maf, then the April 3 through June 20 target flow is 100,000 cfs. In June 21 through August 31, when the forecast is greater than 28 Maf, the flow target is 55,000 cfs. The spring flow targets are interpolated for forecasts between 16 and 20 Maf and the summer flow targets are interpolated for forecasts between 16 and 28 Maf.
- **John Day** is operated at 262.5 feet (127.8 ksfd) from April through September. From October through March, John Day operates to elevation 265 feet (191.0 ksfd).
- Juvenile **Bypass spills at non-Federal** projects will be as described below and as was submitted for OY04 PNCA planning.

PROJECT SPILL FOR FISH IN
PERCENT OF REGULATED FLOW (%)

PROJECTS:	Apr1	Apr2	May	Jun	Jul	Aug1	Aug2
Wells	0.0	6.5	6.5	0.0	6.5	2.5	0.0
Rocky Reach	0.01	15.0	21.0	13.0	15.0	15.0	0.0
Rock Island	0.01	20.0	20.0	20.0	20.0	20.0	0.0
Wanapum	0.0	43.0	43.0	46.0	49.0	49.0	49.0
Priest Rapids	0.0	61.0	61.0	50.0	39.0	39.0	39.0

- **Kootenay Lake** shall be operated as necessary, up to free flow, to maintain the lake level below the IJC rule curve and the calculated "allowable elevation at Queens Bay". This is implemented using the 5-step method developed by BPA and the Corps. After August 31, the lake level may be raised to elevation 1745.32 feet at the Queens Bay gage. This maximum elevation at Queens Bay is in effect through January 7. After January 7 the lake will be lowered to elevation 1744 feet on February 1, elevation 1742.4 feet on March 1, and 1739.32 feet on April 1. April through August 31, after the lake exceeds elevation 1739.32 feet at the Queens Bay gage, the lake shall be operated using the "allowable elevation" calculation to determine the Queens Bay maximum allowable elevation until the elevation at the Nelson gage drafts back to elevation 1743.32 feet.

OPER STEP

- All AER step criteria apply unless specifically amended below.
- **Loads:** The system is run to 2009 Coordinated System firm loads from BPA's 2004 White Book. A secondary market of 9,000 aMW is used in every period, every year.
- **Flood Control Rule Curves:** no change in flood control at Mica and Duncan from the AER step. Arrow flood control is updated to 3.6/4.08 Arrow/Mica split set (from VQ06feb06_syn34_NS.hymod) in order to have more space available for 1 MAF flow augmentation.
- **Non-Federal** projects are run to the contents that resulted in the AER step. It is believed that this will allow the Federal projects to fill without requiring the non-Federal projects to draft to meet load**.**
- **Lower Columbia fall spawning** flow objectives (at Bonneville) are as follows: From November 1 through December 31 provide 125 kcfs, and January 1 through March 31 provides 115 kcfs (allow to exceed Chum flow if the projects operate to fish VECCs). Grand Coulee, Libby, and Hungry Horse will release water (in that order) to meet the Lower Columbia fall spawning salmon flow objectives at Bonneville in November and December. Each reservoir has been assigned a lower draft limit only in November and December so that each will draft no lower than the draft limit before the next priority reservoir is used.
- **Lower Columbia Spring/Summer Flow Augmentation:** The January-April 15 operation of the Federal reservoirs is to achieve the Biop April 10 URC objective. Hungry Horse, Grand Coulee, and Dworshak are on minimum flow from April through June 30 in all water years (No spring flow targets required at Priest Rapid, Lower Granite, and McNary projects). This operation is intended to **maximize storage in the Federal projects by June 30 to maximize the water available for summer flow augmentation**. During the April-June period, these projects will release above minimum outflow only as needed to meet flood control requirements. Grand Coulee will draft below flood control if required to meet the Vernita Bar flow requirement. The BiOp summer flow target of 200 kcfs at MCN is in effect but only Grand Coulee will respond to it in July while Libby and Hungry Horse will release water to reduce occurrences of a second peak in flows without regard to the level of flow achieved at MCN.

Project Specific Data:

- **Mica, Duncan and Arrow** operations are fixed to the 50-year DOP06 Treaty Storage Regulation run by BPA with the exception of Arrow in some periods. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Arrow:** store up to 1 Maf at Arrow for flow augmentation in January and release 15% in May, 15% in June, and 70% in July. The flow augmentation will all be released by July 31.
- **Libby:** has a maximum outflow of 26,500 cfs in all periods. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 2061.3 ksfd (2439 feet). In years when the May1 Libby forecast for the Apr-Aug period results in a bull trout minimum for July and August of 9,000 cfs, the minimum July 31 content will be 2360 ksfd to assure the 9,000 cfs can be provided without drafting below elevation 2439 feet by the end of August. Operating to the July 31 point will have highest priority unless outflow would exceed 26,500 cfs. In August, draft to 2061 ksfd as a target with highest priority-to be ignored only if August outflow would exceed 26,500 cfs. This operation will minimize occurrences of a second peak flow in the summer.

- **Hungry Horse** is operated to the VARQ flood control in September through December at 3560.0 feet (1548.5 ksfd), 3555.7 feet (1497.0 ksfd), 3555.7 feet (1497.0 ksfd), and 3549.2 feet (1418.7 ksfd) respectively, unless the project is trying to meet the minimum flow requirement at Columbia Falls. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 1313.2 ksfd (3540 ft.). If computed July 31 content is below 1360 ksfd (3544 feet) then do not allow Horse to draft below 1360 ksfd in July to avoid Horse drafting below 3540 feet by the end of August. Operating to the July 31 point will have highest priority unless outflow would exceed 14,000 cfs. In August, draft to 1313.2 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 14,000 cfs. This operation will minimize occurrences of a second peak flow in the summer.
- **Albeni Falls** draft Albeni to 2051 feet (57.6 ksfd) by November 30 and maintain at this elevation through April.
- **Grand Coulee's** operates to 1285 and 1288 feet (2408.3 ksfd, 2531.9 ksfd) in September and October, respectively. During the November through December periods, Coulee can not draft below draft limits of 1275 and 1270 feet (2027.7 ksfd, and 1839.2 ksfd). When the July 1 April-August volume runoff at The Dalles is greater than 92 MAF, Grand Coulee is operated as low as 1285.0, 1280.0, and 1280.0 feet (2408.3, 2216.4, and 2216.4 ksfd) in July through August, respectively, to meet the McNary flow augmentation targets. When the July 1 April-August volume runoff at The Dalles is 92 MAF or less, Grand Coulee is operated as low as 1285.0, 1278.0 and 1278.0 feet (2408.3, 2140.9 and 2140.9 ksfd) in July through August, respectively, to meet the McNary flow augmentation targets. At-site minimum flow is 50,000 cfs for peaking purposes.
- **Columbia Basin Irrigation Project Pumping (Banks Lake)** will be reduced by the equivalent of 5 feet (65.5 ksfd) in August in years when it is needed to meet the McNary flow augmentation target of 200 kcfs. Additional water is pumped in the following January-April period to return the Banks Lake elevation to its original level.
- **Dworshak**: Minimum flow will be 1,300 cfs in all periods. By July 31, operate to the midpoint of the straight line drawn from the end of June reservoir content to the end of August flow augmentation draft limit of 497.0 ksfd (1535 ft.). Operating to the July 31 point will have highest priority unless outflow would exceed 14,000 cfs. In August, draft to 497.0 ksfd as a target with highest priority--to be ignored only if August outflow would exceed 14,000 cfs. Dworshak will be drafted in September without exceeding a maximum outflow of 7,650 cfs and the draft limit of 1520 feet (395.8 ksfd). (7,650 cfs derived by assuming the project discharge is 14 kcfs in the first half of the month and 1,300 cfs in the second half of the month).

- **Juvenile Bypass Spill and Dissolved Gas Caps:**

Final04RateC_09 spill criteria									
	MAR	AP1	AP2	MAY	JUN	JUL	AG1	AG2	Modeling Cap (cfs)
LWG - (cfs)		17,333	20,000	20,000	13,333				47,000
LGS - (cfs)		0.260	0.300	0.300	0.200				45,000
LMN - (cfs)		17,333	20,000	20,000	13,333				40,000
IHR - (% of outflow)		0.260	0.300	0.300	0.300	0.300	0.300	0.300	90,000
MCN(a) - (% of outflow)		0.080	0.200	0.200	0.133	0.400	0.400	0.400	185,000
(b) - (cfs)		18,500	46,250	46,250	61,667				
JDA - (% of outflow)		0.120	0.300	0.300	0.300	0.300	0.300	0.300	160,000
TDA - (% of outflow)		0.160	0.400	0.400	0.400	0.400	0.400	0.400	150,000
BON - (cfs)	6,452 or 9,677	40,000	100,000	100,000	100,000	97,500	97,500	97,500	130,000

Project Specific Spill and Gas Caps

LWG:	Apr 3-Jun 20	20 kcfs, 24 hours; 47 kcfs gas cap.
LGS:	Apr 3-Jun 20	30% of flow, 24 hours; 45 kcfs gas cap.
LMN:	Apr 3-Jun 20	20 kcfs, 24 hours; 40 kcfs gas cap.
IHR:	Apr 3-Aug 31	30% of flow, 24 hours; 90 kcfs gas cap.
MCN:	Apr10-Jun 20	40% of flow 24 hours vs. gas gap at night.
	Jun 21-Jun 30	Gas cap at night.
	Jul 1-Aug 31	40% of flow, 24 hours; 185 kcfs gas cap.
JDA:	Apr 10-Jun 30	60% of flow, 12 hours.
	Jul 1-Aug 31	30% of flow, 24 hours; 160 kcfs gas cap.
TDA:	Apr 10-Aug 31	40% of flow, 24 hours; 150 kcfs gas cap.
BON:	4 days in March	50 kcfs if forecast is less than 90 Maf; otherwise 75 kcfs, 24 hours.
	Apr 10-Jun 30	100 kcfs.
	Jul 1-Aug 31	75 kcfs daytime and 120 kcfs night time; 130 kcfs cap.

- **Overgeneration Spill:** Additional spill up to the gas cap (125% %TDG) listed below at the following projects if lack of the secondary market during Jan-Aug. Here is the spill priority list:

ICE: 125 kcfs
MCN: 230 kcfs
JDA: 240 kcfs
TDA: 250 kcfs
BON: 205 kcfs
LMN: 55 kcfs
LGS: 80 kcfs
LWG: 90 kcfs
CHJ: 33 kcfs
GCL: 75 kcfs

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