

1994 Pacific Northwest Loads and Resources Study

*This document is a product of the
Energy Resources Development
and Implementation Process:*

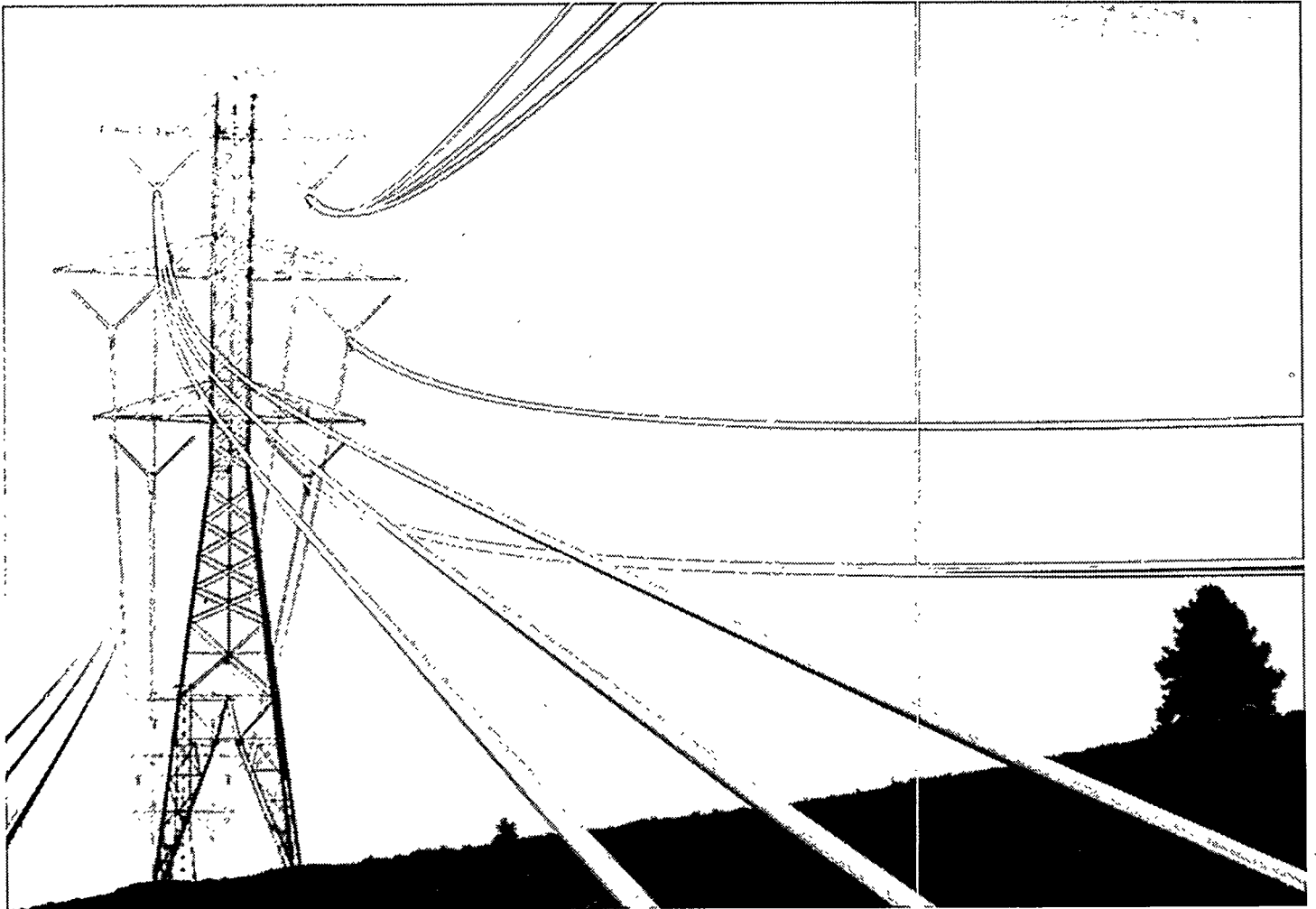
Define Situation →

Identify Alternatives

Select Strategies

Implement Strategies

Evaluate Performance



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Energy Resources Development and Implementation Process

Defining the Resource Picture

To define the resource picture, Bonneville assesses its customers' power requirements for the next 10 years and the supply of existing resources. Bonneville and the Northwest Power Planning Council publish energy demand forecasts, and analysts forecast how much power from existing resources will be available to meet projected uses. The difference must be met by new resources.

Identifying Alternatives

Analysts track potential resources and predict future supplies of conservation and generation resources, including imports and power exchanges. Analysts study all aspects of a resource: reliability, public opinion, cost, environmental impact, regulatory transmission and fuel constraints, and development time. Alternatives considered include opportunities for coordinating hydro system operations with Canada and for power purchases and transfers with Canadian and Southwest utilities.

Selecting Strategies

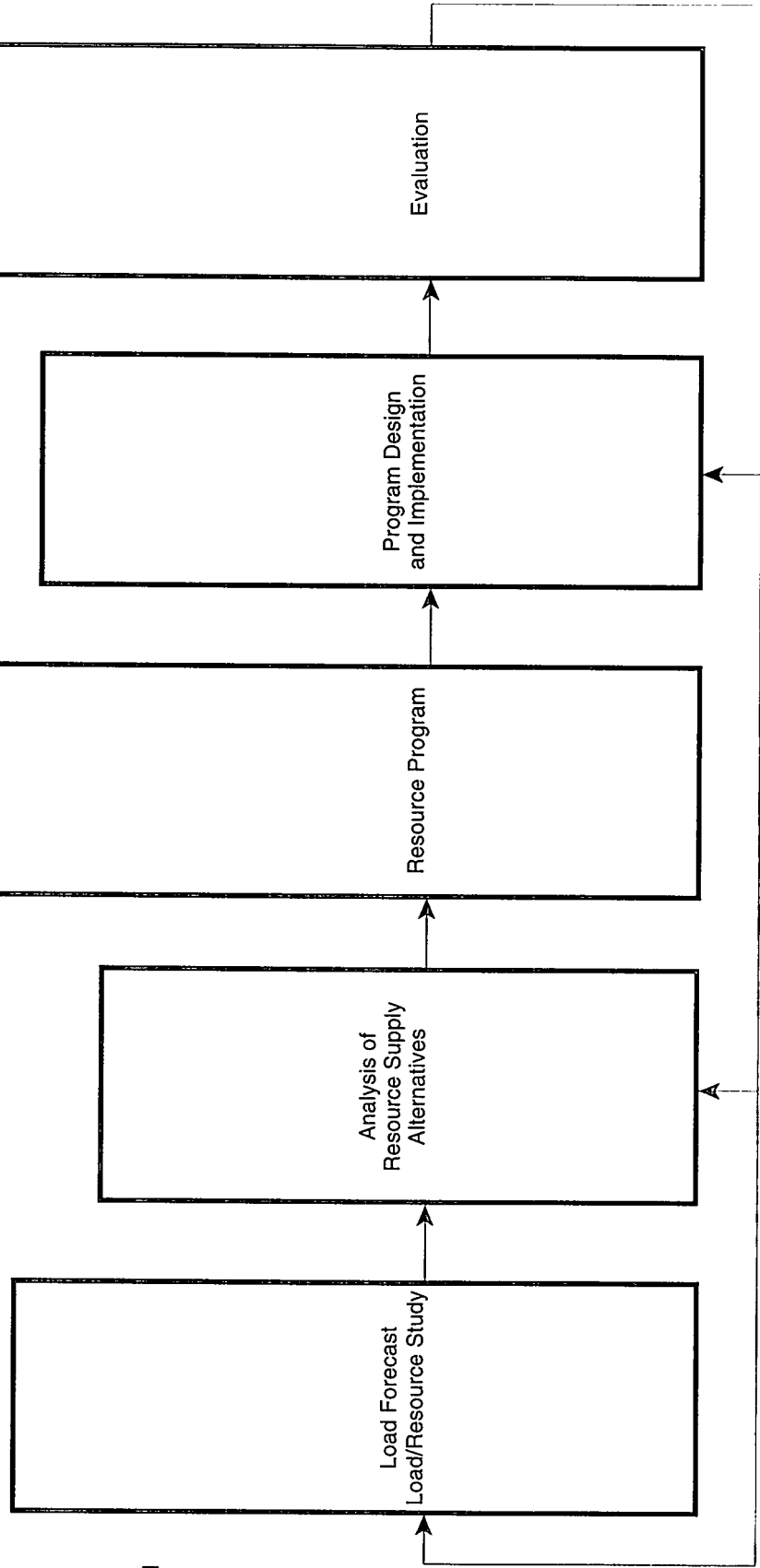
Using information on loads and resources, Bonneville weighs combinations of resources, their consequences, and public comment to choose the most appropriate and cost-effective resource strategy. The Resource Program documents this strategy.

Implementing Strategies

Fulfilling the plans in the Resource Program is the next step. Working with utilities, resource developers, interest groups, the public, and others, Bonneville sponsors conservation and generation programs and projects. BPA conducts environmental reviews of programs and projects and also provides oversight for generation projects. The result: megawatts of electricity generated or saved for the region.

Evaluating Performance

How well did actions meet BPA's objectives? Answering this question through program evaluation provides information on energy savings, energy production, costs and other measures of program quality. It is BPA's policy to evaluate all energy resource acquisitions.



The Energy Resources Program contains all the steps needed to plan for and manage energy resources. This chart reflects that process, with major tasks for each step. Though we display a linear process, it is a simplification; many interactions among the stages take place. Throughout the process, Bonneville asks customers, the Northwest Power Planning Council, utility and environmental groups, the public and others for their advice and comment.

- Customers
- Northwest Power Planning Council
- Utility and Environmental Groups
- The Public

1994 PACIFIC NORTHWEST LOADS AND RESOURCES STUDY

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BONNEVILLE POWER ADMINISTRATION
December 1994

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ACKNOWLEDGMENTS

Preparation of the annual Pacific Northwest loads and resources study is a complex, multidisciplinary effort. The managers of BPA's Marketing Support Group wish to acknowledge the team—BPA staff and others—whose diligence and dedication result in a reliable, high quality document.

Marketing Support Group

Market Forecasting & Segment Analysis

Customer & Competitor Analysis

Resource Optimization Group

Hydro system regulation study and data collection

Pacific Northwest Utilities Conference Committee

Loads and resources data collection

1994 Pacific Northwest Loads and Resources Study

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1994 PACIFIC NORTHWEST LOADS AND RESOURCES STUDY

I. INTRODUCTION

The 1994 Pacific Northwest Loads and Resources Study presented herein establishes a picture of how the agency is positioned today in its loads and resources balance. It is a snapshot of expected resource operation, contractual obligations, and rights. This study does not attempt to present or analyze future conservation or generation resource scenarios. What it does provide are base case assumptions from which scenarios encompassing a wide range of uncertainties about BPA's future may be evaluated.

The Loads and Resources Study is presented in two documents: 1) this summary of Federal system and Pacific Northwest region loads and resources and 2) a technical appendix detailing the loads and resources for each major Pacific Northwest generating utility. This analysis updates the 1993 Pacific Northwest Loads and Resources Study, published in December 1993.

In this loads and resources study, resource availability is compared with a range of forecasted electricity consumption. The forecasted future electricity demands—firm loads—are subtracted from the projected capability of existing and “contracted for” resources to determine whether BPA and the region will be surplus or deficit. If resources are greater than loads in any particular year or month, there is a surplus of

energy and/or capacity, which BPA can sell to increase revenues. Conversely, if firm loads exceed available resources, there is a deficit of energy and/or capacity, and additional conservation, contract purchases, or generating resources will be needed to meet load growth.

The Pacific Northwest Loads and Resources Study analyzes the Pacific Northwest's projected loads and available generating resources in two parts: 1) the loads and resources of the Federal system, for which BPA is the marketing agency; and 2) the larger Pacific Northwest regional power system, which includes loads and resources in addition to the Federal system.

The loads and resources analysis in this study simulates the operation of the power system under the Pacific Northwest Coordination Agreement (PNCA) produced by the Pacific Northwest Coordinating Group.

This study presents the Federal system and regional analyses for the medium load forecast. This analysis projects the yearly average energy consumption and resource availability for Operating Years (OY)¹ 1995-96 through 2004-05. The study shows the Federal system's and the region's monthly estimated maximum electricity

¹ Operating Year (OY) is the 12-month period August 1 through July 31. For example OY 1995-96 is August 1, 1995 through July 31, 1996.

demand, monthly energy demand, and monthly maximum generating capability—capacity—for OY 1995-96, 1999-2000, and 2004-05. The Federal system and regional monthly capacity surpluses/deficits are summarized for 10 operating years.

The Federal system analysis is presented in Section IV, beginning on page 13. The analysis for the Pacific Northwest region is presented in Section VI, page 33.

A glossary of terms is included in Section IX, page 93.

Additional copies of this summary, along with copies of the 1994 Pacific Northwest Loads and Resources Study Technical Appendix: Volume 1 (available February 1995) can be obtained from BPA's Public Involvement Office, toll-free, 1-800-622-4520.

II. BACKGROUND

Pacific Northwest Planning Area

The Pacific Northwest regional planning area is defined by the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), enacted in December 1980. It includes Oregon, Washington, Idaho, Montana west of the Continental Divide, and portions of Nevada, Utah, and Wyoming that lie within the Columbia River drainage basin. In addition, any rural electric cooperative customers not in the geographic area described above that were served by BPA on the effective date of the Northwest Power Act are included in planning for resources to meet load.

Regional Firm Resources

The Pacific Northwest regional resources are comprised of generating resources operated or being built by Federal entities, public agencies, investor-owned utilities (IOUs), and independent power producers (IPPs). This study contains BPA's current projection of generation from existing resources and those future resources with signed contracts.

Hydro Resources

Energy Capability: BPA long-range planning is based on the firm energy capability of the hydro system. The firm hydro energy capability is the amount of power produced by these regional hydro resources in the historical sequence of low water conditions—called the critical period—re-

corded for the Columbia River Basin. Currently, the critical period includes September 1928 through February 1932. This creates a 42-month critical period. The energy produced by the region's hydro projects during the critical period is calculated using the generation average. The hydro regulation study used in this analysis estimated the streamflows described in the National Marine Fisheries Service (NMFS) Draft Biological Opinion dated March 16, 1994. Besides including traditional streamflow requirements and May Water Budget, the NMFS Draft Biological Opinion included June Columbia River Flow Augmentation (CRFA) to further enhance fish passage. The June CRFA and May Water Budget fish mitigation measures are described below.

- ◆ May Water Budget was developed under the Northwest Power Planning Council's (Council) Columbia River Basin Fish and Wildlife Program. It includes the storage of 3.45 million-acre-feet (MAF) of water behind reservoirs for release in the spring—usually May.
- ◆ June CRFA was developed by the NMFS's Draft Biological Opinion dated March 16, 1994. It includes the storage of 3.5 MAF behind the reservoirs in January through April 15 for release in late spring—usually June.

The critical period contains flows in the months of May and June that are in excess of those needed to meet the region's firm electric needs. To avoid overstating the Federal firm hydro energy generation re-

sulting from implementing Water Budget flows and June CRFA, amounts of unusable generation resulting from the May and June flows are shown as reductions to Federal hydro generation. This is labeled "May Water Budget" and "June Columbia River Flow Augmentation" on the utilities' loads and resources tables. (See Section III, *Changes in the 1994 Pacific Northwest Loads and Resources Study*.) The regional hydro system generates approximately 12,700 average megawatts of firm energy under critical water conditions.

Capacity: The monthly instantaneous capacity of hydro projects is defined as the full-gate-flow maximum available generation at each project, based on the average monthly elevation resulting from 1929-30 water reservoir levels. BPA assumes 1929-30 water levels to estimate the regional hydro capacity because that year approximates a peaking capability that is consistent with the reliability criteria set forth in the Pacific Northwest Coordination Agreement.

The monthly instantaneous capacity is limited to 10 times the project's average monthly energy production because, at low or minimum water discharge, a plant may not be allowed to release enough water to achieve maximum capacity. The region's hydro projects have constraints and storage limitations within any water condition.

BPA's planning projections reduce the estimated instantaneous hydro capacity to reflect a Federal sustained peaking level of 50 hours per week. This level provides estimated firm hydro capacity that can be maintained each day and continued for weeks at a time. This definition of firm capacity provides a better measure of resource capability. The hydro generation also is adjusted to allow for scheduled hydro maintenance, spinning reserves, and forced outage reserves.

Sections VII and VIII contain tables showing the amount of surplus capacity as defined above. These capacity tables, based on critical water conditions, should be used to determine the amount of capacity available to support firm sales. **Capacity surplus values do not reflect potential nighttime return problems on the system.** Nighttime return considerations are discussed under *Federal System Firm Capacity Surpluses/Deficits*, page 26.

Multiple-Use Planning: Pacific Northwest hydro projects have many uses besides power generation. The projects may provide flood control, supply irrigation for farming, assist in river navigation and recreation, and contribute to municipal water supplies. In addition, constraints also are in place to protect and enhance resident and anadromous fish populations. These non-power uses place operating requirements on the reservoirs and limit hydroelectric power production. BPA's resource planning takes into account all presently known nonpower operating requirements in assessing regional hydro system capability.

The Corps of Engineers, Bureau of Reclamation, and BPA are jointly preparing a System Operation Review (SOR) Environmental Impact Statement (EIS) on the operation of the Columbia River hydropower system. This EIS will allow the three Federal agencies to make decisions on (1) adopting a System Operating Strategy (SOS), (2) renewing the Pacific Northwest Coordination Agreement, (3) renegotiating five Canadian Entitlement allocation agreements, and (4) developing a means to periodically review and update the SOS.

The Council, BPA, and other Pacific Northwest entities will continue to evaluate new ways to enhance fisheries and wildlife. Future proposals could include additional amendments to the Council's Fish and Wildlife Program, recommendations arising from the System Operation Review, and/or

implementation of additional programs in support of the Endangered Species Act. The impacts of future proposals are unknown. These proposals, however, most likely will increase non-power requirements on the hydro system and reduce operating flexibility, change the monthly shape of streamflows, and change the availability of sustained Federal capacity. Future studies will incorporate these impacts.

Thermal Resources

The expected output of regional thermal resources is based on the energy and capacity capabilities submitted to BPA by the project owners. The output of all thermal plants is reduced to allow for scheduled maintenance, spinning reserves, and forced outage reserves.

Analysis of Regional Firm Loads and Resources

The Pacific Northwest regional analysis contains the Federal system loads and resources, plus non-Federal regional loads, contractual obligations, and generating resources. The region has three load groups: Federal system, generating public agencies, and IOUs. The regional hydro resources are owned and operated by various Federal entities, public agencies, and IOUs. The regional thermal generating resources, fueled by biomass, coal, natural gas, oil, or nuclear power, are owned and operated by various regional entities.

The regional analysis is presented in Section VI, beginning on page 33.

Analysis of Federal System Firm Loads and Resources

BPA is a power marketing agency, responsible for acquiring and delivering sufficient power to serve the needs of its cus-

tomers. BPA does not own generating resources. BPA's customer loads and contractual obligations, combined with the resources from which BPA acquires the power it sells, are collectively referred to as the Federal system. BPA owns and operates the primary transmission grid—more than 14,700 circuit miles of power lines—in the Pacific Northwest.

The Federal system loads are made up of BPA's sales to other Federal agencies, the region's public agencies, several direct service industrial (DSI) customers, and other contractual obligations to deliver power. This study includes only the firm DSI loads; interruptible DSI loads are not served from firm resources. Operation of the Federal system under the PNCA serves interruptible DSI loads on a semi-firm basis, using various operational procedures.

The hydro resources of the Federal system include 30 dams owned and operated by the United States Bureau of Reclamation (USBR) and the United States Army Corps of Engineers (COE), plus hydroelectric projects owned by the city of Idaho Falls, Washington Public Power Supply System (WPPSS), and Lewis County Public Utility District (PUD). Added as a new resource in this year's study is BPA's purchase of firm power from Northern Wasco's McNary Fishway hydro unit. BPA has the exclusive right to sell power generated by USBR and COE hydroelectric projects. BPA also markets the thermal generation from the WNP-2 nuclear plant, operated by WPPSS.

The Federal system analysis is shown in Section IV, beginning on page 13.

Nonfirm Resources

Federal system firm resource capability is estimated using critical water flows. The regional hydro system, however, historically has experienced precipitation levels

that produced greater-than-critical-period flows. This excess water is used to produce nonfirm energy.

BPA's loads and resources balance does not include nonfirm energy. Nonfirm energy could increase regional generation by about 3,800 to 4,200 average megawatts annually when averaged over 50 years of historical water flows. The Federal share of this nonfirm energy is about 2,300 to 2,600 average megawatts based on 50 years of hydro flow data. Capacity generally is available to support nonfirm energy sales.

Nonfirm energy in the Northwest is generally used to serve the interruptible portion of BPA's DSI load and displace higher cost thermal resources, and is stored for later release during the Columbia River's augmented flows in the month of June. Nonfirm energy in excess of Northwest needs is available for export to other markets.

Load Forecasting

The load/resource analysis used BPA's medium case load forecast that was prepared in August 1994. Loads for each of the following customer groups were estimated separately: non-generating public agencies, generating public agencies, aluminum DSIs, non-aluminum DSIs, IOUs, Federal agencies, and the USBR. In general, BPA's load forecasts are designed to respond to and reflect factors such as employment, electricity prices, aluminum prices, smelter production costs, and planned conservation actions. The IOU load forecast was produced by BPA in 1993. This forecast updated the economic assumptions from the 1991 joint BPA/Council forecast and also used a modified version of the residential sector.

Canadian Treaty Downstream Benefits

Obligations under the Columbia River Treaty will change during the study period. This treaty between the United States and Canada enhanced the use of storage in the Columbia River Basin. The treaty and treaty projects provide downstream benefits by increasing the firm power generating capability of U.S. hydro projects. Under the terms of the agreement, the downstream power benefits are shared equally between the two countries as determined by a joint Annual Operating Plan.

Canadian Entitlement to Columbia Storage Power Exchange (CSPE) Through March 31, 2003

Canada agreed to sell its share of the downstream power benefits, called the Canadian Entitlement, for 30-year periods beginning with the completion of each of the three Canadian Treaty Projects (Mica, Duncan, and Arrow). The Canadian Entitlement was sold to the Columbia Storage Power Exchange (CSPE), a Pacific Northwest corporation that was formed to sell the Canadian benefits to participating Pacific Northwest utilities. The Canadian Entitlement sale to CSPE begins to expire April 1, 1998, 30 years after the completion of the first Treaty Project, and expires March 31, 2003.

Canadian Entitlement to Canada, Beginning April 1, 1998

A portion of the Canadian share of downstream power benefits will begin to return to Canada April 1, 1998, 30 years after the first Treaty Project was completed. All remaining Canadian downstream power benefits will revert to Canada by April 1, 2003, 30 years after the third Treaty Project was completed. This analy

sis assumes Canadian Entitlement deliveries to Canada under the basic principles of the Memorandum of Agreement between British Columbia and the United States negotiated during the fall of 1994. These principles changed the participating U.S. entities' capacity and energy obligations to Canada. The Canadian Entitlement Canada delivery starting April 1, 1998, is included in each participating utility's loads and resources balance. BPA delivers the total Canadian Entitlement, shown in Table 1, and it is included as a Federal export.

Table 1

Canadian Entitlement to Canada Energy and Capacity Obligations Beginning April 1, 1998

Energy in Average Megawatts

OPERATING YEAR	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Investor-Owned Utilities	0	0	2	21	47	48	47	57	81	80
Public Agencies	0	0	3	15	31	30	30	40	57	57
Federal System	0	0	12	101	222	221	220	278	392	391
TOTAL ENERGY OBLIGATION	0	0	17	137	300	299	297	375	530	528

January Capacity in Megawatts

OPERATING YEAR	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Investor-Owned Utilities	0	0	0	0	0	0	0	0	0	0
Public Agencies	0	0	0	0	0	0	0	0	0	0
Federal System	0	0	0	86	521	521	521	521	950	950
TOTAL CAPACITY OBLIGATION	0	0	0	86	521	521	521	521	950	950

Major Sources of Uncertainty

Loads and Resources Uncertainty

Future Federal system and regional firm surpluses/deficits are subject to a number of uncertainties over the 10-year study period. These uncertainties include:

- ◆ BPA's future marketing efforts and/or revised resources acquisition, including conservation, under BPA's impending business plan;
- ◆ Possible increases in resource acquisitions by BPA's public agency customers, which would decrease their purchases from BPA;
- ◆ Deviation from the forecasted rate of load growth;
- ◆ Changes in conservation program levels, including model conservation standards (MCS) implementation;
- ◆ Failure of existing or contracted generating resources to operate at anticipated times and levels; and
- ◆ Changes in existing hydro system operation in response to programs developed to address the Endangered Species Act or other environmental considerations.

These uncertainties could affect both the size of projected surpluses or deficits and the times at which they occur.

Contractual Uncertainty

BPA's contractual obligation to serve future regional load growth is uncertain because there is no precise way to predict the amount of load growth regional utilities will place on BPA in coming years. This study assumes that the following contracts, though they are subject to change as noted, will extend throughout the 10-year study period. What occurs when these contracts expire, which will be at varying times during the 10-year study period, may affect the Federal system and regional loads and resources balances:

- ◆ BPA's power sales contracts with its DSI, public agency, and IOU customers expire June 30, 2001. Renegotiation of these contracts may result in new or different Federal obligations.
- ◆ The Pacific Northwest Coordination Agreement will expire June 30, 2003. BPA expects this agreement, which coordinates operation of the Pacific Northwest power system and that of Canada, will be replaced with a new agreement. The provisions of a new agreement may be different from the existing agreement.

III. CHANGES IN THE 1994 PACIFIC NORTHWEST LOADS AND RESOURCES STUDY

This section describes the major changes in the assumptions of the 1994 Pacific Northwest Loads and Resources Study compared to the 1993 study. Other changes are reflected in the data for each utility contained in the 1994 Pacific Northwest Loads and Resources Study Technical Appendix.

Hydro Regulation Study

This study incorporates the hydro requirements contained in the NMFS Draft Biological Opinion dated March 16, 1994.

In addition to all current flow requirements, the NMFS Draft Biological Opinion includes June CRFA, providing 3.5 MAF of storage behind the reservoirs' dams, January through April 15, for release in June to enhance fish passage. This creates energy deficits in the winter during critical water conditions and potential power purchases. Under better water conditions, natural runoffs provide enough storage to meet CRFA requirements. CRFA reduced the Federal system critical period energy by 217 average megawatts when compared to last year's study. During the 42-month critical period, June CRFA with the

May Water Budget produces generation for the Federal system that is beyond normal amounts that can be marketed in that month. June CRFA energy, as well as May Water Budget, are included as reductions to the Federal system loads and resources analysis. In last year's study, CRFA was assumed to be handled operationally using non-firm energy and power purchases.

New Federal System Firm Resources

BPA contracted for several resources for use in meeting long-range loads.

There are four new Federal non-utility generating (NUG) resources which provide up to 184 average megawatts over the study period. These are shown in Table 2, page 10. The energy produced by these projects is shown as Federal NUGs on line 36 in Exhibits 1 through 4, pages 43 through 53. Additionally, Table 2 lists up to 96 average megawatts of new non-utility generation contracted for by BPA since last year's analysis.

Table 2**New Federal System Resources**

Name	Type	On-Line Date	Energy (aMW)
New Federal Non-Utility Generation:			
Tenaska #2 (Frederickson)	Combustion Turbine	October 1996	124
SDS Lumber	Cogeneration	October 1996	50
Clearwater	Hydro	January 1996	1
Wyoming Wind (BPA share)	Wind	January 1996	9
Total New Federal Non-Utility Generation			184

New BPA-Contracted Non-Utility Generation:			
Wauna	Cogeneration	October 1996	29
Newberry	Geothermal	November 1997	30
Glass Mountain (Vale)	Geothermal	October 1998	28
Columbia Hills Wind	Wind	January 1996	9
Total BPA-Contracted Non-Utility Generation			96

Conservation Reductions

This analysis assumes that energy consumers will change their consumption in response to changes in electricity price. The 1994 BPA load forecast was reduced for the following conservation program types and due to conservation reinvention.

1. As in previous loads and resources studies, the load forecast was reduced for conventional programmatic conservation measures. These measures are currently-budgeted BPA-sponsored programs and are counted as a reduction to loads. These programs include residential, commercial, industrial, and agricultural programmatic conservation, and targeted acquisitions. They are detailed on line 1 of Table 3, page 12.

2. This year's study includes other BPA-funded conservation and load reductions due to conservation reinvention programs and changes in the competitive power

marketing business. This is a new reduction to the 1994 study and includes the following:

- ◆ Additional performance-based conservation billing credits contracts, consistent with the Regional Act's billing credit provisions, resulting from responses to a BPA request for proposals;
- ◆ Competitive acquisitions, which are performance-based conservation purchase arrangements resulting from responses to BPA's Competitive Acquisition request for proposals;
- ◆ Power plants, which includes contracts BPA has with individual utilities and with consortia of utilities to use third party financing toward comprehensive utility conservation programs;
- ◆ Tiered rate conservation response due to retail consumer changes in

retail rate structure resulting from BPA implementing tiered rates;

- ◆ Market transformation reductions due to lasting changes in the market that result from the penetration of energy efficient technologies and practices; and
- ◆ Non-MCS codes and standards, which are conservation means not currently included in MCS.

These programs are detailed on line 2 in Table 3.

Table 3, line 3, shows additional customer-funded conservation programs. These conservation measures are not fully

defined and are **not** included as a load reduction. They are shown to help illustrate the total cumulative conservation savings within the Pacific Northwest region, following guidelines set in the 1994 BPA Business Plan and the Council's regional power plan. Total cumulative conservation savings are shown in Table 3, line 4.

New Non-Generating Public Agency Resources

This year's analysis contains new public agency resources including Clark County PUD's Cogentrix (202 average megawatts) and Grays Harbor PUD's share of Centralia (50 average megawatts).

Table 3

**1994 Pacific Northwest Loads and Resources Study
Cumulative Conservation Savings and Other Load Adjustments**

Energy in Average Megawatts

Operating Year ¹	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. CONVENTIONAL CONSERVATION REDUCTIONS ACCOUNTED FOR IN THE 1994 BPA LOAD FORECAST										
Programmatic Conservation										
Residential	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5
Commercial	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2	46.2
Industrial	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2
Agricultural	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
SUB-TOTAL	179.0	179.0	179.0	179.0	179.0	179.0	179.0	179.0	179.0	179.0
Targeted Acquisitions (TAP)	31.1	33.9	35.2	36.0	36.9	37.4	37.6	37.9	37.9	37.9
TOTAL CONSERVATION REDUCTIONS IN THE LOAD FORECAST	210.1	212.9	214.2	215.0	215.9	216.4	216.6	216.9	216.9	216.9
2. ADDITIONAL CONSERVATION & CONSERVATION REINVENTION LOAD REDUCTIONS ACCOUNTED FOR IN THE 1994 BPA LOAD FORECAST										
Billing Credits	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Competitive Acquisitions	18.7	23.4	26.6	27.8	28.4	28.9	29.1	29.4	29.4	29.4
Power Plants	53.2	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5
Assumed Tiered Rate Response	4.0	8.0	12.0	17.0	23.0	30.0	38.0	47.0	47.0	47.0
Assumed Market Transformation	1.0	3.0	6.0	10.0	14.0	18.0	23.0	27.0	27.0	27.0
Adjustments for Codes & Standards	13.0	19.0	25.0	31.0	37.0	43.0	49.0	55.0	55.0	55.0
TOTAL ADDITIONAL LOAD REDUCTIONS IN THE LOAD FORECAST	300.2	323.0	340.5	357.5	375.0	393.0	412.4	432.0	432.0	432.0
3. Additional Customer Funded Conservation not included in the 1994 BPA Load Forecast										
Customer-Funded Conservation	18.0	38.0	65.0	95.0	125.0	156.0	189.0	223.0	223.0	223.0
4. TOTAL PROJECTED CONSERVATION SAVINGS²	318.2	361.0	405.5	452.5	500.0	549.0	601.4	655.0	655.0	655.0

The conservation data is cumulative since 1992.

Price induced conservation is not included in these conservation savings because the load forecast already accounts for price induced conservation.

¹ Operating Year (OY) is the 12-month period August 1 through July 31. For example OY 1995-96 is August 1, 1995 through July 31, 1996.

² Total conservation savings consistent with the 1994 BPA Business Plan.

IV. FEDERAL SYSTEM ANALYSIS

This study provides base case assumptions from which scenarios encompassing a wide range of uncertainties about BPA's future may be evaluated. It incorporates only load forecast uncertainty and capacity availability under extreme weather conditions.

The Federal system loads and resources analysis is based on the following assumptions:

- ◆ **Capacity surplus/deficit values do not reflect potential nighttime return problems on the Federal system;**
- ◆ The region experiences medium load growth;
- ◆ The Pacific Northwest Coordination Agreement, which expires June 30, 2003, is replaced with a like agreement;
- ◆ BPA's power sales contracts with Pacific Northwest Federal and public agencies, IOUs, and DSIs, which expire June 30, 2001, are renewed with like agreements;
- ◆ All existing Federal contractual arrangements not included under Pacific Northwest power sales contracts expire and are not renewed;
- ◆ Federal surplus firm power sales to the cities of Burbank, Glendale, and Pasadena, and the Southern California Edison Company (SCE), are shown as power sales through their expiration.
- ◆ BPA's surplus firm power sale to M-S-R remains a power sale through October 31, 2009, then converts to a capacity/energy exchange until it expires;
- ◆ BPA's surplus firm power sale to Puget Sound Power and Light terminates and converts to a seasonal power exchange beginning in OY 2001-02, per the terms of the contract;
- ◆ BPA delivers 150 megawatts of surplus peak capacity to PGE through June 30, 2001.
- ◆ A surplus capacity contract of 50 megawatts with WWP continues through September 30, 2010;
- ◆ Sustained capacity limits are 50 hours per week.
- ◆ BPA's capacity sale of 1,100 peak megawatts to PacifiCorp (formerly doing business as Pacific Power & Light, a.k.a., PP&L) continues through August 31, 2001;
- ◆ BPA serves all of the Pacific Northwest public agencies' net firm load requirements not served by their own resources;
- ◆ Extreme weather adjustments during the months of November through February. These adjustments vary monthly from 1,400 to 1,800 peak megawatts under the medium load forecast; and
- ◆ The IOUs do not make new long-term BPA purchases under their power sales contracts.

The assumption that there will be no long-term power purchases by BPA's IOU customers is due to the uncertainty of the IOUs' intentions. BPA believes this assumption is reasonable because: 1) The IOUs have not informed BPA to the contrary; and 2) the IOU power sales contracts contain a 7-year notice requirement that provides BPA adequate time to secure resources to meet increased IOU obligations. Currently, no IOU is placing an obligation on BPA.

PGE was purchasing capacity of 150 megawatts through June 30, 1999, under its power sales contract. This contract has since been revised and the capacity now is purchased under the surplus peak rate schedule through June 30, 2000.

Federal System Firm Energy Loads

The Federal system firm loads include BPA's firm DSI load,¹ sales to Federal agencies, current obligations to regional

¹This study includes only firm DSI loads; interruptible DSI loads are not served from firm resources. Operation of the Federal system under the PNCA serves the interruptible DSI loads on a semi-firm basis using various mechanisms.

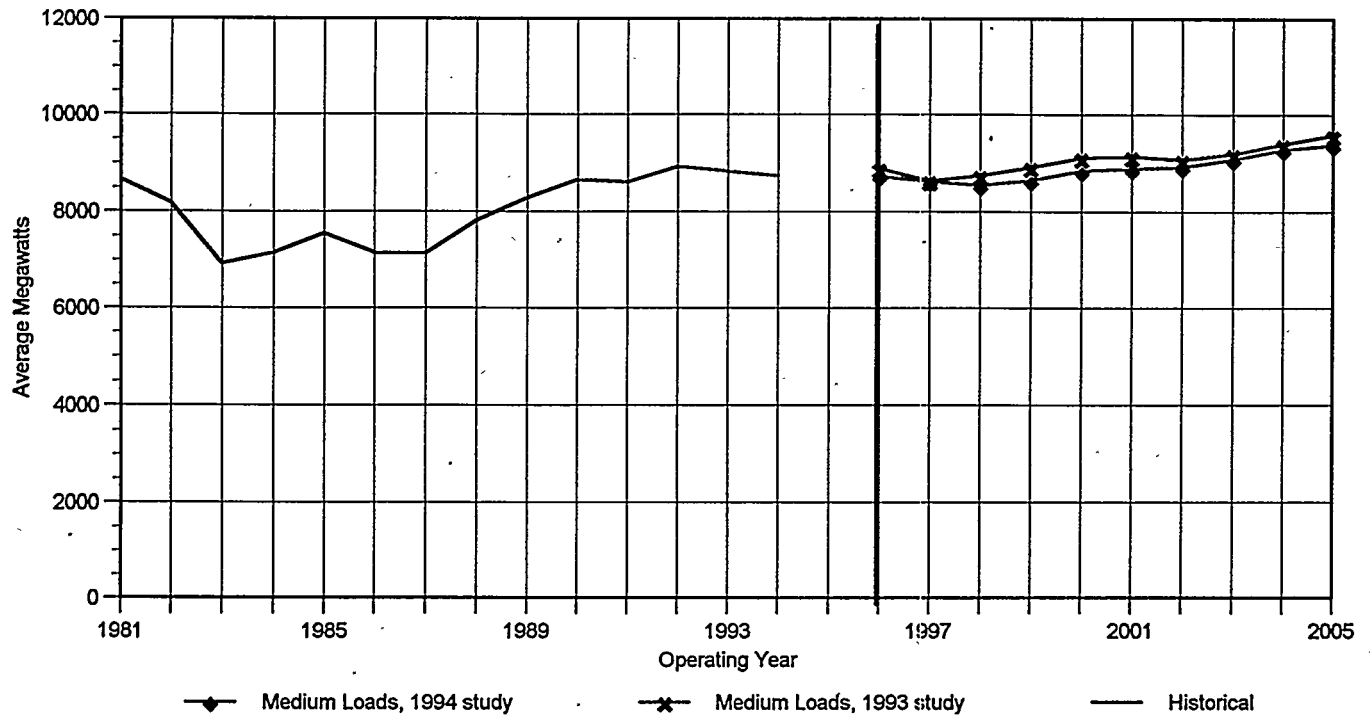
public agencies and IOUs under their power sales contracts, and other inter- and intra-regional contractual obligations.

The Federal system firm energy loads under the medium load forecast for OY 1995-96 through 2004-05 are shown in Figure 1. The methods and assumptions used to complete this year's range of forecasts are discussed under *Load Forecasting*, page 6.

The Federal loads include all intra-regional contracts made within the Pacific Northwest, called contracts out, and inter-regional contracts or exports of firm surplus power to Southwest utilities. The Federal firm energy loads under the medium load forecast are presented on line 8 of Exhibit 1, page 44, and monthly for the medium load forecast for OY 1995-96, 1999-2000, and 2004-05 assuming 1930 water conditions in Exhibits 2 through 4, pages 48 through 53.

Figure 1

**Federal Firm Energy Loads
1994 BPA Forecast**



MPMO: 12/94

Federal System Firm Peak Loads

Figure 2, page 16, shows the Federal firm peak loads for OY 1995-96, 1999-2000, and 2004-05 under the medium load forecast. Figure 4 shows the Federal firm peak loads under the medium load forecast for OY 1995-96. The figures show the expected 1-hour monthly demand under the 1994 BPA load forecast, and include extreme weather adjustments. Extreme weather conditions were assumed for the months of November through February and estimate a 5-percent probability that the actual peak load will be exceeded. The extreme weather adjustment includes possible increased obligations on BPA by the public agencies during extreme weather conditions. In the remaining months of

March through October, the peak loads estimate normal weather conditions with a 50-percent probability that the actual peak load will be exceeded. The peak load projections are reduced by a diversity component to address the fact that all peak electrical demands do not occur simultaneously throughout the region.

This year's study includes the following BPA contract:

- ◆ A capacity sale of 1,100 megawatts to PacifiCorp through August 31, 2011; and
- ◆ A sale of 150 peak capacity megawatts to PGE through June 30, 2000.

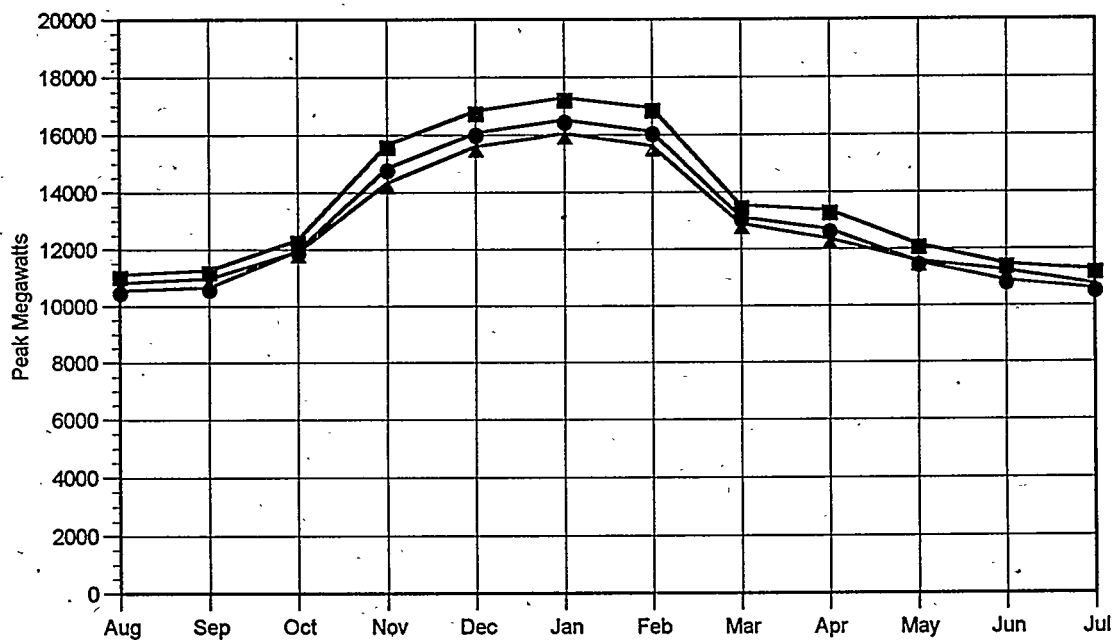
This study assumes that public agencies will purchase capacity from BPA under their power sales contracts to meet peak loads not served by their own resources.

The monthly Federal firm peak loads are presented on line 15, and the monthly extreme weather obligations are presented on lines 47 and 50 of Exhibits 6 through 8,

pages 58 through 63, for the medium load forecast for OY 1995-96, 1999-2000, and 2004-05, assuming Federal obligations under 1930 water conditions.

Figure 2

**Federal Firm Peak Loads Under Extreme Weather Conditions
OY 1995-96, 1999-2000, and 2004-05**



MPMO: 12/94

- 2004-05 Operating Year
- 1999-00 Operating Year
- ▲ 1995-96 Operating Year

Existing Federal System Firm Resources

The Federal system hydro resources from which BPA markets power are shown in Table 4, page 18. In addition, BPA markets power purchased from non-Federally owned resources. BPA's capacity/energy exchange contracts provide energy to BPA as payment for the capacity BPA delivers.

The non-Federally owned resources, return energy associated with BPA's existing capacity/energy exchanges, contractual resources, and other BPA hydro-related contracts are shown in Table 5, page 19.

Combined, these resources represent BPA's available firm resources. A detailed listing of all Federal generating resources is contained in the 1994 Pacific Northwest Loads and Resources Technical Appendix: Volume 1 (available February 1995).

Table 4

Federal System Hydroelectric Projects

Project	Initial Year of Service	Number of Units	Name-plate Rating (MW)	Instantaneous Generating Capacity ¹ (peak MW)	Firm Energy ² (aMW)
U.S. BUREAU OF RECLAMATION HYDROELECTRIC PROJECTS					
Grand Coulee	1941	27	6,187.5	6,684	1,875
Grand Coulee Pump Gen.	1973	6	314.0	314	0
Hungry Horse	1952	4	392.0	428	98
Palisades	1957	4	142.2	164	61
Anderson Ranch	1950	2	27.0	30	11
Minidoka	1909	7	13.4	16	9
Roza	1958	1	11.3	13	4
Black Canyon	1925	2	8.0	10	7
Chandler	1956	2	12.0	13	7
TOTAL U.S. BUREAU OF RECLAMATION PROJECTS		55	7,107.4	7,672	2,072
U.S. ARMY CORPS OF ENGINEERS HYDROELECTRIC PROJECTS					
Chief Joseph	1955	27	2,069.0	2614	1,156
John Day	1968	16	2,160.0	2484	911
The Dalles	1957	22	1,780.0	2074	723
Bonneville	1938	18	1,050.0	1186	477
McNary	1953	14	980.0	1127	662
Lower Granite	1975	6	810.0	932	217
Lower Monumental	1969	6	810.0	930	218
Little Goose	1970	6	810.0	932	213
Ice Harbor	1961	6	603.0	693	177
Libby	1975	5	525.0	600	205
Dworshak	1974	3	400.0	460	164
Lookout Point	1954	3	120.0	138	24
Detroit	1953	2	100.0	115	34
Green Peter	1967	2	80.0	92	22
Lost Creek	1975	2	49.0	56	23
Albeni Falls	1955	3	42.6	49	26
Hills Creek	1962	2	30.0	35	14
Cougar	1964	2	25.0	29	12
Foster	1968	2	20.0	23	10
Big Cliff	1954	1	18.0	21	10
Dexter	1955	1	15.0	17	8
TOTAL CORPS OF ENGINEERS PROJECTS		149	12,496.6	14,607	5,306
HYDRO EFFICIENCY IMPROVEMENTS³		0	0	0	45
TOTAL USBR AND COE PROJECTS		204	19,604.0	22,279	7,378
MAY WATER BUDGET OVERGENERATION⁴		0	0	0	-216
JUNE COLUMBIA RIVER FLOW AUGMENTATION OVERGENERATION⁴		0	0	0	-162
TOTAL USBR AND COE PROJECTS		204	19,604.0	22,279	7,000

¹Maximum generation under optimum conditions. Does not reflect reduction to the peaking capacity of the hydro system due to the drafting of reservoirs and other project constraints.

²Firm energy from a 42-month critical period.

³Contracted hydro efficiency improvements are being completed on various hydroelectric projects. These efficiency improvements were not included in this year's hydro regulation.

⁴May Water Budget and June Columbia River Flow Augmentation reductions are due to excessive generation in the months of May and June during the 42-month critical period in support of fish mitigation.

Table 5

**Non-Federally Owned BPA Resources and Contracts
Capacity based on January 1996**

Project	Type	Operator	Date in Service	OY 1995-96 Capacity (peak MW)	OY 1995-96 Firm Energy (aMW)
Existing Non-Federally Owned BPA Resources					
WNP-2	Nuclear	WPPSS	1984	1,170 ¹	819 ¹
Packwood Lake	Hydro	WPPSS	1964	30	8
Idaho Falls	Hydro	City of Idaho Falls	1982	18	18
Cowlitz Falls	Hydro	Lewis County PUD	1994	25 ²	22
McNary Fishway Hydro Unit	Hydro	Northern Wasco PUD	1997	0 ³	0 ³
Big Creek Hydro Unit	Hydro	Mission Valley	1981	1	0
TOTAL NON-FEDERALLY OWNED BPA RESOURCES				1,244	867
Firm Contracts					
Canadian Entitlement				162	58
Restoration, Columbia River Treaty w/Canada				0	-26
Southwest Capacity/Energy Exchanges				0	10
Montana Power Capacity/Energy Exchange				0	29
PacifiCorp (Wyoming) Import for Southern Idaho Load				189	94
Basin Electric Cooperative Purchase ⁴				120	85
WNP-3 Exchange Settlement Agreements				0	113
Montana Power Purchase ⁵				75	53
Puget Sound Power & Light Purchase ⁶				0	29
San Diego Gas & Electric, Capacity/Energy Exchange ⁷				0	22
San Diego Gas & Electric, Deferred Return Energy ⁷				0	51
Southern California Edison Environmental Storage ⁸				0	7
TOTAL BPA FIRM CONTRACTED RESOURCES				546	527
TOTAL NON-FEDERALLY OWNED BPA RESOURCE CONTRACTS				1,790	1,394

¹ Efficiency improvements will increase WNP-2 capacity to 1,170 megawatts and energy capability to 878 average megawatts when completed in OY 2001.

² Operational capacity is 70 megawatts, but is restricted in January.

³ Operational date is July 1, 1997. Peak capability will be 8 megawatts and 7 average megawatts of annual energy.

⁴ The Basin Electric Cooperative contract began November, 1991, and ends April 23, 1999.

⁵ The Montana Power Company contract began July 1, 1993, and ends June 30, 1996.

⁶ The Puget Sound Power & Light contract began July 1, 1993, and ends June 30, 1996.

⁷ The San Diego Gas & Electric contract begins August 1, 1993, and ends July 31, 1997.

⁸ The Southern California Edison contract begins April 16, 1995, and ends February 29, 2005.

Table 6 summarizes the Federal system firm energy resources and contracts available to meet Federal firm loads for OY 1995-96. Federal system firm energy

resources are comprised as follows: 83 percent from hydroelectric power, 10 percent from one nuclear power plant, and 7 percent from BPA's firm contracts.

Table 6

Federal System¹ Firm Resources for OY 1995-96²
Capacity based on January 1996

Project Type	Sustained Peak Capacity (MW)	Generating Peaking Capacity % of Total	Firm Energy (aMW)	Firm Energy % of Total
Hydro	15,008	91	7,122	83
Nuclear	1,170	7	819	10
Firm Contracts	375	2	573	7
TOTAL FEDERAL RESOURCES	16,554	100	8,519	100

¹ Includes Federally and non-Federally owned projects.

² Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1995, through July 31, 1996.

Federal System Nonfirm Resources

BPA planning does not include nonfirm energy in its Federal system loads and resources balance; however, it is an important component of BPA's marketing programs and revenue forecasts. Regional nonfirm energy can vary from zero in the worst water conditions to as much as 8,300 average megawatts in the best water year. Federal system nonfirm energy comprises approximately 60 percent of the region's nonfirm energy. Federal nonfirm energy averaged over 50 years of historical water flows would increase the Federal system resources from 2,300 to 2,600 average megawatts.

The NMFS Draft Biological Opinion dated March 16, 1994, was incorporated in

this year's 50-year nonfirm energy analysis. This changes the shape and availability of nonfirm energy.

Federal System Firm Energy Surpluses/Deficits

This analysis includes all operating requirements currently adopted by the hydroelectric project owners and the firm planning assumptions from the NMFS Draft Biological Opinion dated March 16, 1994.

The Federal firm energy surpluses/deficits under the various load forecasts for OY 1995-96 through 2004-05 are presented in Table 7, page 21, and graphically shown in Figure 3, page 22. The Federal system is energy deficit throughout the 10-year study period under the medium load forecast. Although utility loads continue to grow through the 1990s, the

Federal system deficit, under medium loads, does not increase significantly due to the expiration of the WNP-1 exchange contract obligation on June 30, 1996, returning 340 average megawatts of firm energy to the Federal system.

The components of the 10-year critical period average Federal energy loads and resources balances under the medium load scenario is presented in Exhibit 1, line 45, page 44.

To show the monthly variability of the loads and resources study, the monthly Federal system energy components assuming medium loads under 1930 water conditions for OY 1995-96, 1999-2000, and 2004-05 are shown in Exhibits 2 through 4, pages 48 through 53.

Figure 4, page 22, shows the impact of the May Water Budget and June CRFA on the Federal system energy surpluses/deficits.

Table 7

**Federal System Firm Energy Surpluses/Deficits
Assuming Existing Loads, Resources, and Contracts
Energy In Average Megawatts**

	OPERATING YEAR ¹									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Medium Load Scenario	-210	-12	-22	-114	-301	-303	-309	-422	-590	-699

¹ Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1995, through July 31, 1996.

Figure 3

Federal Firm Energy Surpluses/Deficits

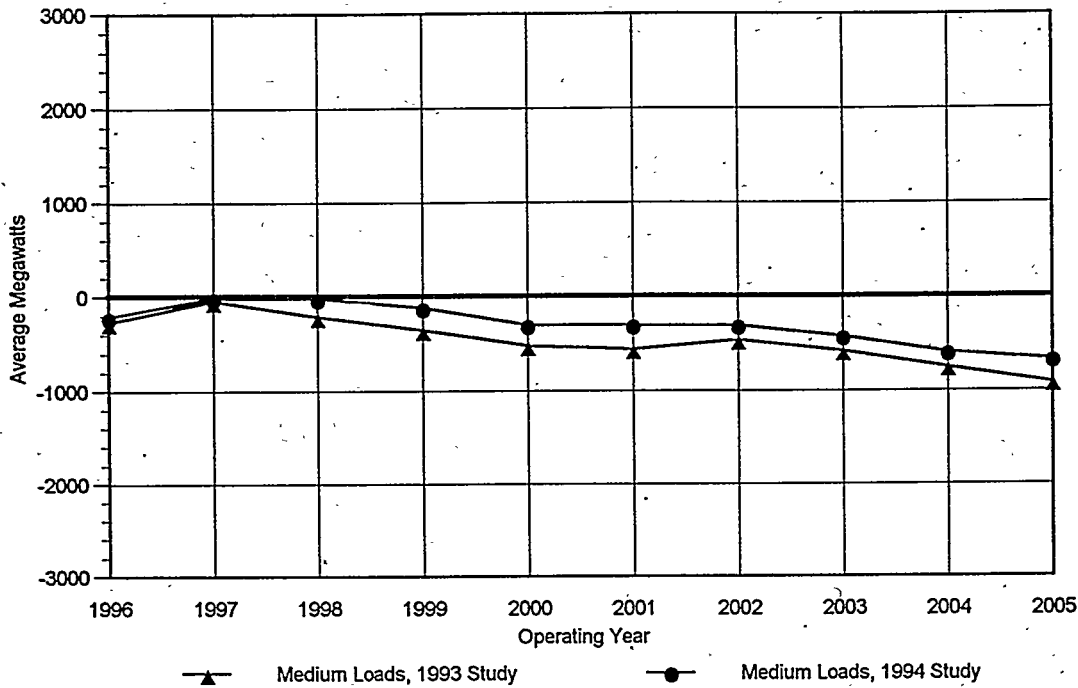
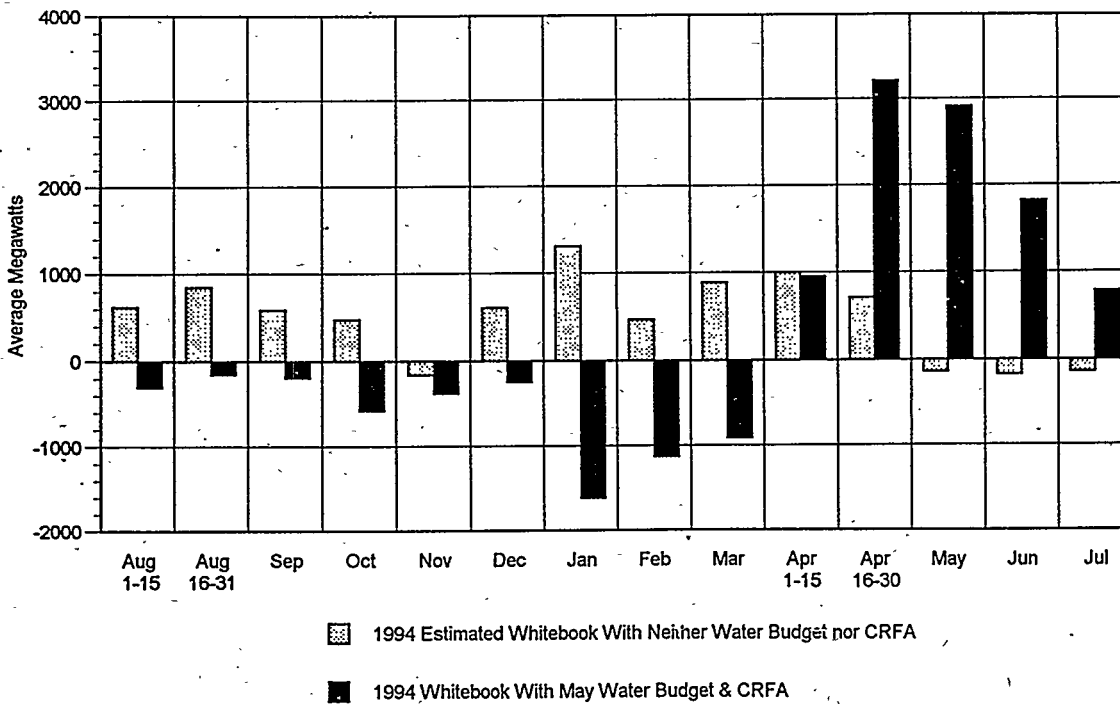


Figure 4

Effect of May Water Budget and June Columbia River Flow Augmentation on the Federal Firm Energy Surplus Medium Load Forecast



V. PLANNING TO MEET FORECASTED DEFICITS

As part of its Competitiveness Project, BPA has developed marketing and business plans that may alter the way the agency acquires and markets resources. Therefore, only existing contractual resource options now available to BPA are included in this section of the study.

Contractual Resource Options

BPA has long-term surplus firm power sale and capacity/energy exchange contracts with five Southwest utilities: Southern California Edison (SCE); the M-S-R Public Power Agency (M-S-R), whose members include the Modesto Irrigation District, and the cities of Santa Clara and Redding, California; and the cities of Burbank, Glendale, and Pasadena, California.

BPA also has a long-term surplus firm power sale and seasonal exchange contract with one Northwest utility—Puget Sound Power and Light.

The above contracts contain provisions, throughout their duration, for complete or partial termination of energy deliveries if that energy is needed to serve BPA's firm requirements.

The Southwest utilities contracts allow BPA to terminate surplus firm energy deliveries and convert these contracts to capacity/energy exchange contracts under the following conditions:

- ◆ On an annual basis, following a termination by BPA under annual

Pacific Northwest Coordination Agreement planning; or

- ◆ On 60-days' notice pursuant to Public Law 88-552.

These provisions relieve BPA of its energy delivery obligations and make those resources available to BPA for meeting firm energy requirements. Energy may be acquired from the following categories:

- ◆ Energy made available from the termination of energy deliveries under Southwest surplus firm energy sales;
- ◆ Exchange energy available upon conversion of the Southwest surplus firm energy sales to capacity/energy exchanges; and
- ◆ Supplemental energy available to BPA for purchase upon conversion of the Southwest surplus firm energy sales to capacity/energy exchanges.

In the event that BPA terminates energy deliveries of these Southwest surplus sales and converts them to exchanges, provisions within the contracts, except the city of Burbank's, allow for later reversion back to surplus energy sales, depending on the availability of Federal surplus firm energy and certain other conditions.

This study assumes that these contracts retain their power sale status throughout their terms (expiration dates range from OY 2007-08 to 2012-13). Should BPA terminate these sales and convert them to capacity/energy exchanges, exchange energy would become available to BPA as a firm resource. The additional resources resulting from early conversion of these sur-

plus firm power sales to capacity/energy exchanges are shown in Table 8, lines 1 and 2, page 25.

Supplemental Energy: If BPA terminates Southwest sales and converts them to capacity/energy exchange contracts, BPA may elect to purchase supplemental energy in that same operating year. The amount of additional resources that would become available upon early conversion of these contracts and purchase of supplemental energy is shown in Table 8, line 3.

Option Energy: BPA also has contractual rights to purchase optional energy from Southern California Edison. This contract allows BPA to purchase up to 71 average megawatts of optional energy on a rolling 5-year basis starting in OY 1994-95. In addition, BPA has near-term contractual rights to purchase optional energy from San Diego Gas and Electric Company. This contract allows BPA to purchase up to 4.5 average megawatts of option energy during OY 1994-95 through OY 1996-97. BPA considers these contracts as resource options, which BPA may elect to purchase; they are not considered firm resources in this study. BPA included Southern California Edison option energy as a firm resource in the 1993-94 Pacific Northwest Coordination Agreement operating plan. The total optional energy available to BPA under these contracts is shown in Table 8, line 4.

Pacific Northwest Surplus Firm Energy: In addition, BPA has a surplus firm sale and seasonal power exchange agreement with Puget Sound Power and Light. This contract contains provisions that allow BPA to terminate the surplus energy sale on the earlier of:

- ◆ 5-years' written notice from BPA; or
- ◆ on July 1, 2001.

In this event, the surplus energy sale converts to a seasonal power-for-power exchange. BPA's right to issue 5-years' written notice is in accordance with Section 5(a) of the Bonneville Project Act; (Public Law 75-329, as amended), and Section 5(f) of the Northwest Power Act (Public Law 96-501). This study assumes that this surplus sale will extend through OY 2000-01, when the contract is required to be converted to seasonal exchange status. If BPA needs the energy earlier, the contract will be terminated as a power sale and convert to a seasonal power exchange in that year and for the remainder of the contract. The earliest that BPA can terminate surplus firm energy deliveries to Puget Sound Power and Light Company is OY 2000-01. The amount of resources available to BPA, under all load forecasts, from the conversion of this contract to a seasonal power exchange is shown in Table 8, line 5.

Non-Treaty Storage

On July 9, 1990, BC Hydro and BPA signed an agreement increasing United States-Canadian coordination of the Columbia River system. This agreement cooperatively manages 4.5 million acre-feet of non-treaty hydro storage through June 30, 2003. Studies on the increased coordination indicate a possible increase of 300 average megawatts in firm energy for the combined Canadian and Pacific Northwest systems. Fifty percent of the benefit, 150 average megawatts, is available to the United States. The Federal system share is 115 average megawatts. This energy, however, is not as valuable as a firm resource because non-treaty storage has a lower refill priority than primary storage reservoirs. Therefore, BPA intends to use the non-treaty storage as a resource option

to increase flexibility in operating the hydro system. Since this energy may not be available every year, it is not included as a firm resource in this loads and resources study.

However, it may be included as a firm resource in future studies. Non-treaty storage is included in Table 8, line 6.

Table 8

**Existing Federal System Contractual Resource Options
Energy In Average Megawatts**

OPERATING YEAR ¹	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. Termination of PSW Surplus Power Sales	212	237	237	237	237	237	237	237	237	237
2. Exchange Energy From PSW	68	71	74	73	71	70	69	68	67	66
3. Supplemental Energy From PSW	37	38	39	41	42	43	44	46	47	48
4. Optional Energy From PSW	76	76	71	71	71	0	0	0	0	0
5. Termination of PNW Surplus Power Sale	0	0	0	0	0	75	0	0	0	0
6. Non-Treaty Storage	115	115	115	115	115	115	115	115	0	0
TOTAL CONTRACTUAL OPTIONS	508	537	536	537	536	540	465	466	351	351

¹ Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1995, through July 31, 1996.

Federal System Firm Capacity Surpluses/Deficits

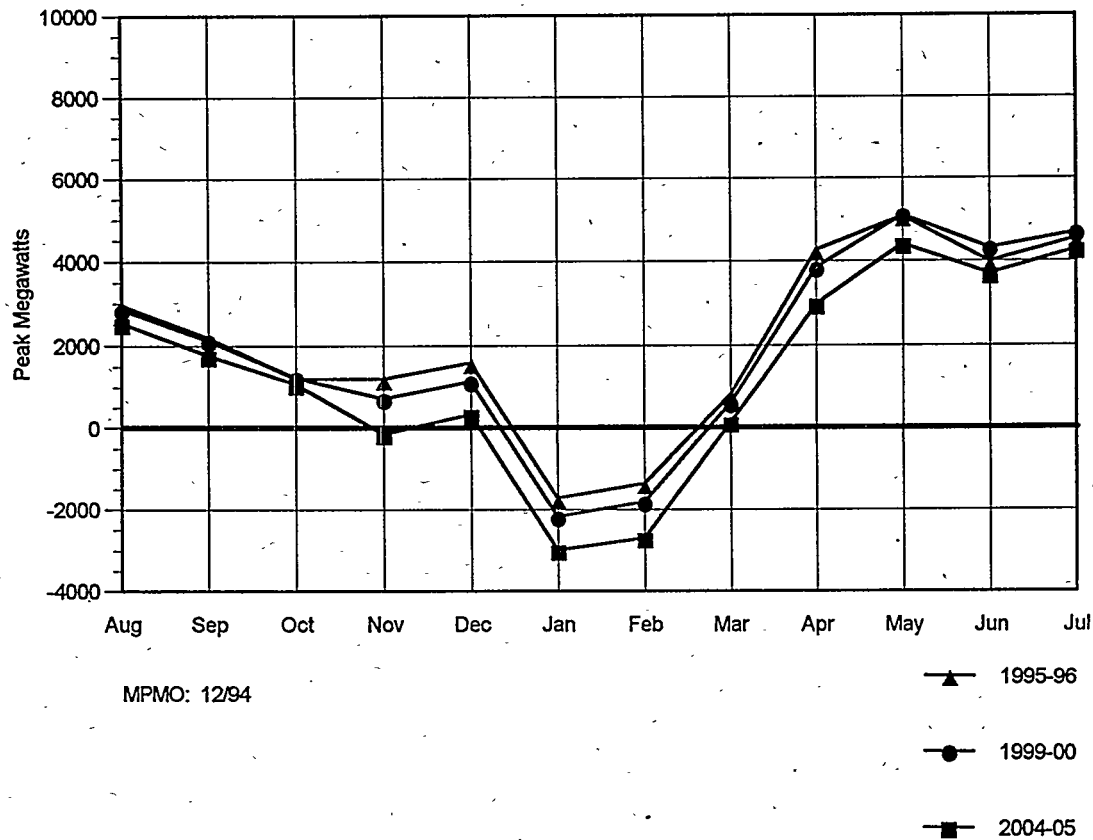
Figure 5 shows the Federal firm capacity surpluses/deficits under the medium load forecast for OY 1995-96, 1999-2000, and 2004-05. This analysis incorporates all operating requirements currently adopted by

the hydroelectric project owners and the firm planning assumptions from the NMFS Draft Biological Opinion dated March 16, 1994.

The monthly capacity surpluses/deficits incorporate the Federal System assumptions noted on page 13.

Figure 5

1995-96 Federal Firm Capacity Surpluses/Deficits Under Extreme Weather Conditions¹



¹ Extreme weather conditions in the months of November, December, January, and February assume a 5-percent probability that the peak load will be exceeded.

The study assumes that there are no nighttime return problems from future capacity sales. Nighttime return problems can occur when replacement energy from capacity sales, combined with minimum hydro generation, the output from other Federal resources, and other Federal contract returns are greater than BPA's nighttime load. The following factors contribute to nighttime return problems:

- ◆ Low Federal system loads;
- ◆ Additional nonpower hydro requirements that dictate minimum streamflows; and
- ◆ The inability of BPA's WNP-2 nuclear resource to cycle from day to night.

These requirements restrict the ability to accept nighttime return energy, even though there is surplus generating capability during the daytime. These constraints are common in summer and fall, when BPA's nighttime loads are low. BPA's future Federal surplus capacity transactions may include provisions to:

- ◆ Limit return energy to a percentage of contract demand;
- ◆ Defer energy returns to a time more favorable to system operations; or
- ◆ Request cash payment in lieu of return energy.

BPA's surplus firm capacity values take into account the following Federal system hydro constraints:

- ◆ Limitations on moving water between projects, including upstream storage;
- ◆ Pondage limitations due to hydraulic imbalance from reservoir to reservoir; and
- ◆ Navigation and recreation constraints, including restrictions on the rate of rise or fall of tailwater and forebay elevations.

As BPA acquires future resources, the added capacity will increase capacity available to the Federal System.

A 10-year summary of Federal capacity surpluses/deficits under the medium load forecast, assuming extreme weather conditions, is presented in Exhibit 5, page 56. The monthly variability of the Federal system capacity components that comprise the loads and resources study assuming medium loads for extreme weather under 1930 water conditions for OY 1995-96, 1999-2000, and 2004-05 are shown on line 51 in Exhibits 6 through 8, pages 58 through 65.

Federal System Loads and Resources Comparison—Energy

Table 9, page 29, shows changes in the energy analysis of the 1994 Pacific Northwest Loads and Resources Study compared to the 1993 Pacific Northwest Loads and Resources Study for OY 1995-96 through 2003-04. The table lists the Federal firm energy surpluses/deficits for the 1993 study and changes since last year to obtain the current firm energy surplus under the medium load forecast. Positive values in the table indicate an increase and negative values indicate a decrease in Federal system firm energy surpluses. Federal planned resource acquisitions are not included as firm resources because they have not yet been contracted for. Similarly, resource options that BPA already has contractual rights to acquire, if needed, have not been included because BPA may or may not exercise the options in any given year.

Changes were based on the following updates in loads, contracts, and resources:

Federal Agencies and USBR

Federal agencies' loads were decreased by 10 average megawatts for the study period.

DSI Aluminum Firm Loads

The near-term portion of the 1994 BPA forecast assumes that DSI aluminum smelter firm load will be 1,916 average megawatts in OY 1996 are forecasted to remain constant over the study period. In the 1993 study, DSI aluminum smelter firm loads were forecasted to decline over the study period, thus decreasing the DSI aluminum loads.

DSI Non-Aluminum Firm Loads

There are few differences in the non-aluminum DSI loads from this year's analysis compared to the 1993 study.

Non-Generating Public Agencies' Power Sales Contract Purchases

This year's study shows decreased sales to small and non-generating public agencies due to load reductions included for competitive acquisitions, tiered rates, conservation responses, market transformation, power plants, and other codes and standards (not MCS) of up to 82 average megawatts over the study period. In addition, this study contains new small generating public resources including Clark County PUD's Cogentrix (202 average megawatts) and Grays Harbor PUD's share of Centralia (50 average megawatts); which reduced the non-generating public agencies' purchases from BPA.

Generating Public Agencies' Power Sales Contract Purchases

Sales to the generating public agencies decreased due to load reductions included for competitive acquisitions, tiered rates, conservation responses, market transformation, power plants, and other non-MCS codes and standards. The generating public agencies' share of these load reductions totals up to 102 average megawatts over the study period.

Exports

BPA's new diversity exchange with Riverside, capacity/energy exchange with Pasadena, and environmental exchange with Southern California Edison represent the monthly load increases on BPA associated with these deliveries.

Contracts Out

The 1994 study includes a new contract with Washington Water Power for deferred power deliveries extending through June 30, 2000.

Regulated Hydro

The NMFS Draft Biological Opinion dated March 16, 1994, was used for the hydro regulation study. In addition, the inclusion of the May Water Budget and June CRFA significantly reduces the Federal system hydro generation.

Imports

To cover potential short-term firm energy deficits, BPA extended its purchase from Basin Electric Cooperative through April 31, 1999.

In addition, BPA's new contracts include deferred replacement energy returns from San Diego Gas and Electric, diversity exchange from Riverside, exchange energy from Pasadena, and environmental exchange with Southern California Edison.

Contracts In

To cover potential short-term deficits, BPA purchased power from Puget Sound Power and Light and Montana Power through OY 1996-97. BPA also revised its WNP-1 contract with Washington Water Power for deferred returns considerations through June 30, 2000.

WNP-2

WNP-2 turbine and efficiency improvements increased the nuclear plant's output by up to 127 average megawatts over last year's study.

Non-Utility Generation

Federal non-utility generation includes Tenaska II (Frederickson), SOS Lumber,

Clearwater, and Wyoming Wind, bringing up to 184 average megawatts of generation to the Federal system.

Miscellaneous Changes

The miscellaneous changes in this year's study include revised USBR loads, new Canadian Entitlement obligations beginning April 1, 1998, and revised transmission losses.

Table 9

Changes in Federal System Firm Energy Surplus/Deficit

Medium Load Forecast

Energy in Average Megawatts

Operating Year ¹	1996	1997	1998	1999	2000	2001	2002	2003	2004
1993 Federal Firm Energy Surplus/Deficit²	-270	-43	-212	-352	-518	-559	-464	-579	-748
Load Changes: (+ Load Increase, - Load Decrease)									
Federal Agencies & USBR	-9	-10	-9	-9	-10	-9	-10	-9	-9
DSI Aluminum Firm Loads	-66	126	130	133	142	163	279	290	301
DSI Non-Aluminum Firm Loads	-11	-1	2	2	2	1	-1	-2	-2
Small Public Agency Purchases	-67	-91	-291	-345	-346	-341	-337	-330	-318
Generating Public Agency Purchases	0	-65	-76	-91	-91	-91	-98	-85	-85
Fed & Generating Public Losses	-10	0	-1	0	1	2	5	5	5
IOU Purchases	0	0	0	0	0	0	0	0	0
Exports	9	13	15	15	15	15	14	15	13
Contracts Out	5	22	27	28	25	-1	0	0	0
Total Load Changes	-149	-6	-203	-267	-262	-261	-148	-116	-95
Resource Changes: (+ Resource Increase, - Resource Decrease)									
Regulated Hydro	-217	-217	-217	-240	-240	-240	-240	-240	-240
Independent Hydro	-1	-1	0	0	0	0	0	0	0
May Water Budget	49	38	30	44	49	53	59	74	82
June Columbia River Flow Aug.	-162	-180	-190	-178	-171	-169	-162	-146	-138
Imports	86	81	81	60	22	22	22	22	22
Contracts In	78	59	7	6	7	7	7	7	7
WNP-2	72	70	91	91	94	127	127	127	127
Non-Utility Generation	6	175	183	183	183	183	183	183	183
Miscellaneous	0	0	2	5	11	12	11	14	20
Total Resource Changes	-89	25	-13	-29	-45	-5	7	41	63
Difference: 1993 Study Less 1994 Study									
Resource Changes - Load Changes	60	31	190	238	217	256	155	157	158
1994 Federal System Firm Energy Surplus/Deficit³	-210	-12	-22	-114	-301	-303	-309	-422	-590

¹ Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1995, through July 31, 1996.

² 1993 Pacific Northwest Loads and Resources Study, December 1993, page 42.

³ 1994 Pacific Northwest Loads and Resources Study, December 1994, page 21.

Federal System Loads and Resources Comparison—Capacity

Table 10, page 32, shows changes in the capacity analysis of the 1994 Pacific Northwest Loads and Resources Study compared to the 1993 Pacific Northwest Loads and Resources Study for OY 1995-96. The table lists the Federal system firm 50-hours-per-week capacity surpluses/deficits for the 1993 study and changes since last year to obtain the current firm 50-hours-per-week capacity surplus under the medium load forecast. Positive values in the table indicate an increase and negative values indicate a decrease in the Federal system firm capacity surpluses. As previously discussed, Federal planned resource acquisitions not yet contracted for and contracted for resource options are not included as firm resources.

Changes were based on the following updates in loads, contracts, and resources:

DSI Firm Loads

The DSI near-term forecast shows capacity loads decreasing by as much as 142 peak megawatts in August of OY 1996 versus the 1993 study. This is due to lower aluminum prices, and drought conditions in the region.

Non-Generating Public Agencies' Power Sales Contract Purchases

This year's study shows generally decreased sales to small and non-generating public agencies due to additional conservation load reductions, increases, Grays Harbor PUD's dedication of their share of Centralia, and Clark County PUD's Cogentrix plant, with loads decreasing as much as 182 peak megawatts in December of OY 1995-96.

Generating Public Agencies' Power Sales Contract Purchases

Sales to the generating public agencies under their power sales contracts decrease by up to 140 peak megawatts in February of OY 1995-96. This change is due to decreases in the generating public agencies peak load forecast due to additional load reductions of up to 102 peak megawatts and increases in the amount of resources dedicated by the generating public agencies to serve their own loads.

Investor-Owned Utilities' Power Sales Contract Purchases

Since last year's study, Portland General Electric revised its 150-megawatt capacity purchase from BPA. PGE now is purchasing this capacity under a surplus peak contract with BPA included in Contracts In.

Exports

Since last year's analysis, BPA has completed a capacity/energy exchange with Pasadena, a diversity exchange with Riverside, and an environmental exchange with Southern California Edison, which decreased the available Federal capacity surplus during May through September.

Contracts Out

This year's study includes BPA's 1,100 peak megawatt capacity sale with PacifiCorp and 150 peak megawatt capacity sale with Portland General Electric.

Federal System Diversity

Decreases in the obligation of the Federal system to the public agencies and IOUs under their power sales contracts and new Federal contracts decreased Federal system diversity impacts.

Extreme Weather Adjustments

The extreme weather adjustments changed slightly compared to the 1993 study mainly due to decreases in BPA's obligation to public agencies under their power sales contracts.

Regulated Hydro

As previously discussed, the 1994 hydro regulation study included CRFA. These changes included storing water in reservoirs in the winter for later release in the late spring and early summer. This created lower flows in the winter and additional flows, especially in the late spring and summer, thus reducing the available hydro in the winter and increased the hydro capability in the spring and early summer when compared to last year's study.

Sustained Peaking Adjustment

The 50-hours-per-week sustained peaking adjustment in this year's analysis decreased the regional capacity surplus in the hydro regulation versus the 1993 study. This is due to changes in the shaping of the hydro system due to CRFA. By storing in the months of January through April 15, the availability of sustained peaking diminished dramatically in some months.

Imports

To cover potential short-term firm energy deficits, BPA extended its purchase from Basin Electric Cooperative through April 31, 1999, which increased capacity resources.

WNP-2

The change in generation is due to efficiency improvement at the project.

Hydro Reserves/Large Thermal Reserves/Spinning Reserves

The change in reserves is due to variations in hydro and thermal capabilities.

DSI Reserves

The DSI system operating reserve is estimated at one-third the DSI firm load, limited by the amount of Federal thermal forced outage reserve.

Contracts In

BPA revised its WNP-1 obligation contract with Washington Water Power for deferred power deliveries to cover short-term firm energy deficits.

Miscellaneous Changes

The miscellaneous changes in this year's study include revised USBR agency loads, and revised transmission losses.

Table 10

Changes in Federal System 50-Hours-Per-Week Firm Capacity Surplus/Deficit For Operating Year 1995-96¹
Medium Load Forecast - Peak in Megawatts

Operating Year 1995-96	Aug 1-15	Aug 16-31	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr 1-15	Apr 16-30	May	Jun	July
1993 Federal Firm Energy Surplus/Deficit ²	4,782	5,188	3,535	3,470	3,162	3,029	3,563	2,583	5,095	4,673	3,821	5,421	2,681	3,091
Load Changes: (+ Load Increase, - Load Decrease)														
Federal Agencies & USBR	-11	-11	-11	-12	-8	-8	-8	-8	-7	-11	-11	-12	-11	-11
DSI Aluminum Firm Loads	-142	-142	-142	-101	-101	-101	-62	-56	-57	-55	-55	-55	-56	127
DSI Non-Aluminum Firm Loads	-27	-27	-27	-23	-6	-6	-14	-6	-6	-6	-6	-6	-10	-10
Non-Generating Public PSC Purchases	-139	-139	-147	-117	-126	-182	-175	22	-105	8	8	-107	3	-56
Generating Public PSC Purchases	-22	-16	-15	-6	-21	-52	-140	-11	-72	69	69	-123	-42	-42
Federal & Generating Public Losses	-2	-2	20	35	4	-4	-28	-27	-32	-12	-12	-18	-13	9
IOU PSC Purchase	-150	-150	-150	-150	-150	-150	0	-1	-150	-150	-150	-150	-150	-150
Exports	15	15	15	0	0	0	0	0	0	-1	51	118	117	117
Contracts Out	1,192	1,192	1,274	1,274	1,192	1,252	1,252	1,252	1,233	1,233	1,233	1,192	1,274	1,213
Federal Diversity	-113	-114	-127	-124	-89	-60	-53	-75	-87	-114	-114	-95	-138	-125
Extreme Weather Adjustment	0	0	0	0	-70	-92	-110	-40	0	0	0	0	0	0
Total Load Changes	601	606	690	776	625	597	512	900	717	961	1,013	744	974	1,072
Resource Changes: (+ Resource Increase, - Resource Decrease)														
Regulated Hydro	118	-21	-15	-7	7	23	141	311	824	1,259	1,031	446	11	-706
Independent Hydro	0	0	0	0	0	0	-1	0	-1	-1	1	0	0	-1
Sustained Peaking Adjustment	-1,606	-1,551	-899	-1,568	-1,549	-1,063	-5,203	-3,602	-4,618	-813	947	-21	3,302	3,201
Imports	200	200	200	0	118	118	118	118	118	118	0	0	0	0
Contracts In	67	67	67	67	67	67	68	65	68	63	63	10	10	0
WNP-2	20	20	20	20	20	20	20	20	20	20	0	0	-1,155	15
Non-Utility Generation	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Hydro Reserves	-6	1	1	0	0	-2	-7	-15	-41	-63	-51	-23	-1	36
Large Thermal Reserves	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	0	0	173	-2
Spinning Reserves	35	38	22	37	37	24	123	80	93	-10	-47	0	-41	-62
DSI Operating Reserves	-58	-58	-58	-42	-36	-37	-26	-21	-22	-21	-21	-21	-22	40
Miscellaneous	1	0	-1	-2	-1	2	-1	-1	0	0	-1	-1	0	0
Total Resource Changes	-1,232	-1,307	-666	-1,498	-1,340	-851	-4,770	-3,047	-3,561	550	1,923	391	2,278	2,522
Difference: 1993 Study Less 1994 Study														
Resource Changes - Load Changes	-1,833	-1,913	-1,356	-2,274	-1,965	-1,448	-5,282	-3,947	-4,278	-411	910	-353	1,304	1,450
1994 Federal System Firm Energy Surplus/Deficit ³	2,949	3,275	2,179	1,196	1,197	1,581	-1,719	-1,364	817	4,262	4,731	5,068	3,985	4,541

¹ Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1995, through July 31, 1996.

² 1993 Pacific Northwest Loads and Resources Study, December 1993, Exhibit 11, page 84.

³ 1994 Pacific Northwest Loads and Resources Study, December 1994, Exhibit 5, page 56.

VI. REGIONAL ANALYSIS

The regional loads and resources analysis is based on the following assumptions:

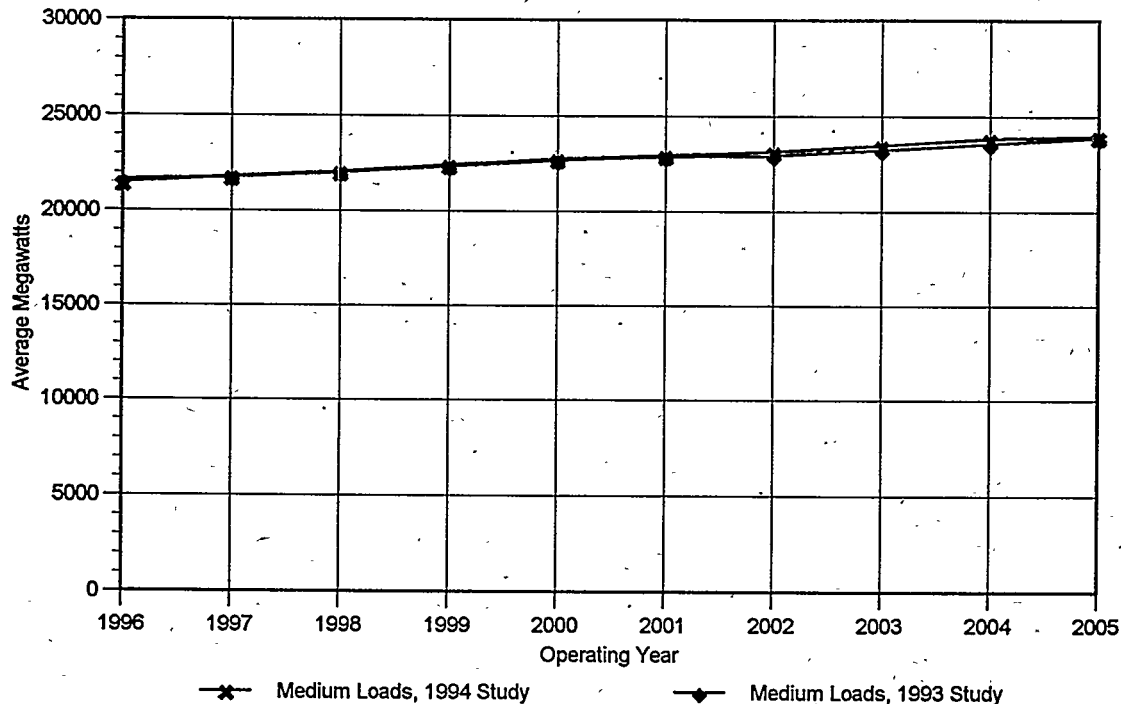
- ◆ Capacity surplus values do not reflect potential nighttime return problems on the region's system.
- ◆ The Pacific Northwest Coordination Agreement, which expires June 30, 2003, is replaced with a like agreement;
- ◆ BPA's power sales contracts with Pacific Northwest Federal and public agencies, IOUs, and DSIs, which expire June 30, 2001, are renewed with like agreements;
- ◆ All existing regional contractual arrangements not included under Pacific Northwest power sales contracts expire and are not renewed;
- ◆ All Federal Southwest surplus firm power sales are shown as power sales through their expiration; and
- ◆ Extreme weather adjustments were included for the months of November through February. These adjustments vary monthly from 3,700 to 4,100 peak megawatts under the medium load forecast.

This analysis includes current operating requirements adopted by the hydroelectric project owners, and incorporates the NMFS Draft Biological Opinion dated March 16, 1994.

Regional Firm Energy Loads

Regional firm energy loads for OY 1995-96 through 2004-05 based on BPA's 1994 medium load forecast are shown in Figure 6, page 34. The load projections also include all intra-regional contracts made by Pacific Northwest utilities and the Federal system, and additional conservation reductions described in *Conservation Reductions*, page 10. The average annual rate of growth for the period from OY 1995-96 through 2004-05 is 1.0 percent per year under the medium load growth scenario. The regional firm energy load for the medium load forecast is presented on line 4 in Exhibit 9, pages 70 through 71, and the monthly firm loads for OY 1995-96, 1999-2000, and 2004-05 under the medium load forecast are presented in Exhibits 10 through 12, pages 74 through 79.

Figure 6
Regional Firm Loads
1994 BPA Forecast



MPMO: 12/94.

Regional Firm Peak Loads

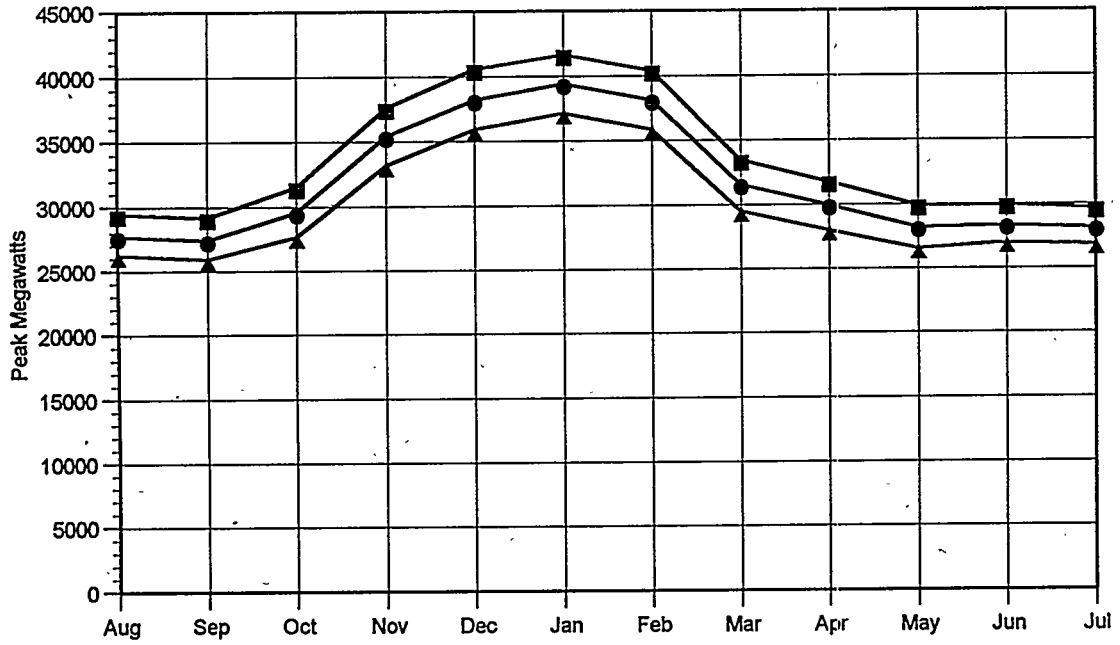
Figure 7, page 35, illustrates the regional firm peak loads under the medium load forecast for OY 1995-96, 1999-2000, and 2004-05. The figures show the expected 1-hour monthly demand under the 1994 BPA load forecast and include extreme weather adjustments. Extreme weather conditions were assumed for the months of November through February and estimate a 5-percent probability that the forecasted peak load will be exceeded. In the months of March through October, the peak loads estimate normal weather conditions with a 50-percent probability

that the forecasted peak load will be exceeded. The projected regional peak loads include all intra-regional contracts made by Pacific Northwest utilities, including the Federal system. The peak load projections are decreased by a diversity factor due to the fact that all peak electrical demands do not occur simultaneously throughout the region.

The monthly regional firm peak loads are presented on line 4, and the extreme weather adjustments to the regional peak loads are presented on line 37, of Exhibits 14 through 16, pages 84 through 89, for the medium load forecast.

Figure 7

**Regional Firm Peak Loads for OY 1995-96, 1999-2000, and 2004-05
Under Extreme Weather Conditions
Medium Loads**



MPMO: 12/94

- 2004-05 Operating Year
- 1999-00 Operating Year
- ▲ 1995-96 Operating Year

Regional Firm Resources

Table 11 summarizes the regional system resources for OY 1995-96. Hydroelectric resources make up a smaller percentage of the regional resources than of the Federal system resources because most of the thermal resources are owned by investor-

owned utilities in the region. These thermal resources are composed primarily of IOU-owned coal and nuclear plants. A detailed listing of all regional generating resources is contained in the 1994 Pacific Northwest Loads and Resources Technical Appendix: Volume 1 (available February 1995).

Table 11

Regional Firm Resources for OY 1995-96¹

Capacity based on January 1996

Project Type	Sustained Peak Capacity (MW)	Generating Peak Capacity % of Total	Firm Energy (aMW)	Firm Energy % of Total
Hydro	26,504	70	12,312	60
Coal	4,410	12	3,862	19
Nuclear	1,170	3	819	4
Imports	2,634	7	1,734	8
Combustion Turbines	1,416	4	544	3
Non-Utility Generation	1,139	3	1,012	5
Miscellaneous	538	1	363	1
TOTAL RESOURCES	37,811	100	20,646	100

¹Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1994 through July 31, 1995.

Regional Nonfirm Resources

As previously discussed, BPA uses critical water flows to compute the regional hydro firm energy for resource planning. Nonfirm energy is created when the region's hydro projects experience water flows greater than critical period levels.

Regional planning does not include nonfirm energy in the loads and resources balance. Nonfirm energy can vary from zero in the worst water year, to as much as 8,300 average megawatts in the best water year. The average annual nonfirm energy increases regional resources by about 3,800 to 4,200 average megawatts when averaged over 50 years of historical water flows.

The augmented Columbia and Snake River flows in the NMFS Draft Biological Opinion dated March 16, 1994 further changed the shape and amount of usable nonfirm energy.

Regional Firm Energy Surpluses/Deficits

This study includes all operating requirements currently adopted by the

hydroelectric project owners and the firm planning assumptions from the NMFS Draft Biological Opinion dated March 16, 1994

The regional critical period firm hydro energy shows a net decrease in this study compared to last year's study due to revised hydro project parameters, the impacts of the CRFA, changes in the shape of Columbia River generation, and up-grades at existing hydro projects.

The regional firm energy surpluses/deficits for the medium load forecast for OY 1995-96 through 2004-05 are presented in Table 12, and depicted graphically in Figure 8, page 38. The region experiences firm energy deficits in OY 1995-96 under the medium load forecast.

The components of the regional energy loads and resources balances for the medium load scenario is presented on line 38 in Exhibit 9, page 70. Monthly regional firm energy loads under the medium load forecast for OY 1995-96, 1999-2000, and 2004-05 are presented in Exhibits 10 through 12, on pages 74 through 79.

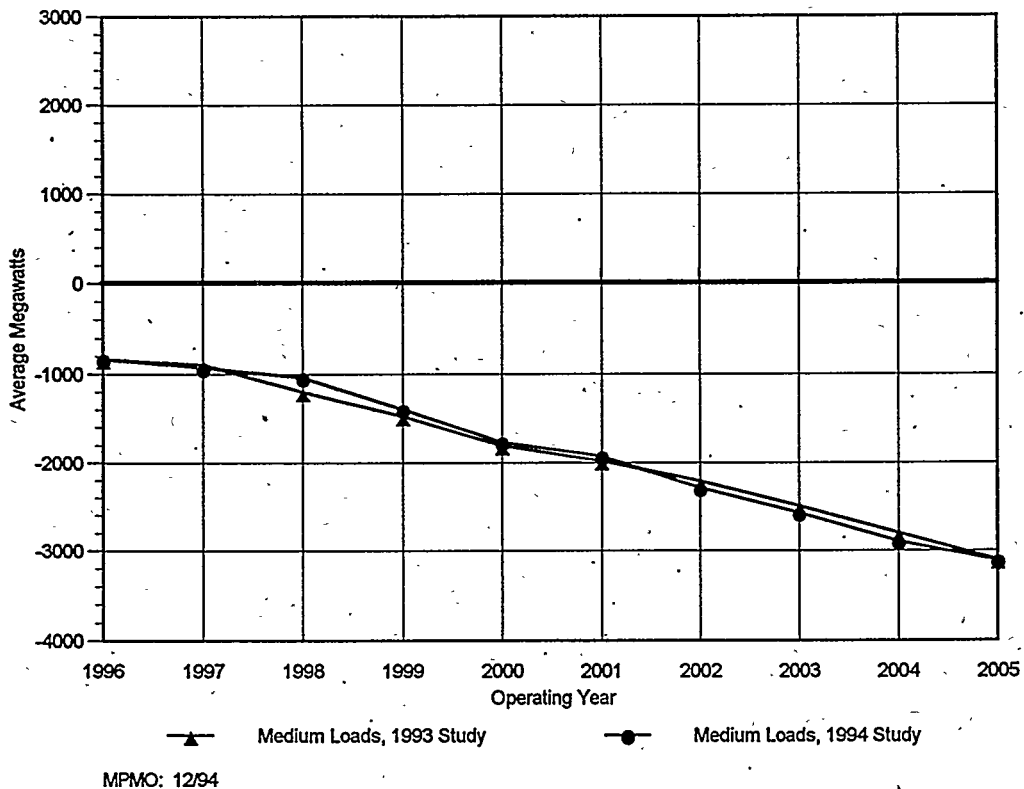
Table 12

Regional Firm Energy Surpluses/Deficits Assuming Existing Loads, Resources, and Contracts
 Energy In Average Megawatts

	OPERATING YEAR ¹									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Medium Load Scenario	-834	-928	-1,040	-1,399	-1,770	-1,933	-2,290	-2,573	-2,899	-3,117

Figure 8

Regional Firm Energy Surpluses/Deficits



¹Operating Year (OY) is the 12-month period August 1 through July 31. For example, OY 1995-96 is August 1, 1995, through July 31, 1996.

Regional Firm Capacity Surpluses/Deficits

Figure 9, page 40, shows the region's firm 50-hours-per-week capacity surpluses/deficits under the medium load forecast for OY 1995-96, 1999-2000, and 2004-05. This analysis incorporates all operating restrictions currently adopted by the hydroelectric project owners and the firm planning assumptions from the NMFS Draft Biological Opinion dated March 16, 1994.

The regional firm capacity surpluses/deficits incorporate the regional assumptions on page 33.

It is important to note that the capacity surplus values do not reflect potential nighttime return problems on the region's system. Peaking replacement energy from capacity sales is returned at night, when the output of the hydro system and other regional resources could be greater than the region's nighttime load. The following factors contribute to nighttime overgeneration:

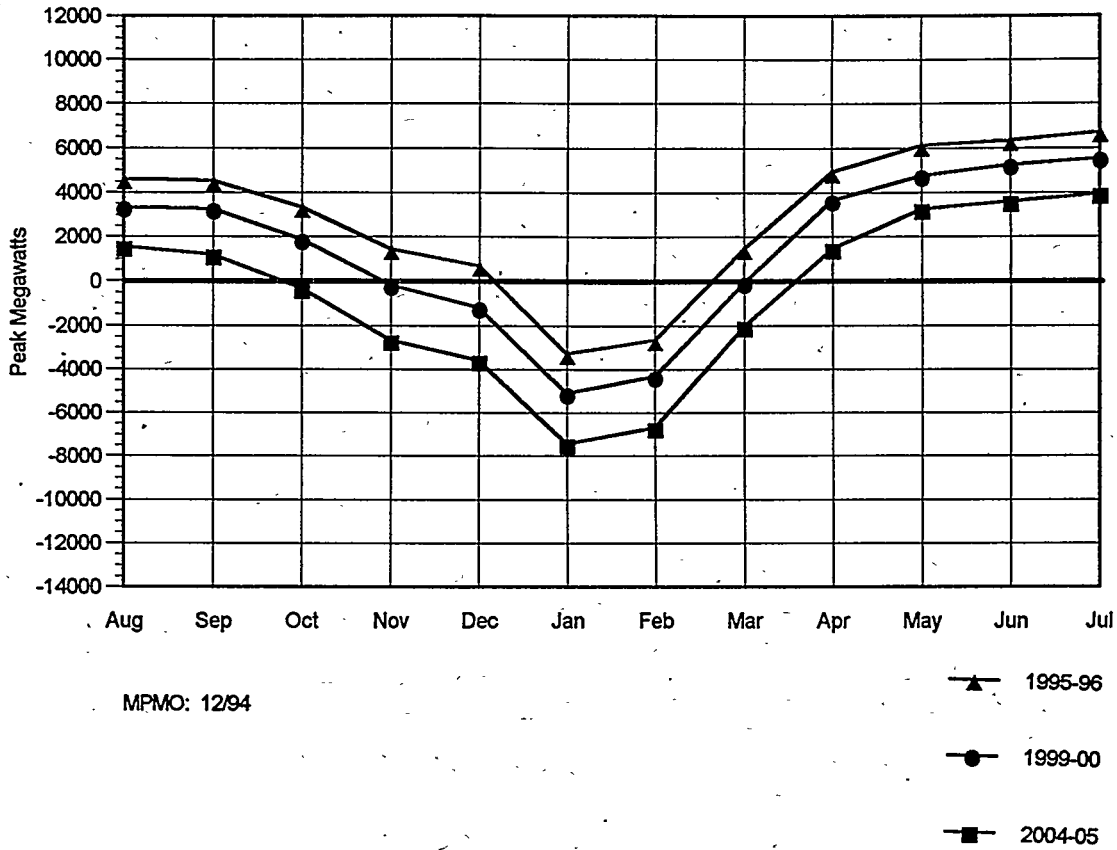
- ◆ Low regional system loads;
- ◆ Nonpower hydro requirements that dictate minimum streamflows; and
- ◆ The inability of the region's thermal resources to cycle from day to night.

These requirements restrict the ability to accept nighttime return energy, even though there is surplus generating capability during the daytime. These requirements are common in summer and fall, when the region's nighttime loads are low. Depending on water availability and economic conditions, return energy from these contracts could create low-priced forced energy sales and may reduce the region's ability to meet firm loads.

A 10-year summary of regional firm capacity surpluses/deficits for the medium load forecast is shown in Exhibit 13, page 82. Monthly firm capacity surpluses/deficits under the medium forecast for OY 1995-96, 1999-2000, and 2004-05 are presented in Exhibits 14 through 16 on pages 84 through 89.

Figure 9

**1995-96 Regional Firm Capacity Surpluses/Deficits
Under Extreme Weather Conditions¹**



¹Extreme weather conditions in the months of November, December, January, and February assume a 5-percent probability that the peak load will be exceeded.

SECTION VII
FEDERAL SYSTEM EXHIBITS

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EXHIBIT 1
FEDERAL SYSTEM CRITICAL PERIOD ENERGY
ANALYSIS FOR 10 OPERATING YEARS

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

M E D I U M L O A D S

1994 WHITEBOOK: 12/20/94
 RUN DATE: 12/20/94

OPERATING YEAR

MEGAWATTS	1995-96		1996-97		1997-98		1998-99		1999-00		2000-01		2001-02		2002-03		2003-04		2004-05		
	AVG		AVG		AVG		AVG		AVG		AVG		AVG		AVG		AVG		AVG		
LOADS																					
1 FEDERAL AGENCIES	145		145	147	147	148	149	149	150	151	152	153									
2 FEDERAL & GEN PUBLIC LOSSES	167		166	170	170	171	174	174	175	177	178	180									
3 USBR	67		67	68	68	67	68	68	68	68	68	68									
4 DSI ALUMINUM FIRM	1916		1941	1941	1941	1941	1941	1941	1941	1941	1941	1941									
5 DSI NON-ALUM FIRM	187		216	200	181	181	163	163	161	160	160	160									
6 DSI FIRM LOSSES	59		61	60	60	60	59	59	59	59	59	59									
7 SM & NON GEN PUB PSC PUR 1/	3215		3257	3122	3136	3194	3238	3238	3278	3324	3381	3430									
8 FIRM SYSTEM LOAD	5756		5853	5723	5722	5762	5792	5792	5832	5880	5939	5991									
TRANSFERS OUT																					
9 EXPORTS	285		278	276	296	559	558	558	555	634	788	777									
10 CONTRACTS OUT	601		372	394	395	392	365	365	341	341	341	341									
11 CSPE TO WEST GROUP UTIL	263		251	178	102	102	98	98	94	62	0	0									
12 GEN PUBLIC AGEN PSC PUR	1825		1868	1907	1960	2028	2068	2068	2100	2163	2222	2268									
13 IDU PSC PURCHASE	0		0	0	0	0	0	0	0	0	0	0									
14 FED DIVERSITY	0		0	0	0	0	0	0	0	0	0	0									
15 FIRM LOADS	8730		8622	8536	8651	8843	8881	8881	8921	9079	9289	9376									
INTERRUPTIBLE LOADS																					
16 DSI ALUM TOP QUARTILE	360		550	550	550	550	550	550	550	550	550	550									
17 DSI NON-ALUMINUM IQ	61		71	65	59	59	53	53	53	53	53	53									
18 TOP QUARTILE LOSSES	12		17	17	17	17	17	17	17	17	17	17									
19 TOTAL LOADS	9163		9260	9174	9284	9469	9502	9502	9542	9700	9909	9996									
HYDRO RESOURCES																					
20 REGULATED HYDRO	7174		7174	7174	7174	7174	7174	7174	7174	7174	7174	7174									
21 INDEPENDENT HYDRO	297		297	298	298	298	298	298	298	298	298	298									
22 MAY WATER BUDGET	-216		-227	-235	-221	-216	-216	-216	-206	-191	-183	-179									
23 JUNE COL. RIVER FLOW AUG 9/	-162		-180	-190	-178	-171	-169	-162	-162	-146	-138	-134									
24 SUS. PKNG. ADJUSTMENT	0		0	0	0	0	0	0	0	0	0	0									
25 CAN. ENT. NON-FED(CSPE)	55		53	50	38	23	22	22	21	14	0	0									
26 CAN. ENT. NON-FED(CNDA)	0		0	5	36	78	78	77	77	97	138	137									
27 RESTORATION	-26		-26	-26	-26	-26	-26	-26	-26	-26	-26	-26									
28 TOTAL HYDRO	7122		7091	7076	7121	7160	7166	7166	7176	7220	7263	7271									

EXHIBIT 1

EXHIBIT 1 (CONTINUED)

SHEET 2 OF 2

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

MEGAWATTS	MEDIUM LOADS											1994 WHITEBOOK: RUN DATE: 12/20/94
	OPERATING YEAR											
	1995-96 AVG	1996-97 AVG	1997-98 AVG	1998-99 AVG	1999-00 AVG	2000-01 AVG	2001-02 AVG	2002-03 AVG	2003-04 AVG	2004-05 AVG		
OTHER RESOURCES												
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0
31 RENEWABLES	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	297	257	182	161	123	123	123	123	123	123	123
34 CONTRACTS IN	15/	276	266	230	230	228	252	252	252	252	252	252
35 LARGE THERMAL	16/	819	821	842	842	878	878	878	878	878	878	878
36 NON-UTILITY GENERATION		6	175	183	183	183	183	183	183	183	183	183
37 RESOURCE ACQUISITIONS	17/	0	0	0	0	0	0	0	0	0	0	0
38 TOTAL RESOURCES		8519	8611	8513	8537	8542	8578	8613	8657	8699	8707	
RESERVES AND MAINTENANCE												
39 HYD, SM THRM & MISC RES	18/	0	0	0	0	0	0	0	0	0	0	0
40 LARGE THERMAL RESERVES	19/	0	0	0	0	0	0	0	0	0	0	0
41 SPINNING RESERVES	20/	0	0	0	0	0	0	0	0	0	0	0
42 DSI RESERVES	21/	0	0	0	0	0	0	0	0	0	0	0
43 FEDERAL HYDRO MAINT	22/	0	0	0	0	0	0	0	0	0	0	0
44 NET RESOURCES		8519	8611	8513	8537	8542	8578	8613	8657	8699	8707	
SURPLUS/DEFICITS												
45 FIRM SURPLUS/DEFICIT		-210	-12	-22	-114	-301	-303	-309	-422	-590	-669	
46 TOTAL SURPLUS/DEFICIT		-644	-650	-661	-747	-927	-923	-929	-1043	-1210	-1289	
47 EXTREME WEATHER ADJ.	23/	0	0	0	0	0	0	0	0	0	0	
48 FIRM S/D W/EXT WTHR ADJ.		-210	-12	-22	-114	-301	-303	-309	-422	-590	-669	
49 TOTAL S/D W/EXT WTHR ADJ.		-644	-650	-661	-747	-927	-923	-929	-1043	-1210	-1289	
50 POSS FED EXT WTHR OBLG	24/	0	0	0	0	0	0	0	0	0	0	
51 FIRM S/D W/EXT WTHR OBLIG		-210	-12	-22	-114	-301	-303	-309	-422	-590	-669	
52 TOTAL S/D W/EXT WTHR OBLIG		-644	-650	-661	-747	-927	-923	-929	-1043	-1210	-1289	

NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSW ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001. THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
 3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
 A. BGP TO BPA, SUPPLEMENTAL ENERGY
 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

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EXHIBITS 2 - 4
FEDERAL SYSTEM MONTHLY ENERGY ANALYSIS
UNDER MEDIUM LOADS FOR 1930 WATER
CONDITIONS

TABLE 2: FEDERAL SYSTEM

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

LOADS	MEDIUM LOADS												12 MO AVG		
	1995-96 OPERATING YEAR						1994 WHITEBOOK: 12/20/94 RUN DATE: 12/20/94								
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY		JUN	JUL
1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	142	139	135	139	147	163	157	157	150	150	139	133	132	141	145
FEDERAL AGENCIES	139	161	143	168	198	222	213	196	165	165	153	140	132	135	167
FEDERAL & GEN PUBLIC LOSSES	161	170	108	41	2	2	2	2	4	4	49	117	151	168	67
USBR	1858	170	1858	1898	1898	1898	1935	1941	1941	1941	1941	1941	1941	1941	1916
DSI ALUMINUM FIRM	170	53	170	173	189	181	189	196	196	196	196	196	196	189	187
DSI NON-ALUM FIRM	53	2989	53	56	61	64	66	66	62	60	60	57	57	56	59
DSI FIRM LOSSES	2989	5512	2803	2910	3372	3720	3841	3592	3284	3122	3102	2950	2943	3074	3216
SM & NON GEN PUB PSC PUR 1/	5512	5506	5270	5385	5867	6250	6403	6150	5802	5660	5640	5534	5552	5704	5756
FIRM SYSTEM LOAD	380	413	382	240	221	196	198	187	189	185	222	389	420	398	284
TRANSFERS OUT	413	268	486	702	951	1006	979	938	789	503	503	162	224	57	601
EXPORTS	268	1546	268	268	268	268	268	268	268	254	254	254	254	254	263
10 CONTRACTS OUT	1546	0	1605	1758	2059	2173	2283	2119	2008	1867	1858	1684	1574	1557	1853
11 CSPE TO WEST GROUP UTIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 GEN PUBLIC AGEN PSC PUR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 10U PSC PURCHASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 FED DIVERSITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 FIRM LOADS	8119	8130	8010	8353	9366	9893	10132	9661	9056	8468	8477	8023	8024	7970	8757
INTERRUPTIBLE LOADS	170	57	170	170	170	170	170	550	550	550	550	550	550	550	360
16 DSI ALUM TOP QUARTILE	57	6	57	57	62	59	62	64	64	64	64	64	64	62	61
17 DSI NON-ALUMINUM IQ	6	6	6	6	7	7	7	19	18	17	17	17	17	16	12
18 TOP QUARTILE LOSSES	8352	8362	8243	8586	9605	10129	10371	10295	9688	9100	9108	8654	8655	8597	9190
19 TOTAL LOADS	6016	407	5694	5683	6845	7408	6421	6318	6230	7560	10953	10515	8725	7295	7209
HYDRO RESOURCES	407	0	321	316	289	342	192	339	242	236	259	347	381	363	313
20 REGULATED HYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 INDEPENDENT HYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 JUNE COL. RIVER FLOW AUG 9/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 SUS. PKNG. ADJUSTMENT	56	56	56	56	56	56	56	56	56	54	54	54	54	54	55
25 CAN. ENT. NON-FED(CSPE)	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	0
26 CAN. ENT. NON-FED(CNDA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 RESTORATION	6453	6614	6045	6029	7164	7780	6643	6687	6502	7824	11240	7979	7321	7686	7158
28 TOTAL HYDRO	6453	6614	6045	6029	7164	7780	6643	6687	6502	7824	11240	7979	7321	7686	7158

EXHIBIT 2 (CONTINUED)

SHEET 2 OF 2

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	MEDIUM LOADS												12/20/94 RUN DATE: 12/20/94	
	1995-96 OPERATING YEAR						1994 WHITEBOOK:							
	AUG 1-15 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15 16-30	MAY	JUN	JUL		12 MO AVG
OTHER RESOURCES														
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 RENEWABLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	283	391	458	526	501	456	249	220	121	18	47	297	297
34 CONTRACTS IN	15/	96	370	382	358	376	391	402	384	322	38	29	276	276
35 LARGE THERMAL	16/	983	983	983	983	983	983	983	983	983	0	983	819	819
36 NON-UTILITY GENERATION		0	0	0	0	17	17	12	9	9	6	4	6	6
37 RESOURCE ACQUISITIONS	17/	0	0	0	0	0	0	0	0	0	0	0	0	0
38 TOTAL RESOURCES	7815	7976	7815	8987	9647	8520	8534	8148	9420	11692	8023	8749	8556	8556
RESERVES AND MAINTENANCE														
39 HYD. SM THERM & MISC RES	18/	0	0	0	0	0	0	0	0	0	0	0	0	0
40 LARGE THERMAL RESERVES	19/	0	0	0	0	0	0	0	0	0	0	0	0	0
41 SPINNING RESERVES	20/	0	0	0	0	0	0	0	0	0	0	0	0	0
42 DST RESERVES	21/	0	0	0	0	0	0	0	0	0	0	0	0	0
43 FEDERAL HYDRO MAINT.	22/	0	0	0	0	0	0	0	0	0	0	0	0	0
44 NET RESOURCES	7815	7976	7815	8987	9647	8520	8534	8148	9420	11692	8023	8749	8556	8556
SURPLUS/DEFICITS														
45 FIRM SURPLUS/DEFICIT	-305	-154	-195	-379	-245	-1611	-1128	-908	952	3215	0	779	-201	-201
46 TOTAL SURPLUS/DEFICIT	-537	-387	-428	-617	-482	-1850	-1761	-1540	320	2584	-631	152	-634	-634
47 EXTREME WEATHER ADJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48 FIRM S/D W/EXT WEATHER ADJ.	-305	-154	-195	-379	-245	-1611	-1128	-908	952	3215	0	779	-201	-201
49 TOTAL S/D W/EXT WTHR. ADJ.	-537	-387	-428	-617	-482	-1850	-1761	-1540	320	2584	-631	152	-634	-634
50 POSS FED EXT WTHR. OBLG 24/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51 FIRM S/D W/EXT WTHR. OBLIG	-305	-154	-195	-379	-245	-1611	-1128	-908	952	3215	0	779	-201	-201
52 TOTAL S/D W/EXT WTHR. OBLIG	-537	-387	-428	-617	-482	-1850	-1761	-1540	320	2584	-631	152	-634	-634

NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSH ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001.
 THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
 3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
 A. BGP TO BPA, SUPPLEMENTAL ENERGY
 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

EXHIBIT 3 (CONTINUED)

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	M E D I U M L O A D S												12 MO AVG			
	1999-0 OPERATING YEAR															
	AUG 1-15 16-31	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15 16-30	APR 16-30	MAY		JUN	JUL	
OTHER RESOURCES																
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 RENOVABLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	29	62	140	206	274	248	204	144	115	94	0	18	50	123	
34 CONTRACTS IN	15/	36	295	295	295	295	295	295	295	295	295	36	295	36	230	
35 LARGE THERMAL	16/	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	0	505	1054	845	
36 NON-UTILITY GENERATION		53	55	308	314	318	318	317	312	60	60	40	54	53	183	
37 RESOURCE ACQUISITIONS	17/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
38 TOTAL RESOURCES	7626	7787	7512	7827	9034	9722	8559	8558	8308	9350	11735	8104	8111	8925	8576	
RESERVES AND MAINTENANCE																
39 HYD, SM THRM & MISC RES	18/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 LARGE THERMAL RESERVES	19/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 SPINNING RESERVES	20/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 DSI RESERVES	21/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43 FEDERAL HYDRO MAINT	22/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44 NET RESOURCES		7626	7787	7512	7827	9034	8559	8558	8308	9350	11735	8104	8111	8925	8576	
SURPLUS/DEFICITS																
45 FIRM SURPLUS/DEFICIT		-507	-356	-512	-593	-552	-1701	-1245	-810	752	3103	0	0	737	-294	
46 TOTAL SURPLUS/DEFICIT		-1136	-986	-1141	-1222	-1181	-2326	-1874	-1437	125	2476	-625	-625	119	-920	
47 EXTREME WEATHER ADJ.	23/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
48 FIRM S/D W/EXT WTHR. ADJ.		-507	-356	-512	-593	-552	-1701	-1245	-810	752	3103	0	0	737	-294	
49 TOTAL S/D W/EXT WTHR. ADJ.		-1136	-986	-1141	-1222	-1181	-2326	-1874	-1437	125	2476	-625	-625	119	-920	
50 POSS FED EXT WTHR. OBLG 24/		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
51 FIRM S/D W/EXT WTHR. OBLIG		-507	-356	-512	-593	-552	-1701	-1245	-810	752	3103	0	0	737	-294	
52 TOTAL S/D W/EXT WTHR. OBLIG		-1136	-986	-1141	-1222	-1181	-2326	-1874	-1437	125	2476	-625	-625	119	-920	

NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSM ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001. THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
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 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

TABLE 2: FEDERAL SYSTEM

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

LOADS	M E D I U M L O A D S												1994 WHITEBOOK: RUN DATE: 12/20/94			
	2004- 5 OPERATING YEAR															
	1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30		MAY	JUN	JUL
1 FEDERAL AGENCIES	150	150	142	146	155	172	165	167	159	146	146	140	139	149	152	
2 FEDERAL & GEN PUBLIC LOSSES	147	147	148	182	214	240	230	206	179	166	166	151	147	149	180	
3 USBR	162	162	109	42	1941	1941	1941	2	4	50	50	118	152	169	68	
4 DSI ALUMINUM FIRM	1941	1941	1941	1941	1941	1941	1941	1941	1941	1941	1941	1941	1941	1941	1941	
5 DSI NON-ALUM FIRM	164	164	164	164	165	140	148	164	164	164	164	164	164	157	160	
6 DSI FIRM LOSSES	55	55	55	57	61	65	65	65	61	59	59	57	57	54	59	
7 SM & NON GEN PUB PSC PUR 1/	3230	3224	3042	3125	3568	3897	4021	3795	3485	3343	3303	3174	3178	3318	3429	
8 FIRM SYSTEM LOAD	5849	5843	5601	5657	6106	6457	6572	6340	5993	5869	5829	5745	5778	5937	5990	
TRANSFERS OUT																
9 EXPORTS	825	825	830	807	775	742	745	732	732	728	728	770	812	826	777	
10 CONTRACTS OUT	13	13	86	152	747	801	775	731	356	329	329	1	62	34	341	
11 CSPE TO WEST GROUP UTIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12 GEN PUBLIC AGEN PSC PUR	2009	2027	2061	2200	2506	2618	2723	2566	2447	2319	2269	2114	2016	2007	2297	
13 IOU PSC PURCHASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14 FED DIVERSITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15 FIRM LOADS	8696	8708	8577	8816	10133	10617	10815	10369	9528	9245	9155	8629	8668	8804	9405	
INTERRUPTIBLE LOADS																
16 DSI ALUM TOP QUARTILE	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	
17 DSI NON-ALUMINUM IQ	55	55	55	55	55	47	49	55	55	55	55	55	55	52	53	
18 TOP QUARTILE LOSSES	16	16	16	16	18	19	19	19	18	17	17	16	16	16	17	
19 TOTAL LOADS	9316	9328	9197	9437	10756	11233	11433	10992	10150	9866	9777	9251	9289	9422	10025	
HYDRO RESOURCES																
20 REGULATED HYDRO	6016	6228	5694	5683	6845	7408	6421	6318	6230	7560	10953	10515	8725	7295	7209	
21 INDEPENDENT HYDRO	407	356	321	316	289	342	192	339	242	236	259	347	381	363	313	
22 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	-2390	0	0	-199	
23 JUNE COL. RIVER FLOW AUG 9/	0	0	0	0	0	0	0	0	0	0	0	0	-1414	0	-118	
24 SUS. PKNG. ADJUSTMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25 CAN. ENT. NON-FED(CSPE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26 CAN. ENT. NON-FED(CNDA)	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	
27 RESTORATION	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	
28 TOTAL HYDRO	6534	6695	6126	6110	7245	7861	6724	6768	6583	7907	11323	8583	7803	7769	7317	

EXHIBIT 4

EXHIBIT 4 (CONTINUED)

SHEET 2 OF 2

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

M E D I U M L O A D S												1994 WHITEBOOK: 12/20/94				
2004-5 OPERATING YEAR												RUN DATE: 12/20/94				
1930 WATER YEAR	AUG	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	APR	MAY	JUN	JUL	12 MO	
ENERGY IN AVERAGE MEGAWATTS	1-15	16-31								1-15	16-30				AVG	
OTHER RESOURCES																
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 RENEWABLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	29	62	140	206	274	248	204	144	114	93	0	18	50	123	
34 CONTRACTS IN	15/	159	418	418	266	266	266	266	266	266	266	0	266	159	252	
35 LARGE THERMAL	16/	1054	1054	1054	1054	1054	1054	1054	1054	1054	0	0	527	1054	878	
36 NON-UTILITY GENERATION	53	53	55	308	314	318	318	317	312	60	60	40	54	53	183	
37 RESOURCE ACQUISITIONS	17/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
38 TOTAL RESOURCES	7829	7990	7714	8029	9085	9773	8610	8609	8359	9401	11742	8629	8668	9084	8754	
RESERVES AND MAINTENANCE																
39 HYD, SM THRM & MISC RES	18/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 LARGE THERMAL RESERVES	19/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 SPINNING RESERVES	20/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 DSI RESERVES	21/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43 FEDERAL HYDRO MAINT	22/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44 NET RESOURCES	7829	7990	7714	8029	9085	9773	8610	8609	8359	9401	11742	8629	8668	9084	8754	
SURPLUS/DEFICITS																
45 FIRM SURPLUS/DEFICIT	-867	-718	-863	-786	-1048	-844	-2205	-1760	-1169	156	2587	0	0	280	-651	
46 TOTAL SURPLUS/DEFICIT	-1488	-1339	-1483	-1407	-1671	-1460	-2823	-2383	-1791	-465	1965	-621	-621	-338	-1272	
47 EXTREME WEATHER ADJ.	23/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48 FIRM S/D W/EXT WTHR. ADJ.	-867	-718	-863	-786	-1048	-844	-2205	-1760	-1169	156	2587	0	0	280	-651	
49 TOTAL S/D W/EXT WTHR. ADJ.	-1488	-1339	-1483	-1407	-1671	-1460	-2823	-2383	-1791	-465	1965	-621	-621	-338	-1272	
50 POSS FED EXT WTHR. OBLG 24/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51 FIRM S/D W/EXT WTHR. OBLG	-867	-718	-863	-786	-1048	-844	-2205	-1760	-1169	156	2587	0	0	280	-651	
52 TOTAL S/D W/EXT WTHR. OBLG	-1488	-1339	-1483	-1407	-1671	-1460	-2823	-2383	-1791	-465	1965	-621	-621	-338	-1272	

- NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSM ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001. THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
 3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
 A. BGP TO BPA, SUPPLEMENTAL ENERGY
 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

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EXHIBIT 5
FEDERAL SYSTEM MONTHLY 50-HOUR CAPACITY
SURPLUS/DEFICIT UNDER THE FIVE LOAD
SCENARIOS FOR 1930 WATER CONDITIONS

EXHIBIT 5

TABLE F-1: 50-HOUR SUSTAINED PEAKING
BASE CASE: EXISTING FEDERAL CONTRACTS

FEDERAL SYSTEM FIRM 50-HOUR CAPACITY SURPLUS/DEFICIT
INCLUDING EXTREME WEATHER ADJUSTMENTS DURING NOVEMBER THROUGH FEBRUARY

10 YEAR MONTHLY SUMMARY

ASSUMING NO NIGHTTIME RETURN CONSTRAINTS,
EXISTING FEDERAL CONTRACTS, AND NO NEW RESOURCE ACQUISITIONS

M E D I U M L O A D S

1994 WHITEBOOK: 12/20/94
RUN DATE: 12/20/94

1930 WATER YEAR	AUG		SEP		OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUN		JUL	
	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31
1995-96	2949	3275	2179	1196	1197	1581	-1719	-1364	817	4262	4731	5068	3985	4541										
1996-97	2727	3057	2033	1551	1450	1864	-1472	-1124	1163	4402	4791	5599	4497	4734										
1997-98	2952	3292	2456	1578	1434	1854	-1451	-1106	1219	4408	4797	5587	4511	4771										
1998-99	2963	3306	2215	1326	1150	1670	-1648	-1301	1072	4049	4533	5209	4152	4417										
1999-00	2854	3197	2110	1224	724	1142	-2167	-1818	610	3838	4322	5092	4308	4670										
2000-01	2864	3204	2111	1222	678	1140	-2131	-1800	614	3842	4327	5081	4324	4700										
2001-02	3162	3503	2387	1751	628	1094	-2214	-1886	814	3675	4284	5051	4304	4889										
2002-03	3077	3418	2304	1646	497	962	-2345	-2027	609	3241	3830	4619	3880	4460										
2003-04	2649	2990	1892	1212	9	481	-2825	-2516	273	3207	3691	4486	3755	4341										
2004-05	2533	2874	1764	1078	-152	325	-2987	-2688	136	2965	3709	4404	3680	4273										

PEAK IN MEGAWATTS

- NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSM ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001.
THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
A. BGP TO BPA, SUPPLEMENTAL ENERGY
B. SCE TO BPA, SUPPLEMENTAL ENERGY
C. SCE TO BPA, OPTION ENERGY

EXHIBITS 6 - 8
FEDERAL SYSTEM MONTHLY CAPACITY ANALYSIS
UNDER MEDIUM LOADS FOR 1930 WATER
CONDITIONS

EXHIBIT 6

SHEET 1 OF 2

TABLE 2: FEDERAL SYSTEM

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

LOADS	MEDIUM LOADS													
	1995-96 OPERATING YEAR													
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL
1930 WATER YEAR PEAK IN MEGAWATTS	1994 WHITEBOOK: 12/20/94 RUN DATE: 12/20/94													
1 FEDERAL AGENCIES	191	191	182	191	199	228	213	220	209	195	195	184	186	187
2 FEDERAL & GEN PUBLIC LOSSES	209	209	242	305	351	388	401	363	319	291	291	253	208	204
3 USBR	199	199	157	75	7	4	4	3	9	99	99	169	197	204
4 DSI ALUMINUM FIRM	1886	1886	1886	1927	1927	1927	1965	1971	1970	1971	1971	1971	1970	1971
5 DSI NON-ALUM FIRM	189	189	189	193	210	201	210	218	218	218	218	218	218	210
6 DSI FIRM LOSSES	60	60	62	68	75	79	85	83	79	74	74	72	66	63
7 SM & NON GEN PUB PSC PUR 1/	4180	4180	4181	4767	5288	5703	6022	5665	5368	5147	5147	4761	4409	4438
8 FIRM SYSTEM LOAD	6914	6914	6899	7526	8057	8530	8900	8523	8172	7995	7995	7628	7254	7277
TRANSFERS OUT														
9 EXPORTS	1110	1110	1110	734	431	431	431	430	431	430	430	904	1161	1161
10 CONTRACTS OUT	2082	2082	2193	2559	2865	2979	2953	2909	2691	2318	2318	2023	2123	1680
11 CSPE TO WEST GROUP UTIL	576	576	576	576	576	576	576	576	576	486	486	486	486	486
12 GEN PUBLIC AGEN PSC PUR	1247	1215	1334	1742	2060	2327	2394	2498	2148	2140	2132	1656	1349	1217
13 IOU PSC PURCHASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 FED DIVERSITY	-1103	-1099	-1132	-1217	-1134	-854	-879	-856	-1131	-1058	-1057	-1124	-1139	-1068
15 FIRM LOADS	10826	10798	10981	11921	12855	13990	14375	14081	12887	12312	12357	11574	11234	10753
INTERRUPTIBLE LOADS														
16 DSI ALUM TOP QUARTILE	173	173	173	173	173	173	173	558	558	558	558	558	558	558
17 DSI NON-ALUMINUM IQ	63	63	63	63	69	66	69	71	71	71	71	71	71	69
18 TOP QUARTILE LOSSES	7	7	7	8	8	9	9	24	23	21	21	21	19	18
19 TOTAL LOADS	11069	11041	11223	12164	13105	14237	14626	14734	13540	12963	13008	12224	11883	11398
HYDRO RESOURCES														
20 REGULATED HYDRO	20269	20494	20524	20581	20945	20915	20884	20844	20668	20046	19713	19465	19673	19636
21 INDEPENDENT HYDRO	687	681	684	694	674	636	632	760	765	792	792	690	683	669
22 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 JUNE COL. RIVER FLOW AUG 9/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 SUS. PKNG. ADJUSTMENT	-4797	-5203	-6196	-6200	-4169	-3307	-6646	-6269	-6623	-2913	-1200	-1221	-3000	-2726
25 CAN. ENT. NON-FED(CSPE)	138	138	138	138	138	138	138	138	138	115	115	115	115	115
26 CAN. ENT. NON-FED(CNDA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 RESTORATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 TOTAL HYDRO	16297	16110	15150	15213	17588	18382	15008	15473	14948	18040	19420	19049	17471	17694

EXHIBIT 6 (CONTINUED)

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

1930 WATER YEAR PEAK IN MEGAWATTS	MEDIUM LOADS												1994 WHITEBOOK: RUN DATE: 12/20/94				
	1995-96 OPERATING YEAR																
	AUG 1-15 16-31	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15 16-30	APR 16-30	MAY		JUN	JUL		
OTHER RESOURCES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 RENEWABLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	333	362	228	279	333	307	263	235	207	89	0	18	34	0	0	0
34 CONTRACTS IN	15/	67	67	67	67	67	68	65	68	63	63	10	10	0	0	0	0
35 LARGE THERMAL	16/	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	0	0	1170	0	0	0
36 NON-UTILITY GENERATION	17/	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
37 RESOURCE ACQUISITIONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 TOTAL RESOURCES	17867	17680	16749	16678	19104	19952	16554	16972	16422	19481	19573	19060	17500	18899	17500	18899	18899
RESERVES AND MAINTENANCE	18/	-1048	-1059	-1060	-1064	-1081	-1078	-1080	-1072	-1042	-1025	-1008	-1018	-1015	-1018	-1018	-1015
39 HVD, SM THRM & MISC RES	19/	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175
40 LARGE THERMAL RESERVES	20/	-316	-323	-297	-299	-358	-328	-324	-311	-383	-409	-407	-379	-378	-379	-378	-378
41 SPINNING RESERVES	21/	711	711	712	729	737	753	757	755	754	754	753	751	747	751	747	747
42 DSI RESERVES	22/	-3263	-2761	-2770	-2752	-2705	-1866	-1408	-1883	-1915	-2061	-1805	-1756	-1635	-1635	-1635	-1635
43 FEDERAL HYDRO MAINT																	
44 NET RESOURCES	13776	14073	13159	13117	15521	17169	14320	14266	13705	16573	17088	16641	15219	15294	15219	15294	15294
SURPLUS/DEFICITS																	
45 FIRM SURPLUS/DEFICIT	2949	3275	2179	1196	2666	3179	-55	186	817	4262	4731	5068	3985	4541	3985	4541	4541
46 TOTAL SURPLUS/DEFICIT	2707	3033	1936	953	2416	2932	-306	-468	165	3610	4080	4417	3336	3895	3336	3895	3895
47 EXTREME WEATHER ADJ.	0	0	0	0	-4	-5	-4	-4	0	0	0	0	0	0	0	0	0
48 FIRM S/D W/EXT WEATHER ADJ.	2949	3275	2179	1196	2662	3174	-59	182	817	4262	4731	5068	3985	4541	3985	4541	4541
49 TOTAL S/D W/EXT WTHR. ADJ.	2707	3033	1936	953	2412	2927	-310	-472	165	3610	4080	4417	3336	3895	3336	3895	3895
50 POSS FED EXT WTHR. OBLG 24/	0	0	0	0	-1465	-1594	-1660	-1546	0	0	0	0	0	0	0	0	0
51 FIRM S/D W/EXT WTHR. OBLG	2949	3275	2179	1196	1197	1581	-1719	-1364	817	4262	4731	5068	3985	4541	3985	4541	4541
52 TOTAL S/D W/EXT WTHR. OBLG	2707	3033	1936	953	947	1334	-1970	-2018	165	3610	4080	4417	3336	3895	3336	3895	3895

NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSM ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001. THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
 3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
 A. BGP TO BPA, SUPPLEMENTAL ENERGY
 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

LOADS	M E D I U M L O A D S													
	1999- 0 OPERATING YEAR													
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL
1930 WATER YEAR PEAK IN MEGAWATTS														
	196	196	186	197	205	235	219	226	215	199	199	189	190	192
FEDERAL AGENCIES	202	202	235	305	352	393	403	361	320	290	290	248	212	205
FEDERAL & GEN PUBLIC LOSSES	199	199	157	76	7	4	4	3	9	99	99	169	197	204
USBR	1970	1970	1971	1970	1971	1971	1971	1971	1970	1971	1971	1971	1971	1971
DSI ALUMINUM FIRM	216	216	214	212	210	182	188	205	204	202	202	200	199	177
DSI NON-ALUM FIRM	63	63	65	70	76	79	84	83	78	74	74	72	65	62
DSI FIRM LOSSES	4332	4332	4361	4962	5456	5857	6185	5839	5550	5304	5327	4936	4561	4593
SM & NON GEN PUB PSC PUR 1/	7178	7178	7189	7792	8277	8721	9054	8688	8346	8139	8162	7785	7395	7404
8 FIRM SYSTEM LOAD														
TRANSFERS OUT														
9 EXPORTS	1126	1126	1126	1111	1018	1019	1019	1018	1019	1018	1070	1177	1178	1178
10 CONTRACTS OUT	1533	1533	1644	2010	2480	2591	2565	2520	2221	1885	1885	1491	1592	1423
11 CSPE TO WEST GROUP UTIL	200	200	200	200	200	200	200	200	200	192	192	192	192	192
12 GEN PUBLIC AGEN PSC PUR	1550	1497	1579	1995	2374	2639	2692	2833	2430	2326	2410	1961	1616	1455
13 IOU PSC PURCHASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 FED DIVERSITY	-1042	-1035	-1067	-1160	-1107	-834	-858	-839	-1094	-1020	-1030	-1082	-1087	-1048
15 FIRM LOADS	10545	10499	10672	11948	13242	14336	14672	14421	13122	12540	12689	11524	10886	10604
INTERRUPTIBLE LOADS														
16 DSI ALUM TOP QUARTILE	558	558	558	558	558	558	558	558	558	558	558	558	558	558
17 DSI NON-ALUMINUM TQ	71	71	70	69	69	59	62	67	67	66	66	66	65	58
18 TOP QUARTILE LOSSES	18	18	19	20	22	23	24	24	23	21	21	21	19	18
19 TOTAL LOADS	11192	11146	11319	12596	13891	14977	15316	15070	13770	13186	13334	12169	11528	11238
HYDRO RESOURCES														
20 REGULATED HYDRO	20269	20494	20524	20581	20945	20915	20884	20844	20668	20046	19713	19465	19673	19636
21 INDEPENDENT HYDRO	687	681	684	694	674	636	632	760	765	792	792	690	683	669
22 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 JUNE COL RIVER FLOW AUG 9/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 SUS. PKNG. ADJUSTMENT 10/	-4794	-5200	-6193	-6185	-4154	-3292	-6631	-6254	-6608	-2910	-1197	-1218	-2997	-2723
25 CAN. ENT. NON-FED(CSPE) 11/	46	46	46	46	46	46	46	46	46	43	43	43	43	43
26 CAN. ENT. NON-FED(CNDA) 12/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 RESTORATION 13/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 TOTAL HYDRO	16208	16021	15061	15136	17511	18305	14931	15396	14871	17971	19351	18980	17402	17625

1994 WHITEBOOK: 12/20/94
 RUN DATE: 12/20/94

EXHIBIT 7 (CONTINUED)

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

1930 WATER YEAR PEAK IN MEGAWATTS	MEDIUM LOADS												1994 WHITEBOOK: RUN DATE: 12/20/94		
	1999-0 OPERATING YEAR														
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY		JUN	JUL
OTHER RESOURCES															
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 RENEWABLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	13	42	108	161	215	189	145	117	89	0	0	18	34	0
34 CONTRACTS IN	15/	8	8	8	8	8	8	8	8	8	8	8	8	8	8
35 LARGE THERMAL	16/	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
36 NON-UTILITY GENERATION	56	56	56	304	304	304	304	304	304	56	56	56	56	56	56
37 RESOURCE ACQUISITIONS	17/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 TOTAL RESOURCES	17455	17268	16337	16726	19154	20002	16602	17023	16470	19294	19504	19044	17484	18893	
RESERVES AND MAINTENANCE															
39 HYD, SM THRM & MISC RES	18/	-1051	-1062	-1079	-1096	-1093	-1091	-1095	-1087	-1045	-1028	-1011	-1021	-1018	
40 LARGE THERMAL RESERVES	19/	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	
41 SPINNING RESERVES	20/	-316	-323	-297	-358	-399	-328	-324	-311	-383	-409	-407	-379	-378	
42 DSI RESERVES	21/	749	749	749	752	743	747	752	750	748	748	747	744	736	
43 FEDERAL HYDRO MAINT	22/	-3263	-2761	-2770	-2752	-1866	-1408	-1883	-1915	-2061	-1805	-1756	-1635	-2785	
44 NET RESOURCES		13399	13696	12782	13171	15571	14347	14298	13733	16378	17010	16616	15194	15273	
SURPLUS/DEFICITS															
45 FIRM SURPLUS/DEFICIT		2854	3197	2110	1224	2330	2876	-324	610	3838	4322	5092	4308	4670	
46 TOTAL SURPLUS/DEFICIT		2206	2550	1463	576	1680	2235	-969	-37	3192	3676	4447	3666	4035	
47 EXTREME WEATHER ADJ.		0	0	0	0	-4	-5	-4	0	0	0	0	0	0	
48 FIRM S/D W/EXT WEATHER ADJ.		2854	3197	2110	1224	2326	2871	-328	610	3838	4322	5092	4308	4670	
49 TOTAL S/D W/EXT WTHR. ADJ.		2206	2550	1463	576	1676	2230	-777	-37	3192	3676	4447	3666	4035	
50 POSS FED EXT WTHR. OBLG		0	0	0	0	-1601	-1729	-1839	0	0	0	0	0	0	
51 FIRM S/D W/EXT WTHR. OBLIG		2854	3197	2110	1224	724	1142	-2167	610	3838	4322	5092	4308	4670	
52 TOTAL S/D W/EXT WTHR. OBLIG		2206	2550	1463	576	75	501	-2812	-37	3192	3676	4447	3666	4035	

- NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSW ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001. THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
 3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
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 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

EXHIBIT 8

TABLE 2: FEDERAL SYSTEM

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

M E D I U M L O A D S

1994 WHITEBOOK: 12/20/94
RUN DATE: 12/20/94

2004- 5 OPERATING YEAR

1930 WATER YEAR
PEAK IN MEGAWATTS

	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL
LOADS														
1 FEDERAL AGENCIES	202	202	191	203	211	243	226	234	222	205	205	195	196	197
2 FEDERAL & GEN PUBLIC LOSSES	205	205	232	312	361	401	414	362	326	296	296	254	216	211
3 USBR	200	200	158	76	7	4	4	3	9	100	100	170	198	205
4 DSI ALUMINUM FIRM	1971	1971	1971	1971	1971	1970	1971	1971	1971	1971	1971	1971	1971	1971
5 DSI NON-ALUM FIRM	182	182	182	182	182	156	164	182	182	183	183	182	182	174
6 DSI FIRM LOSSES	62	62	65	69	75	79	83	82	77	73	73	71	65	62
7 SM & NON GEN PUB PSC PUR 1/	4725	4725	4826	5467	5924	6306	6653	6322	6041	5819	5796	5385	4985	4976
8 FIRM SYSTEM LOAD	7547	7547	7625	8280	8731	9159	9515	9156	8828	8647	8624	8228	7813	7796
TRANSFERS OUT														
9 EXPORTS	1555	1555	1555	1540	1447	1447	1447	1447	1447	1447	1447	1555	1555	1555
10 CONTRACTS OUT	1216	1216	1327	1393	2156	2210	2184	2140	1607	1580	1580	1203	1303	1237
11 CSPE TO WEST GROUP UTIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 GEN PUBLIC AGEN PSC PUR	1857	1807	1849	2283	2673	2964	3016	3171	2756	2755	2654	2297	1913	1758
13 IOU PSC PURCHASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 FED DIVERSITY	-1067	-1060	-1095	-1159	-1132	-849	-875	-856	-1095	-1065	-1053	-1120	-1120	-1089
15 FIRM LOADS	11109	11065	11261	12338	13874	14932	15288	15058	13543	13363	13252	12163	11465	11256
INTERRUPTIBLE LOADS														
16 DSI ALUM TOP QUARTILE	558	558	558	558	558	558	558	558	558	558	558	558	558	558
17 DSI NON-ALUMINUM TQ	61	61	61	61	61	61	61	61	61	61	61	61	61	61
18 TOP QUARTILE LOSSES	18	18	19	20	22	23	24	24	22	21	21	20	19	18
19 TOTAL LOADS	11746	11702	11898	12977	14515	15565	15925	15701	14185	14004	13892	12803	12103	11891
HYDRO RESOURCES														
20 REGULATED HYDRO	20269	20494	20524	20581	20945	20915	20884	20844	20668	20046	19713	19465	19673	19636
21 INDEPENDENT HYDRO	687	681	684	694	674	636	632	760	765	792	792	690	683	669
22 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 JUNE COL. RIVER FLOW AUG 9/	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 SUS. PKNG. ADJUSTMENT	-4794	-5201	-6193	-6185	-4154	-3292	-6631	-6254	-6608	-2910	-1197	-1218	-2997	-2723
25 CAN. ENT. NON-FED(CSPE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 CAN. ENT. NON-FED(CNDA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 RESTORATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 TOTAL HYDRO	16162	15974	15015	15090	17465	18259	14885	15350	14825	17928	19308	18937	17359	17582

EXHIBIT 8 (CONTINUED)

TABLE 2: FEDERAL SYSTEM (CONTINUED)

SUMMARY OF FEDERAL SYSTEM LOADS AND RESOURCES IN THE PACIFIC NORTHWEST REGION UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

1930 WATER YEAR PEAK IN MEGAWATTS	MEDIUM LOADS												1994 WHITEBOOK: RUN DATE: 12/20/94				
	2004-5 OPERATING YEAR																
	AUG 1-15 16-31	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15 16-30	APR 16-30	MAY		JUN	JUL		
OTHER RESOURCES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 SMALL THERMAL & MISC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 COMBUSTION TURBINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 RENEWABLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 COGENERATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 IMPORTS	14/	13	42	108	161	215	189	145	117	89	89	0	0	0	0	0	34
34 CONTRACTS IN	15/	308	308	308	8	8	8	1170	1170	8	8	8	8	8	8	8	308
35 LARGE THERMAL	16/	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	0	0	0	0	0	1170
36 NON-UTILITY GENERATION	56	56	56	304	304	304	304	304	304	56	56	56	56	56	56	56	56
37 RESOURCE ACQUISITIONS	17/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 TOTAL RESOURCES	17709	17521	16591	16980	19108	19956	16556	16977	16424	19251	19461	19001	17441	19150			
RESERVES AND MAINTENANCE																	
39 HYD. SM THRM & MISC RES	18/	-1051	-1061	-1063	-1079	-1096	-1093	-1091	-1087	-1045	-1028	-1011	-1021	-1018			
40 LARGE THERMAL RESERVES	19/	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175			
41 SPINNING RESERVES	20/	-316	-323	-297	-299	-358	-328	-324	-311	-383	-409	-407	-379	-378			
42 DSI RESERVES	21/	738	738	739	740	742	739	744	743	742	742	741	739	735			
43 FEDERAL HYDRO MAINT	22/	-3263	-2761	-2770	-2752	-2705	-1866	-1408	-1883	-1915	-2061	-1805	-1756	-1635			
44 NET RESOURCES		13641	13939	13025	13415	15516	14293	14244	13679	16328	16961	16567	15145	15529			
SURPLUS/DEFICITS																	
45 FIRM SURPLUS/DEFICIT		2533	2874	1764	1078	1642	2226	-995	-815	136	2965	3709	4404	3680	4273		
46 TOTAL SURPLUS/DEFICIT		1896	2237	1127	439	1001	1593	-1632	-1457	-505	2325	3069	3764	3043	3639		
47 EXTREME WEATHER ADJ.	23/	0	0	0	0	-4	-5	-5	0	0	0	0	0	0	0	0	0
48 FIRM S/D W/EXT WTHR. ADJ.		2533	2874	1764	1078	1638	2221	-1000	-820	136	2965	3709	4404	3680	4273		
49 TOTAL S/D W/EXT WTHR. ADJ.		1896	2237	1127	439	997	1588	-1637	-1462	-505	2325	3069	3764	3043	3639		
50 POSS FED EXT WTHR. OBLG 24/		0	0	0	0	-1790	-1895	-1987	-1869	0	0	0	0	0	0	0	0
51 FIRM S/D W/EXT WTHR. OBLG		2533	2874	1764	1078	152	325	-2987	-2688	136	2965	3709	4404	3680	4273		
52 TOTAL S/D W/EXT WTHR. OBLG		1896	2237	1127	439	-793	-308	-3624	-3331	-505	2325	3069	3764	3043	3639		

NOTE: 1. BPA SURPLUS POWER SALES CONTRACTS WITH THE PSW ARE SHOWN AS POWER SALES UNTIL THEY EXPIRE.
 2. BPA SURPLUS POWER SALES CONTRACT WITH PSP&L IS SHOWN AS A POWER SALE THROUGH JUNE 30, 2001. THE CONTRACT THEN CONVERTS TO A SEASONAL POWER EXCHANGE WHICH EXPIRES JULY 1, 2008.
 3. THE FOLLOWING BPA CONTRACTS ARE RESOURCE OPTIONS AND NOT INCLUDED IN THIS ANALYSIS.
 A. BGP TO BPA, SUPPLEMENTAL ENERGY
 B. SCE TO BPA, SUPPLEMENTAL ENERGY
 C. SCE TO BPA, OPTION ENERGY

FEDERAL SYSTEM FOOTNOTES

For Exhibits 1 through 8

1. BPA's small and nongenerating public agencies' purchases are requirements these agencies place on BPA under their power sales contracts and BPA's partnership program. BPA's obligation is each agency's net firm load requirement not served by its own dedicated resources.
2. BPA's exports include surplus firm power sales to the cities of Burbank, Glendale, and Pasadena, and to Southern California Edison; BPA's surplus firm power sale to M-S-R Public Power Agency, which converts to a capacity sale on November 1, 2009; BPA's capacity contracts with the cities of Anaheim and Riverside; BPA's capacity for exchange energy with deferred return with the Sacramento Municipal Utility District and San Diego Gas and Electric; BPA's capacity for exchange energy contracts with the cities of Anaheim, Pasadena, and Riverside; BPA's diversity exchange with the city of Riverside; BPA's delivery of environmental storage to Southern California Edison; BPA's contract with BC Hydro for Canadian Entitlement beginning April 1, 1998; and BPA's Northwest-Southwest Intertie losses.
3. BPA's contracts out include its contracts of Canadian Entitlement capacity and supplemental capacity to Pacific Northwest public agencies and IOUs, which expire March 31, 2003; BPA's contracts with Clark County PUD and other public agencies (Packwood Lake); BPA's WNP-1 obligation contracts with Montana Power Company, Pacific Power and Light, Portland General Electric, Puget Sound Power and Light, and Washington Water Power; BPA's WNP-3 settlement contracts with Pacific Power and Light, Portland General Electric, Puget Sound Power and Light, and Washington Water Power; BPA's power transfer through Pacific Power and Light's system to serve BPA's Southern Idaho load; BPA's capacity sale with Montana Power Company; BPA's surplus firm power sale to Puget Sound Power and Light, which converts to a seasonal power exchange in OY 2001-02; BPA's surplus firm capacity sale to Washington Water Power; BPA's bridge capacity sale to Pacific Power and Light through July 31, 1995; BPA's capacity sale to Portland General Electric; BPA's deferred power exchange with Washington Water Power; and BPA's Baker Head loss replacement with Puget Sound Power and Light.
4. Columbia Storage Power Exchange (CSPE) is the sale of the Canadian share of downstream benefits under the Columbia River Treaty with Canada to a group of Northwest utilities, expiring April 1, 2003.
5. BPA's generating public agencies' purchases are requirements which these agencies place on BPA under their power sales contracts and BPA's partnership program. BPA's obligation is each agency's net firm load requirement not served by its own

dedicated resources. These contracts actually expire June 30, 2001; however, they are assumed to remain in effect through the 20-year study period.

6. Generating private utility purchase is the contracted peak and energy requirement placed on the Federal system under the IOUs' power sales contracts with BPA. Currently, no IOU is placing load on BPA under a power sales contract.
7. Federal diversity is a percentage reduction applied to the Federal system non-coincidental peak utility requirements. This is due to the fact that all peaking electrical loads do not occur simultaneously throughout the region.
8. DSIs' aluminum and nonaluminum top quartile load and associated line losses are BPA's interruptible loads.
9. May Water Budget and June Columbia River Flow Augmentation is the energy loss due to the overgeneration which may be unusable as a firm resource on the Federal system due to the operation of the hydro system.
10. Sustained peaking adjustment is a percentage reduction applied to the Federal hydro system to meet a capacity load of 50 hours per week. This adjustment also includes reductions for Federal hydro maintenance, spinning reserves, forced outage reserves, and summer flow augmentation on the Lower Snake River and John Day hydro projects.
11. Canadian Entitlement Return non-Federal to the Columbia River Storage Exchange (CSPE) reflects the public agencies' and IOUs' obligation of Canadian Entitlement allocation to the Northwest entities of the CSPE, which expires March 31, 2003.
12. Canadian Entitlement Return non-Federal to Canada reflects the Federal system, public agencies', and IOUs' obligation of Canadian Entitlement allocation to Canada, which begins April 1, 1998.
13. Restoration adjusts for the losses and gains of the hydro system due to Canadian storage under the terms of the Pacific Northwest Coordination Agreement. It is an obligation to those utilities that gained generation from the addition of Canadian storage, and a resource gain to utilities that lost generation from Canadian storage.
14. Imports includes exchange energy to BPA from the cities of Anaheim, Pasadena, and Riverside; capacity for energy exchange agreements (#1 and #2) with the city of Pasadena; seasonal replacement energy from the city of Riverside; Southern California Edison's return of environmental storage to BPA; exchange energy from the M-S-R Public Power Agency after its surplus firm sale converts to a capacity/energy exchange beginning November 1, 2009; exchange energy returned from San Diego Gas and Electric; deferred energy returned from Sacramento Municipal Utility District, San Diego Gas and Electric, and Washington Water Power; power purchases from Basin Electric Cooperative and TransAlta; power from Pacific Power and Light's Wyoming Division to serve BPA's Southern Idaho load; and BC Hydro's deliveries of power to BPA.
15. Federal contracts in includes exchange energy to BPA from Montana Power Company, energy delivered to BPA by Northern Wasco County PUD from its McNary Fishway project; WNP-3 settlement exchange energy from Pacific Power and Light, Portland General Electric, Puget Sound Power and Light, and Washington

Water Power; deferred power exchange energy from Washington Water Power; seasonal power exchange energy from Puget Sound Power and Light beginning in OY 2001-02; and power purchases from Puget Sound Power and Light and Montana Power Company.

16. Federal large thermal consists of the generation from WNP-2, operated by WPPSS.
17. Federal NUGs include: Tenaska II (Tenaska at Fredrickson), SDS Lumber (Klickitat Energy), Clearwater Dam (owned by the State of Idaho Department of Water Resources), and Wyoming Wind.
18. Resource acquisitions are resources BPA has identified and contracted for future purchase. When new Federal resource acquisitions are contracted for and/or on line, they will be included in the loads and resources balance.
19. Hydro, small thermal and miscellaneous resources, and combustion turbine reserve requirements are estimated at 5 percent of the Federal capacity of these resources.
20. Large thermal reserve requirements are estimated at 15 percent of the WNP-2 nuclear project.
21. Federal spinning reserve is the reserve generating capacity maintained to provide a regulating margin for the automatic generation and frequency control of power generation.
22. Direct service industrial reserve requirements are one-third of the industrial firm load, or the sum of the reserve requirements for Federal hydro, small thermal and miscellaneous resources, combustion turbines, and large thermal resources, whichever is smaller.
23. Hydro maintenance is the sum of all Federal hydro project maintenance based on the mean of the 1983-84 through 1988-89 schedules submitted to the Northwest Power Pool.
24. Extreme weather adjustment for BPA's directly served loads.
25. Possible Federal extreme weather adjustment is the possible load on BPA by public agencies customers having the right to place this obligation on BPA.

SECTION VIII

PACIFIC NORTHWEST REGIONAL EXHIBITS

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EXHIBIT 9
REGIONAL CRITICAL PERIOD ANALYSIS
ENERGY FOR 10 OPERATING YEARS

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
 UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

M E D I U M L O A D S

1994 WHITEBOOK: 12/20/94
 RUN DATE: 12/20/94

MEGAWATTS	OPERATING YEAR										2004-5 AVG	
	1995-96 AVG	1996-97 AVG	1997-98 AVG	1998-99 AVG	1999-00 AVG	2000-01 AVG	2001-02 AVG	2002-03 AVG	2003-04 AVG	2004-05 AVG		
FIRM LOADS												
1/ SYSTEM FIRM LOADS	20159	20459	20721	20942	21167	21378	21584	21814	22063	22319		
2/ EXPORTS	1310	1308	1320	1437	1566	1557	1557	1633	1755	1634		
3/ FEDERAL DIVERSITY	0	0	0	0	0	0	0	0	0	0		
4/ FIRM LOADS	21469	21767	22041	22379	22733	22935	23141	23447	23818	23953		
INTERRUPTIBLE LOADS												
5/ REGIONAL INTER. LOADS	433	638	638	633	626	620	620	620	620	620		
6/ TOTAL LOADS	21902	22405	22680	23011	23359	23556	23762	24067	24439	24573		
HYDRO RESOURCES												
7/ REGULATED HYDRO	11704	11711	11711	11711	11711	11711	11706	11706	11706	11706		
8/ INDEPENDENT HYDRO	986	999	1000	1001	1001	1001	996	996	996	997		
9/ MAY WATER BUDGET	-216	-227	-235	-221	-216	-212	-206	-191	-183	-179		
10/ JUNE COL. RIVER FLOW AUG	-162	-180	-190	-178	-171	-169	-162	-146	-138	-134		
11/ SUS. PKNG. ADJUSTMENT	0	0	0	0	0	0	0	0	0	0		
12/ TOTAL HYDRO	12312	12303	12286	12313	12325	12332	12334	12365	12381	12391		
OTHER RESOURCES												
13/ SMALL THERMAL & MISC	63	69	70	70	70	69	66	66	66	66		
14/ COMBUSTION TURBINES	544	544	730	747	747	747	747	747	747	747		
15/ RENEWABLES	37	37	37	38	38	38	38	38	38	38		
16/ COGENERATION	263	286	286	286	286	286	286	286	286	286		
17/ IMPORTS	1734	1677	1593	1504	1472	1475	1398	1427	1419	1340		
18/ CENTRALIA	1245	1246	1261	1256	1259	1259	1245	1205	1261	1255		
19/ JIM BRIDGER	586	602	608	615	603	603	589	616	598	615		
20/ COLSTRIP 1 & 2	331	342	342	342	342	341	334	334	335	335		
21/ BOARDMAN	386	386	386	386	386	386	386	386	386	386		
22/ VALMY	195	196	195	194	195	195	195	195	194	195		
23/ COLSTRIP 3	496	503	503	504	504	503	498	498	498	498		
24/ MNP 2	819	821	842	842	845	878	878	878	878	878		
25/ COLSTRIP 4	623	623	623	623	623	623	623	623	623	623		
26/ FED RESOURCE ACQUIS	1012	1215	1250	1273	1278	1278	1245	1220	1220	1215		
27/ NON-UTILITY GENERATION	0	0	0	0	0	0	0	0	0	0		
28/ TOTAL RESOURCES	20646	20850	21012	20991	20973	21013	20863	20885	20930	20847		

EXHIBIT 9 (CONTINUED)

SHEET 2 OF 2

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA
 SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
 UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

MEGAWATTS	M E D I U M L O A D S										1994 WHITEBOOK:	12/20/94	
	OPERATING YEAR										RUN DATE:	12/20/94	
	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05			
	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG		AVG	
RESERVES AND MAINTENANCE													
29 HYD, SM THRM & MISC RES	0	0	0	0	0	0	0	0	0	0	0	0	0
30 LARGE THERMAL RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0
31 BPA SPINNING RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0
32 DSI RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0
33 HYDRO MAINTENANCE	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
34 NET RESOURCES	20635	20839	21001	20980	20962	21002	20851	20874	20919	20836			
SURPLUS/DEFICITS													
35 FIRM SURPLUS/DEFICIT	-834	-928	-1040	-1399	-1770	-1933	-2290	-2573	-2899	-3117			
36 TOTAL SURPLUS/DEFICIT	-1268	-1566	-1678	-2031	-2396	-2554	-2910	-3193	-3520	-3737			
37 EXTREME WEATHER ADJ.	0	0	0	0	0	0	0	0	0	0			
38 FIRM S/D W/EXT WEATHER ADJ.	-834	-928	-1040	-1399	-1770	-1933	-2290	-2573	-2899	-3117			
39 TOTAL S/D W/EXT WTHR. ADJ.	-1268	-1566	-1678	-2031	-2396	-2554	-2910	-3193	-3520	-3737			

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EXHIBITS 10 - 12
REGIONAL MONTHLY ANALYSIS UNDER MEDIUM
LOADS FOR 1930 WATER CONDITIONS

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

M E D I U M L O A D S

1994 WHITEBOOK: 12/20/94
RUN DATE: 12/20/94

1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	1995-96 OPERATING YEAR												JUL AVG	12 MO AVG					
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY			JUN				
FIRM LOADS																			
1 SYSTEM FIRM LOADS	18640	18640	18122	18887	20909	22455	23265	22260	20825	19552	19552	18945	18936	19116	20159				
2 EXPORTS	1779	1779	1734	1238	1122	1086	1052	1023	1002	1008	1045	1165	1693	1796	1310				
3 FEDERAL DIVERSITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4 FIRM LOADS	20419	20419	19856	20125	22031	23541	24317	23283	21827	20560	20597	20110	20629	20912	21469				
INTERRUPTIBLE LOADS																			
5 REGIONAL INTER. LOADS	233	233	233	233	239	236	239	633	632	631	631	631	631	628	433				
6 TOTAL LOADS	20652	20652	20089	20358	22269	23777	24556	23917	22459	21192	21229	20741	21259	21540	21902				
HYDRO RESOURCES																			
7 REGULATED HYDRO	9782	9934	9375	9598	11115	12039	11022	11019	10511	11884	16984	15886	14063	11659	11715				
8 INDEPENDENT HYDRO	1033	975	917	898	905	1104	869	1194	984	1019	1045	1089	1068	1001	1005				
9 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	-2911	0	0	-243				
10 JUNE COL. RIVER FLOW AUG	0	0	0	0	0	0	0	0	0	0	0	0	-1813	0	-151				
11 SUS. PKNG. ADJUSTMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
12 TOTAL HYDRO	10815	10909	10292	10496	12020	13143	11891	12213	11495	12903	18029	14064	13318	12660	12327				
OTHER RESOURCES																			
9/ SMALL THERMAL & MISC	71	71	70	66	72	68	65	62	59	75	79	54	12	84	63				
10/ COMBUSTION TURBINES	543	543	543	543	692	687	687	701	543	543	140	222	487	543	544				
11/ RENEBLES	47	47	47	47	47	47	47	47	47	30	30	30	3	30	37				
12/ RENEABLES	51	51	267	267	267	260	294	294	294	305	305	305	255	298	263				
13/ COGENERATION	1829	1829	1573	1529	1865	2209	2204	2170	1512	1391	1293	1243	1575	1746	1733				
14 CENTRALIA	1295	1295	1295	1295	1295	1295	1295	1295	1295	824	652	1252	1295	1295	1245				
15 JIM BRIDGER	635	635	635	635	635	635	635	553	328	339	536	636	635	635	586				
16 COLSTRIP 1 & 2	358	358	356	348	348	340	335	328	334	183	314	238	354	383	331				
17 BOARDMAN	426	426	426	426	426	426	426	426	426	426	426	69	298	426	386				
18 VALMY	202	202	202	202	202	202	202	202	160	202	202	160	202	202	195				
19 COLSTRIP 3	528	528	521	521	521	515	510	506	510	534	324	311	525	546	496				
20 HNP 2	983	983	983	983	983	983	983	983	983	983	394	381	491	983	819				
21 COLSTRIP 4	657	657	657	657	657	657	657	657	656	656	394	381	657	657	623				
22 FED RESOURCE ACQUIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
23 NON-UTILITY GENERATION	1136	1139	1059	954	920	902	926	947	974	1111	1112	839	1151	1223	1012				
24 TOTAL RESOURCES	19576	19673	18932	18969	20950	22369	21157	21384	19616	20505	23838	19777	21258	21711	20660				

TABLE 1.: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	M E D I U M L O A D S												1994 WHITEBOOK: RUN DATE: 12/20/94			
	1995-96 OPERATING YEAR															
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY		JUN	JUL	12 MO AVG
RESERVES AND MAINTENANCE																
29 HYD, SM THRM & MISC RES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 LARGE THERMAL RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 BPA SPINNING RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 DSI RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 HYDRO MAINTENANCE	-31	-25	-9	-9	-4	0	0	0	-5	-7	-8	-20	-15	-50	-12	
34 NET RESOURCES	19545	19648	18923	18960	20946	22369	21157	21384	19611	20497	23830	19757	21243	21661	20648	
SURPLUS/DEFICITS																
35 FIRM SURPLUS/DEFICIT	-874	-771	-933	-1165	-1084	-1172	-3160	-1900	-2216	-63	3233	-353	614	749	-821	
36 TOTAL SURPLUS/DEFICIT	-1107	-1004	-1165	-1398	-1323	-1408	-3399	-2533	-2848	-694	2602	-984	-17	121	-1255	
37 EXTREME WEATHER ADJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 FIRM S/D W/EXT WEATHER ADJ.	-874	-771	-933	-1165	-1084	-1172	-3160	-1900	-2216	-63	3233	-353	614	749	-821	
39 TOTAL S/D W/EXT WTHR. ADJ.	-1107	-1004	-1165	-1398	-1323	-1408	-3399	-2533	-2848	-694	2602	-984	-17	121	-1255	

EXHIBIT 11

SHEET 1 OF 2

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	M E D I U M L O A D S												1994 WHITEBOOK:		
	1999-0 OPERATING YEAR												12/20/94	12/20/94	
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL	12 MO AVG
FIRM LOADS															
1 SYSTEM FIRM LOADS	19726	19726	19196	19915	21957	23539	24293	23283	21798	20485	20485	19866	19877	20066	21167
2 EXPORTS	1960	1960	1929	1534	1408	1369	1367	1333	1310	1317	1353	1349	1895	2005	1566
3 FEDERAL DIVERSITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 FIRM LOADS	21686	21686	21125	21449	23365	24908	25660	24616	23108	21802	21838	21215	21772	22071	22733
INTERRUPTIBLE LOADS															
5 REGIONAL INTER. LOADS	630	630	629	629	630	622	624	629	628	627	627	625	625	618	626
6 TOTAL LOADS	22315	22315	21754	22078	23995	25530	26285	25245	23735	22428	22464	21841	22397	22689	23359
HYDRO RESOURCES															
7 REGULATED HYDRO	9794	9946	9375	9605	11423	12048	11037	11034	10526	11882	16981	15890	14068	11659	11722
8 INDEPENDENT HYDRO	1052	994	924	912	920	1118	886	1211	1003	1024	1051	1099	1078	1009	1018
9 MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	-2907	0	0	-242
10 JUNE COL. RIVER FLOW AUG	0	0	0	0	0	0	0	0	0	0	0	0	-1941	0	-162
11 SUS. PKNG. ADJUSTMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 TOTAL HYDRO	10846	10940	10299	10517	12043	13166	11923	12245	11529	12906	18032	14082	13205	12668	12337
OTHER RESOURCES															
9/ SMALL THERMAL & MISC	82	82	70	73	82	77	78	74	69	74	78	57	12	84	69
10/ COMBUSTION TURBINES	746	746	746	746	894	889	889	904	746	746	342	425	689	746	747
11/ RENOVABLES	48	48	48	48	48	48	48	48	48	30	30	4	4	30	38
12/ COGENERATION	305	305	294	294	294	287	294	294	294	305	305	235	240	298	286
13/ IMPORTS	1513	1513	1281	1239	1693	1799	1850	1809	1266	1146	1125	973	1478	1617	1471
18 CENTRALIA	1295	1295	1295	1295	1295	1295	1295	1295	1295	1295	901	1060	1295	1295	1259
19 JIM BRIDGER	635	635	635	636	635	635	635	600	477	455	476	614	636	635	603
20 COLSTRIP 1 & 2	380	380	357	362	361	353	354	347	353	182	312	242	359	384	342
21 BOARDMAN	426	426	426	426	426	426	426	426	426	426	426	69	298	426	386
22 VALMY	202	202	202	202	202	202	202	202	160	202	189	163	202	202	195
23 COLSTRIP 3	544	544	527	531	530	524	525	520	524	532	323	313	529	547	503
24 WNP 2	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	0	0	505	1054	845
25 COLSTRIP 4	657	657	657	657	657	657	657	657	657	657	394	381	657	657	623
26 FED RESOURCE ACQUIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 NON-UTILITY GENERATION	1290	1293	1209	1360	1333	1322	1306	1334	1362	1241	1242	952	1280	1349	1278
28 TOTAL RESOURCES	19979	20076	19056	19396	21503	22690	21492	21765	20216	21207	24175	19569	21389	21992	20982

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

	M E D I U M L O A D S												12 MO AVG						
	1999- 0 OPERATING YEAR																		
	AUG 1-15 16-31	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15 16-30	APR 16-30	MAY		JUN	JUL				
1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS																			
RESERVES AND MAINTENANCE																			
29 HYD, SM THRM & MISC RES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 LARGE THERMAL RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 BPA SPINNING RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 DSI RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 HYDRO MAINTENANCE	-31	-26	-9	-9	-4	0	0	0	-5	-7	-8	-20	-15	-50	-12				
34 NET RESOURCES	19948	20051	19047	19387	21499	22690	21492	21765	20211	21200	24168	19549	21374	21941	20970				
SURPLUS/DEFICITS																			
35 FIRM SURPLUS/DEFICIT	-1737	-1635	-2078	-2062	-1866	-2218	-4168	-2850	-2897	-602	2330	-1666	-398	-129	-1763				
36 TOTAL SURPLUS/DEFICIT	-2367	-2265	-2707	-2691	-2496	-2840	-4792	-3480	-3525	-1228	1704	-2291	-1023	-747	-2389				
37 EXTREME WEATHER ADJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
38 FIRM S/D W/EXT WEATHER ADJ.	-1737	-1635	-2078	-2062	-1866	-2218	-4168	-2850	-2897	-602	2330	-1666	-398	-129	-1763				
39 TOTAL S/D W/EXT WTHR. ADJ.	-2367	-2265	-2707	-2691	-2496	-2840	-4792	-3480	-3525	-1228	1704	-2291	-1023	-747	-2389				

1994 WHITEBOOK: 12/20/94
RUN DATE: 12/20/94

EXHIBIT 12

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

		M E D I U M L O A D S												1994 WHITEBOOK: 12/20/94 RUN DATE: 12/20/94														
1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS		2004- 5 OPERATING YEAR																										
		AUG 1-15 16-31		SEP		OCT		NOV		DEC		JAN		FEB		MAR		APR 1-15 16-30		MAY		JUN		JUL		AUG 12 MO AVG		
FIRM LOADS																												
1	SYSTEM FIRM LOADS	20859	20859	20299	21017	23107	24736	25535	24448	22972	21604	21604	20981	21012	21256	22319												
2	EXPORTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	FEDERAL DIVERSITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	FIRM LOADS	22946	22946	22366	22697	24686	26270	26933	25821	24333	22967	22967	22329	22861	23227	23953												
INTERRUPTIBLE LOADS																												
5	REGIONAL INTER. LOADS	620	620	620	620	621	622	622	623	622	622	622	621	621	618	620												
6	TOTAL LOADS	23566	23566	22986	23318	25308	26885	27551	26445	24955	23588	23588	22950	23482	23845	24573												
HYDRO RESOURCES																												
7	REGULATED HYDRO	9790	9942	9371	9602	11118	12043	11031	11028	10521	11876	16975	15883	14061	11656	11717												
8	INDEPENDENT HYDRO	1048	990	920	907	917	1114	883	1208	999	1020	1046	1095	1075	1005	1015												
9	MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
10	JUNE COL. RIVER FLOW AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
11	SUS. PKNG. ADJUSTMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
12	TOTAL HYDRO	10838	10932	10291	10509	12035	13157	11914	12236	11520	12896	18021	14588	13722	12661	12415												
OTHER RESOURCES																												
13	SMALL THERMAL & MISC	78	78	66	69	78	74	74	71	65	70	74	53	12	81	66												
14	COMBUSTION TURBINES	746	746	746	746	894	889	889	904	746	746	342	425	689	746	747												
15	RENEWABLES	49	49	49	49	49	49	49	49	49	49	31	4	4	31	38												
16	COGENERATION	305	305	294	294	294	287	258	258	258	269	200	204	204	262	265												
17	IMPORTS	1339	1339	886	950	1357	1686	1751	1719	1221	1127	1106	1172	1375	1511	1340												
18	CENTRALIA	1295	1295	1295	1295	1295	1295	1295	1295	1295	1295	980	1295	1295	1295	1255												
19	JIM BRIDGER	635	635	635	635	635	635	635	569	476	614	635	636	636	635	616												
20	COLSTRIP 1 & 2	373	372	349	355	354	346	347	340	346	178	305	236	352	377	335												
21	BOARDMAN	426	426	426	426	426	426	426	426	426	426	426	69	298	426	386												
22	VALMY	202	202	202	202	202	202	202	202	160	202	189	163	202	202	195												
23	COLSTRIP 3	538	538	521	525	524	519	520	514	519	526	319	310	523	542	498												
24	MNP 2	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	0	0	527	1054	878												
25	COLSTRIP 4	657	657	657	657	657	656	657	657	657	656	394	381	657	657	623												
26	FED RESOURCE ACQUIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
27	NON-UTILITY GENERATION	1227	1230	1145	1297	1268	1255	1239	1267	1293	1173	1174	907	1234	1284	1216												
28	TOTAL RESOURCES	19762	19858	18616	19063	21122	22530	21310	21561	20085	20611	24265	20438	21730	21764	20872												

EXHIBIT 12 (CONTINUED)

SHEET 2 OF 2

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

1994 WHITEBOOK: 12/20/94
RUN DATE: 12/20/94

M E D I U M L O A D S

2004- 5 OPERATING YEAR

1930 WATER YEAR ENERGY IN AVERAGE MEGAWATTS	2004- 5 OPERATING YEAR												12 MO AVG				
	AUG 1-15 16-31	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15 16-30	APR 16-30	MAY		JUN	JUL		
RESERVES AND MAINTENANCE																	
29 HYD, SM THRM & MISC RES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 LARGE THERMAL RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 BPA SPINNING RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 DSI RESERVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 HYDRO MAINTENANCE	-31	-26	-9	-9	-4	0	0	0	-5	-7	-8	-20	-15	-50	-12	-12	-12
34 NET RESOURCES	19731	19833	18607	19054	21118	22530	21310	21561	20080	20604	24258	20418	21715	21714	20860	20860	20860
SURPLUS/DEFICITS																	
35 FIRM SURPLUS/DEFICIT	-3214	-3113	-3759	-3643	-3567	-3740	-5623	-4260	-4253	-2363	1291	-1910	-1146	-1514	-3093	-3093	-3093
36 TOTAL SURPLUS/DEFICIT	-3835	-3733	-4379	-4264	-4190	-4355	-6241	-4884	-4875	-2984	669	-2531	-1767	-2132	-3713	-3713	-3713
37 EXTREME WEATHER ADJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 FIRM S/D W/EXT WEATHER ADJ.	-3214	-3113	-3759	-3643	-3567	-3740	-5623	-4260	-4253	-2363	1291	-1910	-1146	-1514	-3093	-3093	-3093
39 TOTAL S/D W/EXT WTHR. ADJ.	-3835	-3733	-4379	-4264	-4190	-4355	-6241	-4884	-4875	-2984	669	-2531	-1767	-2132	-3713	-3713	-3713

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EXHIBIT 13
REGIONAL MONTHLY 50-HOUR CAPACITY
SURPLUS/DEFICIT UNDER THE FIVE LOAD
SCENARIOS FOR 1930 WATER CONDITIONS

EXHIBIT 13

TABLE R-1: 50-HOUR SUSTAINED PEAKING
BASE CASE: EXISTING REGIONAL CONTRACTS

REGIONAL FIRM 50-HOUR CAPACITY SURPLUS/DEFICIT

INCLUDING EXTREME WEATHER ADJUSTMENTS DURING NOVEMBER THROUGH FEBRUARY

10 YEAR MONTHLY SUMMARY

ASSUMING NO NIGHTTIME RETURN CONSTRAINTS,
EXISTING REGIONAL CONTRACTS, AND NO NEW RESOURCE ACQUISITIONS

M E D I U M L O A D S

1994 WHITEBOOK: 12/20/94
RUN DATE: 12/20/94

1930 WATER YEAR	M E D I U M L O A D S													
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL
1995-96	4585	5032	4487	3326	1421	667	-3302	-2647	1440	4913	5439	6100	6326	6706
1996-97	4051	4351	4062	3157	1790	523	-3434	-2830	1398	5131	5221	6343	6264	6588
1997-98	4027	4473	4035	2903	1485	191	-3718	-2969	1462	4747	4588	6059	5988	6320
1998-99	3759	4204	3408	2119	369	-339	-4234	-3501	822	4042	3978	5257	5289	5646
1999-00	3326	3770	3240	1848	-213	-1226	-5119	-4345	-88	3638	3722	4722	5217	5512
2000-01	3001	3446	2718	1479	-640	-1679	-5523	-4821	-149	3479	3416	4720	4897	5380
2001-02	2820	3265	2461	1245	-1084	-1923	-5882	-5289	-667	2231	3126	4163	4640	5013
2002-03	2466	2910	2374	860	-1005	-2385	-6300	-5703	-1655	1791	2288	3693	3913	4282
2003-04	1688	2133	1411	62	-1851	-3247	-7089	-6452	-1417	2010	1946	3427	3762	4055
2004-05	1540	1984	1174	-336	-2689	-3599	-7437	-6686	-2027	1448	2554	3245	3589	3946

PEAK IN MEGAWATTS

EXHIBITS 14 - 16
REGIONAL MONTHLY CAPACITY ANALYSIS UNDER
MEDIUM LOADS FOR 1930 WATER CONDITIONS

EXHIBIT 14

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT
ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

		M E D I U M L O A D S												1994 WHITEBOOK: 12/20/94		
		1995-96 OPERATING YEAR												RUN DATE: 12/20/94		
1990 WATER YEAR	PEAK IN MEGAWATTS	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL	
FIRM LOADS																
1/	SYSTEM FIRM LOADS	24195	23942	26712	28956	31132	32319	31189	29115	27498	27498	25807	25011	24747		
3/	EXPORTS	3207	3146	2200	1647	1675	1579	1544	1524	1515	1567	1892	3143	3197		
4/	FEDERAL DIVERSITY	-1103	-1099	-1132	-1217	-1134	-854	-879	-856	-1131	-1058	-1057	-1124	-1139	-1068	
4/	FIRM LOADS	26299	26303	25955	27695	31953	33019	31877	29508	27955	28008	26575	27015	26876		
INTERRUPTIBLE LOADS																
2/	REGIONAL INTER. LOADS	352	352	345	335	379	309	404	778	806	763	763	768	773	768	
6/	TOTAL LOADS	26651	26655	26300	28030	29848	32261	33423	32655	30314	28719	28772	27343	27789	27645	
HYDRO RESOURCES																
5/	REGULATED HYDRO	30620	30975	31239	31345	31528	31414	31444	31138	31045	30305	30250	29805	30208	30311	
6/	INDEPENDENT HYDRO	1836	1799	1757	1730	1745	1723	1706	1829	1879	1908	1913	1800	1812	1800	
7/	MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10/	JUNE COL. RIVER FLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11/	SUS. PKNG. ADJUSTMENT	-4797	-5203	-6196	-6200	-4169	-3307	-6646	-6269	-6623	-2913	-1200	-1221	-3000	-2726	
12/	TOTAL HYDRO	27659	27571	26800	26875	29104	29830	26504	26698	26301	29300	30963	30384	29020	29385	
OTHER RESOURCES																
9/	SMALL THERMAL & MISC	84	84	72	69	165	162	159	155	65	74	71	36	45	94	
10/	COMBUSTION TURBINES	718	718	718	718	1416	1416	1416	1416	718	718	184	184	602	718	
11/	RENEWABLES	49	49	49	49	49	49	50	50	50	50	50	3	3	50	
12/	COGENERATION	65	65	302	302	302	282	329	329	329	340	340	340	340	320	
13/	IMPORTS	2262	2262	1710	1764	2116	2662	2634	2652	1930	1566	1428	1481	1988	2012	
18/	CENTRALIA	1343	1343	1343	1343	1343	1343	1343	1343	1343	672	671	1343	1343	1343	
19/	JIM BRIDGER	693	693	693	693	693	693	520	520	346	346	520	693	693	693	
20/	COLSTRIP 1 & 2	396	396	372	367	376	371	364	357	359	188	369	188	382	414	
21/	BOARDMAN	508	508	508	508	508	508	508	508	508	508	508	0	508	508	
22/	VALMY	242	242	242	242	242	242	242	242	242	242	242	242	242	242	
23/	COLSTRIP 3	561	561	545	541	548	544	540	535	536	548	543	547	552	574	
24/	HNP 2	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	720	720	720	1170	
25/	COLSTRIP 4	720	720	720	720	720	720	720	720	720	720	720	720	720	720	
26/	FED RESOURCE ACQUIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27/	NON-UTILITY GENERATION	1389	1389	1292	1197	1153	1137	1139	1159	1195	1346	1344	902	1302	1458	
28/	TOTAL RESOURCES	37859	37771	36536	36558	39904	41129	37811	37854	35812	37768	37953	37063	37740	39701	

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT
ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

	M E D I U M L O A D S												1994 WHITEBOOK: 12/20/94		
	1995-96 OPERATING YEAR												RUN DATE: 12/20/94		
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL	
1930 WATER YEAR PEAK IN MEGAWATTS															
RESERVES AND MAINTENANCE															
29 HYD, SM THRM & MISC RES	16/	-1736	-1752	-1769	-1768	-1816	-1807	-1810	-1802	-1762	-1735	-1705	-1651	-1714	
30 LARGE THERMAL RESERVES	17/	-1031	-1031	-952	-990	-938	-1006	-992	-969	-918	-784	-662	-722	-855	
31 BPA SPINNING RESERVES	18/	-316	-323	-297	-299	-358	-399	-328	-324	-311	-383	-409	-407	-379	
32 DSI RESERVES	19/	711	711	712	729	737	735	753	757	755	754	754	753	751	
33 HYDRO MAINTENANCE	20/	-4603	-4040	-3787	-3208	-2935	-2037	-1561	-2287	-2629	-2751	-2483	-2360	-2202	
34 NET RESOURCES		30884	31336	30443	31021	34594	36615	33872	33229	30948	32869	33448	32676	33341	
SURPLUS/DEFICITS															
35 FIRM SURPLUS/DEFICIT		4585	5032	4487	3326	5125	4663	853	1351	1440	4913	5439	6100	6326	
36 TOTAL SURPLUS/DEFICIT		4233	4681	4143	2991	4746	4354	449	574	634	4150	4676	5333	5553	
37 EXTREME WEATHER ADJ.	21/	0	0	0	0	-3704	-3996	-4155	-3998	0	0	0	0	0	
38 FIRM S/D W/EXT WEATHER ADJ.		4585	5032	4487	3326	1421	667	-3302	-2647	1440	4913	5439	6100	6326	
39 TOTAL S/D W/EXT WTHR. ADJ.		4233	4681	4143	2991	1042	358	-3706	-3424	634	4150	4676	5333	5553	

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
 UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT
 ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

		M E D I U M L O A D S													
		1999- 0 OPERATING YEAR						1994 WHITEBOOK: 12/20/94 RUN DATE: 12/20/94							
		AUG	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	APR	MAY	JUN	JUL
		1-15	16-31								1-15	16-30			
1930 WATER YEAR PEAK IN MEGAWATTS															
FIRM LOADS															
1/	SYSTEM FIRM LOADS	25670	25670	25453	28290	30505	32739	33814	32727	30593	28925	28925	27184	26368	26080
3/	EXPORTS	3107	3107	3051	2472	2121	2117	2123	2089	2070	2059	2111	2125	3126	3160
4/	FEDERAL DIVERSITY	-1042	-1035	-1067	-1160	-1107	-834	-858	-839	-1094	-1020	-1030	-1082	-1087	-1048
4	FIRM LOADS	27735	27742	27437	29602	31519	34022	35079	33977	31569	29964	30005	28227	28406	28192
INTERRUPTIBLE LOADS															
2/	REGIONAL INTER. LOADS	769	769	750	720	779	706	795	774	780	755	755	762	783	759
6	TOTAL LOADS	28504	28511	28187	30321	32298	34729	35874	34751	32350	30719	30760	28989	29189	28951
HYDRO RESOURCES															
5/	REGULATED HYDRO	30632	30987	31254	31367	31547	31432	31471	31164	31073	30323	30264	29821	30225	30312
6/	INDEPENDENT HYDRO	1860	1823	1786	1763	1777	1756	1744	1867	1920	1935	1940	1826	1838	1808
9	MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	JUNE COL. RIVER FLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	SUS. PKNG. ADJUSTMENT	-4794	-5200	-6193	-6185	-4154	-3292	-6631	-6254	-6608	-2910	-1197	-1218	-2997	-2723
12	TOTAL HYDRO	27698	27610	26847	26945	29170	29896	26584	26777	26385	29348	31007	30429	29066	29397
OTHER RESOURCES															
9/	SMALL THERMAL & MISC	94	94	84	87	197	193	192	188	85	86	81	47	45	94
10/	COMBUSTION TURBINES	938	938	938	938	1636	1636	1636	1636	938	938	404	404	822	938
11/	RENEWABLES	51	51	51	51	51	51	51	51	51	51	51	4	4	51
12/	COGENERATION	340	340	329	329	309	309	329	329	329	340	340	340	340	320
13/	IMPORTS	1745	1745	1514	1446	2047	2335	2404	2431	1611	1332	1332	1388	1903	1826
18	CENTRALIA	1343	1343	1343	1343	1343	1343	1343	1343	1343	1343	671	1343	1343	1343
19	JIM BRIDGER	693	693	693	692	693	693	693	693	519	346	520	693	693	693
20	COLSTRIP 1 & 2	414	414	395	401	406	400	400	393	397	200	390	198	403	415
21	BOARDMAN	508	508	508	508	508	508	508	508	508	508	508	0	508	508
22	VALMY	242	242	242	242	242	242	242	242	242	242	242	242	242	242
23	COLSTRIP 3	574	574	561	565	568	565	564	560	563	564	557	562	567	574
24	WNP 2	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	0	0	0	1170
25	COLSTRIP 4	720	720	720	720	720	720	720	720	720	720	720	720	720	720
26	FED RESOURCE ACQUIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	NON-UTILITY GENERATION	1474	1474	1380	1538	1493	1478	1463	1491	1528	1426	1422	978	1378	1526
28	TOTAL RESOURCES	38004	37916	36775	36975	40573	41537	38299	38532	36389	38614	38245	37348	38034	39817

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT
ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

1930 WATER YEAR PEAK IN MEGAWATTS	M E D I U M L O A D S												1994 WHITEBOOK: 12/20/94 RUN DATE: 12/20/94					
	1999- 0 OPERATING YEAR												APR	MAY	JUN	JUL		
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL				
RESERVES AND MAINTENANCE																		
29 HYD, SM THRM & MISC RES	16/	-1767	-1783	-1789	-1801	-1849	-1841	-1842	-1834	-1794	-1753	-1723	-1669	-1730	-1750			
30 LARGE THERMAL RESERVES	17/	-1004	-1004	-974	-967	-952	-981	-983	-987	-922	-873	-651	-710	-845	-1000			
31 BPA SPINNING RESERVES	18/	-316	-323	-297	-299	-358	-399	-328	-324	-311	-383	-409	-407	-379	-378			
32 DSI RESERVES	19/	749	749	749	750	752	743	747	752	750	748	748	747	744	736			
33 HYDRO MAINTENANCE	20/	-4605	-4042	-3787	-3208	-2935	-2037	-1561	-2288	-2631	-2751	-2483	-2360	-2202	-3721			
34 NET RESOURCES		31061	31513	30677	31449	35231	37023	34332	33851	31481	33602	33727	32949	33623	33704			
SURPLUS/DEFICITS																		
35 FIRM SURPLUS/DEFICIT		3326	3770	3240	1848	3712	3000	-747	-126	-88	3638	3722	4722	5217	5512			
36 TOTAL SURPLUS/DEFICIT		2556	3001	2490	1128	2933	2294	-1543	-899	-868	2883	2967	3960	4434	4753			
37 EXTREME WEATHER ADJ.	21/	0	0	0	0	-3925	-4226	-4372	-4219	0	0	0	0	0	0			
38 FIRM S/D W/EXT WEATHER ADJ.		3326	3770	3240	1848	-213	-1226	-5119	-4345	-88	3638	3722	4722	5217	5512			
39 TOTAL S/D W/EXT WTHR. ADJ.		2556	3001	2490	1128	-992	-1932	-5915	-5118	-868	2883	2967	3960	4434	4753			

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT
ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

1930 WATER YEAR PEAK IN MEGAWATTS	M E D I U M L O A D S												1994 WHITEBOOK: 12/20/94	
	2004- 5 OPERATING YEAR												RUN DATE: 12/20/94	
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	JUL
FIRM LOADS														
1/ SYSTEM FIRM LOADS	27193	27193	26986	29948	32151	34476	35639	34561	32334	30599	28806	27967	27579	
2/ EXPORTS	3347	3347	3294	2726	2467	2456	2276	2249	2245	2242	2237	3132	3180	
3/ FEDERAL DIVERSITY	-1067	-1067	-1095	-1159	-1132	-849	-875	-856	-1095	-1065	-1120	-1120	-1089	
4/ FIRM LOADS	29474	29480	29185	31515	33486	36083	37040	35954	33483	31775	29923	29979	29670	
INTERRUPTIBLE LOADS														
5/ REGIONAL INTER. LOADS	768	768	742	710	775	716	788	743	790	749	733	772	756	
6/ TOTAL LOADS	30242	30249	29926	32225	34261	36800	37828	36698	34273	32525	32537	30656	30426	
HYDRO RESOURCES														
7/ REGULATED HYDRO	30647	31002	31270	31383	31562	31446	31488	31183	31092	30344	29842	30245	30332	
8/ INDEPENDENT HYDRO	1883	1846	1810	1782	1796	1778	1765	1885	1941	1961	1850	1866	1830	
9/ MAY WATER BUDGET	0	0	0	0	0	0	0	0	0	0	0	0	0	
10/ JUNE COL. RIVER FLOW AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	
11/ SUS. PKNG. ADJUSTMENT	-4794	-5201	-6193	-6185	-4154	-3292	-6631	-6254	-6608	-2910	-1197	-2997	-2723	
12/ TOTAL HYDRO	27736	27647	26887	26980	29204	29932	26622	26814	26425	29395	31048	29114	29439	
OTHER RESOURCES														
13/ SMALL THERMAL & MISC	106	938	97	100	214	210	209	205	98	101	61	45	107	
14/ COMBUSTION TURBINES	938	938	938	938	1636	1636	1636	1636	938	938	404	822	938	
15/ RENEWABLES	52	52	52	52	52	52	52	52	52	52	5	5	52	
16/ COGENERATION	340	340	329	329	329	309	284	284	284	295	295	295	275	
17/ IMPORTS	1656	1656	1101	1094	1684	2211	2293	2321	1601	1223	1633	1824	1723	
18/ CENTRALIA	1343	1343	1343	1343	1343	1343	1343	1343	1343	671	1343	1343	1343	
19/ JIM BRIDGER	693	693	692	693	693	692	692	692	519	693	693	693	693	
20/ COLSTRIP 1 & 2	439	439	421	427	431	426	424	418	423	215	213	431	440	
21/ BOARDMAN	508	508	508	508	508	508	508	508	508	508	0	508	508	
22/ VALMY	242	242	242	242	242	242	242	242	242	242	242	242	242	
23/ COLSTRIP 3	591	591	579	582	585	582	581	577	580	584	582	586	592	
24/ MNP 2	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	0	0	1170	
25/ COLSTRIP 4	720	720	720	720	720	720	720	720	720	720	720	720	720	
26/ FED RESOURCE ACQUIS	0	0	0	0	0	0	0	0	0	0	0	0	0	
27/ NON-UTILITY GENERATION	1421	1421	1327	1485	1439	1422	1406	1434	1471	1370	946	1345	1472	
28/ TOTAL RESOURCES	37955	37866	36406	36663	40250	41455	38182	38416	36374	38177	37611	37973	39714	

TABLE 1: PACIFIC NORTHWEST REGIONAL AREA

SUMMARY OF PACIFIC NORTHWEST REGIONAL LOADS AND RESOURCES
 UNDER THE PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT
 ASSUMING NO NIGHTTIME RETURN CONSTRAINTS

1930 WATER YEAR PEAK IN MEGAWATTS	M E D I U M L O A D S												1994 WHITEBOOK: RUN DATE: 12/20/94		
	2004-5 OPERATING YEAR														
	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY		JUN	JUL
RESERVES AND MAINTENANCE															
29 HYD, SM THRM & MISC RES	16/	-1767	-1783	-1789	-1801	-1849	-1840	-1842	-1834	-1794	-1753	-1723	-1670	-1731	-1750
30 LARGE THERMAL RESERVES	17/	-988	-988	-913	-916	-899	-965	-967	-971	-923	-809	-763	-747	-832	-984
31 BPA SPINNING RESERVES	18/	-316	-323	-297	-299	-358	-399	-328	-324	-311	-383	-409	-407	-379	-378
32 DSI RESERVES	19/	738	738	739	740	742	734	739	744	743	742	742	741	739	735
33 HYDRO MAINTENANCE	20/	-4608	-4045	-3787	-3208	-2935	-2037	-1561	-2289	-2633	-2751	-2483	-2360	-2202	-3722
34 NET RESOURCES		31014	31465	30359	31179	34951	36949	34222	33742	31457	33223	34342	33168	33568	33615
SURPLUS/DEFICITS															
35 FIRM SURPLUS/DEFICIT		1540	1984	1174	-336	1466	865	-2818	-2212	-2027	1448	2554	3245	3589	3946
36 TOTAL SURPLUS/DEFICIT		772	1216	432	-1046	690	149	-3606	-2955	-2817	698	1805	2512	2817	3189
37 EXTREME WEATHER ADJ.	21/	0	0	0	0	-4155	-6464	-4619	-4474	0	0	0	0	0	0
38 FIRM S/D W/EXT WEATHER ADJ.		1540	1984	1174	-336	-2689	-3599	-7437	-6686	-2027	1448	2554	3245	3589	3946
39 TOTAL S/D W/EXT WTHR. ADJ.		772	1216	432	-1046	-3465	-4315	-8225	-7429	-2817	698	1805	2512	2817	3189

REGIONAL FOOTNOTES

For Exhibits 9 through 16

1. Firm loads for the region include the sum of the estimated firm loads of Federal agencies, public agencies, direct service industries (DSIs), investor-owned utilities (IOUs), and associated transmission losses. Peak loads represent non-coincidental capacity demands adjusted to account for Federal system diversity; they are based on the prediction of normal weather and have a 50-percent chance of being exceeded.
2. Total loads for the region include system firm loads, plus BPA's nonfirm loads, which include industrial top-quartile loads, associated transmission losses, and Utah Power Company's interruptible load.
3. Exports from the region by Northwest utilities include BPA's surplus firm power sales to the cities of Burbank, Glendale, Pasadena, Sacramento Municipal Utility District, San Diego Gas and Electric, and Southern California Edison; BPA's surplus firm power sale to M-S-R Public Power Agency, which converts to a capacity sale on November 1, 2009; BPA's capacity contracts with the cities of Anaheim and Riverside; BPA's capacity for exchange energy contracts with the cities of Anaheim, Pasadena, and Riverside; BPA's environmental storage agreement with Southern California Edison; BPA's optional capacity agreement with Southern California Edison; BPA's contract with BC Hydro for Canadian Entitlement beginning April 1, 1998; BPA's Northwest-Southwest Intertie losses; Idaho Power Company's power sales to Sierra Pacific, the cities of Azusa, Banning, and Colton in California, the city of Washington in Utah, and Utah Associated Municipal Power Systems (UAMPS); Montana Power Company's power sales to the Los Angeles Department of Water and Power; Pacific Power and Light's transfer to its Northern California load, and power sales to the California Department of Water Resources, Pacific Gas and Electric, Southern California Edison, Sacramento Municipal Utility District, and the Western Area Power Administration (WAPA); Portland General Electric's power sales to the cities of Burbank and Glendale, Southern California Edison, and WAPA, and seasonal power exchange deliveries to Southern California Edison; Seattle City Light's seasonal power exchange deliveries to Pacific Gas and Electric; Puget Sound Power and Light's seasonal power exchange deliveries to Pacific Gas and Electric; Washington Water Power's seasonal power exchange deliveries to Pacific Gas and Electric; the City of Idaho Falls' contract with Utah Power Company for Gem State Hydro; Seattle City Light's seasonal power exchange deliveries to Northern California Public Agencies; and Snohomish County Public Utility District's seasonal power exchange with Sacramento Municipal Utility District, and Tacoma Public Utilities' power sale to WAPA.

Also included in exports are resources purchased by utilities outside the region. These include WAPA's purchase of the output of Longview Fibre, 14.2 percent of the

Boardman coal plant sold to San Diego Gas and Electric, and 10 percent of the Boardman coal plant sold to the City of Turlock, CA.

4. Federal diversity is a percentage reduction applied to the Federal system non-coincidental peak utility allocation requirements. This is because all peaking electrical loads do not occur simultaneously throughout the region.
5. Regulated hydro includes those hydro dams where the firm energy generation of the dam is affected by the release of stored water from upstream reservoirs. Regulated hydro generation is determined by completing a hydro regulation study of the Pacific Northwest hydro system.
6. Independent hydro includes those hydro dams where no reservoirs exist upstream to release stored water and the firm energy is based on fixed historical flows. Hydro independents are not changed as a part of the hydro regulation study.
7. May Water Budget and June Columbia River Flow Augmentation is the energy loss due to the overgeneration which may be unusable as a firm resource on the Federal system due to the operation of the hydro system.
8. Sustained peaking adjustment is a percentage reduction applied to the Federal hydro system to meet a capacity load of 50 hours per week. This adjustment also includes reductions for Federal hydro maintenance, spinning reserves, forced outage reserves, and summer flow augmentation on the Lower Snake River and John Day hydro projects.
9. Small thermal and miscellaneous resources include Tacoma Public Utilities' Steam Plant No. 2; Idaho Power Company's Energy Management System; Portland General Electric's Summit units; Puget Sound Power and Light's Crystal Mountain and Shuffleton; Montana Power Company's portion of Corette and Bird in the region; and Seattle City Light's Boundary.
10. Combustion turbines include Clark County Public Utility's Cogentrix; Idaho Power Company's Wood River; Portland General Electric's Bethel and Beaver; Puget Sound Power and Light's Whidbey Island, Whitehorn, Fredrickson, and Fredonia units; and Washington Water Power's Northeast units.
11. Renewables include Emerald County PUD's Short Mountain; and Washington Water Power's Kettle Falls.
12. Cogeneration includes Eugene Water and Electric Board's WEYCO Energy Center; Snohomish County PUD's Scott Paper; and Portland General Electric's Coyote Springs. Longview Fibre output is sold outside the region to WAPA.
13. Imports include exchange energy to BPA from the cities of Anaheim, Pasadena, and Riverside; exchange energy from the M-S-R Public Power Agency after their surplus firm sale converts to a capacity/energy exchange beginning November 1, 2009; deferred energy returns from Sacramento Municipal Utility District and San Diego Gas and Electric; exchange energy returned from San Diego Gas and Electric; power from Pacific Power and Light's Wyoming Division to serve BPA's Southern Idaho load; Power purchases from Basin Electric Cooperative and Powerex (TransAlta); seasonal power exchange deliveries to BPA from the cities of Pasadena and Riverside; environmental storage returns to BPA from Southern California Edison; Pacific

Power and Light transfers from their Wyoming division and seasonal power exchange deliveries to Portland General Electric from Southern California Edison; power sale deliveries to Puget Sound Power and Light from BC Hydro, and seasonal power exchange deliveries from Pacific Gas & Electric and from Puget Sound Power and Light to Seattle City Light; Utah Power Company's intra-company transfer; seasonal power exchange deliveries to Washington Water Power from Pacific Gas and Electric; power deliveries to Seattle City Light from BC Hydro for Ross replacement; seasonal power exchange deliveries from Northern California Public Agencies to Seattle City Light; and BC Hydro's delivery of power to BPA for the Portland General Electric inter-company pool.

14. Resource acquisitions are resources BPA has identified and contracted for future purchase. When new Federal resource acquisitions are contracted for and/or on-line, they will be included in the loads and resources balance.
15. Non-utility generation (NUG) resources include generation provided to utilities by independent power producers and resources included under the Public Utility Regulatory Policies Act (PURPA). This study included 189 individual NUGs.
16. Hydro, small thermal and miscellaneous resources, and combustion turbine reserve requirements are estimated at 5 percent of the capacity of these resources for all utilities in the region.
17. Large thermal reserves requirements are estimated at 15 percent of the total capacity of the Pacific Power and Light thermal import into the region plus the large thermal resources owned by utilities in the region.
18. Federal spinning reserves equal the reserve generating capacity maintained to provide a regulating margin for the automatic generation and frequency control of power generation.
19. Direct service industry reserve requirements are estimated at one-third of the industrial firm load, or the sum of the reserve requirements for Federal hydro, small thermal and miscellaneous resources, combustion turbines, and large thermal, whichever is smaller.
20. Hydro maintenance is the sum of individual Federal system, public agency, and IOU hydro project maintenance, based on the average of the 1983-84 through 1988-89 schedules submitted to the Northwest Power Pool.
21. Extreme weather adjustment is the sum of all utility load responses with Pacific Northwest cold weather, and has a 5-percent chance of being exceeded.

**SECTION IX
GLOSSARY**

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GLOSSARY

- Average Megawatts** - A unit of electrical consumption or production over a year. It is equivalent to the energy produced by the continuous use of 1 megawatt of capacity served over a period of 1 year. (Equivalent to 8.76 gigawatt hours, 8,760 megawatt hours, or 8,760,000 kilowatt hours.)
- Biomass** - Any organic matter that is available on a renewable basis, including forest residues, agricultural crops and waste, wood and wood wastes, animal wastes, livestock operation residue, aquatic plants, and municipal wastes.
- Boiling Water Reactor (BWR)** - A nuclear power plant in which steam from the reactor is fed directly into the steam turbine.
- Bonneville Power Administration (BPA)** - BPA is a power marketing agency, responsible for acquiring and delivering sufficient power to meet its contractual obligations to serve the electrical needs of its customers. BPA does not own generating resources.
- Calendar Year** - Calendar year (CY) is the 12-month period January 1 through December 31. For example, CY 1994 is January 1, 1994 through December 31, 1994.
- Capacity** - The maximum power that an electrical system or machine such as a hydro powered or thermal powered generating plant can produce under specified conditions.
- Capacity Factor** - The ratio of the average load on a machine or piece of equipment over a given period to the maximum power rating of the machine or equipment.
- Cogeneration** - The simultaneous production of electricity and useful heat energy from a fuel source. Often this is accomplished by the recovery of waste energy caused by various industrial and commercial operations. This is typically used for industrial processes or space heating applications.
- Columbia River Flow Augmentation (CRFA)** - A part of the National Marine Fisheries Service Biological Opinion dated March 16, 1994, that calls for the storage of water in the winter for later release in the late spring in order to assist in the downstream migration of juvenile salmon and steelhead.
- Conservation** - Any reduction in electrical power consumption as a result of increases in the efficiency of energy use, production, or distribution.
- Critical Period** - That portion of the historical streamflow record during which the recorded streamflows, combined with all available reservoir storage, produced the least amount of energy.
- Dedicated Resources** - Generating resources owned by a utility and used to serve its firm loads. These resources are declared for a rolling 7-year period in Exhibit I of the utilities' power sales contracts with BPA.
- Direct Service Industries (DSI)** - A group of industrial customers that purchase electric power directly from BPA. Most DSIs are aluminum and other primary metal smelting plants.
- Diversity** - An adjustment applied to peak loads to reflect the fact that all peaking electrical demands do not occur simultaneously across the region.
- Energy Load** - The demand for power averaged over a specified period of time.
- Federal Columbia River Power System (FCRPS)** - The FCRPS consists of 30 Federal hydroelectric projects constructed and operated by the U.S. Army Corps of Engineers (COE), U.S. Bureau of Reclamation (USBR), plus BPA's transmission facilities.
- Federal System** - The Federal system is a combination of BPA's customer loads and contractual obligations, and resources from which BPA acquires the power it sells. The resources include plants operated by the U.S Army Corps of Engineers (COE), U.S. Bureau of Reclamation (USBR), and hydroelectric projects owned by the city of Idaho Falls and WPPSS. BPA markets the thermal generation from WNP-2, operated by WPPSS.

- 50-Hour Peak Capacity** - The amount of capacity that can be sustained for 10 hours a day during peak-load hours for a 5-day week.
- Firm Capacity** - Maximum on-peak electrical energy which is considered assurable to the customer to meet all contractual peak load requirements over a defined period.
- Firm Energy** - Electric power which is considered assurable to the customer to meet all contractual energy load requirements over a defined period.
- Firm Energy Load Carrying Capability (FELCC)** - The amount of electrical energy load that a hydro system could serve on a firm basis under critical-period streamflows.
- Fiscal Year** - In this study, fiscal year (FY) is the 12 month period October 1 to September 30. For example FY 1994-95 is October 1, 1994 to September 30, 1995.
- Forced Outage Reserve** - Capacity that is held in reserve, for use in case a generating unit malfunctions.
- Forced Energy Sale (Spill)** - Electrical energy that cannot be accepted into the system and must either be sold or spilled due to constraints and limitations of hydro projects.
- Forebay** - The portion of the reservoir at a hydroelectric plant that is immediately upstream of the generating station.
- Historical Streamflow Record** - The unregulated streamflow database of the 50 years from July 1928 to June 1978.
- Hydroregulation** - A study simulating operation of the Pacific Northwest electric power system that incorporates the historical streamflow record, monthly loads, thermal and other non-hydro resources, hydroelectric plant data for each project, and the constraints limiting each project's operation.
- Interruptible Loads** - Loads that can be interrupted in the event of a power deficiency on the supplying system.
- Megawatts** - A unit of electrical power equal to 1 million watts or 1,000 kilowatts.
- Model Conservation Standards (MCS)** - A set of energy-efficient building standards for new electrically heated commercial and residential buildings. It also includes standards for residential and commercial buildings that have been changed to electric space heating.
- Nondedicated Resources** - Resources brought into service after June 1980 by BPA customers who choose not to use them to serve their own firm loads.
- Nonfirm Energy** - Electrical power produced by the hydro system that is available with water conditions better than those of the critical period without appreciably jeopardizing reservoir refill. It is available in varying amounts depending upon season and weather conditions.
- Nonfirm Energy Loads** - Loads that are served with nonfirm energy whenever it is available.
- Obligation** - Capacity and energy the Federal system is required to provide to public agencies and IOUs under their power sales contracts with BPA.
- Operating Year** - For this study, operating year (OY) is the 12-month period August 1 through July 31. For example, OY 1994-95 is August 1, 1994 through July 31, 1995.
- Peak Load** - The maximum demand for power during a specified period of time.
- Programs In Perspective** - An annual program conducted by BPA to take the agency's proposed programs and budgets before the public, both to explain the agency's plans and to get constructive feedback.
- PURPA Resources** - Resources declared by utilities according to the Public Utility Regulatory Policies Act of 1978 (Public Law 95-617).
- Region** - The geographic area defined by the Pacific Northwest Electric Power Planning and Conservation Act. It includes Oregon, Washington, Idaho, Montana west of the Continental Divide, portions of Nevada, Utah, and Wyoming that lie within the Columbia River drainage basin, and any rural electric cooperative customer not in the geographic area described above but served by BPA on the effective date of the Northwest Power Planning Act.
- Resource Acquisitions** - Conservation or generating resources acquired in order to meet projected firm energy deficits.
- Spinning Reserves** - Reserve generating capacity which is maintained for immediate response to load variations. This provides a regulating margin for controlling the automatic generation and frequency of power in the Federal system.

Surplus Firm Capacity - The maximum amount of assured electrical power above the firm peak loads served by the power system.

Surplus Firm Energy - The amount of assured electrical energy above the firm energy loads served by the power system.

Sustained Peak - The peaking capacity necessary to sustain a load for a given period of time.

Water Budget - A part of the Pacific Northwest Power Planning Council's Fish and Wildlife Program that calls for a quantity of water to be released in order to assist in the downstream migration of juvenile salmon and steelhead.