

memorandum

Bonneville Power Administration

DATE: March 15, 2002

REPLY TO
ATTN OF: PGPL-5

SUBJECT: 2000 White Book

TO: Interested parties

Attached is Bonneville Power Administration's (BPA) latest projected Pacific Northwest Loads and Resources summary, commonly called the "White Book". The 2000 White Book is a snap shot of the Federal system conditions as of October 1, 2001 and all other conditions as of December 31, 2000. The publication schedule for this document was delayed, pending execution of the 2001 power sales contracts to provide BPA with more accurate load and obligation estimates over the study period. BPA staff incorporated utility information provided for the 2001 rate case and the 2000 PNUCC data submittals to arrive at projections of regional and Federal system loads and resources for the 10-year study horizon, operating years (OY) 2002 through 2011.

Over the past twenty years BPA published the White Book in accordance with the 1981 regional power sales contracts. Those contracts are now expired and under its new regional power sales contracts, BPA no longer has a contractual purpose for publishing the White Book. However, BPA has other obligations to plan for adequate, efficient and reliable load service. Consequently, BPA will continue to publish the White Book because it helps to meet these purposes and provides valuable long-range planning information on projected loads and resources for both BPA and the region. BPA will continue to update and make the White Book publicly available and will explore options in 2002 for making the future White Book a more valuable document. This 2000 White Book updates the 1999 Pacific Northwest Loads and Resources Study and presents a projection of regional and Federal system load and resource capabilities used as input to BPA's long-range resource planning process.

White Book Study Assumptions

This study incorporates information on Pacific Northwest regional retail loads, contract obligations and contract resources; combined with the resource capabilities estimates provided by BPA and regional public agency and investor-owned utility (IOU) customers through their annual PNUCC data submittals for 2000. The following revisions were implemented October 1, 2001 to reflect BPA's 2001 power sales contracts and Exhibit C submittals:

- BPA's obligations to public agency and IOU customers were updated;
- Load reduction agreements for public agencies, IOUs, and DSIs were reflected; and
- BPA's new total retail load forecast for public agencies, IOUs, and DSIs was incorporated. However, the recent Fall 2001 recession is not incorporated in this load forecast.

Complete Federal system assumptions concerning loads, contracts, and resources are presented in section 4, Federal System Analysis, page 11. Regional assumptions are detailed in section 5, Regional Analysis, page 23.

Load Forecast

The 2000 White Book presents an updated customer-by-customer regional load forecast. The forecast is based on entity submittals provided for the 2001 power sales contracts and/or the PNUCC data submittals. The information and growth trends were checked with FERC filings, when available. The load forecasts were developed for each of the following customer groups:

- Public agency, USBR, and Federal Agencies load forecasts developed from their 2001 power sales contracts Exhibit C submittals with customer load reduction agreements reflected;
- IOU load forecasts developed from Exhibit C data submittals for their 2001 power sales contracts and their PNUCC submittals; and
- DSI load estimates based on their current BPA power sales contracts with buy-downs reflected.

This is the first total update of the regional load forecast since the 1996 Rate Case.

Comparison of Northwest Power Planning Council (Council) and White Book Regional Loads: Table 1, below, shows the comparison of the non-DSI regional firm loads for the 2000 White Book and the Council for OY 2002 through 2006. The Council's load forecast, for this comparison, was based on the Fourth Northwest Conservation and Electric Power Plan, published in 1996. The Council's load forecast was reduced in OY 2002 through 2005 to reflect the Fall 2001 recession. The Council's load forecast starts to trend up in OY 2003 to show economic recovery; complete economic recovery is assumed by OY 2006. The 2000 White Book loads do not include these adjustments. In OY 2006, non-DSI regional firm loads differ by only 802 aMW.

Table 1
Comparison of Non-DSI Regional Firm Loads
2000 White Book versus the Council Regional Plan with Recession Adjustments
 Annual Energy in Average Megawatts

Operating Year	2002	2003	2004	2005	2006
2000 White Book	20,348	20,759	21,195	21,640	22,000
Council Reg. Plan	18,809	20,006	20,532	20,893	21,198
Difference	1,539	753	663	747	802

BPA 2001 Power Sales Contract Obligations

This analysis includes BPA's 2001 power sales contract obligations. The 2001 power sales contracts incorporate the new Slice Product; the IOU Residential Exchange Settlement; and contracts with regional DSI customers. After BPA signed the new power sales contracts, it became apparent that BPA would need to meet an approximate 3,000 aMW critical water year deficit. This deficit was immediate in OY 2001, because BPA and the region experienced a critically low water year combined with extremely high and volatile electricity market prices. Under these conditions, BPA and its customers were faced with the prospect of significant rate increases. BPA worked with its customers through amendatory agreements to temporarily reduce their power sales contract obligations on BPA and minimize rate impacts by:

- Decreasing BPA's public and Federal agency obligations by implementing load reduction agreements, primarily in OY 2002;
- Reducing BPA's IOU obligations through a combination of rate mitigation and power purchase programs through September 30, 2006. Table 2, shows that the net amount of BPA's IOU power sales contract obligations is up to 258 aMW through September 30, 2006. For the period of October 1, 2006 through September 31, 2011, this study assumes that the IOU customers will take the settlement amount of 2,200 aMW in power; and
- While BPA's DSI obligations were contracted up to 1,442 aMW through to September 30, 2006, the agency bought down most DSI Federal loads through 2003. Most DSI obligations are shown to return in 2004 through 2006; however, in actual operation, the DSI obligations may be lower due to economic conditions.

Table 2, below shows BPA's public agency, USBR, Federal agency, IOU and DSI obligations under the 2001 power sales contracts (PSC) incorporating load reduction agreements and contract buy-downs in this study.

Table 2
2000 White Book
BPA 2001 Power Sales Contract Obligations
Annual Energy in Average Megawatts

Operating Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
USBR ^{1/}	120	148	148	148	148	67	38	38	38	38
Federal Agencies ^{2/}	126	126	131	133	134	91	83	84	84	85
Public Agencies ^{3/}	5,817	6,380	6,608	6,678	6,773	7,064	7,177	7,206	7,278	7,295
DSI Obligations ^{4/}	400	839	1336	1435	1441	240	0	0	0	0
IOU Obligations										
IOU PSC Obligations ^{5/}	292	377	382	382	382	1,897	2,200	2,200	2,200	2,200
IOU Power Purchases ^{6/}	-99	-123	-124	-124	-124	-21	0	0	0	0
Net IOU PSC Obligations ^{7/}	193	254	258	258	258	1,876	2,200	2,200	2,200	2,200

^{1/} USBR power sales obligations should be 148 aMW in OY 2007 through 2011. This will be reflected in future studies.

^{2/} Federal Agencies power sales obligations should be approximately 135 aMW in OY 2007 through 2011. This will be reflected in future studies.

^{3/} Public agency obligations include BPA's full service, partial service, block, slice block and slice resource customer obligations. BPA's obligations are reduced for load reduction agreements.

^{4/} BPA's DSI customers signed 5-year contracts beginning October 1, 2001 through September 30, 2006. After September 30, 2006, Federal service to the DSIs is not assumed because the DSIs do not have signed contracts in place for service. This assumption does not represent a decision by BPA on post-September 30, 2006 firm DSI power sales.

^{5/} BPA's IOU PSC obligations were reduced through September 30, 2006 to reflect rate mitigation programs. Beginning October 1, 2006 through the end of the study, this analysis assumes that all PNW IOUs take actual power of 2,200 aMW.

^{6/} In addition to the IOU rate mitigation incentives, some of the IOUs reduced their obligations through power purchase programs. Under these programs, BPA purchased power back from some of the IOUs through September 30, 2006. These contracts are shown as BPA purchases in Intra-Regional Transfers and reduce BPA's actual IOU obligations.

^{7/} The net IOU power sales contract obligations associated with the 2001 rate case is up to 258 aMW through September 30, 2006: During this time, the total IOU power sales contract obligations include reductions for rate mitigation and power purchase programs. Beginning October 1, 2006 through the end of the study, this analysis assumes that the IOUs take actual power of 2,200 aMW.

BPA Resources

BPA is a federal power marketing agency charged with marketing the power from 31 Federal dams and certain non-Federal projects, and with serving the net requirements firm power loads of its customers. BPA does not own generating resources. BPA's customer loads and contractual obligations, combined with the Federal and non-Federal resources from which BPA acquires the power it sells, are collectively called the Federal system. This analysis reflects the following resource changes compared to the 1999 study.

- New hydroregulation studies that incorporate the assumptions of the current PNCA, including the Columbia River streamflow requirements of the 2000 NMFS Biological Opinions (2000 BO); and
- New independent hydro and Non-Utility Generating resources including the Dworshak small hydropower project; Foote Creek 1, Foote Creek 2, Foote Creek 4 wind projects; Stateline wind project; Condon wind project; and the Ashland solar project.

Hydro Improvements: BPA has budgeted \$1.2 billion over the next fifteen years for maintaining and improving the reliability of the Federal hydro system. These improvements include reliability increases to decrease forced and planned outages, runner replacements at Grand Coulee and other projects to increase generation and make the turbine operations more fish friendly, and implementation of hydro optimization and operational planning tools to increase the generation of the Federal hydro system.

- Under average water conditions, it is estimated that the combination of these hydro improvements will preserve and create up to 1,133 aMW by OY 2016. About 712 aMW of these improvements are associated with preserving the existing level of Federal hydro system generation capability from degradation. The remaining hydro improvements could result in up to 421 aMW in additional Federal hydro generation.
- Under critical water conditions, the combination of these hydro improvements could preserve and create up to 355 aMW at the end of the fifteenth year. About 76 aMW of these improvements are associated with preserving the existing level of Federal hydro system generation capability from degradation. The remaining hydro improvements could result in up to 279 aMW in additional Federal hydro generation.

The total amount and timing of annual megawatts realized over the next fifteen-year period is dependent on the timely completion of the scheduled installations and the success of the optimization changes. These estimated increases in generation are associated with the current level of fishery operations. If future fishery operations decrease the flexibility of the hydro system operations and/or increase the amount of spill, the annual megawatt contribution of the hydro improvements will likely decrease.

Because the Hydro Improvements Program was in an early stage of development when the resources were finalized for the 2000 White Book analysis, only the contributions associated with turbine runner replacements were included. The maximum increase in Federal hydro generation associated with these improvements is estimated to be up to 62 aMW under critical water conditions through OY 2011. This analysis will be refined in future studies.

Federal Surplus/Deficit

Table 3, below, is a summary of the Federal system annual energy loads and resources as shown in the 2000 White Book, page 33, utilizing medium loads and the 1937 critical water conditions. Using the assumptions detailed on page 11, the Federal system is in surplus in OY 2002. In OY 2003 through 2011, the Federal system is in deficit, with large deficits occurring in OY 2007 through 2011. BPA will most likely meet these deficits using a combination of methods described below in Federal Resource Adequacy.

Table 3
2000 White Book
Federal System Firm Surplus/Deficit
Annual Energy in Average Megawatts

Operating Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Resources	9,871	9,719	9,602	9,405	9,385	8,407	8,234	8,094	8,213	8,084
Obligations	9,635	10,037	10,394	10,387	10,352	10,491	10,530	10,550	10,623	10,641
Surplus/Deficit	236	-318	-792	-982	-967	-2,084	-2,297	-2,456	-2,409	-2,557

Federal Resource Adequacy

The Federal system energy and capacity load resource projections are conservative. This analysis assumes Federal system hydro generation under critical water conditions; Federal non-hydro resources are operating at expected generation levels; and Federal contract obligations and purchases are delivered at maximum contract levels. This analysis includes Federal power purchases or resources that were signed prior to October 1, 2001. The magnitude of the actual Federal system deficits may be reduced or met by a combination of the following.

- Better than critical water conditions, which increase water flow and water storage, thereby increasing the output of the Federal hydro system;
- Purchase power from merchant plants operating or under construction in the Pacific Northwest;
- Import power from merchant plants operating outside the Pacific Northwest region;

- Supplement the Federal hydro generation using drafting provisions of the Non-Treaty Storage Agreement through June 30, 2003;
- Purchase off-system storage and employ exchange agreements that allow for seasonal shaping of Federal hydropower with other Pacific Northwest entities or other regions.
- Potential reduction in BPA's obligations to full service power sales contract customers resulting from the Fall 2001 recession;
- While BPA's DSI obligations were contracted up to 1,442 aMW through September 30, 2006, BPA's DSI obligations were reduced through buy-back agreements through OY 2003. In actual operation, BPA's DSI obligations may be lower than their full contracted amounts due to economic conditions through September 30, 2006; and
- Although BPA's IOU obligations were reduced over the first 5-years of the rate period, for the period of October 1, 2006 through September 30, 2011, this study assumed that the IOU customers will take the settlement amount of 2,200 aMW in power benefits. The actual amount of power taken in this timeframe may be less, lowering BPA's obligations over the last 5-years of the study.

Treatment of Merchant Plants

Merchant plants, whether planned or already under construction, but without contracts to utilities in the Pacific Northwest, are not included as regional resources because there is no assurance that the power production from these plants will be sold in the Northwest. New merchant or utility generation that is currently on-line totals 1,250 peak MW and includes such plants as the Klamath Cogeneration, Rathdrum Project and some wind generation. Approximately, 2,600 peak MW of new merchant plants are under construction and expected to be completed by 2003. As the region contracts for power from these plants, they will be reflected in future studies.

The changes in this year's analysis are detailed in section 3, Changes in the 2000 Pacific Northwest Loads and Resources Study, page 8. These updates are centered around BPA's 2001 power sales contracts and the new Slice of the System Product; impacts of changes to operations based on the NMFS 2000 BO; and new independent hydro and non-utility generating resources. The Administrator's Record of Decision on the 2000 Pacific Northwest Loads and Resources Study is in section 8, page 89.

Additional copies of this document can be obtained from BPA's Public Information Center, 1-800-622-4520. As with 1999, this year's 2000 Pacific Northwest Loads and Resources Study Technical Appendix, which presents the aggregation of the loads and resources for each major Pacific Northwest generating utility, will be made available as an electronic rather than a printed document. The 2000 Pacific Northwest Loads and Resources Study Technical Appendix and this summary document will be available on BPA's external web site at: <http://www.bpa.gov/power/whitebook2000>.

Questions or additional comments may be directed to Tim Misley (503) 230-3942.

Sincerely,

/s/ Gregory K. Delwiche

Gregory K. Delwiche
Vice President, Generation Supply

Attachment

cc:
Official File – PGP (RP-23-14)