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May 4, 1979

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Washington, D. C. 20555

In the Matter of Puget Sound Power & Light Company, et al.
(Skagit Nuclear Power Project, Units 1 and 2)
Docket Nos. 50-522 and 50-523

Gentlemen:

For the information of the Licensing Board, the Regulatory Staff and the parties pursuant to the McGuire rule, we are enclosing copies of the 1979 West Group Forecast (WGF).

It will be recalled that the 1977 WGF was received in evidence on March 1, 1977 during the joint need for power hearing as Skagit Exhibit 87 and Pebble Springs Exhibit 26 (Tr. NFP 1760). Subsequently, the 1978 WGF was distributed to the Board, the Regulatory Staff and the parties under cover of our letter of March 4, 1978.

To facilitate comparison of the 1977, 1978 and 1979 West Group Forecasts, we are also enclosing a graph on which we have plotted the energy deficits projected in each of these forecasts. (The values plotted are from line 10 of the estimated loads and resources tables, copies of which are attached to the graph.) The graph also shows the probable energy dates (projected on-line dates) for Skagit Unit 1 (S1) and Skagit Unit 2 (S2) used in the 1977 WGF as well as those used in the 1979 WGF.

2282 001

7906220122

As can be seen from the graph, the projected energy deficits facing the region during the mid-1980's have become progressively more alarming with each new forecast. The reason is apparent from the tables, which show that, although estimated loads have been reduced, this has been more than offset by delays in the addition of new resources.

With specific reference to the WGF projected need for the Skagit Units, the following table compares the projected energy deficit for the year of initial operation of each unit as shown in the 1977 WGF with that shown in the 1979 WGF.

	Skagit 1	Skagit 2
1977 WGF		
84-85	(1108)	
86-87		(290)
1979 WGF		
86-87	(1159)	
88-89		(1033)

As can be seen, the projected need for Unit 1 -- the energy deficit facing the region with the unit on-line -- during the first year of its scheduled operation remains about the same under the 1979 forecast as it was under the 1977 forecast. The projected need for Unit 2 during its first year has become more pronounced.

Very truly yours,

PERKINS, COIE, STONE,
OLSEN & WILLIAMS

By F. Theodore Thomsen
F. Theodore Thomsen
Attorneys for Puget Sound Power & Light Company

FTT/kd
Enclosures:
1979 WGF
Graph with three tabulations attached
cc: Service List

2282 002

Date: May 4, 1979

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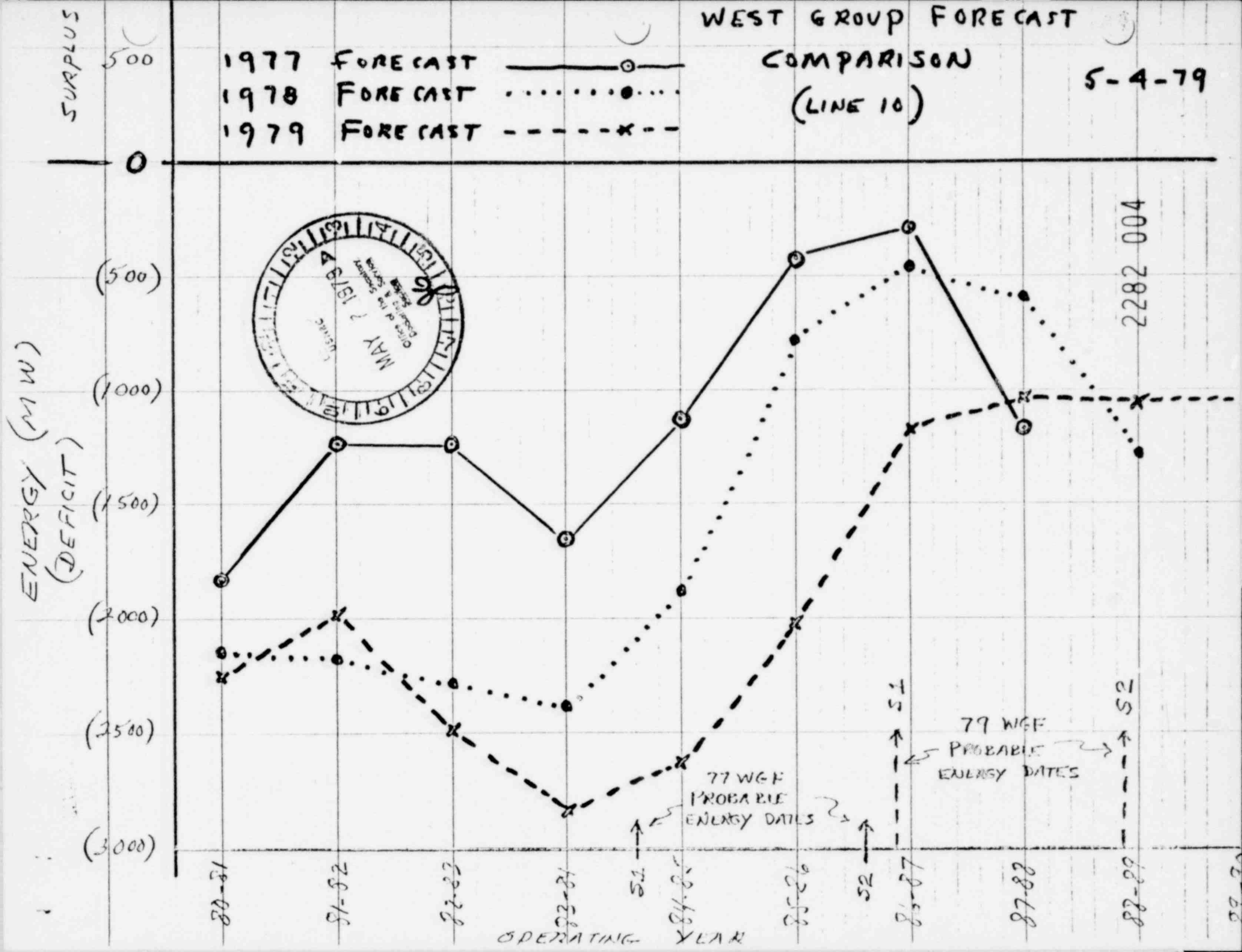
2282 003

2/16/79


WEST GROUP FORECAST
COMPARISON
(LINE 10)
5-4-79
1977 FORECAST
1978 FORECAST
1979 FORECAST
SURPLUS
500
0
(500)
(1000)
(1500)
(2000)
(2500)
(3000)
ENERGY (MW)
(DEFICIT)
2282 004
MAY 7 1979
80-81
81-82
82-83
83-84
S1
84-85
85-86
S2
86-87
87-88
88-89
S1
S2
77 WGF
PROBABLE
ENERGY DATES
77 WGF
PROBABLE
ENERGY DATES
OPERATING YEAR

1979 WGF
MARCH 1979

WEST GROUP FORECAST - ESTIMATED LOADS AND RESOURCES
JULY 1979-JUNE 1990

Figures are megawatts.		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1. Total Area Peak Load (January)		26,041	27,345	28,676	30,046	31,162	32,296	33,514	34,786	36,101	37,462	38,845
2. Net Peak Resources 1/		28,911	29,540	31,843	32,039	35,804	36,302	38,835	41,826	43,864	45,149	46,332
3. Reserve Requirements		(3,125)	(3,555)	(4,015)	(4,507)	(4,986)	(5,490)	(6,033)	(6,609)	(7,220)	(7,492)	(7,769)
4. Net Peak Resources For Load		25,786	25,985	27,828	27,532	30,818	30,812	32,802	35,217	36,644	37,657	38,563
5. Peak Surplus (Over Total Load)		(255)	(1,360)	(848)	(2,514)	(344)	(1,484)	(712)	431	543	195	(282)
6. Total Area Energy Load (July-June)		16,743	17,569	18,390	19,326	20,028	20,720	21,423	22,156	22,923	23,717	24,538
7. Net Energy Resources 1/		15,476	15,676	16,723	17,153	17,519	18,446	19,755	21,353	22,275	23,064	23,917
8. Reserve Requirements		(330)	(318)	(330)	(325)	(324)	(336)	(349)	(356)	(368)	(380)	(398)
9. Net Energy Resources For Load		15,146	15,358	16,393	16,828	17,195	18,110	19,406	20,997	21,907	22,684	23,519
10. Energy Surplus (Over Total Load)		(1,597)	(2,211)	(1,997)	(2,498)	(2,833)	(2,610)	(2,017)	(1,159)	(1,016)	(1,033)	(1,019)
11. Interruptible Load (Included in Lines 1 and 6)	-Peak	1,079	1,134	1,132	1,123	1,133	1,144	1,154	1,165	1,175	1,185	1,195
	-Energy	1,056	1,109	1,092	1,100	1,111	1,121	1,132	1,142	1,151	1,162	1,172
12. Fossil-Thermal & Miscellaneous Resources (Not Included Above) 2/	-Peak	-	-	-	-	-	-	-	-	-	-	-
	-Energy	688	683	683	683	683	683	677	677	677	677	677
Probability that Resources Will Be Insufficient to Meet Total Energy Load in at Least 1 Period of 3/												
13. Year Shown	-%	37.9	47.6	43.5	46.2	50.7	44.6	37.5	33.7	36.0	34.4	37.6
14. Years 1979-80 Through Year Shown	-%	37.9	63.6	76.8	85.6	92.2	95.1	96.6	97.5	98.0	98.5	98.9
Probability that Resources Will Be Insufficient to Meet Firm Energy Load in at Least 1 Period of 3/												
15. Year Shown	-%	15.1	20.3	22.0	23.9	27.8	21.7	14.0	10.6	14.2	13.1	15.9
16. Years 1979-80 Through Year Shown	-%	15.1	29.0	42.1	53.2	64.6	70.6	74.6	76.9	80.0	82.3	84.9

2282 005

1/ Resources include hydro; small fossil-fuel plants; Hanford-NPR through June 1983; Centralia; Trojan; Colstrip #1 and #2 (50%), #3 and #4 (60%); WPPSS Nuclear #1, #2, #3, #4, #5; Boardman (90%); Skagit #1 and #2; Pebble Springs #1 and #2; and net contractual imports/exports with utilities outside the Area. Hanford is not included as a peak resource. Estimated amounts for scheduled maintenance (energy only) and for hydro realization factor (peak only) have been deducted. All existing thermal units and future thermal units under 500 megawatts (peak and energy) are included in amounts as submitted by respective project owners. The energy availability of all future thermal units 500 megawatts or larger has been included as 60% of the first full year and 75% thereafter.

2/ The energy megawatts tabulated in line 12 reflect the amounts of energy available from existing fossil and combustion-turbine installations which may be considered available as reserve energy resources. These are predominately petroleum-fueled plants utilizing high-cost fuels of questionable availability. The amounts are in addition to those included as firm energy resources in line 7.

3/ Based on same load and resource data as other tabulations herein, except that there is no consideration of energy reserve requirements or realization factor. Study initialized on the basis of full reservoirs on July 31, 1979. An explanation of these probability figures is found in Section I "Discussion of Detailed Report" under the subtitle "Energy Reserve Planning Model".

1978 WGF
March 1978

WEST GROUP FORECAST - ESTIMATED LOADS AND RESOURCES
JULY 1978-JUNE 1989

Figures are megawatts.

		1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
1. Total Area Peak Load (January)		24,617	25,871	27,228	28,591	29,877	30,978	32,239	33,511	34,855	36,294	37,739
2. Net Peak Resources 1/		30,679	32,645	33,435	35,286	35,936	38,202	40,697	43,185	44,970	47,016	47,082
3. Reserve Requirements		(2,954)	(3,363)	(3,812)	(4,289)	(4,780)	(5,266)	(5,803)	(6,367)	(6,971)	(7,259)	(7,548)
4. Net Peak Resources For Load		27,725	29,282	29,623	30,997	31,156	32,936	34,894	36,818	37,999	39,757	39,534
5. Peak Surplus (Over Total Load)		3,108	3,411	2,395	2,406	1,279	1,958	2,655	3,307	3,144	3,463	1,795
6. Total July-June Energy Load		16,072	16,867	17,758	18,715	19,504	20,219	20,972	21,752	22,550	23,394	24,271
7. Net Energy Resources 1/		15,350	15,586	15,939	16,891	17,568	18,196	19,445	21,349	22,493	23,206	23,402
8. Reserve Requirements		(340)	(316)	(321)	(373)	(341)	(349)	(369)	(377)	(394)	(411)	(423)
9. Net Energy Resources For Load		15,010	15,270	15,618	16,518	17,227	17,847	19,076	20,972	22,099	22,795	22,979
→ 10. Energy Surplus (Over Total Load)		(1,062)	(1,597)	(2,140)	(2,197)	(2,277)	(2,372)	(1,896)	(780)	(451)	(599)	(1,292)
11. Interruptible Load (Included in Lines 1 and 6)	-Peak	1,033	1,090	1,174	1,179	1,119	1,130	1,140	1,151	1,161	1,172	1,182
	-Energy	1,035	1,076	1,147	1,160	1,108	1,118	1,128	1,139	1,149	1,160	1,170
12. Fossil-Thermal & Miscellaneous Resources (Not Included Above) 2/	-Peak	-	-	-	-	-	-	-	-	-	-	-
	-Energy	571	577	571	571	571	571	571	563	563	563	563
Probability that Resources Will Be Insufficient to Meet Total Energy Load in at Least 1 Period of: 3/												
13. Year Shown	-%	12.9	36.0	39.2	40.7	38.1	42.0	33.9	20.8	18.8	26.4	32.9
14. Years, 1978-79 Through Year Shown	-%	12.9	40.8	59.8	73.4	82.3	88.4	91.7	93.0	94.0	95.2	96.3
Probability that Resources Will Be Insufficient to Meet Firm Energy Load in at Least 1 Period of: 3/												
15. Year Shown	-%	1.6	9.9	11.4	14.5	15.2	17.8	13.3	4.1	3.2	6.0	13.0
16. Years, 1978-79 Through Year Shown	-%	1.6	10.7	19	30.3	40.4	48.9	54.0	55.5	56.4	58.8	63.9

1/ Resources include hydro; small fossil-fuel plants; Hanford-NPR through June 1983; Centralia; Trojan; Colstrip #1 and #2 (50%), #3 and #4 (70%); WPPSS Nuclear #1, #2, #3, #4, #5; Boardman (90%); Skagit #1 and #2; Pebble Springs #1 and #2; and net contractual imports/exports with utilities outside the area. Hanford is not included as a peak resource. Estimated amounts for scheduled maintenance (energy only) and hydro realization factor (peak only) have been deducted. All existing thermal units and future thermal units under 500 megawatts (peak and energy) are included in amounts as submitted by respective project owners. The energy availability of all future thermal units 500 megawatts or larger has been included as 60% of the first full year and 75% thereafter.

2/ The energy megawatts tabulated in line 12 reflect the amounts of energy available from existing fossil and gas turbine installations which may be considered available as reserve energy resources. These amounts are in addition to those included as firm energy resources in line 7.

3/ Based on same load and resource data as other tabulations herein, except that there is no consideration of energy reserve requirements or realization factor. Study initialized on the basis of actual system conditions and streamflow forecasts made as of February 1, 1978.

FEB. 1977
1977 WGF
EX 87 (26)

WEST GROUP FORECAST - ESTIMATED LOADS AND RESOURCES
JULY 1977 - JUNE 1988

Figures are megawatts.		1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
1. Total Area Peak Load (January)		24,020	25,202	26,742	27,963	29,229	30,561	31,816	33,187	34,633	36,128	37,744
2. Total Peak Resources 1/		28,187	31,589	32,668	34,580	37,325	37,462	39,326	41,861	44,177	46,191	46,847
3. Reserve Requirements		(2,882)	(3,276)	(3,744)	(4,194)	(4,677)	(5,195)	(5,727)	(6,306)	(6,927)	(7,226)	(7,549)
4. Peak Resources		25,305	28,313	28,924	30,386	32,648	32,267	33,599	35,555	37,250	38,965	39,298
5. Peak Surplus (Over Total Load)		1,285	3,111	2,182	2,423	3,419	1,706	1,783	2,368	2,617	2,837	1 554
6. Total July-June Energy Load		15,545	16,326	17,335	18,178	18,948	19,770	20,565	21,401	22,281	23,183	24,128
7. Total Energy Resources 1/		15,032	15,489	15,693	16,703	18,126	18,929	19,306	20,700	22,277	23,337	23,414
8. Reserve Requirements		(313)	(322)	(330)	(351)	(386)	(368)	(388)	(407)	(421)	(444)	(478)
9. Energy Resources		14,719	15,167	15,363	16,352	17,740	18,561	18,918	20,293	21,856	22,893	22,936
10. Energy Surplus (Over Total Load)		(826)	(1,159)	(1,972)	(1,826)	(1,208)	(1,209)	(1,647)	(1,108)	(425)	(290)	(1,192)
11. Interruptible Load (Included in Lines 1 and 6)	-Peak	1,006	1,066	1,199	1,237	1,195	1,143	1,153	1,164	1,174	1,185	1,195
	-Energy	975	1,046	1,149	1,200	1,159	1,108	1,118	1,128	1,138	1,149	1,159
12. Fossil-Thermal & Miscellaneous Resources (Not Included Above) 2/	-Peak	-	-	-	-	-	-	-	-	-	-	-
	-Energy	554	611	617	611	611	611	611	611	603	603	603
Probability that Resources Will Be Insufficient to Meet Total Energy Load in at Least 1 Period of: 3/												
13. Year Shown	-%	31.2	18.6	35.2	31.8	15.8	18.0	21.0	18.4	11.0	15.0	24.6
14. Years, 1978-79 through Year Shown	-%	-	18.6	41.6	59.2	65.0	69.8	75.6	79.2	80.8	84.6	87.2
Probability that Resources Will Be Insufficient to Meet Firm Energy Load in At Least 1 Period of: 3/												
15. Year Shown	-%	17.4	9.6	11.8	10.2	4.8	6.4	7.6	6.0	3.0	4.6	9.4
16. Years, 1978-79 through Year Shown	-%	-	9.6	18.6	25.4	28.2	32.6	37.2	41.0	42.4	45.4	50.8

2282 007

1/ Resources include hydro; small fossil-fuel plants; Hanford-NPR through June 1983; Centralia; Trojan; Colstrip #1 and #2 (50%), #3 and #4 (70%); WPPSS Nuclear #1, #2, #3, #4, #5; Boardman Coal; Skagit #1 and #2; Pebble Springs #1; and net contractual imports/exports with utilities outside the area. Hanford is not included as a peak resource. Estimated amounts for scheduled maintenance (energy only), hydro realization factor (peak only) and incremental losses have been deducted. All existing thermal units and future thermal units under 500 megawatts (peak and energy) are included in amounts as submitted by respective project owners. The energy availability of all future thermal units 500 megawatts or larger has been included as 60% of the first full year and 75% thereafter.

2/ The energy megawatts tabulated in line 12 reflect the amounts of energy available from existing fossil and gas turbine installations which may be considered available as reserve energy resources. These amounts are in addition to those included as firm energy resources in line 7.

3/ Based on same load and resource data as other tabulations herein, except that there is no consideration of energy reserve requirements or realization factor. Study initialized on the basis of actual system conditions and streamflow forecasts made as of February 1, 1977. Because the outlook for 1977-78 is strongly affected by the poor runoff forecasted for 1977, the probabilities for 1977-78 are omitted from the accumulated probability figures. The tabulation shows probability of not meeting load, while last year's West Group Forecast showed probability of meeting load.

PACIFIC NORTHWEST UTILITIES
CONFERENCE COMMITTEE

WEST GROUP FORECAST

OF POWER LOADS AND RESOURCES

JULY 1979 - JUNE 1990

MARCH 1979

WEST GROUP FORECAST
JULY 1979 THROUGH JUNE 1990

CONTENTS

CONTENTS -contd.

Tailwater constraints have been imposed on operations at Grand Coulee which reduce the peaking capability for years 1980 through 1983. In order to reflect this condition an adjustment of 1,543 mw has been deducted in this year's report in the first four (4) years.

Again this year, a range of projected loads was made from the econometric model developed for PNUCC by National Economic Research Associates. This model produces a spectrum of possible loads, providing one (but not the only) comparison for checking the reasonableness of the actual load forecast which is contained in the West Group Forecast.

Very truly yours,

Glenn Nogle

Glenn F. Nogle, Chairman
Subcommittee on Loads and
Resources of Pacific Northwest
Utilities Conference Committee

GFN:wpc

Subcommittee on Loads and Resources:

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G. R. Garman	Seattle City Light
D. J. Caha	Tacoma City Light
G. E. Bredemeier	Portland General Electric Company
A. D. Hanson	Coordinating Group of Northwest Power Pool
R. F. Deesen	Pacific Power & Light Company
D. H. Knight	Puget Sound Power & Light Company
H. M. Schoffen	Chelan County Public Utility District
D. E. Long	Grant County Public Utility District
N. A. Dodge	U. S. Army Corps of Engineers
J. I. Fuller	Eugene Water & Electric Board
G. A. Einarsson	Douglas County Public Utility District
H. R. Kosmata	Washington Public Power Supply System
E. F. Timme	Intercompany Pool
G. F. Nogle	The Washington Water Power Company

SECTION I

Summary Data

Discussion of Detailed Report

DEFINITIONS

For the purpose of assisting in interpreting the enclosed figures, the following terms are explained:

Critical Period: The multimonth period during which the least amount of firm energy load can be served from firm resources. With the scheduled development of additional storage facilities, both U.S. and Canadian, the critical period has extended to a multiple-year sequence of historical water years. For the load years included in this report, the length of the critical period based on 1928-32 water years is 42½ months (August 16 through February 29) for the first eight years of the report and 43 months (September 1 through March 31) for the last three years.

The hydro peak capabilities are the January peaking capabilities based on 1936-37 streamflow conditions. The 1936-37 water year represents the most severe conditions that would occur in a single season with reservoirs full at the beginning of the storage drawdown period.

Adverse Water Years: Historical water years during which the critical period occurred.

Firm Resources: (Firm Power and Energy Capability) - Peak and energy resources of all systems, plants and reservoirs when operated as an integrated unit and when related to the characteristics of the Area firm load and as limited by the regulated streamflow of the critical period of the adverse water years.

Milestone: A significant event in the critical path from conception of a thermal project to the time it is placed in commercial operation. Once construction is started, the Milestones are represented by a continuous curve relating percentage of completion to the date of commercial operation.

Probable Energy Date: The later of the scheduled date for commercial operation as submitted by the plant sponsor or the date determined by application of Milestones.

Secondary Resources: Resources in excess of firm resources.

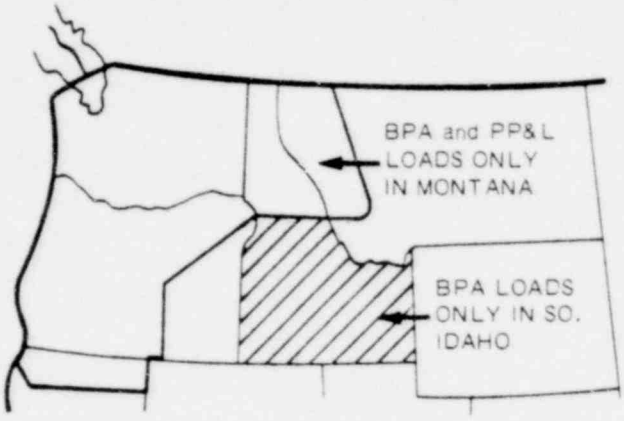
Total Load: The peak and energy load that the West Group Area plans to provide resources to serve. The Area load consists of two components which are:

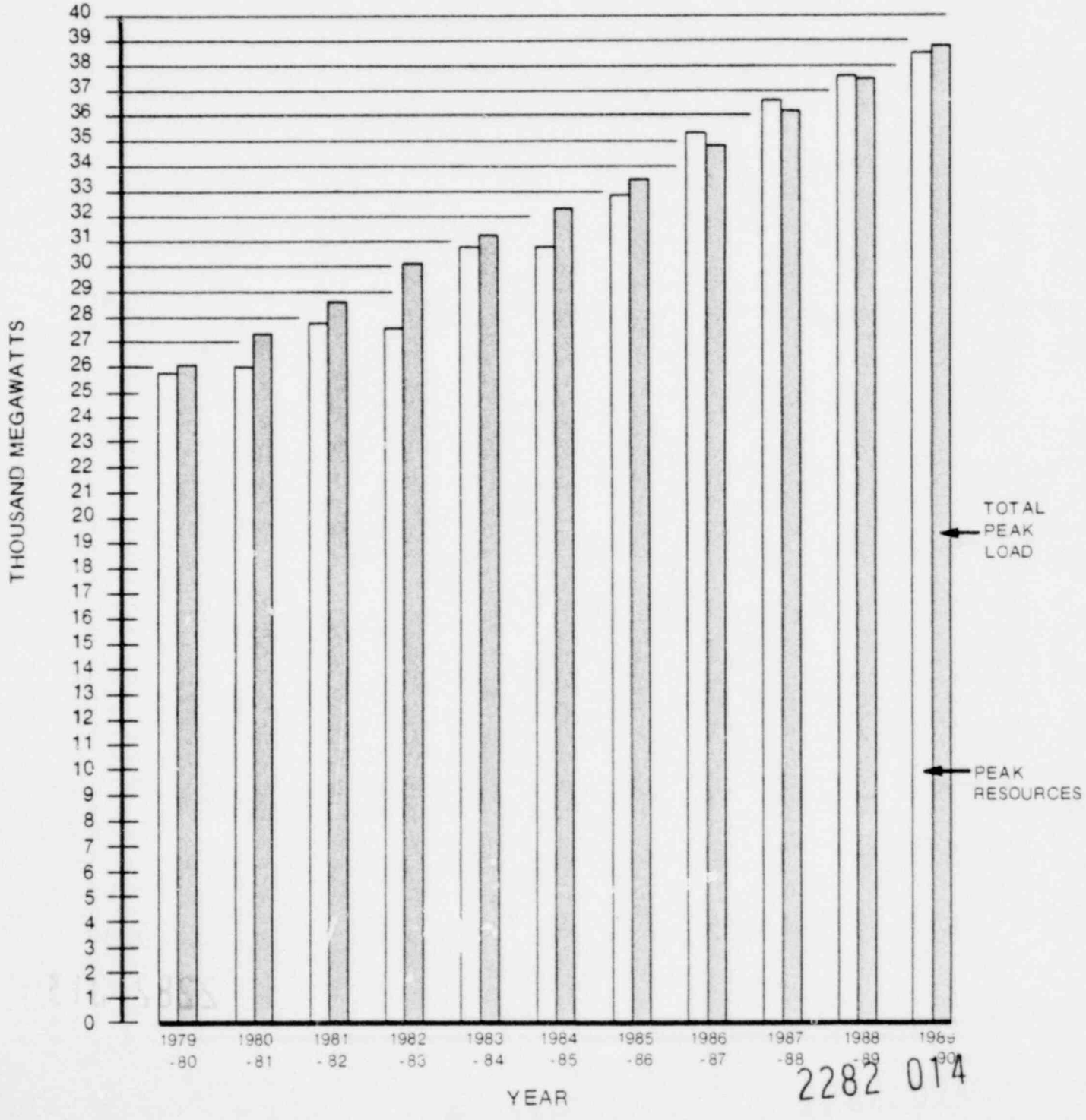
(1) Firm load or the load which a utility or agency is committed to supply.

(2) Interruptible load or the load which by agreement can be curtailed due to adverse water or shortage of machine capacity.

WEST GROUP FORECAST

PEAK LOADS AND RESOURCES
(ADVERSE HYDRO)





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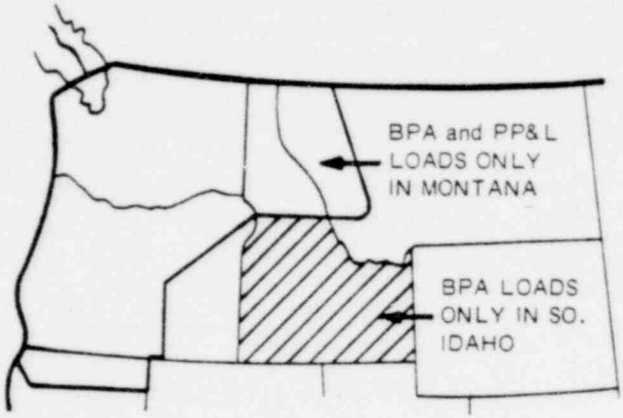
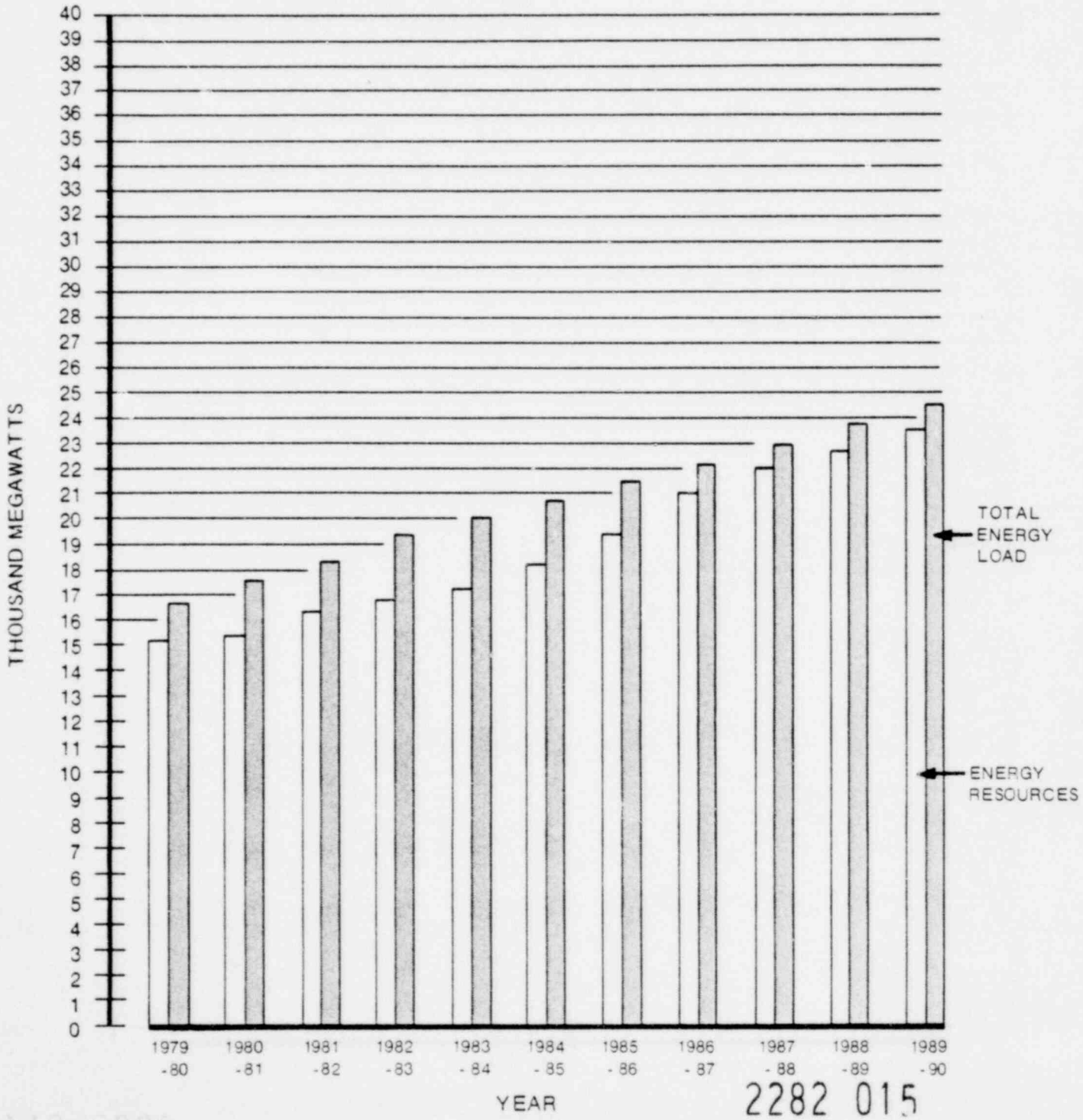
WEST GROUP FORECAST

ENERGY LOADS AND RESOURCES
(ADVERSE HYDRO)





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WEST GROUP FORECAST - ESTIMATED LOADS AND RESOURCES
JULY 1979-JUNE 1990

Figures are megawatts.		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1. Total Area Peak Load (January)		26,041	27,345	28,676	30,046	31,162	32,296	33 514	34,786	36,101	37,462	38,845
2. Net Peak Resources 1/		28,911	29,540	31,843	32,039	35,804	36,302	38,835	41,826	43,864	45,149	46,332
3. Reserve Requirements		(3,125)	(3,555)	(4,015)	(4,507)	(4,986)	(5,490)	(6,033)	(6,609)	(7,220)	(7,492)	(7,769)
4. Net Peak Resources For Load		25,786	25,985	27,828	27,532	30,818	30,812	32,802	35,217	36,644	37,657	38,563
5. Peak Surplus (Over Total Load)		(255)	(1,360)	(848)	(2,514)	(344)	(1,484)	(712)	431	543	195	(282)
6. Total Area Energy Load (July-June)		16,743	17,569	18,390	19,326	20,028	20,720	21,423	22,156	22,923	23,717	24,538
7. Net Energy Resources 1/		15,476	15,676	16,723	17,153	17,519	18,446	19,755	21,353	22,275	23,064	23,917
8. Reserve Requirements		(330)	(318)	(330)	(325)	(324)	(336)	(349)	(356)	(368)	(380)	(398)
9. Net Energy Resources For Load		15,146	15,358	16,393	16,828	17,195	18,110	19,406	20,997	21,907	22,684	23,519
10. Energy Surplus (Over Total Load)		(1,597)	(2,211)	(1,997)	(2,498)	(2,833)	(2,610)	(2,017)	(1,159)	(1,016)	(1,033)	(1,019)
11. Interruptible Load (Included in Lines 1 and 6)	-Peak	1,079	1,134	1,132	1,123	1,133	1,144	1,154	1,165	1,175	1,185	1,195
	-Energy	1,056	1,109	1,092	1,100	1,111	1,121	1,132	1,142	1,151	1,162	1,172
12. Fossil-Thermal & Miscellaneous Resources (Not Included Above) 2/	-Peak	-	-	-	-	-	-	-	-	-	-	-
	-Energy	688	683	683	683	683	683	677	677	677	677	677
Probability that Resources Will Be Insufficient to Meet Total Energy Load in at Least 1 Period of 3/												
13. Year Shown	-%	37.9	47.6	43.5	46.2	50.7	44.6	37.5	33.7	36.0	34.4	37.6
14. Years 1979-80 Through Year Shown	-%	37.9	63.6	76.8	85.6	92.2	95.1	96.6	97.5	98.0	98.5	98.9
Probability that Resources Will Be Insufficient to Meet Firm Energy Load in at Least 1 Period of 3/												
15. Year Shown	-%	15.1	20.3	22.0	23.9	27.8	21.7	14.0	10.6	14.2	13.1	15.9
16. Years 1979-80 Through Year Shown	-%	15.1	29.0	42.1	53.2	64.6	70.6	74.6	76.9	80.0	82.3	84.9

1/ Resources include hydro; small fossil-fuel plants; Hanford-NPR through June 1983; Centralia; Trojan; Colstrip #1 and #2 (50%), #3 and #4 (60%); WPPSS Nuclear #1, #2, #3, #4, #5; Boardman (90%); Skagit #1 and #2; Pebble Springs #1 and #2; and net contractual imports/exports with utilities outside the Area. Hanford is not included as a peak resource. Estimated amounts for scheduled maintenance (energy only) and for hydro realization factor (peak only) have been deducted. All existing thermal units and future thermal units under 500 megawatts (peak and energy) are included in amounts as submitted by respective project owners. The energy availability of all future thermal units 500 megawatts or larger has been included as 60% of the first full year and 75% thereafter.

2/ The energy megawatts tabulated in line 12 reflect the amounts of energy available from existing fossil and combustion-turbine installations which may be considered available as reserve energy resources. These are predominately petroleum-fueled plants utilizing high-cost fuels of questionable availability. The amounts are in addition to those included as firm energy resources in line 7.

3/ Based on same load and resource data as other tabulations herein, except that there is no consideration of energy reserve requirements or realization factor. Study initialized on the basis of full reservoirs on July 31, 1979. An explanation of these probability figures is found in Section I "Discussion of Detailed Report" under the subtitle "Energy Reserve Planning Model".

WEST GROUP FORECAST - ESTIMATED LOADS AND RESOURCES - contd.
JULY 1979 - JUNE 1990

New Generating Units Installed During the Report Period

Plant	Initial Operation	Date of Completion	Nameplate Rating	
Chief Joseph	Jan 1979	May 1979	380	
Grand Coulee	Jun 1979	Jul 1979	1,400	
Grand Coulee Pump-Generators	Dec 1980	Dec 1981	200	
Rock Island	Feb 1979	Aug 1979	204	
Lower Monumental	Feb 1979	Apr 1979	405	
Bonneville	May 1981	Jul 1982	558	
Mayfield	May 1982	May 1982	40	
Libby	Nov 1983	Nov 1983	420	
Libby Reregulating	Jan 1984	May 1984	76	
Cougar	Sep 1985	Sep 1985	35	
Strube	Sep 1985	Sep 1985	4	
Colstrip #3 and #4 (60% for Area Resource)	Jul 1983	May 1984	980	*
Skagit #1	Sep 1986	Sep 1986	1,330	
Skagit #2	Sep 1988	Sep 1988	1,330	
Boardman (90% for Area Resource)	Jul 1980	Jul 1980	504	*
Pebble Springs #1	Mar 1987	Mar 1987	1,367	
Pebble Springs #2	Apr 1989	Apr 1989	1,367	
Jim Bridger #4	Dec 1979	Dec 1979	509	**
Washington Public Power Supply System #2	Sep 1981	Sep 1981	1,100	
Washington Public Power Supply System #1	Dec 1983	Dec 1983	1,373	
Washington Public Power Supply System #3	Dec 1984	Dec 1984	1,316	
Washington Public Power Supply System #4	Jun 1985	Jun 1985	1,373	
Washington Public Power Supply System #5	Jun 1986	Jun 1986	1,316	
Total New Installations			17,587	

December 31, 1978 Installed Capacity - Hydro	24,982			
- Hanford Steam	800			
- Existing Thermal & Miscellaneous	1,399			
- Centralia	1,330			
- Colstrip #1, #2	358	*		
- Jim Bridger #1, #2, #3	1,526	**		
- Trojan	1,216		31,611	
Total Installed Capacity - Megawatts			49,198	

* Portion of plant shown as a West Group Area resource.
** Generation from Jim Bridger is included in imports from East.

WEST GROUP FORECAST

Discussion of Detailed Report

Objectives

The West Group Forecast is an area report prepared annually by the Loads and Resources Subcommittee of the Pacific Northwest Utilities Conference Committee. Its objective is to show the estimated peak and energy loads and the peak and energy capabilities of existing and planned resources to meet these requirements. The basic criteria employed in the preparation of the report are described in the following text.

Details of estimated loads and resources for the period July 1979 through June 1990 are tabulated in the report. Comparisons of total peak and energy loads with peak and energy resources indicate when deficiencies or surpluses may be expected in the area under adverse streamflow conditions. The probabilities of failing to meet area energy loads are determined for each year.

The critical-period hydro energy capabilities have been predicated on coordinated operation of all West Group resources, including the operation of Canadian Storage, as required by the Pacific Northwest Coordination Agreement. In preparing the analysis, an attempt was made to shape any surplus or deficiency as uniformly as possible during the critical period.

Tabulations "Summary of Resources" include the energy capability and January peak capability for each of the contract years (July through June) of the report period. Summary tabulations by months for 40 years of water record showing the surpluses over the firm energy load carrying capability are also included. A more detailed analysis of individual plant January peak capabilities and critical-period energy capabilities is tabulated in Section V, "Peak and Energy Capability".

Operating Area Covered

The report area includes the entire state of Washington, the panhandle of Idaho, Oregon except for the southeastern part of the state, a portion of northern California, the Bonneville Power Administration and Pacific Power & Light Company service areas in Montana, and the BPA loads and USBR resources in southern Idaho. It does not include the service areas of Idaho Power Company, Utah Power & Light Company, The Montana Power Company, California-Pacific Utilities Company, B.C. Hydro and Power Authority or West Kootenay Power and Light Company, Limited. Firm contractual arrangements of utilities operating in the West Group Area with utilities outside this area have been included in summary tabulations.

Planning Estimates

The West Group Area loads used for planning purposes are the sum of the system peak loads and the system energy loads estimated by each of the utilities operating in the area. The resulting total average annual rate of load growth for the area for the 10-year period is approximately 4.1% peak and 3.9% energy. The estimates include an increase in total BPA industrial load, due to technological changes, of approximately 40 megawatts per year.[1] Despite the reduced load estimate appearing in this year's West Group Forecast, energy deficiencies occur in every year through 1989-90. The total West Group peak and energy loads by months are found in Section VII of the report. Section VII also includes a breakdown of loads by major utilities.

The utilities are keenly aware of the need for accurate load forecasts in the planning and scheduling of resources to meet the projected power requirements. The costs and difficulties of acquiring capital are at historic peaks, and the utility industry is very capital intensive. Therefore, scheduling of resources in advance of need could result in an adverse financial impact on utilities and their customers. Conversely, there would be severe adverse economic effects on the people and commerce of this area and a difficult allocation or rationing problem for state governments if there were insufficient resources to meet the power needs. Because of the vital importance of balancing the loads and resources, the load-resource analyses are reviewed at least annually. If experience shows that more than enough resources have been scheduled, the schedules can be corrected by delaying completion; but if too few resources have been scheduled, there may be no way to avoid the public injury from the resulting shortage.

The BPA system load excludes Grand Coulee and Roza pumping loads and USBR local use at Grand Coulee, and compensation for these loads is accomplished by reducing Grand Coulee and Roza resources by equivalent amounts.

The Forecast reflects plans to provide resources to serve both the peak and energy components of the total Bonneville Power Administration industrial loads, approximately 25% of which may be interrupted for any reason. The BPA interruptible load has been noted in Section VII on the sheet "Information on Loads", and is shown on line 11 in Section I on the summary sheet "Estimated Loads and Resources". These loads operate under contracts which

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[1] Pending BPA's development and adoption of an allocation formula, BPA has not determined that it will serve either the present or new loads of its existing industrial customers after their existing contracts expire. This statement applies to all places in this report that include or make reference to BPA's industrial loads.

do not assure a firm power supply; therefore, it is to be expected that these loads might be curtailed if necessary during an adverse water year.

Peak load estimates are based on 60-minute clock-hour averages. Within the hour, short-time loads will be in excess of the hourly average. However, peak load diversities between systems result in an area peak lower than the sum of system peaks. The short-time peak loads in excess of the hourly average and the diversity in system peak loads are of the same general magnitude and tend to cancel each other.

Energy loads on the summary sheets are shown as a July-June average.

Econometric Model Estimates

During the last three years the PNUCC has utilized an econometric load forecasting model to forecast West Group loads for the purpose of checking the reasonableness of the forecast of West Group Area loads prepared by the area utilities. The model was originally developed by a nationally recognized consulting firm and provided to the PNUCC in January 1976. Since that time, the Model Review Subcommittee of Task Force 6 of the PNUCC has continued to maintain a current data base and develop the model to improve its forecasting capabilities.

The PNUCC model, as with any econometric model, attempts to quantify relationships between electric energy demand and various causal factors. These relationships are developed through statistical analysis of historical data. The model handles each of the three major load classifications (namely, residential, commercial and industrial) separately. The residential sector is disaggregated to consider the saturation levels of various energy end uses. Within the industrial sector, ten industry types are separately forecast.

The PNUCC econometric model is a valuable tool for analyzing West Group Area loads for several reasons. First is its ability to explicitly handle price and income effects. With the recent dramatic increases in energy prices and expected future increases, it is particularly important to quantify their impact on electric loads. Second is its ability to accept forecasts of demographic and economic factors, such as population and employment, thus providing some consistency between regional forecasts of these factors. Third, this is the only model available which covers the entire West Group Area. Finally, given a set of input values, the model will always produce the same results. This facilitates testing the sensitivity of forecasted loads to changes in inputs or model structure without being influenced by prejudices of the person running the model.

However, the model has limitations which must be considered when interpreting results. The model's results are dependent on

forecasts of population; family income; employment; prices of oil, gas and electricity; and so on. Even if the model perfectly simulated the historical relationships between these factors and electric loads, the projected loads could be no better than the forecasts of these factors.

In an effort to improve the accuracy of these forecasts, the input values for this year's forecast were prepared during a two-day workshop. The intent of the workshop was to bring together individuals representing a broad range of backgrounds and interests who could provide their expectations concerning the economic and political factors affecting the input values. Half of the nearly 70 participants were nominated by the States of Idaho, Oregon and Washington and represented various state agencies, and environmental and consumer groups. The remaining participants were members of the PNUCC's Task Force 6.

Inputs addressed in the workshop were oil prices, gas prices, conservation, per capita income, population and persons per household, and solar energy savings. A separate session was held for each input during which two or more experts presented background information on the input and their views of the future input values. Time was provided for the participants to ask questions, discuss the presentations and present their own views. Following each session, each participant was asked to forecast values of the inputs. For most inputs three values were required: a most probable, a reasonable low, and a reasonable high. The reasonable low and reasonable high values were to represent a 90 percent confidence level. These values were entered into the model's data base for use in forecasting electric sales. The scenario results of the most probable, reasonable low, and reasonable high votes will be included in the documentation.

An advantage of selecting input values with this procedure is that it incorporates the judgement of a large number of individuals including minority opinions. The workshop also was useful in bringing together individuals from various groups involved in energy forecasting to share views on important input values.

A computer program was used to randomly draw one value for each of the most probable inputs with each participant's choice having an equal probability of being drawn. The model was then solved using these values and the results recorded as one possible future. The process was repeated 500 times to produce a distribution of future electric loads resulting from the randomly selected input values.

The average of the 500 forecasted annual energy growth rates during the period July 1979 through June 1990 is 3.9 percent. The 90-percent confidence band of the forecasted annual growth rates provides a range from a low of 3.0 percent to a high of 4.8 percent.

This large range of growth rates produced by the econometric model indicates the uncertainty in forecasting electric loads.

The fact that both the West Group Forecast and the average of the 500 econometric model runs resulted in an annual growth rate of 3.9 percent cannot be construed as indicating precision in forecasting. If any of the input values to the econometric model were changed, the average of the 500 runs could have been different, but would likely have fallen within the 3.0 to 4.8 percent range.

Further, econometric models assume that responses to economic conditions will be the same in the future as they have been in the past and that no changes in technology, governmental regulation or international politics will occur to upset the validity of the model.

For these reasons, an econometric model provides a valuable tool for analyses but cannot be expected to provide a precise forecast of future growth or even predict a narrow band of possible growth projections with a high degree of confidence.

A complete description of the model and the model results are contained in a report prepared by the Model Review Subcommittee.

New Resources

New hydro projects included in the determination of the January peak and firm energy capabilities in the report are those considered to be assured. All federal projects included are authorized projects which are under construction or have been funded for construction or preconstruction planning. Nonfederal hydro projects include additional capability at High Ross. A license application has been issued by the Federal Energy Regulatory Commission (now pending before the U.S. Circuit Court of Appeals) to raise the height of Ross Dam to a new lake elevation of 1725 feet over the present lake elevation of 1602.5 feet.

The energy resources include the generation in the United States resulting from the storage regulation of the three Canadian reservoirs (Duncan, Arrow, and Mica) in coordination with the Libby reservoir and other power facilities in the West Group Area. No adjustments were made in downstream project power capabilities for the return of Canadian Entitlement to Canada inasmuch as the power has been purchased on a long-term basis by utilities in the Pacific Northwest. This year's report assumes Libby generation will be reduced in 1984 due to water being diverted from the Kootenay River to the Columbia River at Canal Flats in Canada.

The new projects scheduled as part of the area's resources plan for meeting loads through 1989-90 are listed in Section II, and a chronological tabulation of the expected cumulative hydro nameplate ratings is given in Section IV. Section II also includes an enumeration of the various hydro projects which are under consideration in this area but were not included in the calculations.

New thermal plants included in this year's report are those for which siting certificate applications have been made and the Pacific Northwest Utilities Conference Committee considers essential if the area's load requirements are to be met through the year 1989-90. The new thermal projects include some from which only part is scheduled as a West Group resource in meeting load requirements. These include 60 percent of Colstrip Units #3 and #4 and 90 percent of Boardman. Pacific Power & Light Company's (PP&L) 66-2/3 percent share of Jim Bridger plant continues to be available to serve West Group loads for a number of years; however, because of the delay in the receipt of all permits necessary to construct the Midpoint-Malin 500-kv transmission line providing additional transmission capacity between Wyoming and the West Group, the amount of power and energy available from Wyoming has been reduced by the amount bottlenecked in Wyoming. This is reflected in the imports from East Group utilities along with PP&L's surplus Wyoming system generation after meeting Wyoming's firm loads. The Midpoint-Malin line is assumed operational in September 1981.

The energy capabilities of large new thermal resources (500 megawatts or larger), are computed on an annual plant factor increasing from 60% for the first full year of operation to 75% for all years thereafter. The plant factors include allowance for scheduled maintenance outages. PNUCC Task Forces are continuing evaluation of appropriate plant factors for planning.

The scheduled dates of new thermal resources as shown in Section II are as submitted by the project sponsors; however, the peak and energy capabilities from such plants are based on the "Probable Energy Date" as later described in the text. The "Summary of Resources" tables in Section III show zeros in the intervening periods.

For new thermal plants under 500 megawatts, the energy capabilities used are those submitted by the plant construction agent. This year's report shows all thermal energy generation as a July-June average.

The impact of the second Bacon siphon and tunnel for the Bureau of Reclamation's Columbia Basin Project is not reflected in this year's report. Negotiations with the water users have not reached a point where realistic estimates of increased pumping can be made. Any changes are expected to be gradual.

Joint Area Planning

The Pacific Northwest's publicly- and cooperatively-owned systems, investor-owned utilities, BPA and the Corps of Engineers have historically cooperated in informal, long-range planning with respect to future regional power requirements. BPA's participation in regional programs, together with other alternatives, has been considered in a "Draft" Role Environmental Impact Statement that is now being put in a final form. BPA is also developing a policy

for allocating its power supply amongst its existing customers and competing bids from potential new customers. There is proposed legislation before the Congress that could have a substantial impact on regional power planning.

The scheduled dates for commercial operation of the new thermal facilities are the dates determined by the sponsoring utility for each plant. Experience throughout the United States has conclusively demonstrated in the last few years that many more large thermal plants are delayed beyond their scheduled completion dates than are completed on time. The reasons are many and may be caused by delays at any point along the paths of their respective development programs. Which plants may be delayed and for what reason or for how long cannot be anticipated in advance. Yet, on the average they will be delayed; and if the area were relying on firm resources based on every project being completed on its scheduled commercial operation date, the area's planned capacity and energy would not be realized.

It is important that the area's indicated resources realistically reflect the energy and capacity which can be expected on the average, recognizing that some of the scheduled completion dates will not be met. The capacity and energy resources in this report are therefore based on a Probable Energy Date which is the later of the Scheduled Operation Date or the Milestone Date.

Milestones

Milestone dates are determined from a standardized schedule reflecting anticipated average planning and construction times. The Milestones provide a means for utilizing a standardized schedule without upsetting the developmental program of each project planned by its sponsor. It is considered essential that each sponsor vigorously pursue his planned schedule in order that the area's planned levels of energy and capacity can be achieved despite the inevitable delays at some projects.

The Milestones are designed to reflect possible plant delays in excess of those considered in the scheduled Commercial Operation Dates. The causes for these delays include many which are not under the control of the building agency or utility. These include litigation and ever-changing procedures affecting site approvals, construction permits, and licensing. It is not anticipated that they will occur at each plant, but rather that the delays will be greater at some and less at others, with the consequence that the region's energy and capacity resources will be properly estimated by applying an average delay to each plant. Milestones are reviewed each year and modified whenever required by changed conditions.

More lead-time is required for a thermal plant in Oregon than in the other states of the West Group Area because a 120-day notice of intent is required before the application for site certification is filed. The Oregon Facilities Siting Council is then allowed two years for a decision.

A project sponsor may select a schedule of greater duration than that indicated by the Milestones, and it is assumed that where this is done the schedule of activities leading to the indicated date for commercial operation is such that the scheduled date is the most probable date.

A tabulation is included which compares thermal plant schedules as submitted by project sponsors and the Probable Energy Date. Charts showing the Milestones for both coal-fired and nuclear plants are also included at the end of this section.

Present Resources

Present resources include all generating resources presently available within the area. Small fossil-fuel plants and combustion turbines have been included as firm resources in the amounts submitted by each of the project owners. Where these plants are included as peaking resources and the firm energy included is the amount associated with such peaking operations, the remaining energy capability is considered available for energy reserves. However, these are petroleum-fueled plants utilizing high-cost fuels of questionable availability.

The Hanford-NPR project has been included as a firm energy resource through June 1983. Due to its frequent refueling cycle, the project is not considered dependable as a peak resource, and is, therefore, not included as such.

All existing thermal plants regardless of size have been included as firm resources in the amounts submitted by the plant operator.

Interchanges With Systems Outside the Area

The resources include firm arrangements for interchanges with systems outside the reporting area. These arrangements (excluding PP&L's Wyoming transfers) are firm contracts with utilities to the East, Canada, assignment of Canadian Entitlement Exchange Power to the State of California, deliveries of power to the Central Valley Project, and capacity sales and exchanges with California utilities.

Transfers to the Pacific Southwest are amounts delivered to the California-Oregon border. The incremental losses to the border associated with deliveries to Central Valley Project, Canadian Entitlement Assignment and peak/energy exchanges are shown on the "Summary of Resources" sheets. These losses were deducted in determining the amount of peak and energy available to meet area requirements. Further breakdowns on interchanges with systems outside the area are tabulated in Section VI to permit users to more readily assess the effect of these transactions on area requirements. All energy transfers have been included as a July-June average.

Reservoir Operation

A comprehensive analysis of monthly secondary energy using historical flows of record was made for all load years. Through this type of studies it is possible to analyze area resources and study reservoir regulations that would occur for all water years including those with minimum runoff and those with extremely high runoff. In making these analyses, procedures as developed under the Pacific Northwest Coordination Agreement were followed.

In computing the critical-period energy capability, all reservoirs in operation prior to the beginning of the operating year being studied were assumed to be full at the beginning of the storage control period and drafted to their normal bottom elevation by the end of the critical period to produce maximum firm energy and establish critical rule curves. This maximum firm energy becomes the Firm Energy Load Carrying Capability (FELCC) of the system.

The 40-year studies assumed that all reservoirs were full at the beginning of the first year of the 40-year period. Reservoirs were drafted to energy content curves except when drafts below energy content curves were needed to carry FELCC. When draft below energy content curve was required, an attempt was made to draft all reservoirs a proportionate amount between energy content curves and critical rule curves. The energy content curves were adjusted in each month from January to April on the basis of subsequent runoff during that year to produce the maximum amount of secondary energy consistent with the requirements for refilling the reservoirs.

In addition, flood control requirements developed by the U. S. Corps of Engineers for each of the major reservoirs were considered as a mandatory draft whenever the energy content curve was above the flood control requirement.

Where reservoirs have restrictions on their operation for power production those restrictions were observed in setting up the draft schedules in these analyses.

Restriction on Usability of Resources

The Uniform Regional Planning Assumptions adopted by the PNUCC state that each system will take into account the ability of hydro generation to achieve claimed capability. Under this criterion BPA last year submitted a 5 percent realization factor on the January peak capability of the Federal system. This factor was an adjustment representing the reduction in capacity which would result in actual operation from inability to maintain all pools at their optimum levels from environmental restrictions, etc.

This year the Federal System realization factor concept has been modified to reflect its inability to maintain generating

capabilities equal to load requirements over the extended 6- to 10-hour heavy-load periods. An adjustment amount has been determined by which the total Federal 1-hour peak value has been reduced to obtain the total Federal sustained peak value for each January.

In addition to the reduction for sustained peak, tailwater constraints have been imposed on operations at Grand Coulee which reduce the peaking capability for years 1980 through 1983. In order to reflect this condition, an adjustment amount of 1,545 megawatts has been deducted in this year's report in the first 4 years.

Thus, this year a Federal peak adjustment value (hydro realization factor) is shown which is the total of these two amounts and varies from 3,963 megawatts in January 1980 to 2,590 megawatts in January 1990. Consequently, the Total Peak Resources shown on the summary sheet in Section I have been reduced by these amounts.

Hydro energy capabilities have not been reduced to reflect energy loss due to spill and discharge requirements for downstream fish migration.

Except for the bottleneck in transferring PP&L's Wyoming resources to the West Group, it has been assumed that there will be no restrictions on the utilization of all the available resources because of bottlenecking transmission lines, transformers, etc., or because of reactive loading of generating facilities.

Scheduled Maintenance

In order to provide an indication of the maintenance normally undertaken in the Pool, we have included estimated amounts for scheduled maintenance in derivation of energy capabilities. These amounts are shown on tabulations "Summary of Resources". The amounts of maintenance for hydro and existing small thermal resources are based on a procedure developed by the Coordinating Group of the Northwest Power Pool and utilize a percentage of energy capabilities by months. The hydro maintenance used in the derivation of January peak capabilities is included as part of the reserves used in this report which were determined by the percentage method.

Reserve Requirements

In the derivation of January peak capabilities, reserves have been deducted from the tabulation of peak resources. The area peak reserves used are the greater of (i) forced-outage reserves as computed under the Pacific Northwest Coordination Agreement plus one-half year's load growth for utility-type loads plus hydro maintenance or (ii) 12% reserve for the first year of the study, increasing 1% per year to 20% and remaining at 20% thereafter. The reserve requirements are shown in Section I on the summary sheet "Estimated Loads and Resources".

The percentage method has been the controlling factor for the month of January between these two methods since they were initiated in 1974 and is used in this report.

These reserves are used primarily for long-range planning and take into account forced-outage reserves, hydro maintenance, unanticipated load growth, project construction delays, and other contingency-type reserves. The percentage reserve method was a consensus of the representatives of PNUCC members to reflect peaking requirements, taking into account that new resource construction may take up to ten to twelve years and that a project may be delayed much more easily than it can be accelerated.

The area energy reserves shown in Section I on the summary sheet are one-half year's load growth for utility-type loads.

Energy Reserve Planning Model

The Energy Reserve Planning Model was developed to provide an improved method for analyzing the load-resource relationship in a hydro-based system increasingly dependent on thermal generating facilities. Our traditional techniques have combined an extremely comprehensive treatment of hydro energy capabilities with a single-alued estimate of thermal energy generation, and they have only partially reflected the responses of operating policies to system conditions. So long as the proportion of thermal energy generation in the system was quite small, these established methods were adequate.

In the future, however, the reliability of energy supply will be affected not only by the vagaries of hydro runoff, but also by the uncertainties of thermal plant construction and availability once in service. These plants individually represent large portions of the total energy supply, and their lead-times, at best, are very long. A single plant's delay in construction or poor performance after completion might have a profound impact on system reliability, which cannot be measured in an analysis where the plant is represented as having a single probable installation date and a single average capacity factor.

Along with the uncertainties of hydro and thermal energy capabilities, the wide range of possible energy loads on the system in future years contributes to the doubts about the sufficiency of reliability evaluations based on single-point estimates.

The Model is a probabilistic simulation program, designed to treat rigorously the four general components of the energy load-resource picture--hydro, thermal plant construction, thermal plant availability, and load--combined with logic which operates the system model realistically in response to simulated conditions of these components. It is based on a modelling technique called Monte Carlo Simulation, in which statistical results are derived from a mass of repeated trials. Within each trial, the model

system is operated into the future continuously, and the state of each variable in each time interval is determined by a random draw from an appropriate probability distribution. Each trial, therefore, represents a possible real outcome, but many trials are necessary before a statistically valid conclusion can be drawn about the future. The probabilities shown in this report are based on a study comprising 2,000 trials. At the beginning of each trial, storage contents are defined on the basis of the latest available forecast at the time of the study.

The representation of energy load in the program presently has no probabilistic features; a list of load forecasts is input and used as fixed quantities. Work is continuing on logic which will treat the forecasted loads as a trend about which yearly deviations will be randomly generated.

As it stands, the Energy Reserve Planning Model is believed to be a significant advance in the state of the techniques available to analyze the energy load-resource situation. But it is not a finished product, nor will it ever be. Efforts to improve its structure and data will be continuous, and frequent program changes are expected.

The probabilities of the resources being insufficient to meet the total energy loads during each year of the forecast period and cumulatively through the forecast period are shown on lines 13 and 14 of the preceding tabulation of loads and resources. The probabilities of an insufficiency increase to a maximum of 50.7 percent in the year 1983-84 and continue at a very high level throughout the forecast period. The cumulative probabilities of insufficiency show that there is a 92-percent probability of insufficiency prior to 1984-85 and a 98.9-percent probability that an insufficiency will occur during the forecast period.

The corresponding figures for resources being insufficient to meet firm energy load are shown on lines 15 and 16. They reach a maximum of 27.8 percent in 1983-84 and indicate an 85-percent probability of insufficiency sometime during the forecast period.

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THERMAL PLANT SCHEDULES

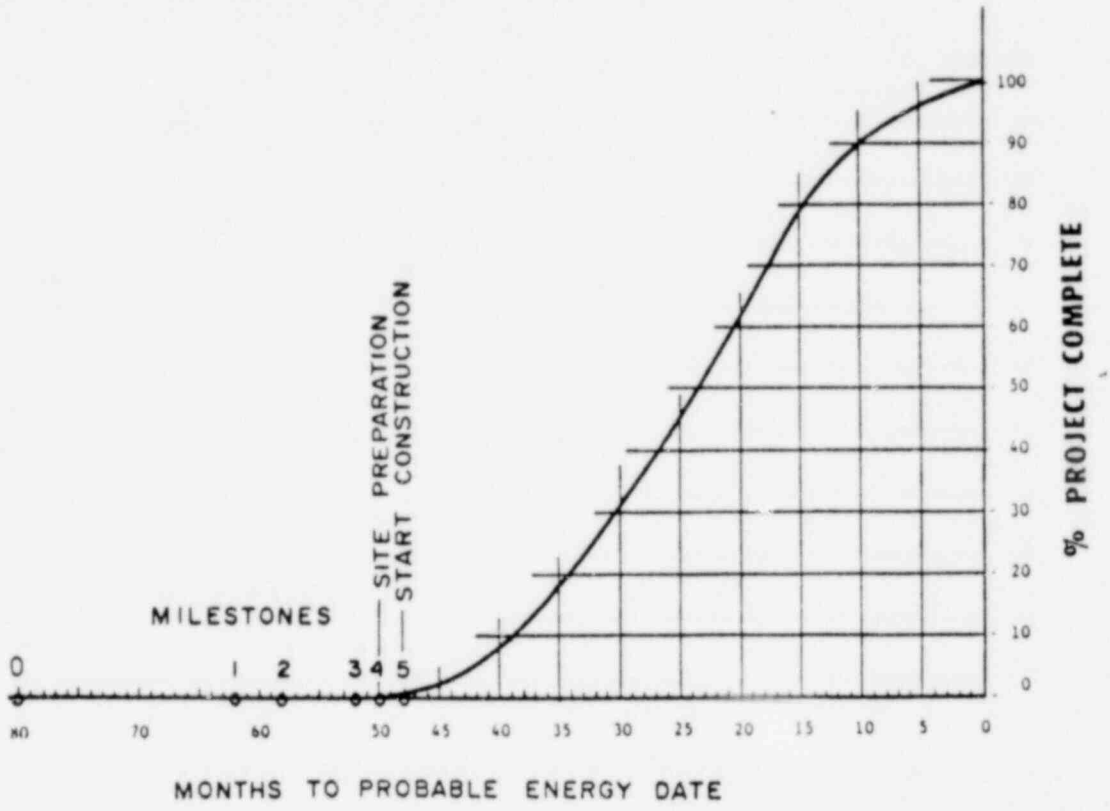
PLANT		CAPABILITY MW	SCHEDULED COMMERCIAL OPERATION	PROBABLE ENERGY DATE
1/ Jim Bridger	4	500	Dec 1979	Dec 1979
2/ Boardman		530	Jul 1980	Nov 1980
WNP	2	1100	Sep 1981	Sep 1981
	1	1250	Dec 1983	Dec 1983
	3	1240	Dec 1984	Mar 1985
	4	1250	Jun 1985	Jun 1985
	5	1240	Jun 1986	Jun 1986
3/ Colstrip	3	700	Jul 1983	Jul 1983
	4	700	May 1984	May 1984
Skagit	1	1288	Sep 1986	Nov 1986
	2	1288	Sep 1988	Nov 1988
Pebble Springs	1	1260	Mar 1987	Mar 1987
	2	1260	Apr 1989	Apr 1989

1/ Generation from Jim Bridger is included in imports from East.

2/ 90% of this unit is dedicated as a West Group Area resource.

3/ 60% of each unit is dedicated as a West Group Area resource.

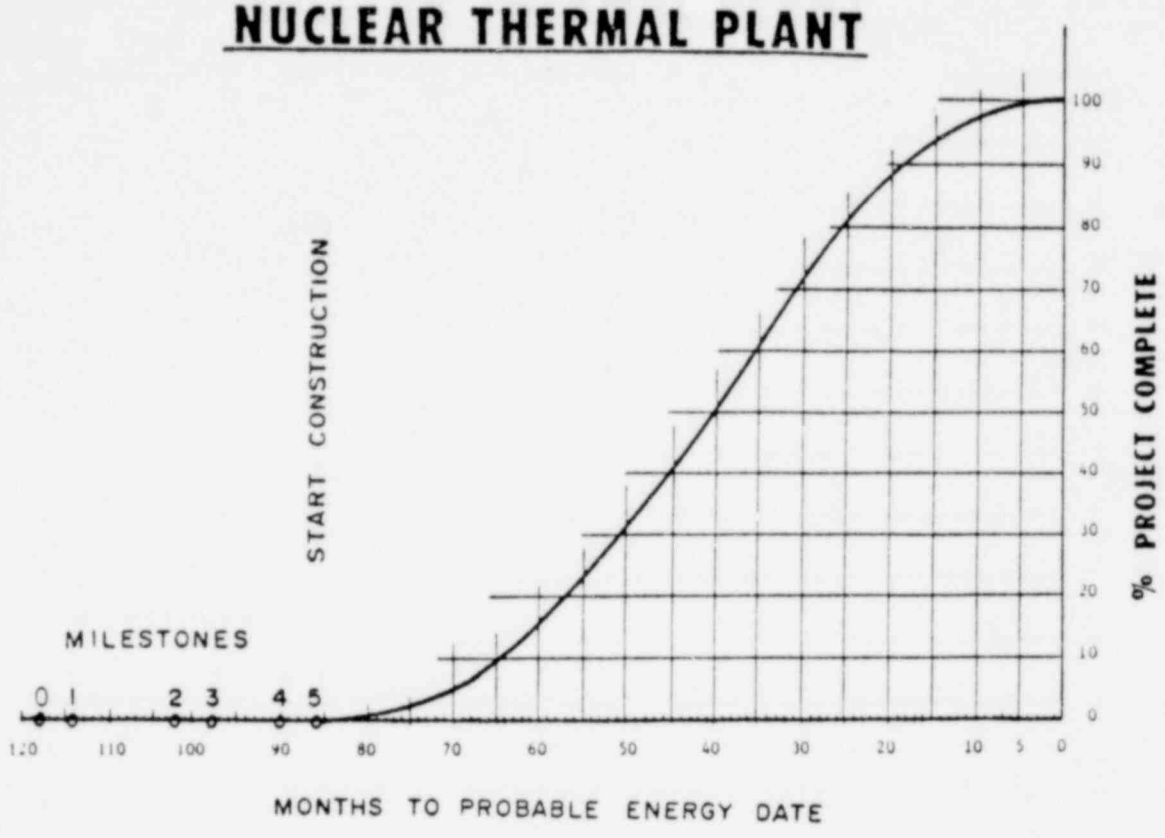
MILESTONES
COAL FIRED THERMAL PLANTS



PRECONSTRUCTION MILESTONES

MILESTONE 0	80 months	(Oregon only) Notice of Intent filed with state
	76 months	(Oregon only) Application for Site Certificate filed
MILESTONE 1	62 months	Final site selection
MILESTONE 2	58 months	Boiler and Turbine Generator ordered
MILESTONE 3	52 months	Environmental and Siting Permits, Licenses, etc., issued
MILESTONE 4	50 months	Start site preparation
MILESTONE 5	48 months	Start construction

MILESTONES
NUCLEAR THERMAL PLANT



PRECONSTRUCTION MILESTONES

MILESTONE 0	118 months	(Oregon only) Notice of Intent filed with state
MILESTONE 1	114 months	Regional selection of unit (Oregon only) Application for Site Certificate filed
MILESTONE 2	102 months	Following Actions completed: (a) NSSS contract awarded (b) AE selected (c) (Except Oregon) Site selected
MILESTONE 3	98 months	Project becomes firm resource after following actions completed: (a) Environmental Report filed (b) Preliminary Safety Analysis Report filed (c) (Except Oregon) State site application filed
MILESTONE 4	90 months	Site certified by state
MILESTONE 5	86 months	Construction Permit or Limited Work Authorization issued by AEC

SECTION II

Additional Generating Capacity

Actually Installed - January 1978 through December 1978
Scheduled for Service - January 1979 through June 1990
Partial List of Plants Under Consideration

NEW GENERATING CAPACITY ACTUALLY INSTALLED
JANUARY 1978 THROUGH DECEMBER 1978

Plant	Unit No.	Location	Type	Nameplate Rating-Mw	Capability Expected-Mw	Date of Operation
Bonneville Power Administration						
Chief Joseph (USCE)	20	Bridgeport, Washington	Hydraulic	95.0 each	102.9 each	Feb 1978
	21					Jun 1978
	22					Jun 1978
	23					Aug 1978
Little Goose (USCE)	4	Starbuck, Washington	Hydraulic	135.0 each	155.25 each	Jan 1978
	5					May 1978
	6					Dec 1978
Grand Coulee (USBR)	22	Coulee Dam, Washington	Hydraulic	700.0	805.0	May 1978
Lower Granite (USCE)	4	Almota, Washington	Hydraulic	135.0 each	155.25 each	Feb 1978
	5					Apr 1978
	6					May 1978
The Washington Water Power Company						
Northeast Turbine	1	Spokane, Washington	Comb. Turbine	61.2	68.0	Dec 1978
Chelan County PUD						
Rock Island	18	Rock Island, Washington	Hydraulic	51.0 each	51.0 each	Jul 1978
	17					Aug 1978
	16					Oct 1978
	15					Dec 1978

NEW GENERATING CAPACITY SCHEDULED FOR SERVICE
JANUARY 1979 THROUGH JUNE 1990

PLANT		UNIT NO.	LOCATION	TYPE	NAMEPLATE RATING-MW	CAPABILITY EXPECTED-MW	EXPECTED DATE OF COMMERCIAL OPERATION
Bonneville Power Administration							
Chief Joseph	(USCE)	24	Bridgeport, Washington	Hydraulic	95.0 each	102.92 each	Jan 1979
		25					Jan 1979
		26					Mar 1979
		27					May 1979
Grand Coulee	(USBR)						
3rd Powerhouse		23	Coulee Dam, Washington	Hydraulic	700.0 each	805.0 each	Jun 1979
		24					Jul 1979
Pump-Generator Additions		P/G- 9		Pumped	50.0 each	57.5 each	Dec 1980
		P/G-10		Storage			Apr 1981
		P/G-11					Aug 1981
		P/G-12					Dec 1981
Lower Monumental	(USCE)	4	Matthew, Washington	Hydraulic	135.0 each	155.25 each	Feb 1979
		5					Mar 1979
		6					Apr 1979
Bonneville	(USCE)						
2nd Powerhouse		F-1	Bonneville, Washington	Hydraulic	13.1	15.1	May 1981
		F-2			13.1	15.1	May 1981
		18			66.5 each	76.5 each	May 1981
		17					Jul 1981
		16					Sep 1981
		15					Nov 1981
		14					Jan 1982
		13					Mar 1982
		12					May 1982
		11					Jul 1982
Libby *	(USCE)	5,6,7,8	Jennings, Montana	Hydraulic	105.0 each	120.75 each	Nov 1983
Libby Reregulating *	(USCE)	1	Libby, Montana	Hydraulic	15.4	17.7	Jan 1984
		2			30.5	35.0	Mar 1984
		3			30.5	35.0	May 1984
Cougar	(USCE)	4	Rainbow, Oregon	Hydraulic	35.0	40.3	Sep 1985
Strube	(USCE)	1	Rainbow, Oregon	Hydraulic	4.5	5.2	Sep 1985

* Scheduled operation dates are tentative pending litigation.

Note: A chronological tabulation of new hydro installations appears in the section on nameplate ratings.

NEW GENERATING CAPACITY SCHEDULED FOR SERVICE -contd.
JANUARY 1979 THROUGH JUNE 1990

PLANT	UNIT NO.	LOCATION	TYPE	NAMEPLATE RATING-MW	CAPABILITY EXPECTED-MW	EXPECTED DATE OF COMMERCIAL OPERATION
Chelan County PUD						
Rock Island	14	Rock Island, Washington	Hydraulic	51.0 each	51.0 each	Feb 1979
	13					Apr 1979
	12					Jun 1979
	11					Aug 1979
Seattle City Light						
High Ross	--	Rockport, Washington	Hydraulic	--	251.0 total	1983-84
Tacoma City Light						
Mayfield	4	Mayfield, Washington	Hydraulic	40.5	45.0	May 1982
Puget Sound Power & Light Company						
Colstrip (60% of units)	3	Colstrip, Montana	Steam	700.0 each	700.0 each	Jul 1983
	4					May 1984
Skagit	1	Sedro Woolley, Washington	Nuclear	1330.0 each	1288.0 each	Sep 1986
	2					Sep 1988
Portland General Electric Company						
Boardman (90% of unit)	1	Boardman, Oregon	Steam	560.0	530.0	Jul 1980
Pebble Springs	1	Arlington, Oregon	Nuclear	1367.0 each	1260.0 each	Mar 1987
	2					Apr 1989
Pacific Power & Light Company						
Jim Bridger (66.67% of unit) 1/	4	Rock Springs, Wyoming	Steam	508.6	500.0	Dec 1979
Washington Public Power Supply System						
WNP #2	1	Richland, Washington	Nuclear	1100.0	1100.0	Sep 1981
WNP #1	1	Richland, Washington	Nuclear	1373.0	1250.0	Dec 1983
WNP #3	1	Satsop, Washington	Nuclear	1316.0	1240.0	Dec 1984
WNP #4	1	Richland, Washington	Nuclear	1373.0	1250.0	Jun 1985
WNP #5	1	Satsop, Washington	Nuclear	1316.0	1240.0	Jun 1986

1/ Generation from Jim Bridger is included in imports from East.

Note: A chronological tabulation of new hydro installations appears in the section on nameplate ratings.

PARTIAL LIST OF NEW GENERATING CAPACITY UNDER CONSIDERATION

PLANT		NO. OF UNITS	LOCATION	TYPE	NAMEPLATE RATING MW	CAPABILITY EXPECTED MW
Bonneville Power Administration						
Anderson Ranch	(USBR) Addition	1	S. Fork Boise River, Idaho	Hydraulic	13.5	17.25
Ben Franklin	(USCE)	16	Ringold, Washington	Hydraulic	53.0 each	61.0 each
Cougar	(USCE) Addition	1	Blue River, Oregon	Hydraulic	35.0	40.25
Dworshak	(USCE) Additions	3	Ahsahka, Idaho	Hydraulic	220.0 each	253.0 each
Garden Valley	(USBR)	4	Garden Valley, Idaho	Hydraulic	43.75 each	43.75 each
Garden Valley Reregulating	(USBR)	4	Garden Valley, Idaho	Hydraulic	9.0 each	9.0 each
Grand Coulee 3rd Powerhouse	(USBR)	6	Coulee Dam, Washington	Hydraulic	600.0 each	690.0 each
John Day	(USCE) Additions	4	Rufus, Oregon	Hydraulic	135.0 each	155.25 each
Lucky Peak	(USCE) Power Additions	2	Boise, Idaho	Hydraulic	17.5 each	20.15 each
		1			57.4	60.0
Lynn Crandall	(USBR)	4	Heise, Idaho	Hydraulic	60.0 each	60.0 each
McNary	(USCE) Additions	10	Umatilla, Oregon	Hydraulic	105.0 each	120.75 each
Palisades	(USBR) Additions	2	Palisades, Idaho	Hydraulic	67.5 each	77.62 each
Upper Scriver Creek	(USBR)	3	Garden Valley, Idaho	Hydraulic	12.5 each	12.5 each
Lower Scriver Creek	(USBR)	4	Garden Valley, Idaho	Hydraulic	30.0 each	30.0 each
Strube	(USCE)	1	Blue River, Oregon	Hydraulic	4.5	5.17
Twin Springs	(USCE)	2	Boise River, Idaho	Hydraulic	15.0 each	17.25 each
		2			30.0 each	34.5 each
Chelan County PUD						
Antilon		4	Manson, Washington	Pumped Storage	400.0 each	--
Douglas County PUD						
Brown's Canyon		4	Waterville Plateau-Lake Entiat, Washington	Pumped Storage	250.0 each	250.0 each
Grant County PUD						
Priest Rapids	Additions	6	Mattawa, Washington	Hydraulic	78.85 each	67.3 each
Wanapum	Additions	6	Beverly, Washington	Hydraulic	83.125 each	75.83 each
Northern Lights, Inc.						
Kootenai Falls		2	Troy, Montana	Hydraulic	70.0 each	80.5 each
Pacific Power & Light Company						
Klamath River Development		-	Klamath River	Hydraulic	230.0	--
Yale		-	Amboy, Washington	Pumped Storage	500.0	500.0
Pend Oreille County PUD						
Sullivan Creek		-	Metaline Falls, Washington	Hydraulic	13.6	--
Seattle City Light						
Copper Creek		-	Rockport, Washington	Hydraulic	--	120.0
Tacoma City Light						
Mossyrock	Addition	1	Mossyrock, Washington	Hydraulic	150.0	192.0

SECTION III

Resources and Requirements - Summary Tabulations

Peak (January) and Energy
Surplus or Deficiency - 40-Year Studies

2282 038

SUMMARY OF RESOURCES

JANUARY PEAK CAPABILITY - Mw	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1. Hydro 1/	29,505	29,629	30,081	30,372	30,891	31,060	31,202	31,139	31,249	31,187	31,213
2. Small Existing Thermal	1,399	1,393	1,393	1,393	1,393	1,393	1,386	1,386	1,386	1,386	1,386
3. Miscellaneous (Industrial)	23	23	23	23	23	23	23	23	23	23	23
4. Centralia #1 and #2	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313
5. Colstrip #1 and #2	330	330	330	330	330	330	330	330	330	330	330
6. Trojan	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130
7. Boardman	-	477	477	477	477	477	477	477	477	477	477
8. WNP #2	-	-	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
9. Colstrip #3	-	-	-	-	420	420	420	420	420	420	420
10. WNP #1	-	-	-	-	1,250	1,250	1,250	1,250	1,250	1,250	1,250
11. Colstrip #4	-	-	-	-	-	420	420	420	420	420	420
12. [illegible]	-	-	-	-	-	0	1,240	1,240	1,240	1,240	1,240
13.	-	-	-	-	-	-	1,250	1,250	1,250	1,250	1,250
14. WNP #5	-	-	-	-	-	-	-	1,240	1,240	1,240	1,240
15. Skagit #1	-	-	-	-	-	-	-	1,288	1,288	1,288	1,288
16. Pebble Springs #1	-	-	-	-	-	-	-	-	1,260	1,260	1,260
17. Skagit #2	-	-	-	-	-	-	-	-	-	1,288	1,288
18. Pebble Springs #2	-	-	-	-	-	-	-	-	-	-	1,260
19. Total Resources	33,700	34,295	35,847	36,138	38,327	38,916	41,541	44,006	45,376	46,602	47,888
20. Exports 2/	(2,066)	(2,108)	(1,754)	(1,760)	(1,562)	(1,563)	(1,565)	(989)	(248)	(106)	(108)
21. Imports 2/	1,324	1,415	1,840	1,781	1,641	1,572	1,498	1,417	1,332	1,240	1,142
22. Incremental Losses 3/	(84)	(84)	(57)	(57)	(50)	(50)	(50)	(26)	(1)	-	-
23. Hydro Realization Factor 4/	(3,963)	(3,978)	(4,033)	(4,063)	(2,552)	(2,573)	(2,589)	(2,582)	(2,595)	(2,587)	(2,590)
24. Net Peak Resources	28,911	29,540	31,843	32,039	35,804	36,302	38,835	41,826	43,864	45,149	46,332

1/ Tabulations of the hydro plants for the Columbia Mainstem, Seasonal, and Pondage and Minor categories are shown in Section V.
2/ Tabulations of the exports and imports for the Southwest, East, and Canada are shown in Section VI.
3/ Incremental losses from generator to border are associated with deliveries under contracts with Pacific Southwest utilities.
4/ These figures represent Federal System reductions for tailwater constraints at Grand Coulee through 1982-83 and for sustained system peak.

SUMMARY OF RESOURCES

CONTRACT YEAR ENERGY CAPABILITY - Mw	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
1. Hydro 1/	12,037	12,069	12,103	12,101	12,130	12,128	12,101	12,108	12,137	12,131	12,081
2. Small Existing Thermal	155	154	154	154	154	154	153	153	153	153	153
3. Miscellaneous (Industrial)	9	9	9	9	9	9	9	9	9	9	9
4. Hanford Steam 2/	515	515	515	515	-	-	-	-	-	-	-
5. Centralia #1 and #2	903	903	957	914	1,000	957	870	914	935	957	935
6. Colstrip #1 and #2	251	251	251	251	251	251	251	251	251	251	251
7. Trojan	800	800	800	800	800	800	800	800	800	800	800
8. Boardman	-	191	334	358	358	358	358	358	358	358	358
9. WNP #2	-	-	550	798	825	825	825	825	825	825	825
10. Colstrip #3	-	-	-	-	252	315	315	315	315	315	315
11. WNP #1	-	-	-	-	438	860	938	938	938	938	938
12. Colstrip #4	-	-	-	-	42	262	315	315	315	315	315
13. WNP #3	-	-	-	-	-	248	806	930	930	930	930
14. WNP #4	-	-	-	-	-	62	766	938	938	938	938
15. WNP #5	-	-	-	-	-	-	62	760	930	930	930
16. Skagit #1	-	-	-	-	-	-	-	515	902	966	966
17. Pebble Springs #1	-	-	-	-	-	-	-	252	819	945	945
18. Skagit #2	-	-	-	-	-	-	-	-	-	515	902
19. Pebble Springs #2	-	-	-	-	-	-	-	-	-	189	893
20. Total Resources	14,670	14,892	15,673	15,900	16,259	17,229	18,569	20,381	21,555	22,465	23,394
21. Exports 3/	(629)	(665)	(562)	(351)	(203)	(205)	(207)	(209)	(201)	(174)	(177)
22. Imports 3/	1,489	1,503	1,657	1,640	1,495	1,455	1,426	1,215	955	807	734
23. Incremental Losses 4/	(20)	(20)	(11)	(2)	-	-	-	-	-	-	-
24. Estimated Hydro Maintenance	(34)	(34)	(34)	(34)	(32)	(33)	(33)	(34)	(34)	(34)	(34)
25. Net Energy Resources	15,476	15,676	16,723	17,153	17,519	18,446	19,755	21,353	22,275	23,064	23,917
26. Thermal & Miscellaneous Resources 5/ (Not included above)	688	683	683	683	683	683	677	677	677	677	677

1/ Tabulations of the hydro plants for the Columbia Mainstem, Seasonal, and Pondage and Minor categories are shown in Section V.
2/ Hanford-NPR operation is available through June 1983.
3/ Tabulations of the exports and imports for the Southwest, East, and Canada are shown in Section VI.
4/ Incremental losses from generator to border are associated with deliveries under contracts with Pacific Southwest utilities.
5/ These are predominately petroleum-fueled plants utilizing high-cost fuels of questionable availability.

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1979-80 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3294	3196	3	0	0	0	0	0	0	0	0	0	0	0	418
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	5	0	2755	7244	9748	3330	1513
1932-33	0	0	483	0	0	270	1489	8930	3448	2323	1201	3670	6543	11767	3114
1933-34	3534	5056	3004	1728	3185	4803	8545	12442	8956	8006	9197	13114	8134	0	6121
1934-35	0	0	0	0	0	0	0	7248	4547	496	0	2040	4461	1765	1514
1935-36	1674	3165	0	0	0	0	0	5081	335	0	0	9202	8787	0	1854
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	495	41
1937-38	0	0	0	0	0	0	0	5714	1202	2703	1231	9183	8860	3424	2269
1938-39	0	0	0	0	0	0	0	1107	0	0	223	5607	6294	0	868
1939-40	658	922	0	0	0	0	0	1012	1374	4012	2968	4658	2833	0	1180
1940-41	0	0	0	0	0	0	0	0	161	1224	210	455	0	0	144
1941-42	0	0	0	0	0	0	4232	7453	2002	0	0	1980	2617	1016	1533
1942-43	1129	2283	161	0	0	0	1427	9485	4867	2848	7648	11856	7201	6662	3699
1943-44	5648	4442	124	0	0	0	0	0	0	0	0	0	0	0	668
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	3636	296
1945-46	0	0	0	0	0	0	0	6168	1252	3291	3077	8245	11345	2634	2545
1946-47	0	455	21	650	89	1898	5885	9687	6585	4308	3535	5791	10634	817	3835
1947-48	0	0	0	0	5154	4174	3469	10230	5765	3095	1625	7224	12403	12252	5075
1948-49	0	0	2611	1075	52	772	1046	6466	4156	2916	2657	8168	12180	627	3008
1949-50	0	0	0	0	0	0	0	8853	5761	6337	6750	6222	7043	12229	3868
1950-51	5944	4812	2974	1614	3099	5836	6585	10870	10280	6753	7957	8622	11077	4618	6442
1951-52	914	4074	533	1110	4107	2421	3317	8835	5276	2591	5035	12087	11226	0	4221
1952-53	0	1196	0	0	0	0	0	9567	6341	928	0	1277	5486	8685	2659
1953-54	1999	2919	1428	316	239	1681	3297	9559	6667	4609	3169	3943	11198	9075	4521
1954-55	6345	7416	6332	4110	1142	3239	2434	8157	3959	0	359	0	3416	9296	4094
1955-56	4972	4610	363	164	2213	4348	6437	11222	5689	6163	8098	13269	12596	11663	6557
1956-57	0	1549	1665	672	1361	1155	3520	8047	5195	4347	4230	3104	12096	4233	3829
1957-58	0	0	0	0	0	0	4	6114	6425	2302	2013	5173	11791	3006	2752
1958-59	0	0	0	0	0	155	3871	10911	6683	4665	5548	4969	9256	9955	4216
1959-60	1156	3089	1177	5838	6795	5714	4679	8765	5397	5047	8794	4683	4654	4754	5128
1960-61	1133	2830	0	301	49	2134	1356	8998	3715	6521	4337	1405	10207	10397	4476
1961-62	0	0	0	0	0	0	0	7502	4404	0	2618	7669	4735	3893	2121
1962-63	0	1342	747	0	1128	3609	4892	8019	7785	2559	0	0	3125	3365	2933
1963-64	172	1650	0	371	0	703	1248	8980	3736	1176	1787	170	7046	1175	3120
1964-65	2792	4215	1444	1972	1995	1952	6407	11855	8922	5936	3957	10225	8918	6662	5592
1965-66	979	4646	2964	1158	761	1875	1625	8658	3114	2488	5772	2095	4223	681	2779
1966-67	318	2342	0	0	0	0	3379	9871	6377	3386	1453	0	7889	12097	3749
1967-68	862	2799	722	452	1286	2627	2080	8695	7942	5439	683	0	1757	5421	3137
AVERAGE	1087	1725	669	538	816	1199	2032	6613	4284	2676	2723	4534	6494	4525	2903

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1980-81 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3293	3538	73	0	0	0	0	0	0	0	0	0	0	0	428
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932-33	0	0	276	0	0	752	1529	8916	3835	1242	1033	3914	6773	11682	3099
1933-34	3527	5410	3036	1789	3195	4895	8850	12382	8915	7381	8993	11253	8397	0	6135
1934-35	0	0	0	0	0	0	0	7607	4354	132	0	1774	4734	1595	1597
1935-36	1460	3407	0	0	0	0	0	5256	0	0	0	9249	8873	0	1844
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	381	31
1937-38	0	0	0	0	0	0	0	6157	587	2641	999	9280	9095	3334	2261
1938-39	0	0	0	0	0	0	0	1178	0	0	0	3919	6999	0	856
1939-40	737	1246	0	0	0	0	0	1519	303	4157	2314	4807	3299	0	1190
1940-41	0	0	0	0	0	0	0	0	0	794	0	164	0	0	74
1941-42	0	0	0	0	0	0	5413	7552	2219	0	0	2038	2368	982	1630
1942-43	1006	2570	265	0	0	0	1136	9568	5065	2108	7421	12008	7455	6562	3640
1943-44	5638	4785	433	0	0	0	0	0	0	0	0	0	0	0	694
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	3419	261
1945-46	0	0	0	0	0	0	0	6298	854	3222	2783	8349	11591	2543	2525
1946-47	0	228	0	589	261	1910	6136	9665	6601	4170	3337	5924	10900	749	3862
1947-48	0	0	0	0	5377	4192	3445	10211	5887	2632	1431	7337	12646	12142	5069
1948-49	0	0	2488	1077	439	911	732	6635	3538	2888	2439	8283	12426	555	2994
1949-50	0	0	0	0	0	0	0	8956	6114	5747	6378	6297	7271	12131	3853
1950-51	5936	5150	2928	1108	3100	5052	6674	10865	11226	6347	7807	8715	11322	4525	6439
1951-52	888	4415	534	1143	4224	2429	3291	9002	5396	1794	4796	12192	11470	0	4215
1952-53	0	1213	0	0	0	0	0	9816	5655	898	0	1531	5513	8707	2640
1953-54	2003	3254	1446	381	251	1688	3304	9545	6893	3976	2953	4302	11439	8976	4524
1954-55	6348	7799	6330	4205	1141	3266	2441	8461	3900	0	0	0	3552	9212	4132
1955-56	4977	4954	311	263	2328	4311	6165	11131	5781	5508	7810	13373	12843	11564	6506
1956-57	0	1719	1722	744	1350	1160	3527	8121	5224	3775	4014	3490	12329	4059	3817
1957-58	0	0	0	0	0	0	0	6654	5519	2325	1822	5381	12033	2923	2744
1958-59	0	0	0	0	0	887	3841	10982	6746	3809	5067	4968	9480	9886	4203
1959-60	1091	3422	1175	5762	7009	5742	4615	8698	5610	4446	8626	4777	4870	4684	5114
1960-61	1111	3165	0	338	59	2143	1358	8984	8853	5927	4118	1637	10446	10302	4464
1961-62	0	0	0	0	0	0	0	7760	3843	0	2468	7823	4973	3828	2106
1962-63	0	1423	779	0	1250	3631	4873	8346	7678	1858	0	0	3408	3218	2921
1963-64	122	1978	25	1001	0	842	1134	8366	4121	578	1422	470	7281	11624	3119
1964-65	2742	4560	1383	2073	1996	1974	6652	11631	9014	5133	3699	10396	9190	6593	5582
1965-66	949	4997	2934	1167	835	1894	1632	8919	3014	1870	5979	2232	4437	608	2771
1966-67	294	2678	0	0	0	0	3436	9852	6577	2780	1235	0	8229	12604	3741
1967-68	767	3138	762	473	1279	2144	2083	9126	7913	4704	476	0	1966	5399	3123
AVERAGE	1072	1876	671	553	951	1243	2956	8718	4036	2321	2527	4562	6690	4433	2892

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SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1981-82 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3000	3051	0	.	0	0	0	0	0	0	0	0	0	0	380
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	2718	7884	10389	3711	1623
1932-33	0	0	0	0	0	0	1454	9308	4334	1635	1194	4110	7173	12343	3227
1933-34	3269	4992	3668	1767	3303	5211	9129	12744	9443	7602	9318	11657	8800	0	6308
1934-35	0	0	0	0	0	0	0	8680	4970	81	0	2283	4951	1885	1744
1935-36	1129	2975	0	0	0	0	0	5567	0	0	0	9765	9135	0	1868
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	472	39
1937-38	0	0	0	.	0	0	0	6652	816	2915	1188	9810	9514	3866	2453
1938-39	0	0	0	0	0	0	0	992	0	0	0	3856	6787	12	828
1939-40	348	696	0	0	0	0	0	1747	122	4608	2750	5216	3396	0	1223
1940-41	0	0	0	.	0	0	0	0	0	1690	0	551	0	0	115
1941-42	0	0	0	0	0	0	5037	8079	2366	0	0	2420	2899	1305	1748
1942-43	511	2083	0	0	0	0	1067	9891	5657	2215	7821	12449	7874	7229	3778
1943-44	5389	4367	0	0	0	0	0	0	0	0	0	0	0	0	637
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	4343	357
1945-46	0	0	0	0	0	0	0	7082	997	3495	3058	8889	12003	2998	2732
1946-47	0	0	0	0	0	1187	6375	10051	7155	4294	3533	6314	11307	1115	3863
1947-48	0	0	0	0	5027	4282	3576	10595	6461	2619	1567	7866	13047	12764	5245
1948-49	0	0	2141	374	377	508	757	6936	3957	3192	2677	8812	12834	967	3117
1949-50	0	0	0	0	0	0	0	9686	6284	5962	6672	6824	7690	12796	4019
1950-51	5688	4732	3061	1043	3202	5369	6865	11258	10809	6507	8127	9244	11733	5110	6659
1951-52	510	3998	470	1108	4393	2630	3457	9386	5834	1861	5185	12679	11874	0	4348
1952-53	0	685	0	0	0	0	0	9731	6573	1078	0	1851	5938	9404	2804
1953-54	1600	2800	1438	356	256	1746	3432	9935	7454	4132	3161	4573	11854	9670	4684
1954-55	6096	7381	6433	4251	1179	3389	2534	8853	4288	0	0	0	3790	9831	4261
1955-56	4721	4536	174	255	2354	4675	6765	11561	6359	5836	8231	13850	13215	12033	6724
1956-57	0	591	1529	709	1383	1204	3669	8508	5702	3988	4359	3875	12717	4073	3979
1957-58	0	0	0	.	0	0	0	7942	6497	2306	1938	5865	12177	3238	2913
1958-59	0	0	0	0	0	337	4224	11356	7301	4619	5240	5264	9815	10474	4379
1959-60	802	2961	1127	5862	7230	6187	4843	9175	6099	4519	8976	5236	5150	5223	5328
1960-61	748	2674	0	352	22	2218	1411	9381	9355	5993	4414	2686	10877	10983	4623
1961-62	0	0	0	.	0	0	0	7209	4589	100	2655	8299	5246	4354	2213
1962-63	0	451	447	.	1213	3761	5098	8714	8118	1923	0	0	3648	3742	3126
1963-64	0	950	0	951	0	637	1324	9362	4603	355	1690	838	7688	12297	3232
1964-65	2490	4121	1417	2013	2082	2039	6905	12199	9565	5399	3980	10811	9563	7272	5785
1965-66	620	4579	3004	1089	886	1964	1706	9277	3382	1958	5948	2471	4642	699	2871
1966-67	0	1966	0	0	0	.	3526	10239	7154	2853	1354	0	8632	12674	3871
1967-68	416	2649	666	482	1238	2117	2175	9466	8374	4877	559	0	2080	5991	3229
AVERAGE	933	1581	622	532	855	1220	2133	6980	4365	2435	2709	4894	6961	4347	3006

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1982-83 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3714	3541	0	0	4	0	0	0	0	0	0	0	0	0	461
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	2319	7886	9985	3027	1516
1932-33	0	0	564	0	0	447	1990	9214	4352	1376	1221	4255	6702	11771	3225
1933-34	4012	5533	3096	1773	3322	5060	9326	12694	9483	7722	9483	11861	8413	0	6393
1934-35	0	0	0	0	0	0	0	7887	4750	43	0	2097	4545	1336	1620
1935-36	2022	3562	0	0	0	0	0	5537	0	0	0	9905	9034	0	1963
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	211	17
1937-38	0	0	0	0	0	0	0	6665	741	2727	1181	9919	9117	3217	2349
1938-39	0	0	0	0	0	0	0	1726	0	0	0	3345	7441	0	916
1939-40	650	1174	0	0	0	0	0	1864	300	4352	1262	5268	3700	0	1237
1940-41	0	0	0	0	0	0	0	0	0	1024	0	0	0	0	87
1941-42	0	0	0	0	0	0	5595	7897	2440	0	0	2407	2202	667	1674
1942-43	1272	2571	118	0	0	0	1583	9859	5686	2292	7927	12649	7455	6563	3840
1943-44	6237	4896	66	0	0	0	0	0	0	0	0	0	0	0	734
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	3887	319
1945-46	0	0	0	0	0	0	0	6906	971	3322	3079	8952	11614	2347	2617
1946-47	0	677	0	506	54	1970	6395	9590	7238	4442	3624	6362	10924	482	3938
1947-48	0	0	0	0	5719	4320	3562	10550	6497	2896	1693	7892	12659	12180	5254
1948-49	0	223	2559	1112	459	729	1092	6894	4232	2951	2655	8849	12447	326	3122
1949-50	0	0	0	0	0	0	0	9258	6795	6118	6975	6876	7221	12214	4014
1950-51	6548	5263	3031	1344	3210	5223	6852	11238	10923	6748	8302	9341	11343	4459	6695
1951-52	1216	4491	478	1143	4371	2477	3399	9342	5886	2034	5235	12849	11487	0	4403
1952-53	0	1131	0	0	0	0	0	10250	6213	790	0	1833	5462	8823	2724
1953-54	2327	3283	1421	356	259	1749	3432	9852	7525	4211	3206	4726	11468	9085	4700
1954-55	6916	8019	6561	4269	1192	3349	2546	8777	4301	0	0	0	3315	9315	4271
1955-56	5543	5060	320	183	2433	4144	6798	11530	6332	5947	8382	14000	12835	11627	6765
1956-57	22	2255	1757	709	1391	1205	3669	8415	5752	4045	4349	3836	12330	4021	3972
1957-58	0	0	0	0	0	0	0	7098	6391	2315	2040	5907	12055	2803	2670
1958-59	0	0	0	0	0	303	4493	11314	7358	4951	5676	5523	9537	9994	4368
1959-60	1492	3445	1144	6342	7277	5938	4774	8979	6228	4709	9172	5228	4673	4586	5333
1960-61	1455	3159	0	254	106	2234	1408	9277	9529	6274	4416	1861	10479	16402	4641
1961-62	0	0	0	0	0	0	0	9262	4474	0	2660	6264	4697	3686	2196
1962-63	0	1778	717	0	1358	3749	5038	8739	8284	1972	0	0	3170	3078	3023
1963-64	429	1916	0	374	0	697	1320	9258	4643	655	1595	565	7220	11728	3229
1964-65	3227	4609	1433	2014	2099	2041	6991	12155	9310	5462	3987	11036	9212	6679	5829
1965-66	1334	5068	3043	1192	788	1965	1715	9279	3581	1940	5942	2464	4162	257	2874
1966-67	583	2659	0	0	0	0	3536	10181	7165	2936	1397	0	8262	12094	3877
1967-68	1125	3137	679	486	1300	2117	2173	9364	8490	4965	572	0	1599	5354	3231
AVERAGE	1253	1936	675	551	883	1243	2192	7006	4410	2458	2709	4899	[illegible]	[illegible]	3007

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SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1983-84 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3570	3138	221	0	0	0	0	0	0	0	0	0	0	0	442
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	4	0	2554	6930	10542	4473	1653
1932-33	0	0	761	0	0	0	841	9617	4381	1934	986	3168	7342	13245	3305
1933-34	3865	5157	3299	1803	2959	5060	8934	13203	9716	8010	9323	10934	8961	0	6400
1934-35	0	0	0	0	0	0	0	7958	5432	390	0	1197	5028	2689	1826
1935-36	1708	3066	0	0	0	0	0	5451	571	0	0	6813	8930	299	1920
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	1574	129
1937-38	0	0	0	0	0	0	0	6436	1383	2456	1062	8986	9718	4634	2480
1938-39	0	0	0	0	0	0	0	1247	0	0	0	3067	6515	889	858
1939-40	677	777	0	0	0	0	0	920	1328	3792	2824	4153	3408	652	1221
1940-41	0	0	0	0	0	0	0	0	224	1154	0	0	0	0	115
1941-42	0	0	0	0	0	0	4372	8155	3489	0	0	1388	2990	2084	1814
1942-43	1145	2166	350	0	0	0	717	10170	5714	2173	7432	11650	8014	8013	3873
1943-44	6874	4475	589	0	0	0	0	0	0	0	0	0	0	0	726
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	4275	351
1945-46	0	0	0	0	0	0	0	6715	1434	3031	2944	8008	12271	3725	2736
1946-47	0	262	79	516	0	942	5798	10380	7429	4569	3090	5259	11489	1875	3939
1947-48	0	0	0	0	5150	4314	2992	10957	6685	2872	1281	6939	13420	13608	5329
1948-49	0	73	3157	1084	0	655	916	6014	5092	2819	2412	7984	13100	1730	3185
1949-50	0	0	0	0	0	0	0	9391	6537	6134	6511	5819	7863	13704	4121
1950-51	6412	4871	3156	1106	2989	5196	6113	11729	11103	6806	8081	8413	12035	5847	6781
1951-52	1079	4092	684	967	3724	2434	2795	9522	5999	2593	5066	11857	12062	662	4386
1952-53	0	1781	0	0	0	0	0	9396	7425	675	0	684	6031	10205	2877
1953-54	2215	2879	1596	381	260	1761	3064	10255	7697	4084	2599	3264	12305	10508	4793
1954-55	6776	7648	6713	4254	1248	3325	1983	8685	4278	0	105	0	3735	10633	4343
1955-56	5332	4670	465	180	2017	4427	6237	11994	6568	5770	7947	13157	13645	13022	6854
1956-57	0	1637	1891	758	1396	1217	3315	8091	5801	4337	4207	2565	13010	5430	4043
1957-58	0	0	0	0	0	0	0	6669	7136	1723	1774	4728	12565	4126	2934
1958-59	0	0	0	0	0	357	3697	11673	7583	4600	5071	4345	10054	11345	4480
1959-60	1371	3048	1322	5748	6686	6132	4314	9300	5598	4911	8831	4261	5199	6033	5399
1960-61	1313	2761	0	374	98	2229	1198	9697	9363	6306	3945	589	11131	11857	4732
1961-62	0	0	0	0	0	0	0	6966	5306	0	2493	7234	5196	5119	2260
1962-63	0	1652	923	0	1111	3706	4415	8428	8581	2228	0	0	3908	4142	3117
1963-64	0	1362	128	849	0	688	965	9674	4362	566	1185	0	7843	13099	3266
1964-65	3052	4220	1545	1970	2185	2033	6471	12536	10027	5619	3471	9871	9675	8083	5916
1965-66	1194	4672	3172	987	893	2652	1317	8909	3943	2171	5815	14065	4696	1684	2947
1966-67	442	2260	0	0	0	0	3269	10596	7290	2770	751	0	6514	13652	3978
1967-68	992	2718	918	462	1312	2130	1863	9001	3628	5352	268	0	1967	6564	3317
AVERAGE	1180	1735	774	536	821	1216	1899	6994	4678	2496	2551	4167	7078	5487	3071

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1984-85 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3940	3633	0	0	0	0	0	0	0	0	0	0	0	0	484
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	3117	7151	11381	5229	1818
1932-33	0	0	0	0	0	26	1896	9134	3084	585	1523	3480	8264	14192	3299
1933-34	4176	5654	3133	1791	3274	4991	9641	12833	8461	7269	9504	11681	9451	730	6444
1934-35	0	0	0	0	0	0	735	7675	3649	148	0	2248	6103	3856	1932
1935-36	2236	3667	0	0	0	0	0	4349	0	0	0	9263	9958	1092	2224
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	1877	154
1937-38	0	0	0	0	0	0	0	4348	873	2683	1553	9299	10783	5340	2465
1938-39	0	0	0	0	0	0	0	21	0	0	0	3263	7551	1441	896
1939-40	1392	1259	0	0	0	0	0	1062	0	3838	2738	4123	3824	965	1272
1940-41	0	0	0	0	0	0	0	0	0	402	0	0	0	0	34
1941-42	0	0	0	0	0	562	6722	7670	1343	0	265	1750	3475	2920	1989
1942-43	1452	2670	138	0	0	0	1295	9748	4362	2041	8151	11711	8586	8798	3954
1943-44	6506	5104	153	0	0	0	0	0	0	0	0	0	0	0	769
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	5828	479
1945-46	0	0	0	0	0	0	0	4778	1027	2784	3435	8219	12878	5121	2714
1946-47	62	1764	0	532	0	1497	6433	9855	5330	4045	3826	5533	12228	2798	4026
1947-48	0	562	0	219	5592	4332	3598	10792	4875	2346	1491	7164	13841	14419	5384
1948-49	0	617	3117	1179	293	965	1094	6201	2665	3030	2827	7979	13735	2684	3276
1949-50	0	0	0	0	0	0	0	9142	5617	5639	6869	6069	8887	14489	4163
1950-51	6725	5388	3658	1046	3182	5238	7098	11470	9785	6301	8354	8231	12601	6494	6862
1951-52	1577	4190	489	1162	4041	2479	3432	9031	3816	1999	5632	12116	12733	1343	4412
1952-53	23	2629	0	0	0	0	0	8918	5540	1268	0	1039	7126	10928	2946
1953-54	2595	3396	1439	357	261	1751	3451	10091	6177	3808	3339	3837	12633	11274	4852
1954-55	7508	8289	6633	4292	1180	3361	2537	8640	2252	0	126	0	4460	11535	4449
1955-56	5498	5232	336	156	2233	4188	6857	11792	4604	5734	8565	13363	14097	13713	6893
1956-57	585	2358	1777	716	1399	1222	3694	8029	3559	3788	4662	3095	13588	6140	4670
1957-58	0	0	0	0	0	0	0	5873	5637	2564	2312	5127	13262	5937	3069
1958-59	0	0	0	0	0	557	4411	11493	6877	3706	5470	4853	10734	12390	4503
1959-60	1676	3544	1160	5991	6920	5931	4887	8946	4243	4463	9648	5141	5890	6831	5455
1960-61	1751	3257	0	265	98	2218	1414	9405	8520	5681	4346	873	11569	12939	4811
1961-62	0	0	0	0	0	0	0	6812	3325	23	3704	7735	6049	6153	2325
1962-63	0	2645	746	0	1373	3737	5101	8227	6759	1493	127	0	4560	5479	3161
1963-64	606	2014	0	395	0	720	1342	9141	2348	21	1855	0	8729	14134	3370
1964-65	3355	4719	1451	2325	2071	1999	7027	12079	8266	4922	4386	10326	10716	8768	5955
1965-66	1536	5175	3060	1183	772	1938	1721	8959	2029	1153	6287	1759	5889	2687	3012
1966-67	730	2753	0	0	0	0	3576	10365	5923	2428	1020	0	9159	14315	4018
1967-68	1754	3266	690	457	1326	2123	2193	9148	6678	4707	787	0	2924	7811	3434
AVERAGE	1392	2676	685	559	856	1246	2253	6651	3432	2222	2893	4377	7692	6263	3129

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1985-86 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	4772	4439	652	0	0	0	0	0	0	0	0	0	0	0	616
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932-33	0	1652	1752	0	0	0	342	9565	3338	612	1321	3370	6841	14106	3227
1933-34	4994	6450	3731	1799	2993	4936	9219	13333	8845	7177	9286	10805	8031	391	6404
1934-35	0	0	0	0	0	0	734	8086	4647	105	0	1937	4938	3434	1896
1935-36	3039	4474	337	88	0	0	0	5246	0	0	0	8883	8728	650	2068
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	2002	169
1937-38	0	0	0	0	0	0	0	4914	842	2218	1304	9185	9539	4999	2322
1938-39	472	136	0	0	0	0	0	1599	0	0	0	4049	5920	1304	958
1939-40	1869	2084	0	0	0	0	0	1193	408	3392	2745	4240	2502	997	1247
1940-41	0	0	0	0	0	0	0	0	434	899	31	0	0	0	111
1941-42	0	0	0	0	0	0	5753	7832	2858	0	293	1938	2452	2631	1889
1942-43	2125	3468	781	0	0	0	629	10026	5268	1750	7823	11783	7242	8328	3920
1943-44	7205	5752	950	0	0	0	0	0	0	0	0	0	0	0	890
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	3828	315
1945-46	0	0	0	0	0	0	0	5751	983	2364	3205	8206	11462	4957	2614
1946-47	921	2736	643	722	186	1932	5894	10115	6062	3983	3476	5381	10808	2435	4098
1947-48	371	1959	0	568	5326	4263	3076	11234	5530	2507	1247	6827	12431	14653	5357
1948-49	16	1984	4011	1467	469	985	650	5845	4014	2957	2555	7950	12335	2396	3280
1949-50	0	0	0	0	0	0	0	9586	6136	5676	6870	5913	7687	14235	4115
1950-51	7548	6170	3591	1103	3045	5184	6633	11969	10113	6111	7930	7883	11198	6132	6807
1951-52	2340	5316	1108	1149	3774	2397	2909	9316	4733	1901	5415	11972	11323	959	4396
1952-53	828	3456	0	0	0	0	0	9595	5378	803	0	1151	5818	10583	2923
1953-54	3320	4200	2045	383	264	1782	3035	10539	6774	3410	2894	3451	11159	11063	4820
1954-55	8396	9627	6907	4329	1180	3274	2077	8671	3027	0	135	0	3087	11038	4437
1955-56	6286	5971	892	222	2205	4265	6408	12246	5419	5143	8164	13173	12717	13411	6870
1956-57	1379	3171	2336	777	1403	1233	3226	7775	4621	3575	4395	2556	12230	6116	4054
1957-58	0	0	0	0	0	0	0	6915	6450	2025	2035	4784	11908	5883	3629
1958-59	0	0	0	0	0	967	4591	11683	6755	3661	5292	3903	9229	12189	4471
1959-60	2508	4333	1745	6335	6653	6693	4654	9338	4968	4180	9267	4955	4410	6458	5444
1960-61	2538	4064	0	616	195	2257	963	9853	6808	5284	3923	395	10176	12713	4757
1961-62	0	0	0	0	0	0	0	7748	4133	0	3441	7569	4635	5731	2287
1962-63	80	4067	1457	0	1415	3675	4614	7977	7466	1882	141	0	3183	5182	3147
1963-64	1345	2824	616	1116	0	741	888	9581	3088	0	1538	0	7438	13693	3349
1964-65	4217	5307	1989	2076	2068	2019	6551	12502	6667	4922	4068	10050	9325	8383	5935
1965-66	2335	5965	3598	1244	750	1950	1277	8839	2968	1164	6021	1541	4490	2387	3001
1966-67	1504	3569	146	67	0	0	3248	10811	6513	1728	654	0	7783	13976	3963
1967-68	2889	3773	1357	478	1332	2123	1750	9211	7413	4615	462	0	1419	7417	3428
AVERAGE	1832	2659	1015	603	829	1252	1978	8977	3917	2196	2726	4269	6560	5973	3126

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1986-87 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	3951	3344	0	0	0	0	0	0	0	0	0	0	0	0	473
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	5036	7599	10338	4418	1760
1932-33	0	0	184	0	0	0	0	9763	4109	1273	2345	3943	7052	13525	3229
1933-34	4171	5356	3100	1756	2992	5135	8965	13498	9758	7723	10312	11409	8244	0	6436
1934-35	0	0	0	0	0	0	0	7435	5338	671	0	2295	5537	3039	1912
1935-36	2184	3380	0	0	0	0	0	5349	0	0	0	9678	9238	239	1981
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	1239	102
1937-38	0	0	0	0	0	0	0	4376	1973	3057	2347	9789	9746	4432	2473
1938-39	0	0	0	0	0	0	0	1219	0	0	175	5549	6126	749	921
1939-40	668	987	0	0	0	0	0	1622	1157	3853	3790	4843	2103	131	1195
1940-41	0	0	0	0	0	0	0	0	713	950	1028	57	0	0	180
1941-42	0	0	0	0	0	0	3453	8217	3739	0	871	2335	2309	2046	1774
1942-43	1356	2373	127	0	0	0	0	10330	6066	2565	8835	12381	7457	7738	3920
1943-44	6382	4650	0	0	0	0	0	0	0	0	0	0	0	0	733
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	4109	338
1945-46	0	0	0	0	0	0	0	5060	2120	3197	4250	8815	11680	4379	2752
1946-47	18	1488	0	372	0	1845	5236	10414	7015	4507	4447	5987	11064	1869	4017
1947-48	0	72	0	150	5312	4386	2364	11509	6477	2983	2159	7507	12657	13483	5336
1948-49	0	215	2393	1098	466	990	0	6253	4627	3682	3589	8558	12554	1735	3258
1949-50	0	0	0	0	0	0	0	9369	5791	6354	7733	6482	7893	13662	4157
1950-51	6731	5076	3039	1031	3041	5309	5959	12180	11136	6750	8978	8477	11417	5553	6808
1951-52	1521	4210	472	1000	3762	2512	2199	9632	5530	2668	6432	12573	11541	381	4379
1952-53	0	2355	0	0	0	0	0	8996	6271	1713	0	1256	6030	10532	2917
1953-54	2549	3105	1435	360	263	1793	2226	10816	7803	4106	3966	4003	11377	10420	4809
1954-55	7579	7933	6276	4191	1197	3396	1308	9056	3890	0	1096	0	3637	10866	4395
1955-56	5641	4876	337	38	1896	4590	5715	12515	6287	6021	9203	13774	12937	12828	6875
1956-57	558	2075	1778	724	1396	1057	2464	8144	5449	4258	5430	3149	12451	5517	4034
1957-58	0	0	0	0	0	0	0	6634	5605	2802	3039	5356	12129	5301	3042
1958-59	0	0	0	0	0	0	3553	12203	7772	3950	6120	4526	9455	11628	4466
1959-60	1691	3235	1134	5675	6846	6112	3812	9654	5998	4882	10313	5563	4605	5891	5423
1960-61	1714	2968	0	264	135	2268	149	10126	9936	5886	4945	982	10393	12132	4740
1961-62	0	0	0	0	0	0	0	6970	3787	437	4478	8501	5060	5127	2304
1962-63	0	1738	738	0	1333	3794	3900	8286	8525	2197	1150	0	3616	4645	3132
1963-64	518	1728	0	975	0	751	72	9851	4091	438	2443	0	7653	13342	3298
1964-65	3495	4209	1454	1339	2134	2452	5872	12866	9750	5387	4980	10661	9539	7804	5926
1965-66	1514	4871	3044	385	931	1979	460	9231	4017	1649	7063	2139	4687	1811	2981
1966-67	678	2472	0	0	0	0	2361	11085	7665	2343	1615	0	5113	13460	3946
1967-68	2064	2659	698	464	1327	2153	934	9677	8252	5255	1484	0	1680	6933	3402
AVERAGE	1375	1684	670	526	824	1257	1525	7556	4514	2537	3490	4705	6758	5525	3098

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1987-88 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	5205	4348	561	0	0	0	0	0	0	0	0	0	0	0	645
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	2174	6822	10279	4295	1596
1932-33	149	2677	1662	0	0	0	716	9027	4094	69	1165	3182	7154	13403	3206
1933-34	5425	6360	3638	1794	3228	5136	9084	12760	9562	6722	9174	10702	8352	0	6403
1934-35	0	0	0	0	0	0	954	7824	5192	0	0	1799	5075	2554	1859
1935-36	3467	4382	215	58	0	0	0	4789	0	0	0	8773	9060	0	2025
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	1971	162
1937-38	0	0	0	0	0	0	0	5598	1056	1527	1191	9076	9846	4334	2301
1938-39	906	51	0	0	0	0	0	1803	259	0	0	3709	6196	655	985
1939-40	2277	1988	0	0	0	0	0	1294	56	3517	2636	4129	2870	314	1236
1940-41	0	0	0	0	0	0	262	0	193	1062	0	0	0	0	127
1941-42	0	0	0	0	57	870	5515	7301	3287	0	203	1859	2613	1911	1881
1942-43	2475	3375	687	0	0	0	452	9491	5930	1575	7743	11815	7542	7606	3873
1943-44	7632	5657	849	0	0	0	0	0	0	0	0	0	0	0	918
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	3390	279
1945-46	0	0	0	0	0	0	0	5795	1315	1689	3122	8130	11897	4346	2567
1946-47	1431	2642	549	721	187	1983	6142	9576	6714	3462	3378	5304	11177	1744	4085
1947-48	794	1863	0	519	5559	4372	3275	10694	6246	1773	1002	6787	12769	13365	5337
1948-49	443	1883	3916	1461	471	995	758	5528	4590	2548	2441	7861	12664	1608	3262
1949-50	0	0	0	0	0	0	0	9055	6977	5429	6850	5911	8006	13545	4083
1950-51	7981	6078	3498	1399	3182	5295	6577	11411	10810	5602	7800	7747	11528	5429	6774
1951-52	2773	5205	1016	1044	4002	2499	3110	8852	5464	1295	5272	11865	11650	247	4304
1952-53	1254	3358	0	0	0	0	0	9352	6172	72	0	985	6127	9874	2891
1953-54	3729	4168	1955	382	267	1797	3152	9995	7411	3218	2839	3195	11483	10290	4800
1954-55	8832	8939	6809	4315	1189	3381	2247	8299	3515	0	0	0	3591	10319	4468
1955-56	6683	5879	801	198	2259	4134	6399	11666	6133	4732	7993	13049	13044	12696	6813
1956-57	1808	3078	2245	778	1403	1241	3382	7417	5149	3210	4284	2537	12561	5369	4037
1957-58	0	0	0	0	0	0	0	6772	7424	1398	1938	4753	12238	5185	3604
1958-59	0	0	0	0	0	1795	4353	11384	7352	2988	5239	3844	9631	11551	4440
1959-60	2935	4236	1648	5772	6834	6028	4761	8379	5689	3822	9224	4833	4691	5767	5421
1960-61	2966	3970	0	564	169	2272	1073	9314	3482	4806	3884	427	12495	12006	4731
1961-62	0	0	0	0	0	0	0	7453	5199	0	3287	7261	4708	4832	2262
1962-63	492	3974	1367	0	1427	3784	4819	7597	8018	1162	0	0	3421	4466	3123
1963-64	1771	2731	523	1003	0	755	995	9437	3304	0	1253	0	7729	12854	3346
1964-65	4594	5268	1899	2344	2108	2038	6831	11982	3289	4422	3911	9989	9659	7685	5908
1965-66	2767	5874	3596	1270	320	1965	1394	8959	3447	766	5922	1451	4781	1689	2980
1966-67	1930	3474	53	34	0	0	3468	10272	7184	1485	546	0	8017	13239	3947
1967-68	3316	3648	1262	466	1334	2158	1853	8944	7945	4280	392	0	1688	6695	3399
AVERAGE	2101	2610	966	583	865	1369	2039	6693	4376	1811	2522	4191	6813	5381	3089

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1988-89 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	4581	3851	80	0	0	0	0	0	0	0	0	0	0	0	551
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	4	1889	6555	10305	3805	1535
1932-33	0	705	1182	0	0	0	32	9850	4802	701	811	2660	7191	12911	3163
1933-34	4811	5863	3156	1787	2986	5089	8997	13595	10228	7236	8784	10346	8373	0	6422
1934-35	0	0	0	0	0	0	0	7953	5895	97	0	1481	5098	2159	1807
1935-36	2844	3886	0	0	0	0	0	5718	0	0	0	8269	9196	0	2068
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	1187	98
1937-38	0	0	0	0	0	0	0	5132	2157	1815	843	8732	9867	3815	2301
1938-39	284	0	0	0	0	0	0	2653	963	0	0	2943	6129	79	920
1939-40	1656	1493	0	0	0	0	0	1686	1044	3803	2288	3782	2630	0	1221
1940-41	0	0	0	0	0	0	0	0	842	1343	0	0	0	0	179
1941-42	0	0	0	0	0	0	3827	8321	4140	0	0	1187	2649	1378	1736
1942-43	1739	2877	205	0	0	0	0	10297	6662	1880	7287	11315	7587	7083	3811
1943-44	7005	5154	303	0	0	0	0	0	0	0	0	0	0	0	820
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	4605	378
1945-46	0	0	0	0	0	0	0	5178	2163	1899	2754	7762	11822	3722	2509
1946-47	645	1995	3	409	0	1726	5841	10386	7418	3804	2927	5614	11196	1248	3963
1947-48	169	1368	0	259	5312	4379	2969	11517	6912	2395	636	6419	12802	12860	5301
1948-49	0	1122	3359	1465	472	997	426	6154	5375	3035	2069	7507	12694	1103	3222
1949-50	0	0	0	0	0	0	0	9751	7220	5428	6304	5251	8060	13044	4075
1950-51	7352	5581	3316	1395	3016	5300	6378	12216	11425	6218	7462	7392	11561	4918	6748
1951-52	2150	4703	534	979	3755	2499	2806	9574	6194	1960	4927	11533	11682	0	4366
1952-53	371	2862	0	0	0	0	0	9886	6624	477	0	660	6087	9264	2843
1953-54	3079	3612	1474	380	269	1807	2816	10819	8161	3553	2348	2630	11534	9800	4753
1954-55	8208	8444	6326	4243	1246	3388	1911	8943	4302	0	0	0	3561	9997	4430
1955-56	6146	5383	319	72	2034	4641	6284	12520	6818	5279	7537	12672	13069	12174	6778
1956-57	1183	2584	1764	777	1400	1240	3053	8052	5965	3664	3914	1828	12605	4939	3993
1957-58	0	0	0	0	0	0	0	7222	7391	1620	1549	4082	12284	4735	2979
1958-59	0	0	0	0	0	883	3915	12199	8126	3588	4712	3437	9579	10966	4419
1959-60	2309	3736	1162	5693	6801	6109	4540	9584	6380	4327	8811	4495	4738	5271	5385
1960-61	2342	3473	0	305	110	2272	741	10139	10161	5335	3411	0	10472	11493	4694
1961-62	0	0	0	0	0	0	0	7775	5362	0	2893	6815	4795	4473	2246
1962-63	0	3234	886	0	1417	3868	4535	8270	8684	1729	0	0	3393	3667	3093
1963-64	1120	2236	42	398	0	756	662	9859	4499	0	963	0	7795	12396	3292
1964-65	4010	4707	1417	1376	2158	2061	6483	12786	10054	4907	3432	9592	9660	7171	5681
1965-66	2145	5379	3025	1305	906	2040	1055	9261	4172	1258	5563	905	4856	1184	2941
1966-67	1300	2976	0	0	0	0	2992	11160	7871	1851	63	0	7936	12695	3915
1967-68	2678	3134	774	453	1332	2157	1922	9578	8719	4652	0	0	1629	6387	3363
AVERAGE	1703	2259	726	546	930	1264	1734	7184	4918	2196	2354	3881	6821	5605	3653

SURPLUS ENERGY IN EXCESS OF FIRM LOAD CARRYING CAPABILITY
FOR 40 YEARS OF WATER RECORD
1989-90 OPERATING YEAR

ENERGY IN AVERAGE MEGAWATTS

WATER CONDITION	JUL	AUG 1-15	AUG 16-31	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR 1-15	APR 16-30	MAY	JUN	ANNUAL AVERAGE
1928-29	4715	4360	876	0	0	0	0	0	0	0	0	0	0	0	618
1929-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931-32	0	0	0	0	0	0	0	0	0	0	0	3335	10047	3391	1269
1932-33	0	1625	1978	0	0	0	501	10023	5262	1418	0	200	6915	12064	3158
1933-34	4712	6346	3950	1802	3351	5269	9076	13747	10759	7538	6302	7774	8163	0	6376
1934-35	0	0	0	0	0	0	0	8757	6633	630	0	0	4171	1065	1752
1935-36	2602	4244	433	0	0	0	0	5785	1000	0	0	5058	8774	0	1935
1936-37	0	0	0	0	0	0	0	0	0	0	0	0	0	69	6
1937-38	0	0	0	0	0	0	0	7057	2676	1961	0	5632	9696	3421	2307
1938-39	415	63	0	0	0	0	0	3207	1522	0	0	0	5307	0	878
1939-40	1700	1999	0	0	0	0	0	2991	2005	3747	0	871	2559	0	1206
1940-41	0	0	0	0	0	0	0	1615	1690	925	0	0	0	0	345
1941-42	0	0	0	0	0	0	2727	8536	4636	0	0	0	1237	783	1481
1942-43	1730	3227	917	0	0	0	0	10473	7133	2890	5069	8677	7356	6679	3740
1943-44	7137	5664	1153	0	0	0	0	0	0	0	0	0	0	0	889
1944-45	0	0	0	0	0	0	0	0	0	0	0	0	0	1953	161
1945-46	0	0	0	0	0	0	0	6920	2453	2143	192	5396	11733	3456	2468
1946-47	955	2652	859	722	193	1984	5826	10585	7915	4788	740	2343	10958	832	4000
1947-48	302	1873	212	566	5812	4360	2989	11681	7561	3130	0	3527	12087	12393	5292
1948-49	0	1650	4219	1321	479	998	568	6991	6012	3459	0	4634	12447	695	3181
1949-50	0	0	0	0	0	0	0	9973	7996	6511	4131	2035	7835	12648	4005
1950-51	7489	6688	3811	1101	3208	5281	6389	12526	12161	6624	4852	4773	11342	4523	6678
1951-52	2286	5198	1327	1151	4361	2475	2831	9903	6585	2410	2404	8985	11465	0	4367
1952-53	334	3365	0	0	0	0	0	10392	9013	500	0	1	4990	8390	2820
1953-54	3002	3938	2174	180	268	1443	2899	10979	8675	4496	212	0	11298	9396	4635
1954-55	8346	8952	7118	4330	1203	3366	1986	9258	3500	0	0	0	2336	9446	4322
1955-56	6373	5847	1075	182	2427	4526	6392	12667	7428	6175	5374	10061	12850	11773	6828
1956-57	1316	3091	2558	778	1402	1245	3136	8629	6687	4251	1324	0	12187	4439	3964
1957-58	0	0	0	0	0	0	0	8046	8562	2218	0	1931	11791	4152	2951
1958-59	0	0	0	0	0	1387	4191	12333	8702	4189	2564	897	9428	10651	4359
1959-60	2436	4240	1353	6110	7280	6136	4434	9800	7023	4724	6311	1876	4482	4364	5357
1960-61	2474	3978	130	656	111	2261	823	10306	12725	6106	1232	0	9476	10947	4672
1961-62	0	0	0	0	0	0	0	8297	6345	225	442	4878	4980	4135	2192
1962-63	10	3984	1680	0	1432	3785	4521	8867	9169	2411	0	0	1464	2935	3082
1963-64	940	2635	826	330	0	457	743	10011	5161	573	0	0	7048	11771	3262
1964-65	4009	4996	2867	1727	1970	2074	6476	12916	10604	5743	1255	7240	9457	6776	5765
1965-66	2279	5885	3820	1248	766	1984	1139	9858	4877	1763	2967	0	3920	649	2900
1966-67	1424	3480	363	54	0	0	3199	11263	9445	2203	0	0	7576	11823	3961
1967-68	2544	3456	1451	148	1171	2008	1674	9973	9283	5304	0	0	1268	5167	3378
AVERAGE	1738	2571	1124	575	486	1276	1810	7609	5428	2478	1134	2269	6416	4532	3.14

SECTION IV

Rating Information for Generating Facilities

Fuel Plants - Nameplate Ratings and Capabilities
Hydro Plants - Nameplate Ratings as of December 31, 1978
Hydro Plants - Chronological Projection of Nameplate Additions

NAMEPLATE RATINGS AND CAPABILITIES OF FUEL PLANTS
AS OF DECEMBER 31, 1978

Utility		Plant	Type	Nameplate Rating Mw	Peak Capability Mw	Energy Capability Avg. Mw
Eugene Water & Electric Board		--	Steam	25.0	25.0	3.7
		Weyco	Steam	51.2	33.5	27.4
Portland General Electric Company		Summit #1	Diesel	2.75	3.0	0.5
		Summit #2	Diesel	2.75	3.0	0.5
		Bethel	Comb. Turbine	113.4	125.0	3.9
	1/	Harborton	Comb. Turbine	226.8	249.0	7.8
		Beaver	Combined-Cycle	585.3	599.0	60.8
Pacific Power & Light Company	2/	Lincoln	Steam	35.5	15.0	0.0
		Libby Turbine	Comb. Turbine	23.8	28.0	0.0
Seattle City Light		Lake Union	Steam	30.0	30.0	2.0
		Boundary	Comb. Turbine	0.75	0.75	0.64
Puget Sound Power & Light Company		Shuffleton	Steam	90.0	86.0	8.6
		Crystal Mountain	Diesel	2.8	2.8	0.3
		Whidbey Island	Comb. Turbine	26.5	28.5	2.8
		Whitehorn	Comb. Turbine	67.5	67.5	6.7
City of Bonners Ferry		--	Diesel	0.2	0.2	0.0
		#1	Diesel	1.1	1.1	1.0
		#2	Diesel	1.1	1.1	1.0
The Washington Water Power Company		Othello	Comb. Turbine	28.2	32.8	1.0
		Northeast	Comb. Turbine	61.2	68.0	
Total Small Fossil-Fuel Plants				1375.8	1399.2	128.6
Washington Public Power Supply System		Hanford	Nuclear-Steam	800.0		
Pacific Power & Light Company		Centralia #1 & #2	Steam	1329.8	1313.0	919.1
	3/	Jim Bridger #1, #2, #3	Steam	1525.8	1500.0	1125.0
The Montana Power Company	4/	Colstrip #1	Steam	358.0	330.0	280.5
		Colstrip #2	Steam	358.0	330.0	280.5
Portland General Electric Company		Trojan	Nuclear-Steam	1216.0	1130.0	800.0

1/ Currently, no permit is issued for operation of this plant.
2/ Stand-by status only.
3/ PP&L has 66-2/3% of all units. Generation from Jim Bridger is included in imports from East.
4/ Puget Sound Power & Light has 50% of both units.

SMALL FUEL PLANTS

Peak and Energy Capabilities Used as Firm Resources and
Additional Thermal Capability Available for Energy Reserve

Utility	Plant	Type	January Peak Capability - Mw			Annual Energy Capability - Avg. Mw			Additional Thermal Capability Available for Energy Reserve - Avg. Mw		
			1979-80	1980-81 Thru 1984-85	1985-86 Thru 1989-90	1979-80	1980-81 Thru 1984-85	1985-86 Thru 1989-90	1979-80	1980-81 Thru 1984-85	1985-86 Thru 1989-90
Eugene Water & Electric Board	--	Steam	25.0	19.0	11.5	3.7	2.8	1.7	18.8	14.3	8.6
	Weyco	Steam	33.5	33.5	33.5	27.4	27.4	27.4	-	-	-
Portland General Electric Company	Summit #1	Diesel	3.0	3.0	3.0	0.5	0.5	0.5	-	-	-
	Summit #2	Diesel	3.0	3.0	3.0	0.5	0.5	0.5	-	-	-
	Bethel	Comb. Turbine	125.0	125.0	125.0	3.9	3.9	3.9	78.3	78.3	78.3
	* Harborton	Comb. Turbine	249.0	249.0	249.0	7.8	7.8	7.8	157.1	157.1	157.1
	Beaver	Combined-Cycle	599.0	599.0	599.0	60.8	60.8	60.8	324.2	324.2	324.2
Pacific Power & Light Company	** Lincoln	Steam	15.0	15.0	15.0	-	-	-	-	-	-
	Libby Turbine	Comb. Turbine	28.0	28.0	28.0	-	-	-	-	-	-
Seattle City Light	Lake Union	Steam	30.0	30.0	30.0	2.0	2.0	2.0	-	-	-
	Boundary	Comb. Turbine	0.75	0.75	0.75	0.64	0.64	0.64	-	-	-
Puget Sound Power & Light Company	Shuffleton	Steam	86.0	86.0	86.0	8.6	8.6	8.6	53.9	53.9	53.9
	Crystal Mountain	Diesel	2.8	2.8	2.8	0.3	0.3	0.3	1.4	1.4	1.4
	Whidbey Island	Comb. Turbine	28.5	28.5	28.5	2.8	2.8	2.8	14.7	14.7	14.7
	Whitehorn	Comb. Turbine	67.5	67.5	67.5	6.7	6.7	6.7	39.1	39.1	39.1
City of Bonners Ferry	--	Diesel	0.2	0.2	0.2	-	-	-	-	-	-
	#1	Diesel	1.1	1.1	1.1	1.0	1.0	1.0	-	-	-
	#2	Diesel	1.1	1.1	1.1	1.0	1.0	1.0	-	-	-
The Washington Water Power Company	Othello	Comb. Turbine	32.8	32.8	32.8	1.0	1.0	1.0	-	-	-
	Northeast	Comb. Turbine	68.0	68.0	68.0	26.0	26.0	26.0	-	-	-
Total Capability			1399.2	1393.2	1385.8	154.6	153.7	152.6	687.5	683.0	677.3

* Currently, no permit is issued for operation of this plant.
** Stand-by status only.

NAMEPLATE RATINGS OF PRESENT HYDRO INSTALLATIONS

Plant			Nameplate Megawatts
City of Bonners Ferry			
Moyie Springs			2.4 *
Bonneville Power Administration			
Hungry Horse		(USBR)	285.0
Albeni Falls		(USCE)	42.6
Libby		(USCE)	420.0
Grand Coulee		(USBR)	4,763.0 **
Chief Joseph		(USCE)	1,689.0
McNary		(USCE)	980.0
The Dalles		(USCE)	1,807.0
Bonneville		(USCE)	518.4
Detroit		(USCE)	100.0
Big Cliff		(USCE)	18.0
Hills Creek		(USCE)	30.0
Lookout Point		(USCE)	120.0
Dexter		(USCE)	15.0
Chandler		(USBR)	12.0
Roza		(USBR)	11.2
Dworshak		(USCE)	400.0
Lower Granite		(USCE)	810.0
Little Goose		(USCE)	810.0
Ice Harbor		(USCE)	602.9
Cougar		(USCE)	25.0
Green Peter		(USCE)	80.0
Foster		(USCE)	20.0
John Day		(USCE)	2,160.0
Lower Monumental		(USCE)	405.0
Palisades	(So. Idaho)	(USBR)	118.8
Black Canyon	(So. Idaho)	(USBR)	8.0
Boise Diversion	(So. Idaho)	(USBR)	1.5
Anderson Ranch	(So. Idaho)	(USBR)	27.0
Minidoka	(So. Idaho)	(USBR)	13.4
Lost Creek		(USCE)	49.0
City of Centralia			
Yelm		(Nisqually River)	10.0
Chelan County PUD			
Chelan			48.0
Rock Island			416.1
Rocky Reach			1,211.6

Plant		Nameplate Megawatts
Cowlitz County PUD		
(See Swift No. 2 - Pacific Power & Light Company)		
Douglas County PUD		
Wells		774.3
Eugene Water & Electric Board		
Walterville	(McKenzie River)	8.0
Leaburg	(McKenzie River)	13.5
Carmen	(McKenzie River)	80.0
Trail Bridge	(McKenzie River)	10.0
Grant County PUD		
Priest Rapids	(10 Units)	788.5
Wanapum	(10 Units)	831.3
Pacific Power & Light Company		
Swift No. 1	(Lewis River)	204.0
Swift No. 2 - (Cowlitz PUD)	(Lewis River)	70.0
Merwin	(Lewis River)	136.0
Yale	(Lewis River)	108.0
John C. Boyle	(Klamath River)	80.0
Iron Gate	(Klamath River)	18.0
Copco No. 1	(Klamath River)	20.0
Copco No. 2	(Klamath River)	27.0
East Side	(Klamath River)	3.2
West Side	(Klamath River)	0.6
Toketee		42.5
Lemolo No. 2		33.0
Prospect No. 2		32.0
Lemolo No. 1		29.0
Clearwater No. 2		26.0
Slide Creek		18.0
Clearwater No. 1		15.0
Soda Springs		11.0
Fish Creek		11.0
Condit		9.6
Prospect No. 3		7.2
Naches		6.4
Powerdale		6.0
Big Fork		4.2

2282 055

* Included in "Minor Hydro-Others" in resource tabulations.

** Includes service units, 2 pump-generator units, rewind of 17 main units.

NAMEPLATE RATINGS OF PRESENT HYDRO INSTALLATIONS

Plant		Nameplate Megawatts
Pacific Power & Light Company - contd.		
Prospect No. 1		3.8
Eagle Point		2.8
Fall Creek		2.2
Drop		1.4
Bend		1.1
Wallowa Falls		1.1
Cline Falls		1.0
Prospect No. 4		1.0
Albany		0.8
Stayton		0.6
Pend Oreille County PUD		
Calispel Creek		0.6 *
Box Canyon		60.0
Sullivan Lake	(Storage Only)	-
Portland General Electric Company		
T. W. Sullivan		15.4
Bull Run		21.0
Oak Grove	(Clackamas River)	51.0
North Fork	(Clackamas River)	38.4
Faraday	(Clackamas River)	34.5
River Mill	(Clackamas River)	19.0
Pelton	(Deschutes River)	108.0
Round Butte	(Deschutes River)	247.1
Puget Sound Power & Light Company		
Nooksack	(Nooksack River)	1.5
Electron	(Puyallup River)	25.5
Snoqualmie Falls	(Snoqualmie River)	41.7
White	(White River)	70.0
Lower Baker	(Baker River)	64.0
Upper Baker	(Baker River)	94.4
Seattle City Light		
Cedar Falls	(Cedar River)	22.9
Newhalem	(Newhalem River)	2.0
Ross	(Skagit River)	360.0
Diablo	(Skagit River)	120.0
Gorge	(Skagit River)	134.4
Boundary		551.0

Plant		Nameplate Megawatts
Tacoma City Light		
Cushman	(Skokomish River)	124.2
Alder	(Nisqually River)	50.0
LaGrande	(Nisqually River)	64.0
Mayfield	(Cowlitz River)	121.5
Mossyrock	(Cowlitz River)	300.0
The Washington Water Power Company		
Post Falls		11.2
Upper Falls		10.0
Monroe Street		7.2
Nine Mile		12.0
Long Lake		70.0
Little Falls		32.0
Meyers Falls		1.2
Cabinet Gorge		200.0
Noxon Rapids		396.9
Washington Public Power Supply System		
Packwood		26.0
City of Idaho Falls	(So. Idaho)	
Lower		3.0
Lower Valley Power & Light Inc.	(So. Idaho)	
Strawberry Creek		1.5
Flathead Irrigation Project (FIP)		
Big Creek		0.4 *
Total Installed as of December 31, 1978		24,982.5

* Included in "Minor Hydro-Others" in resource tabulations.

HYDRO PLANTS
CHRONOLOGICAL PROJECTION OF NAMEPLATE ADDITIONS

DATE	PLANT	UNIT NO.	PLANT ADDITION NAMEPLATE-MW	TOTAL AREA NAMEPLATE-MW
Dec/78				24,982.5
Jan/79	Chief Joseph	24	95.0	25,077.5
Jan/79	Chief Joseph	25	95.0	25,172.5
Feb/79	Rock Island	14	51.0	25,223.5
Feb/79	Lower Monumental	4	135.0	25,358.5
Mar/79	Lower Monumental	5	135.0	25,493.5
Mar/79	Chief Joseph	26	95.0	25,588.5
Apr/79	Lower Monumental	6	135.0	25,723.5
Apr/79	Rock Island	13	51.0	25,774.5
May/79	Chief Joseph	27	95.0	25,869.5
Jun/79	Rock Island	12	51.0	25,920.5
Jun/79	Grand Coulee	23	700.0	26,620.5
Jul/79	Grand Coulee	24	700.0	27,320.5
Aug/79	Rock Island	11	51.0	27,371.5
Dec/80	Grand Coulee	P/G 9	50.0	27,421.5
Apr/81	Grand Coulee	P/G 10	50.0	27,471.5
May/81	Bonneville	F-1	13.1	27,484.6
May/81	Bonneville	F-2	13.1	27,497.7
May/81	Bonneville	18	66.5	27,564.2
Jul/81	Bonneville	17	66.5	27,630.7
Aug/81	Grand Coulee	P/G 11	50.0	27,680.7
Sep/81	Bonneville	16	66.5	27,747.2
Nov/81	Bonneville	15	66.5	27,813.7
Dec/81	Grand Coulee	P/G 12	50.0	27,863.7
Jan/82	Bonneville	14	66.5	27,930.2
Mar/82	Bonneville	13	66.5	27,996.7
May/82	Bonneville	12	66.5	28,063.2
May/82	Mayfield	4	40.5	28,103.7
Jul/82	Bonneville	11	66.5	28,170.2
Nov/83	Libby	5	105.0	28,275.2
Nov/83	Libby	6	105.0	28,380.2
Nov/83	Libby	7	105.0	28,485.2
Nov/83	Libby	8	105.0	28,590.2
Jan/84	Libby Reregulating	1	15.4	28,605.6
Mar/84	Libby Reregulating	2	30.5	28,636.1
May/84	Libby Reregulating	3	30.5	28,666.6
Sep/85	Cougar	4	35.0	28,701.6
Sep/85	Strube	1	4.5	28,706.1

Note: Additional data relative to these units are contained in the section on Additional Generating Capacity.

SECTION V

January Peak, Critical-Period Energy and
40-Year Average Energy Capabilities

Columbia Mainstem Hydro
Seasonal Hydro
Pondage and Minor Hydro

1979 WEST GROUP FORECAST

JANUARY PEAK CAPABILITY

JANUARY 1937 WATER YEAR

FIGURES ARE MEGAWATTS.

		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
COLUMBIA MAINSTEM												
LIBBY	BPA	345	385	364	398	696	772	822	807	821	819	822
LIBBY REREGULATING	BPA	0	0	0	0	18	88	88	88	88	88	88
HUNGRY HORSE	BPA	261	256	207	249	221	234	274	239	309	273	323
NOXON RAPIDS	WWP	548	548	547	548	549	547	549	548	549	549	549
CABINET GORGE	WWP	230	230	230	230	230	230	230	230	230	230	230
ALBENI FALLS	WPA	24	24	25	24	24	24	24	25	25	24	25
BOX CANYON	PEND OR.PUD	71	71	71	71	71	71	71	71	72	71	72
BOUNDARY	SEATTLE	655	655	655	655	655	655	655	655	655	655	655
SPOKANE RIVER	WWP	152	152	152	152	152	152	152	152	152	152	152
GRAND COULEE	BPA	6492	6543	6691	6695	6698	6688	6697	6692	6699	6699	6699
CHIEF JOSEPH	BPA	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
WELLS	DOUGLAS PUD	820	820	820	820	820	820	820	820	820	820	820
CHELAN	CHELAN PUD	51	51	51	51	51	51	51	51	51	51	51
ROCKY REACH	CHELAN PUD	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267	1267
ROCK ISLAND	CHELAN PUD	544	544	544	544	544	544	544	544	544	544	544
WANAPUM	GRANT PUD	986	986	986	986	986	986	986	986	986	986	986
PRIEST RAPIDS	GRANT PUD	912	912	912	912	912	912	912	912	912	912	912
DWORSHAK	BPA	410	455	440	460	435	460	454	450	460	440	406
LOWER GRANITE	BPA	930	930	930	930	930	930	930	930	930	930	930
LITTLE GOOSE	BPA	930	930	930	930	930	930	930	930	930	930	930
LOWER MONUMENTAL	BPA	930	930	930	930	930	930	930	930	930	930	930
ICE HARBOR	BPA	693	693	693	693	693	693	693	693	693	693	693
MCNARY	BPA	1127	1127	1127	1127	1127	1127	1127	1127	1127	1127	1127
JOHN DAY	BPA	2484	2484	2484	2484	2484	2484	2484	2484	2484	2484	2484
ROUND BUTTE	PGE	312	312	312	312	312	312	312	312	312	312	312
PELTON	PGE	124	124	124	124	124	124	124	124	124	124	124
THE DALLES	BPA	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
BONNEVILLE	BPA	574	574	956	1114	1114	1114	1114	1114	1114	1114	1114
TOTAL MAINSTEM HYDRO		26311	26433	26887	27136	27403	27575	27670	27611	27714	27654	27675
FEDERAL MAINSTEM		19843	19915	20220	20468	20734	20908	21044	20986	21087	21028	21048
FEDERAL HYDRO INDEPENDENTS		106	106	106	106	106	106	106	106	106	106	106
NET PUMPING LOADS		96	146	296	296	296	296	296	296	296	296	296
TOTAL FEDERAL HYDRO		20045	20167	20622	20870	21136	21310	21446	21388	21489	21430	21450
REALIZATION FACTOR		-3963	-3978	-4033	-4063	-2552	-2573	-2589	-2582	-2595	-2587	-2590

1979 WEST GROUP FORECAST

JANUARY PEAK CAPACITY

JANUARY 1ST WATER YEAR

FIGURES ARE MEGAWATTS.

		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
SEASONAL HYDRO												
CARMEN	EUGENE	41	41	41	41	41	41	41	41	40	41	41
TRAIL BRIDGE	EUGENE	5	5	5	5	5	5	5	5	5	5	5
DETROIT	BPA	99	99	99	99	99	99	99	99	99	99	99
BIG CLIFF	BPA	4	4	4	4	4	4	4	4	4	4	4
LOOKOUT POINT	BPA	71	71	71	71	71	71	71	71	71	71	71
DEXTER	BPA	6	6	6	6	6	6	6	6	6	6	6
COUGAR	BPA	6	6	6	6	6	6	47	47	47	47	47
STAUBE	BPA	0	0	0	0	0	0	2	2	2	2	2
HILLS CREEK	BPA	30	30	30	30	30	30	30	30	30	30	30
GREEN PETER	BPA	78	78	78	78	78	78	78	78	78	78	78
FOSTER	BPA	6	6	6	6	6	6	6	6	6	6	6
OAK GROVE	PGE	49	49	49	49	49	49	49	49	49	49	49
NORTH FORK	PGE	54	54	54	54	54	54	54	54	54	54	54
FARADAY	PGE	44	44	44	44	44	44	44	44	44	44	44
RIVER MILL	PGE	23	23	23	23	23	23	23	23	23	23	23
SWIFT #1	PPEL	188	188	188	189	188	188	189	188	188	188	189
SWIFT #2	PPEL	76	76	76	76	76	76	76	76	76	76	76
YALE	PPEL	118	118	118	118	118	118	118	118	118	118	118
MERWIN	PPEL	143	143	143	143	144	143	143	143	144	144	144
KLAMATH RIVER	PPEL	163	163	163	163	163	163	163	163	163	163	163
ALDER	TACOMA	36	35	36	37	37	36	38	36	41	39	41
LAGRANDE	TACOMA	65	65	65	65	65	65	65	65	65	65	65
CUSHMAN #1	TACOMA	27	27	27	27	27	27	27	27	29	28	30
CUSHMAN #2	TACOMA	88	88	88	88	88	88	89	88	88	88	88
MAYFIELD	TACOMA	131	131	131	169	169	169	169	169	169	169	169
MOSSYROCK	TACOMA	293	293	293	293	293	293	293	293	293	293	293
ROSS	SEATTLE	276	277	275	277	529	529	529	529	529	529	529
DIABLO	SEATTLE	159	159	159	159	159	159	159	159	159	159	159
GORGE	SEATTLE	175	175	175	175	175	175	175	175	175	175	175
WHITE	PSPEL	43	43	43	43	43	43	43	43	43	43	43
UPPER BAKER	PSPEL	84	84	84	84	84	84	84	84	83	83	83
LOWER BAKER	PSPEL	66	67	67	67	67	67	67	66	67	67	67
PALISADES-S. IDAHO	BPA	49	49	49	49	49	49	49	49	49	49	49
LOST CREEK	BPA	18	18	18	18	18	18	18	18	18	18	18
TOTAL SEASONAL HYDRO		2714	2716	2714	2756	3038	3005	3052	3048	3055	3053	3058

1979 WEST GROUP FORECAST

JANUARY PEAK CAPABILITY

JANUARY 1937 WATER YEAR

FIGURES ARE MEGAWATTS.

1979-80 THROUGH 1989-90

PONDAGE AND MINOR HYDRO

WATERVILLE	EUGENE	9
LEABURG	EUGENE	12
CHANDLER	BPA	9
ROZA(NET)	BPA	3
BULL RUN	PGE	22
T.W. SULLIVAN	PGE	14
UMPQUA	PP&L	175
ROGUE	PP&L	25
CONDIT,BIG F&MINOR	PP&L	33
YELM	CENTRALIA	10
CEDAR F&NEWHALEM	SEATTLE	32
SNOQUALMIE & MINOR	PSP&L	72
MEYER FALLS	WWP	1
PACKWOOD	WPPSS	30
MINOR HYDRO-OTHERS	1/	4
S.IDAHO-SMALL PLNT	BPA	26
S.IDAHO-PUBLIC AGY	BPA	3
TOTAL PONDAGE & MINOR HYDRO		480

1/ INCLUDES CALISPEL CREEK, MOYIE SPRINGS AND BIG CREEK (F.I.P. - FLATHEAD IRRIGATION PROJECTS).

1979 WEST GROUP FORECAST

CRITICAL PERIOD ENERGY CAPABILITY

FIGURES ARE MEGAWATTS.

		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
MONTHS IN CRITICAL PERIOD		42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	43.0	43.0	43.0
COLUMBIA MAINSTEM												
LIBBY	BPA	196	192	191	193	187	171	158	154	148	149	149
LIBBY REREGULATING	BPA	0	0	0	0	10	32	29	29	29	29	29
HUNGRY HORSE	BPA	95	95	94	95	93	95	95	95	95	94	95
NOXON RAPIDS	WWP	148	148	148	148	148	148	148	148	147	147	147
CABINET GORGE	WWP	106	106	106	106	106	106	106	106	106	106	105
ALBENI FALLS	BPA	25	25	25	25	25	25	24	25	24	25	24
BOX CANYON	PEND OR.PUD	46	47	46	46	46	46	48	46	47	46	46
BOUNDARY	SEATTLE	360	360	360	360	360	360	360	360	362	361	361
SPOKANE RIVER	WWP	90	90	90	90	90	90	90	89	91	91	91
GRAND COULEE	BPA	1935	1910	1919	1917	1913	1909	1908	1912	1895	1893	1855
CHIEF JOSEPH	BPA	1056	1088	1087	1086	1085	1086	1086	1085	1081	1081	1081
WELLS	DOUGLAS PUD	438	437	437	436	437	436	436	437	434	435	434
CHELAN	CHELAN PUD	38	38	38	38	38	38	39	38	38	38	38
ROCKY REACH	CHELAN PUD	590	590	589	589	589	589	589	588	586	586	586
ROCK ISLAND	CHELAN PUD	279	279	279	279	279	278	278	278	277	277	277
WANAPUM	GRANT PUD	557	557	557	557	557	556	556	556	554	554	554
PRIEST RAPIDS	GRANT PUD	531	530	530	530	530	529	529	530	528	528	527
DWORSHAK	BPA	161	165	164	165	162	165	163	166	165	163	157
LOWER GRANITE	BPA	218	217	217	216	215	215	215	215	219	219	218
LITTLE GOOSE	BPA	219	217	217	216	216	215	215	215	219	219	219
LOWER MONUMENTAL	BPA	216	216	215	215	214	214	213	213	219	218	218
ICE HARBOR	BPA	217	217	216	216	215	215	215	214	219	219	218
MCNARY	BPA	641	640	640	639	639	639	639	637	643	642	642
JOHN DAY	BPA	925	924	924	922	922	921	920	921	924	924	923
ROUND BUTTE	PGE	84	84	84	84	84	84	84	84	84	84	84
PELTON	PGE	40	40	40	40	40	40	40	40	40	40	40
THE DALLES	BPA	818	818	817	817	817	816	816	815	821	820	820
BONNEVILLE	BPA	563	563	606	609	609	609	608	608	612	612	611
TOTAL MAINSTEM HYDRO		10569	10532	10536	10534	10527	10526	10598	10604	10607	10600	10549

1979 WEST GROUP FORECAST

CRITICAL PERIOD ENERGY CAPABILITY

FIGURES ARE MEGAWATTS.

		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
MONTHS IN CRITICAL PERIOD		42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	43.0	43.0	43.0
SEASONAL HYDRO												
CARMEN	EUGENE	20	20	20	20	20	20	20	20	20	20	20
TEA.L BRIDGE	EUGENE	4	4	4	4	4	4	4	4	4	4	5
DETROIT	BPA	36	36	36	36	36	36	36	36	38	38	38
BIG CLIFF	BPA	10	10	10	10	10	10	10	10	10	10	10
LOOKOUT POINT	BPA	26	26	26	26	26	26	26	26	27	27	27
DEXTER	BPA	8	8	8	8	8	8	8	8	8	8	8
COUGAR	BPA	13	13	13	13	13	13	13	13	14	14	14
STRUBE	BPA	0	0	0	0	0	0	2	2	3	3	3
HILLS CREEK	BPA	15	15	15	15	15	15	15	15	15	15	15
GREEN PETER	BPA	22	22	22	22	22	22	22	22	23	23	23
FOSTER	BPA	12	12	12	12	12	12	12	12	13	13	13
OAK GROVE	PGE	24	24	24	24	24	24	24	24	24	24	24
NORTH FORK	PGE	19	19	19	19	19	19	19	19	20	20	20
FARADAY	PGE	17	17	17	17	17	17	17	17	18	18	18
FIVER MILL	PGE	10	10	10	10	10	10	10	10	10	10	10
SWIFT #1	PPRL	54	54	54	54	54	54	54	54	56	56	56
SWIFT #2	PPRL	21	20	20	20	21	20	21	20	21	22	22
YALE	PPRL	53	53	53	53	53	53	53	53	54	54	54
MERWIN	PPRL	52	52	52	52	52	52	52	52	53	53	53
KLAMATH RIVER	PPRL	50	50	50	50	50	50	50	50	50	50	50
ALDER	TACOMA	19	19	19	19	19	19	19	19	20	20	20
LAGRANDE	TACOMA	33	33	33	33	33	33	33	33	34	34	34
CUSHMAN #1	TACOMA	11	11	11	11	11	11	11	11	11	11	11
CUSHMAN #2	TACOMA	23	23	23	23	23	23	23	23	24	24	24
MAYFIELD	TACOMA	66	66	66	66	66	66	66	66	68	68	68
MOSSYROCK	TACOMA	98	98	98	98	98	98	98	98	99	99	99
ROSS	SEATTLE	66	66	66	66	101	101	101	101	102	102	102
DIABLO	SEATTLE	83	83	83	83	83	83	83	83	84	84	84
GORGE	SEATTLE	93	93	93	93	93	93	93	93	94	94	94
WHITE	PSREL	28	28	28	28	28	28	28	28	29	29	29
UPPER BAKER	PSREL	33	33	33	33	33	33	33	33	34	34	34
LOWER BAKER	PSREL	38	38	38	38	38	38	38	38	38	38	38
PALISADES-S. IDAHO	BPA	69	69	69	69	69	69	69	69	67	67	67
LOST CREEK	BPA	22	22	22	22	22	22	22	22	21	21	21
TOTAL SEASONAL HYDRO		1148	1147	1147	1147	1183	1182	1185	1184	1206	1207	1208

1979 WEST GROUP FORECAST

CRITICAL PERIOD ENERGY CAPABILITY

FIGURES ARE MEGAWATTS.

		1979-80 THROUGH 1986-87	1987-88 THROUGH 1989-90
MONTHS IN CRITICAL PERIOD		42.5	43.0
PONDAGE AND MINOR HYDRO			
WATERVILLE	EUGENE	8	8
LEABURG	EUGENE	12	12
CHANDLER	BPA	7	7
ROZA(NET)	BPA	5	5
BULL RUN	PGE	16	16
T.W. SULLIVAN	PGE	14	14
UMPQUA	PP&L	97	98
ROGUE	PP&L	34	35
CONDIT,BIG F&MINOR	PP&L	26	26
YELM	CENTRALIA	9	9
CEDAR F&NEWHALEM	SEATTLE	8	9
SNOQUALMIE & MINOR	PSP&L	47	48
MEYER FALLS	WWP	1	1
PACKWOOD	WPPSS	7	8
MINOR HYDRO-OTHERS	1/	2	2
S.IDAHO-SMALL PLNT	BPA	30	29
S.IDAHO-PUBLIC AGY	BPA	3	3
TOTAL PONDAGE & MINOR HYDRO		320	324

1/ INCLUDES CALISPEL CREEK, MOYIE SPRINGS AND BIG CREEK (F.I.P. - FLATHEAD IRRIGATION PROJECTS).

1979 WEST GROUP FORECAST

40-YEAR AVERAGE ENERGY CAPABILITY

FIGURES ARE MEGAWATTS.

		LOAD YEAR STUDIED										
		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
COLUMBIA MAINSTEM												
LIBBY	BPA	215	216	216	216	221	205	188	189	188	188	188
LIBBY REREGULATING	BPA	0	0	0	0	14	36	33	33	33	33	33
HUNGRY HORSE	BPA	106	106	106	106	105	106	107	106	107	106	107
NOXON RAPIDS	WWP	204	204	204	203	204	204	204	204	204	204	204
CABINET GORGE	WWP	130	130	131	130	131	131	131	130	131	131	130
ALBENI FALLS	BPA	24	24	24	24	24	24	23	24	23	24	23
BOX CANYON	PEND OR.PUD	50	50	50	50	50	50	50	50	50	50	50
BOUNDARY	SEATTLE	449	449	450	449	452	450	450	450	450	450	448
SPOKANE RIVER	WWP	115	114	115	114	114	114	114	114	114	114	113
GRAND COULEE	BPA	2261	2242	2240	2237	2236	2241	2235	2238	2231	2232	2219
CHIEF JOSEPH	BPA	1313	1345	1344	1343	1344	1343	1343	1343	1341	1341	1339
WELLS	DOUGLAS PUD	518	518	518	516	517	518	517	518	515	516	514
CHELAN	CHELAN PUD	46	46	46	46	46	46	46	46	46	46	46
ROCKY REACH	CHELAN PUD	727	726	726	725	726	725	725	725	724	724	723
ROCK ISLAND	CHELAN PUD	336	337	336	336	336	336	336	336	335	335	334
WANAPUM	GRANT PUD	665	665	664	663	664	665	663	664	662	663	660
PRIEST RAPIDS	GRANT PUD	625	625	625	624	625	625	624	625	622	623	621
DWORSHAK	BPA	217	218	218	218	218	218	218	219	218	218	217
LOWER GRANITE	BPA	330	329	329	328	328	327	327	326	326	325	325
LITTLE GOOSE	BPA	331	330	330	329	329	328	327	327	327	326	326
LOWER MONUMENTAL	BPA	334	334	333	332	332	332	331	331	330	330	329
ICE HARBOR	BPA	317	317	316	316	315	315	314	314	313	313	313
MCNARY	BPA	804	802	802	801	802	802	800	800	798	799	797
JOHN DAY	BPA	1248	1248	1247	1246	1246	1244	1244	1244	1242	1242	1241
ROUND BUTTE	PGE	97	97	97	97	97	96	96	97	96	96	96
PELTON	PGE	46	46	46	46	46	46	46	46	46	46	46
THE DALLES	BPA	1062	1062	1061	1061	1062	1059	1059	1058	1058	1057	1057
BONNEVILLE	BPA	556	569	729	753	754	753	752	753	751	751	750
TOTAL MAINSTEM HYDRO		13126	13149	13302	13309	13336	13333	13303	13310	13281	13283	13249

1979 WEST GROUP FORECAST

40-YEAR AVERAGE ENERGY CAPABILITY

FIGURES ARE MEGAWATTS.

		LOAD YEAR STUDIED										
		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
SEASONAL HYDRO												
CARMEN	EUGENE	27	27	27	27	27	27	27	27	27	27	27
TRAIL BRIDGE	EUGENE	6	6	6	6	6	6	6	6	6	6	6
DETROIT	BPA	47	47	47	47	47	47	47	47	47	47	47
BIG CLIFF	BPA	11	11	11	11	11	11	11	11	11	11	11
LOOKOUT POINT	BPA	38	38	38	38	38	38	38	38	38	38	38
DEXTER	BPA	10	10	10	10	10	10	10	10	10	10	10
COUGAR	BPA	17	17	17	17	17	17	20	20	20	20	20
STRUBE	BPA	0	0	0	0	0	0	3	3	3	3	3
HILLS CREEK	BPA	19	19	19	19	19	19	19	19	19	19	19
GREEN PETER	BPA	29	29	29	29	29	29	29	29	29	29	29
FOSTER	BPA	14	14	14	14	14	14	14	14	14	14	14
OAK GROVE	PGE	27	27	27	27	27	27	27	27	27	27	27
NORTH FORK	PGE	26	26	26	26	26	26	26	26	26	26	26
FARADAY	PGE	23	23	23	23	23	23	23	23	23	23	23
RIVER MILL	PGE	13	13	13	13	13	13	13	13	13	13	13
SWIFT #1	PP&L	74	74	74	74	74	74	74	74	74	74	74
SWIFT #2	PP&L	25	25	25	25	25	25	25	25	25	25	25
YALE	PP&L	65	65	65	65	65	65	65	65	65	65	65
MERWIN	PP&L	64	64	64	64	64	64	64	64	64	64	64
KLAMATH RIVER	PP&L	84	84	84	84	84	84	84	84	84	84	84
ALDER	TACOMA	25	25	25	25	25	25	25	25	25	25	25
LAGRANDE	TACOMA	39	39	39	39	39	39	39	39	39	39	39
CUSHMAN #1	TACOMA	13	13	13	13	13	13	13	13	13	13	13
CUSHMAN #2	TACOMA	25	25	25	25	25	25	25	25	25	25	25
MAYFIELD	TACOMA	72	72	72	72	72	72	72	72	72	72	72
MOSSYROCK	TACOMA	115	115	115	115	115	115	115	115	115	115	115
ROSS	SEATTLE	83	83	83	83	123	124	124	123	124	124	124
DIABLO	SEATTLE	92	92	91	92	92	92	92	92	93	93	93
GORGE	SEATTLE	106	106	106	107	106	107	107	107	107	107	107
WHITE	PSP&L	36	36	36	36	36	36	36	36	36	36	36
UPPER BAKER	PSP&L	40	40	40	40	40	40	40	40	40	40	40
LOWER BAKER	PSP&L	44	44	44	44	44	44	44	44	44	44	44
PALISADES-S. IDAHO	BPA	73	73	73	73	73	73	73	73	73	73	73
LOST CREEK	BPA	35	35	35	35	35	35	35	35	35	35	35
TOTAL SEASONAL HYDRO		1417	1417	1416	1418	1457	1459	1465	1464	1466	1466	1466

1979 WEST GROUP FORECAST

40-YEAR AVERAGE ENERGY CAPABILITY

FIGURES ARE MEGAWATTS.

		LOAD YEAR STUDIED
		1979-80 THROUGH 1989-90
PONDAGE AND MINOR HYDRO		
WATERVILLE	EUGENE	9
LEABURG	EUGENE	13
CHANDLER	BPA	8
ROZA(NET)	BPA	7
BULL RUN	PGE	12
T.W. SULLIVAN	PGE	14
UMPQUA	PP&L	129
ROGUE	PP&L	43
CONDIT,BIG F&MINOR	PP&L	27
YELM	CENTRALIA	9
CEDAR F&NEWHALEM	SEATTLE	13
SNOQUALMIE & MINOR	PSP&L	54
MEYER FALLS	WWP	1
PACKWOOD	WPPSS	11
MINOR HYDRO-OTHERS 1/		3
S.IDAHO-SMALL PLNT	BPA	37
S.IDAHO-PUBLIC AGY	BPA	3
TOTAL PONDAGE & MINOR HYDRO		393

1/ INCLUDES CALISPEL CREEK, MOYIE SPRINGS AND BIG CREEK (F.I.P. - FLATHEAD IRRIGATION PROJECTS).

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SECTION VI

Miscellaneous

Industrial and Miscellaneous Suppliers - Peak and Average
Pumping Requirements - Grand Coulee and Roza
USBR Local Use at Grand Coulee
Hanford-NPR - Peak and Energy
Imports and Exports (East) - Peak and Energy
Imports and Exports (Southwest) - Peak and Energy
Imports (Canada) - Peak and Energy
B.C. Hydro and Power Authority - Loads
B.C. Hydro and Power Authority - Schedule of New Generating Units
West Kootenay Power and Light Company, Limited - Loads

INDUSTRIAL AND MISCELLANEOUS SUPPLIERS

Figures are megawatts.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
Portland General Electric Company												
Lake Oswego Corp.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	--	0.5	0.5	0.5
Pacific Power & Light Company												
U.S.B.R. - Green Springs	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
The Washington Water Power Company												
City of Spokane, Upriver Hydro	--	--	--	2.0	4.0	4.0	4.0	4.0	4.0	1.0	--	--
Total PEAK	18.8	18.8	18.8	20.8	22.8	22.8	22.8	22.8	22.3	19.8	18.8	18.8
TOTAL PEAK USED IN REPORT	19	19	19	21	23	23	23	23	22	20	19	19
ENERGY												
Portland General Electric Company												
Lake Oswego Corp.	0.2	0.1	0.1	0.2	0.4	0.4	0.4	0.4	--	0.4	0.4	0.4
Pacific Power & Light Company												
U.S.B.R. - Green Springs	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
The Washington Water Power Company												
City of Spokane, Upriver Hydro	--	--	--	2.0	2.0	3.0	2.0	2.0	2.0	--	--	--
Total ENERGY	7.5	7.4	7.4	9.5	9.7	10.7	9.7	9.7	9.3	7.7	7.7	7.7
TOTAL ENERGY USED IN REPORT	8	7	7	10	10	11	10	10	9	8	8	8

PUMPING REQUIREMENTS AT GRAND COULEE AND ROZA

Electric Energy and Water Estimated for Primary Pumping at Grand Coulee 1/
Median or Adverse Hydro

Peak and Energy are mw.		Jul	Aug 1-15	Aug 16-31	Sep	Oct	Nov	Mar	May	Jun
1979-80 *	Peak	373	272	0	0	0	0	361	258	272
	Energy	372	272	0	0	0	0	226	106	264
	Water - Avg. cfs	13,580	9,680	0	0	0	0	11,380	3,290	9,090
1979-80 *	Peak	373	272	180	0	135	90		258	272
	Energy	372	272	180	0	131	56		118	264
	Water - Avg. cfs	13,580	9,680	6,400	0	4,690	2,000		3,680	9,090
1980-81	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		128	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		3,970	9,090
1981-82	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		135	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,180	9,090
1982-83	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		140	264
	Water - Avg. cfs	13,580	9,680	6,500	4,690	2,000	0		4,340	9,090
1983-84	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		144	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,460	9,090
1984-85	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		146	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,540	9,090
1985-86	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		149	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,620	9,090
1986-87	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		151	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,700	9,090
1987-88	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		154	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,780	9,090
1988-89 & 1989-90	Peak	373	272	180	135	90	0		258	272
	Energy	372	272	180	131	56	0		156	264
	Water - Avg. cfs	13,580	9,680	6,400	4,690	2,000	0		4,830	9,090

1/ These requirements have been deducted from both peak and energy capabilities for Grand Coulee plant.

Note: A. Columbia Basin Irrigation requirements are deducted from Hydro Resources and are not included in the load.
b. Primary pumping requirements at Grand Coulee are USBR estimates of December 4, 1978.

* Alternative schedules depending on contractor progress, load conditions and weather.

Peak and Energy Requirements Estimated for the USBR-Roza Project
Roza Point of Delivery

	Peak Mw	Average Mw
Jul	5.2	4.7
Aug 1-15	5.2	4.7
Aug 16-31	5.2	4.7
Sep	4.7	3.7
Oct	3.3	1.5
Nov	0.1	0.1
Dec	0.1	0.1
Jan	0.1	0.1
Feb	0.1	0.1
Mar	1.1	0.2
Apr 1-15	2.8	1.0
Apr 16-30	3.9	2.7
May	5.0	3.7
Jun	5.2	4.2

Note: The Roza irrigation loads apply to all years, median and adverse, and have been deducted from the gross capability of the Roza plant and are not included in the loads.

USBR LOCAL USE AT GRAND COULEE DAM

Figures are mw.	Jul	Aug 1-15	Aug 16-31	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr 1-15	Apr 16-30	May	Jun
1979-80 through 1989-90														
Peak	2.0	2.0	2.0	2.0	2.0	3.0	4.0	4.0	3.0	3.0	2.0	2.0	2.0	2.0
Energy	1.0	1.0	1.0	1.0	1.0	1.5	2.0	2.0	1.5	1.5	1.0	1.0	1.0	1.0

Note: These requirements have been deducted from both peak and energy capabilities for Grand Coulee Plant and are not included in the load.

USBR estimates of December 4, 1978.

HANFORD-NPR
ESTIMATED MONTHLY CAPABILITIES

Megawatts

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
1979-80 thru 1989-90	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY												
1979-80 thru 1982-83	0	687	687	687	687	687	687	687	687	687	0	0
1983-84 thru 1989-90	0	0	0	0	0	0	0	0	0	0	0	0

Note: Hanford-NPR plant is assumed undependable as a firm peak resource. The energy capabilities are based on 4.5 billion kwh operation per year for the period August through April of years 1979-80 through 1982-83.

EXPORTS TO EAST

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
1979-80	613	599	293	222	223	225	202	201	199	198	224	300
1980-81	376	361	310	240	241	243	244	243	241	240	265	342
1981-82	377	362	311	241	242	289	290	291	242	241	266	343
1982-83	378	363	312	242	243	294	296	296	243	242	267	343
1983-84	379	364	313	243	244	247	248	246	244	243	268	345
1984-85	380	366	314	244	245	248	249	247	245	244	269	346
1985-86	382	366	315	245	246	249	251	248	246	245	270	347
1986-87	383	368	316	246	247	251	253	250	247	246	271	348
1987-88	384	369	168	97	99	102	104	102	99	97	123	200
1988-89	236	221	169	98	100	104	106	103	100	99	124	201
1989-90	238	223	171	100	102	106	108	105	102	100	126	203
ENERGY												
1979-80	389	450	213	128	128	131	122	120	117	116	224	227
1980-81	265	357	264	178	180	183	184	162	149	178	240	273
1981-82	292	353	261	174	176	225	227	226	146	144	228	256
1982-83	268	350	257	170	173	226	229	191	144	151	258	263
1983-84	278	274	181	94	96	100	114	99	85	106	256	273
1984-85	292	258	194	107	86	114	116	83	80	108	251	287
1985-86	282	278	184	97	100	104	106	103	100	98	271	277
1986-87	285	281	186	99	102	107	109	106	102	99	273	279
1987-88	287	283	188	101	104	109	112	108	105	101	275	282
1988-89	290	286	191	104	107	112	115	111	108	104	278	284
1989-90	293	289	193	106	109	115	118	114	110	106	280	287

IMPORTS FROM EAST

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
1979-80	1018	1005	1018	1020	1070	1110	1149	1094	1059	1009	1009	1009
1980-81	1000	1000	1000	1000	1150	1190	1240	1185	1050	1000	1000	1000
1981-82	1000	1000	1265	1249	1589	1577	1665	1634	1286	1138	1151	1139
1982-83	1093	1214	1209	1193	1532	1516	1606	1578	1131	1082	1098	1183
1983-84	927	1019	1152	1135	1467	1448	1541	1515	1069	1022	918	903
1984-85	1113	1176	1089	1070	1400	1377	1472	1449	1006	957	854	729
1985-86	1048	1109	1022	1001	1327	1298	1398	1377	935	887	905	989
1986-87	977	1037	948	927	1248	1214	1317	1300	959	911	932	813
1987-88	901	858	650	1180	1164	1124	1232	1216	878	831	853	832
1988-89	819	655	687	994	1074	1028	1140	1128	792	745	768	747
1989-90	732	566	597	903	978	925	1042	1034	701	653	679	655
ENERGY												
1979-80	888	902	883	925	1167	1167	1166	1134	1084	924	924	921
1980-81	915	915	915	947	1167	1167	1167	1166	1075	915	904	915
1981-82	893	915	1121	1048	1433	1426	1421	1425	1287	976	1027	1040
1982-83	999	1033	1018	1080	1394	1388	1383	1387	1148	979	943	1064
1983-84	849	932	1047	973	1353	1346	1340	1343	1092	935	841	783
1984-85	1013	991	936	978	1307	1299	1291	1296	1035	876	784	671
1985-86	898	940	935	880	1256	1246	1240	1244	972	790	830	905
1986-87	894	756	868	827	1201	1187	1183	1187	955	807	816	747
1987-88	786	676	585	1016	1127	1091	1106	1110	878	731	742	749
1988-89	709	530	604	862	1063	1004	1041	1045	828	668	679	655
1989-90	644	462	537	794	992	912	969	972	746	588	611	585

EXPORTS TO SOUTHWEST

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
1979-80	2964	2964	2964	2464	1864	1864	1864	1864	1864	1864	2364	2964
1980-81	2964	2964	2964	2464	1864	1864	1864	1864	1864	1864	2364	3189
1981-82	3189	3189	3189	2464	1864	1864	1464	1464	1464	1464	1964	2564
1982-83	2564	2564	2564	2064	1464	1464	1464	1464	1464	1314	1814	2414
1983-84	2414	2414	2414	1914	1314	1314	1314	1314	1314	1314	1814	2414
1984-85	2414	2414	2414	1914	1314	1314	1314	1314	1314	1314	1814	2414
1985-86	2414	2414	2414	1914	1314	1314	1314	1314	1314	1314	1814	2414
1986-87	2414	1889	1889	1389	789	789	736	736	736	736	1194	1794
1987-88	1794	644	644	144	144	144	144	112	112	-	500	500
1988-89	500	500	500	-	-	-	-	-	-	-	500	500
1989-90	500	500	500	-	-	-	-	-	-	-	500	500
ENERGY												
1979-80	431	454	479	470	452	328	435	408	404	444	434	444
1980-81	428	451	476	467	449	325	432	405	401	440	430	658
1981-82	642	665	690	463	445	321	153	132	132	131	131	131
1982-83	125	148	163	164	163	157	152	131	131	68	68	68
1983-84	40	40	40	40	40	40	40	40	40	40	40	40
1984-85	40	40	40	40	40	40	40	40	40	40	40	40
1985-86	40	40	40	40	40	40	40	40	40	40	40	40
1986-87	40	40	40	40	40	40	40	40	40	40	40	40
1987-88	40	40	40	40	40	40	40	40	40	-	-	-
1988-89	-	-	-	-	-	-	-	-	-	-	-	-
1989-90	-	-	-	-	-	-	-	-	-	-	-	-

IMPORTS FROM SOUTHWEST

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
1979-80 thru 1989-90	-	-	-	-	100	100	100	100	100	-	-	-
ENERGY												
1979-80	415	415	415	415	415	415	415	448	448	448	449	448
80-81	415	415	415	415	415	415	415	448	448	448	449	448
81-82	415	415	415	415	415	415	415	448	448	448	449	448
82-83	415	415	415	415	415	415	415	448	448	448	449	448
83-84	415	415	415	415	415	415	415	415	415	415	415	415
84-85	415	415	415	415	415	415	415	415	415	415	415	415
85-86	415	415	415	415	415	415	415	415	415	415	415	415
86-87	352	265	265	265	265	264	250	250	250	250	240	238
87-88	233	81	81	81	81	81	79	72	72	-	-	-
88-89	-	-	-	-	-	-	-	-	-	-	-	-
89-90	-	-	-	-	-	-	-	-	-	-	-	-

IMPORTS FROM CANADA

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
PEAK												
1979-80	25	25	75	75	75	75	75	75	75	75	75	75
1980-81	75	75	75	75	75	75	75	75	75	75	75	75
1981-82	75	75	75	75	75	75	75	75	75	75	75	75
1982-83	75	75	75	75	75	75	75	75	75	75	75	75
1983-84	75	75	-	-	-	-	-	-	-	-	-	-
1984-85 thru 1989-90	-	-	-	-	-	-	-	-	-	-	-	-
ENERGY												
1979-80	20	20	60	60	60	60	60	60	60	60	60	60
1980-81	60	60	60	60	60	60	60	60	60	60	60	60
1981-82	60	60	60	60	60	60	60	60	60	60	60	60
1982-83	60	60	60	60	60	60	60	60	60	60	60	60
1983-84	60	60	-	-	-	-	-	-	-	-	-	-
1984-85 thru 1989-90	-	-	-	-	-	-	-	-	-	-	-	-

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
Load Estimates

Figures are mw.		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1979-80	Peak	3820	3920	4030	4600	5170	5340	5280	5090	4870	4470	4250	4150
	Energy	3036	3133	3142	3472	3775	3803	3937	3922	3772	3506	3358	3296
1980-81	Peak	4000	4100	4220	4820	5420	5680	5610	5340	5110	4740	4510	4400
	Energy	3180	3280	3290	3640	3958	3996	4137	4110	3957	3724	3565	3497
1981-82	Peak	4250	4350	4480	5120	5760	6060	5980	5670	5430	5120	4870	4740
	Energy	3379	3483	3494	3868	4207	4254	4406	4369	4208	4015	3844	3765
1982-83	Peak	4590	4700	4830	5530	6220	6570	6480	6120	5870	5580	5320	5170
	Energy	3648	3762	3771	4175	4542	4604	4769	4716	4546	4382	4199	4108
1983-84	Peak	5020	5140	5280	6040	6780	7180	7080	6670	6390	5970	5680	5520
	Energy	3992	4110	4115	4559	4949	5012	5198	5135	4953	4688	4489	4392
1984-85	Peak	5370	5490	5640	6460	7250	7680	7580	7130	6840	6330	6020	5850
	Energy	4269	4395	4403	4878	5293	5370	5567	5493	5301	4969	4758	4647
1985-86	Peak	5690	5820	5980	6850	7700	8170	8070	7570	7270	6710	6380	6190
	Energy	4524	4657	4665	5174	5619	5712	5923	5830	5632	5269	5040	4918
1986-87	Peak	6030	6170	6340	7270	8180	8710	8590	8040	7720	7110	6750	6540
	Energy	4793	4933	4944	5491	5968	6078	6304	6189	5983	5579	5333	5197
1987-88	Peak	6380	6520	6710	7710	8670	9270	9130	8520	8190	7530	7150	6910
	Energy	5071	5219	5233	5819	6331	6461	6702	6562	6349	5913	5647	5497
1988-89	Peak	6750	6910	7100	8170	9200	9850	9710	9040	8700	7970	7560	7310
	Energy	5368	5524	5542	6169	6719	6872	7129	6963	6742	6249	5964	5806
1989-90	Peak	7140	7300	7510	8640	9730	10420	10270	9560	9200	8420	8000	7730
	Energy	5672	5840	5853	6516	7097	7261	7528	7359	7122	6600	6297	6131

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
10-Year Generation Plan

YEAR	MONTH	PROJECT	UNIT	CAPACITY (MW)
1979	Dec	Peace Canyon	1	175
1980	Feb	Peace Canyon	2	175
	Feb	G. M. Shrum	10	300
	Apr	Seven Mile	1	175
	Apr	Seven Mile	2	175
	Jun	Peace Canyon	3	175
	Sep	Peace Canyon	4	175
	Oct	Seven Mile	3	175
1983	Sep	Revelstoke	1	450
	Sep	Revelstoke	2	450
	Dec	Revelstoke	3	450
1984	Jun	Revelstoke	4	450

WEST KOOTENAY POWER AND LIGHT COMPANY, LIMITED
Estimated System Firm & Interruptible Loads

Figures are mw.

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
FIRM LOADS													
1979-80	Peak	493	415	517	591	638	665	700	660	619	606	576	564
	Energy	394	312	414	461	500	524	548	519	495	490	467	455
1980-81	Peak	570	547	573	644	697	730	764	721	674	631	599	587
	Energy	463	432	462	504	548	577	599	569	541	507	482	469
1981-82	Peak	594	571	597	672	729	764	800	754	704	739	706	693
	Energy	478	448	477	521	569	599	623	591	561	604	579	565
1982-83	Peak	701	679	705	784	845	882	920	871	817	801	768	752
	Energy	575	545	574	620	671	703	728	693	661	655	631	614
1983-84	Peak	759	733	756	846	913	949	988	935	877	829	794	778
	Energy	624	589	615	669	726	756	782	745	710	674	648	631
1984-85	Peak	786	761	783	878	949	987	1027	971	909	858	821	805
	Energy	642	607	633	689	749	781	808	768	732	693	666	648
1985-86	Peak	814	789	811	911	986	1026	1068	1008	942	888	849	832
	Energy	660	625	651	710	774	807	835	793	754	712	684	666
1986-87	Peak	842	818	839	944	1025	1067	1109	1046	976	918	877	859
	Energy	679	644	670	731	798	834	862	818	777	732	703	684
1987-88	Peak	871	847	869	979	1063	1108	1152	1086	1011	949	906	888
	Energy	699	663	690	753	824	861	890	844	800	753	722	703
1988-89	Peak	901	877	899	1015	1104	1151	1196	1126	1047	982	937	918
	Energy	719	683	710	776	850	889	919	871	824	774	742	722
1989-90	Peak	931	909	930	1051	1145	1194	1241	1167	1084	1015	967	948
	Energy	739	703	730	799	877	918	949	898	849	796	763	742
INTERRUPTIBLE LOADS													
All years													
	Peak	55	55	55	55	55	55	55	55	55	55	55	55
	Energy	30	30	30	30	30	30	30	30	30	30	30	30

SECTION VII

Loads

Information on Loads
Total West Group Load
Total Loads
- Bonneville Power Administration
- Chelan County PUD
- Clark County PUD
- Cowlitz County PUD
- Douglas County PUD
- Eugene Water & Electric Board
- Grant County PUD
- Grays Harbor County PUD
- Pacific Power & Light Company
- Pend Oreille County PUD
- Portland General Electric Company
- Puget Sound Power & Light Company
- Seattle City Light
- Snohomish County PUD
- Tacoma City Light
- The Washington Water Power Company
- Other Public Agencies

INFORMATION ON LOADS

Total Load

In this resource-planning report, the West Group Area plans to provide resources to serve the total peak and energy load. The total load consists of utilities' firm loads and Bonneville Power Administration's industrial load which is composed of firm, modified firm and interruptible loads.

Interruptible Load

Bonneville Power Administration's interruptible loads are as follows:

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Peak - Mw (January)	1079	1134	1132	1123	1133	1144	1154	1165	1175	1185	1195
Energy - Mw (July-June Avg.)	1056	1109	1092	1100	1111	1121	1132	1142	1151	1162	1172

New Loads

For technological changes, approximately one percent (1%) of the total BPA industrial load has been added to the estimated loads starting in 1979-80.

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Peak - Mw (January)	72	112	152	192	232	272	312	352	392	432	472
Energy - Mw (July-June Avg.)	72	112	147	192	232	272	312	352	392	431	471

TOTAL WEST GROUP LOAD

	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		18635	18957	19748	21801	23755	25488	26041	24632	23397	22169	21235	20082
79-80 AV	16743.50	14538	14837	14808	15904	17771	19046	19669	18710	17805	16741	15717	15376
80-81 PK		19553	19891	20747	22875	24939	26767	27345	25857	24519	23227	22241	21045
80-81 AV	17569.50	15275	15576	15553	16690	18672	20023	20633	19645	18660	17540	16459	16108
81-82 PK		20431	20747	21612	23844	26030	27979	28676	27096	25691	24335	23457	22205
81-82 AV	18390.16	15950	16219	16161	17352	19455	20901	21643	20601	19561	18385	17410	17044
82-83 PK		21578	21909	22786	25152	27442	29499	30046	28397	26929	25504	24425	23109
82-83 AV	19326.33	16871	17149	17092	18350	20550	22069	22684	21590	20497	19275	18084	17705
83-84 PK		22403	22747	23689	26126	28524	30685	31162	29421	27903	26410	25305	23940
83-84 AV	20028.66	17515	17680	17748	19031	21355	22950	23512	22358	21220	19937	18712	18326
84-85 PK		23169	23570	24498	27014	29528	31793	32296	30470	28886	27343	26187	24788
84-85 AV	20720.41	18095	18402	18320	19671	22076	23744	24346	23139	21948	20613	19343	18948
85-86 PK		23988	24397	25370	27974	30593	32965	33514	31598	29957	28367	27167	25725
85-86 AV	21422.83	18697	19009	18933	20312	22815	24560	25199	23936	22697	21316	19996	19604
86-87 PK		24897	25335	26330	29043	31776	34235	34786	32777	31060	29396	28148	26640
86-87 AV	22156.33	19360	19676	19561	20998	23599	25427	26087	24764	23470	22029	20656	20249
87-88 PK		25784	26239	27279	30100	32959	35539	36101	34002	32208	30557	29170	27611
87-88 AV	22922.58	20013	20339	20215	21713	24433	26346	27026	25637	24283	22785	21353	20928
88-89 PK		26706	27191	28263	31199	34189	36893	37462	35256	33382	31570	30228	28613
88-89 AV	23716.75	20688	21029	20904	22451	25239	27300	27996	26540	25120	23560	22075	21649
89-90 PK		27661	28169	29283	32321	35448	38274	38845	36548	34583	32711	31319	29649
89-90 AV	24537.66	21395	21749	21612	23210	26169	28272	28989	27470	25990	24369	22830	22397

TOTAL WEST GROUP LOAD

LOAD-BONNEVILLE PWR ADMIN.	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		8470	8638	8892	9258	9806	10364	10693	10193	9786	9586	9369	8988
79-80 AV	7698.91	7126	7225	7135	7346	7875	8379	8630	8248	7911	7662	7433	7412
80-81 PK		8908	9074	9386	9769	10353	10948	11248	10701	10260	10042	9815	9412
80-81 AV	8092.25	7495	7589	7523	7748	8318	8850	9055	8661	8294	8023	7791	7760
81-82 PK		9269	9428	9704	10115	10732	11366	11861	11268	10799	10571	10491	10069
81-82 AV	8473.00	7773	7865	7749	7986	8588	9157	9542	9124	8737	8453	8365	8337
82-83 PK		9901	10060	10335	10796	11453	12124	12436	11818	11328	11092	10838	10399
82-83 AV	8957.41	8344	8434	8312	8573	9204	9803	10013	9572	9165	8869	8611	8589
83-84 PK		10191	10350	10656	11108	11796	12500	12815	12153	11648	11398	11146	10701
83-84 AV	9207.75	8578	8672	8545	8784	9463	10098	10310	9840	9418	9106	8848	8831
84-85 PK		10470	10632	10945	11411	12127	12870	13206	12507	11982	11738	11473	11026
84-85 AV	9463.08	8815	8909	8766	9027	9716	10386	10610	10117	9677	9356	9094	9084
85-86 PK		10791	10945	11282	11748	12495	13274	13640	12906	12371	12135	11861	11416
85-86 AV	9717.25	9053	9143	9003	9247	9962	10665	10905	10390	9935	9611	9344	9349
86-87 PK		11181	11354	11687	12178	12958	13759	14121	13345	12780	12531	12243	11784
86-87 AV	9995.25	9339	9428	9247	9504	10242	10980	11229	10688	10212	9873	9595	9605
87-88 PK		11540	11715	12064	12576	13406	14249	14619	13802	13206	13030	12637	12163
87-88 AV	10290.50	9608	9701	9509	9777	10552	11332	11583	11012	10510	10157	9868	9877
88-89 PK		11904	12095	12456	12986	13866	14755	15147	14285	13657	13381	13067	12576
88-89 AV	10602.08	9883	9981	9786	10054	10869	11694	11962	11358	10829	10461	10162	10186
89-90 PK		12298	12497	12873	13417	14348	15280	15723	14817	14147	13869	13542	13037
89-90 AV	10944.08	10182	10286	10076	10351	11203	12068	12381	11747	11192	10811	10501	10531

LOAD-CHELAN COUNTY PUD	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		306	311	307	335	353	368	383	364	346	325	314	312
79-80 AV	296.58	277	279	280	292	310	324	333	317	300	286	280	281
80-81 PK		312	316	313	342	361	377	392	373	354	331	320	318
80-81 AV	301.75	281	283	284	297	316	331	340	323	306	291	284	285
81-82 PK		319	323	319	351	371	387	404	383	363	339	327	325
81-82 AV	307.67	285	288	289	303	322	339	349	330	312	296	289	290
82-83 PK		325	330	325	358	379	397	414	393	372	346	333	331
82-83 AV	313.25	290	292	294	308	329	346	356	337	318	301	294	294
83-84 PK		356	361	357	392	414	432	451	428	406	379	365	363
83-84 AV	339.08	314	317	319	334	356	374	384	364	344	326	318	319
84-85 PK		363	368	364	400	424	443	463	439	416	387	373	370
84-85 AV	345.42	319	322	324	340	363	382	393	372	350	332	324	324
85-86 PK		369	375	370	408	433	453	473	448	424	395	379	376
85-86 AV	351.08	324	327	329	345	369	389	401	379	356	337	328	329
86-87 PK		376	382	377	417	443	464	485	459	434	403	387	383
86-87 AV	357.17	328	332	334	351	376	397	410	386	363	342	333	334
87-88 PK		382	389	383	425	452	474	496	469	443	410	394	390
87-88 AV	363.00	333	336	339	357	383	404	418	393	369	347	338	339
88-89 PK		390	396	391	435	463	486	509	480	453	419	401	398
88-89 AV	369.50	338	342	344	363	390	413	427	401	376	353	343	344
89-90 PK		397	404	398	444	474	498	522	492	464	428	409	406
89-90 AV	376.50	343	348	350	370	398	422	436	410	383	359	349	350

LOAD-CLARK COUNTY PUD 1/	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		324	332	433	520	600	679	699	633	601	545	495	424
79-80 AV	357.75	221	226	281	343	407	467	506	449	417	379	312	285
80-81 PK		371	379	454	547	630	714	733	664	631	572	519	444
80-81 AV	378.75	264	269	293	358	427	489	520	471	436	396	325	297
81-82 PK		388	397	476	573	661	749	769	695	661	599	543	465
81-82 AV	396.00	275	281	306	375	447	513	544	492	456	413	340	310
82-83 PK		406	415	478	600	694	786	805	729	692	627	568	486
82-83 AV	413.17	287	293	319	391	467	536	568	514	476	431	354	322
83-84 PK		424	433	521	629	726	822	841	760	722	654	593	506
83-84 AV	430.50	298	304	332	408	488	560	592	536	496	449	368	335
84-85 PK		441	452	542	656	757	859	878	793	753	682	618	528
84-85 AV	448.50	311	317	346	424	509	584	617	558	517	468	383	348
85-86 PK		460	470	566	684	791	897	915	827	785	711	643	549
85-86 AV	465.92	322	326	360	442	529	609	642	580	537	486	397	361
86-87 PK		478	489	589	712	824	935	953	861	817	739	669	571
86-87 AV	484.33	334	341	373	459	551	633	668	603	558	505	412	375
87-88 PK		497	508	612	741	858	974	991	895	850	769	695	593
87-88 AV	502.83	346	354	387	477	572	659	694	626	579	524	428	388
88-89 PK		515	528	636	770	891	1013	1030	929	882	798	722	615
88-89 AV	521.42	359	366	401	495	594	684	720	649	601	543	443	402
89-90 PK		535	547	660	800	926	1052	1068	964	915	828	748	638
89-90 AV	540.00	371	379	415	513	616	709	746	673	622	562	458	416

LOAD-CLARK COUNTY PUD 1/

1/ These loads are included in BPA loads.

LOAD-COWLITZ COUNTY PUD	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		471	465	482	550	603	638	645	635	616	584	537	516
79-80 AV	468.92	338	412	395	473	510	490	539	533	522	497	466	452
80-81 PK		492	497	514	560	614	649	677	666	646	613	564	547
80-81 AV	490.00	367	442	421	484	523	506	560	555	543	518	486	475
81-82 PK		540	546	572	614	675	710	738	727	708	673	619	600
81-82 AV	536.00	419	484	463	527	567	556	610	603	591	564	532	516
82-83 PK		626	637	657	704	761	798	805	795	776	740	684	663
82-83 AV	586.00	458	531	515	580	624	610	659	652	639	616	583	565
83-84 PK		649	661	679	729	787	826	834	822	804	766	710	687
83-84 AV	616.58	494	572	548	618	660	637	688	680	668	640	606	588
84-85 PK		669	680	699	750	810	851	858	845	825	787	728	707
84-85 AV	632.92	507	587	562	635	677	654	706	698	684	656	624	605
85-86 PK		689	703	722	774	837	878	885	872	852	813	752	730
85-86 AV	653.00	524	606	581	655	698	675	728	720	706	676	643	624
86-87 PK		705	717	737	792	854	895	904	891	871	829	768	735
86-87 AV	665.42	535	617	592	667	711	689	743	733	719	689	655	635
87-88 PK		721	730	754	809	874	916	925	912	891	849	786	762
87-88 AV	677.92	545	627	603	679	725	703	757	747	735	702	667	647
88-89 PK		735	748	769	826	892	937	944	931	909	866	802	777
88-89 AV	690.42	556	638	614	691	738	717	771	762	746	715	679	658
89-90 PK		752	763	786	845	914	958	966	952	930	887	820	795
89-90 AV	703.92	567	650	626	704	752	734	786	777	761	729	691	670

LOAD-DOUGLAS COUNTY PUD	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		80	82	78	83	98	101	112	96	94	84	85	80
79-80 AV	65.83	61	63	60	58	69	77	82	73	65	61	61	60
80-81 PK		82	85	81	86	103	106	117	101	99	88	89	84
80-81 AV	68.42	63	65	62	60	72	81	86	76	68	63	63	62
81-82 PK		86	89	85	90	108	112	124	106	104	92	93	87
81-82 AV	71.17	65	67	64	62	75	84	90	79	71	66	66	65
82-83 PK		90	93	89	95	113	118	130	111	109	96	98	91
82-83 AV	74.25	68	70	67	65	78	88	95	83	74	68	68	67
83-84 PK		94	97	93	99	119	124	138	117	114	100	102	96
83-84 AV	77.50	70	73	69	67	82	93	100	87	77	71	71	70
84-85 PK		98	102	97	104	126	131	145	123	120	105	107	100
84-85 AV	81.00	73	76	72	70	86	97	105	91	81	74	74	73
85-86 PK		103	107	101	109	133	138	154	129	127	111	113	105
85-86 AV	84.58	76	79	75	73	90	102	110	95	84	78	77	75
86-87 PK		108	112	106	115	140	146	163	137	134	116	119	110
86-87 AV	88.75	80	83	78	76	94	108	116	100	89	81	81	79
87-88 PK		113	118	112	121	148	155	172	144	141	122	125	116
87-88 AV	93.17	83	87	82	80	99	114	123	105	93	85	84	83
88-89 PK		119	124	117	127	157	164	182	152	149	129	132	122
88-89 AV	97.67	87	91	85	83	104	120	130	111	97	89	88	87
89-90 PK		125	131	123	134	166	173	193	161	158	136	139	128
89-90 AV	102.50	91	95	89	87	110	126	137	117	102	93	92	91

LOAD-EUGENE W AND E BOARD	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		266	271	329	401	448	495	500	467	441	402	359	309
79-80 AV	265.42	188	193	212	257	308	343	351	326	302	275	225	205
80-81 PK		274	279	339	413	461	510	515	481	454	414	369	318
80-81 AV	273.83	194	199	219	265	318	354	362	336	312	284	232	211
81-82 PK		282	287	349	426	475	525	530	495	468	426	380	327
81-82 AV	282.83	200	206	226	274	329	366	374	347	322	293	239	218
82-83 PK		290	296	360	438	489	541	546	510	482	439	392	337
82-83 AV	291.92	207	212	233	283	339	377	386	358	333	303	247	225
83-84 PK		299	305	370	451	503	557	562	525	496	452	404	347
83-84 AV	301.33	213	219	241	292	350	389	398	370	343	313	255	233
84-85 PK		308	314	382	465	519	574	579	541	511	466	416	358
84-85 AV	311.00	220	226	249	301	361	402	411	382	354	323	263	240
85-86 PK		317	323	393	479	534	591	597	557	526	480	428	368
85-86 AV	320.25	227	234	257	311	373	415	422	392	364	331	270	247
86-87 PK		325	332	403	491	548	606	612	572	540	492	439	378
86-87 AV	328.92	233	240	264	319	383	426	434	403	374	340	278	253
87-88 PK		333	340	413	504	562	621	627	586	553	505	450	387
87-88 AV	338.00	240	246	271	328	394	438	446	414	384	350	285	260
88-89 PK		342	349	424	517	576	637	643	601	568	518	462	397
88-89 AV	347.08	246	253	278	337	404	450	458	425	395	359	293	267
89-90 PK		351	358	435	530	591	654	660	617	582	531	474	405
89-90 AV	356.58	253	260	286	346	415	462	470	437	405	369	301	275

LOAD-GRANT COUNTY PUD	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		322	295	271	209	220	262	288	287	243	282	309	326
79-80 AV	190.17	220	192	156	142	168	186	195	216	175	205	203	224
80-81 PK		338	307	283	218	230	275	305	304	257	299	327	347
80-81 AV	201.33	232	201	164	148	176	197	207	230	187	218	216	240
81-82 PK		359	325	302	233	245	290	315	313	265	310	339	360
81-82 AV	211.25	248	213	175	159	190	207	214	238	193	226	224	248
82-83 PK		373	338	313	240	253	299	331	330	279	325	356	378
82-83 AV	220.42	257	222	181	164	195	214	225	250	203	238	235	261
83-84 PK		391	356	328	253	266	314	346	344	292	341	373	395
83-84 AV	231.33	270	233	190	173	206	225	236	261	213	249	247	273
84-85 PK		410	373	344	265	278	329	357	356	301	353	386	410
84-85 AV	240.92	283	244	200	182	217	234	244	270	220	258	256	283
85-86 PK		425	388	356	274	287	340	374	372	315	369	404	428
85-86 AV	251.08	294	253	207	189	224	242	255	282	231	271	268	297
86-87 PK		444	406	372	287	301	355	391	390	330	386	423	447
86-87 AV	263.08	308	264	217	199	235	253	267	296	242	284	281	311
87-88 PK		464	425	389	301	316	371	408	407	345	403	442	467
87-88 AV	275.33	322	276	227	209	248	264	279	309	254	297	294	325
88-89 PK		484	444	406	315	330	388	429	428	362	423	464	490
88-89 AV	288.58	336	288	237	220	260	276	293	324	267	312	309	341
89-90 PK		508	466	426	331	347	407	450	449	380	445	487	514
89-90 AV	303.00	353	302	249	231	273	290	308	340	280	328	324	358

LOAD-GRAYS HARBOR PUD 1/	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		212	188	228	289	291	310	316	308	313	276	253	220
79-80 AV	184.42	143	135	141	176	208	232	234	221	212	189	171	151
80-81 PK		219	193	235	298	301	321	325	315	316	281	258	224
80-81 AV	190.83	149	140	147	183	217	242	243	227	216	195	176	155
81-82 PK		225	199	242	307	306	334	337	323	324	288	265	230
81-82 AV	198.08	155	146	153	190	223	254	252	235	223	202	183	161
82-83 PK		232	204	250	316	316	346	350	342	343	306	281	244
82-83 AV	205.58	159	149	156	195	228	260	265	247	235	212	192	169
83-84 PK		242	212	261	330	329	359	363	343	348	306	284	247
83-84 AV	213.33	167	157	165	205	241	274	274	251	241	215	197	173
84-85 PK		249	218	269	340	339	373	381	357	362	319	296	256
84-85 AV	221.58	173	162	170	212	248	285	286	262	251	224	205	181
85-86 PK		259	227	279	353	352	387	393	371	376	331	307	267
85-86 AV	229.92	179	168	176	220	258	296	297	272	260	232	213	188
86-87 PK		268	235	289	366	365	402	407	385	390	343	319	277
86-87 AV	238.67	186	175	183	228	268	307	308	282	270	241	221	195
87-88 PK		279	244	301	380	379	417	423	400	405	356	331	288
87-88 AV	247.58	193	181	190	237	278	319	320	292	280	250	229	202
88-89 PK		289	254	311	394	394	433	439	415	420	370	343	299
88-89 AV	257.08	200	188	197	246	288	331	332	304	291	260	238	210
89-90 PK		300	263	323	409	409	449	455	430	436	384	356	310
89-90 AV	266.75	208	195	205	255	299	343	344	315	302	270	247	218

LOAD-GRAYS HARBOR PUD 1/

1/ These loads are included in BPA loads.

LOAD-PAC PWR & LIGHT CO.	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		2514	2635	2700	3108	3217	3667	3567	3439	3202	3038	3021	2842
79-80 AV	2016.67	1746	1782	1747	1883	2132	2310	2401	2278	2158	2001	1894	1868
80-81 PK		2644	2771	2839	3270	3383	3857	3752	3617	3368	3197	3177	2988
80-81 AV	2120.92	1837	1874	1837	1980	2242	2430	2525	2395	2269	2105	1992	1965
81-82 PK		2779	2915	2985	3438	3557	4057	3991	3848	3582	3398	3372	3174
81-82 AV	2244.42	1931	1971	1933	2083	2359	2557	2688	2551	2414	2239	2118	2089
82-83 PK		2952	3097	3177	3653	3782	4312	4199	4046	3769	3574	3549	3338
82-83 AV	2373.33	2051	2094	2056	2217	2511	2720	2828	2684	2539	2356	2228	2196
83-84 PK		3105	3257	3342	3844	3980	4538	4417	4256	3964	3760	3733	3512
83-84 AV	2496.42	2157	2203	2163	2331	2641	2862	2975	2823	2671	2477	2344	2310
84-85 PK		3266	3428	3515	4044	4186	4773	4646	4477	4170	3955	3926	3694
84-85 AV	2626.83	2269	2317	2276	2453	2779	3013	3131	2971	2810	2607	2466	2430
85-86 PK		3435	3605	3698	4255	4403	5022	4890	4712	4386	4160	4130	3885
85-86 AV	2763.67	2386	2438	2395	2581	2924	3170	3295	3126	2957	2742	2594	2556
86-87 PK		3614	3792	3891	4476	4634	5284	5145	4957	4615	4378	4346	4088
86-87 AV	2907.67	2511	2564	2520	2715	3077	3334	3466	3289	3111	2885	2730	2690
87-88 PK		3801	3990	4095	4710	4874	5560	5414	5217	4857	4605	4571	4300
87-88 AV	3059.50	2641	2698	2651	2858	3238	3509	3648	3461	3273	3037	2871	2829
88-89 PK		3999	4198	4305	4958	5129	5851	5698	5487	5110	4844	4810	4525
88-89 AV	3219.25	2778	2839	2790	3006	3408	3694	3839	3642	3444	3194	3021	2976
89-90 PK		4207	4417	4530	5213	5394	6156	5995	5774	5378	5097	5062	4761
89-90 AV	3387.75	2923	2987	2937	3163	3587	3867	4040	3832	3624	3362	3179	3132

LOAD-PEND GREILLE PUD	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		20	20	28	28	29	32	32	30	29	27	25	21
79-80 AV	17.83	13	13	15	17	20	22	23	21	20	19	16	15
80-81 PK		21	21	29	30	31	33	34	32	30	26	26	22
80-81 AV	18.08	13	13	15	18	21	23	24	21	21	19	15	14
81-82 PK		22	22	31	32	33	35	36	33	32	30	28	23
81-82 AV	19.17	14	14	16	19	22	24	25	23	22	20	16	15
82-83 PK		23	24	33	33	35	37	38	35	34	31	29	24
82-83 AV	20.08	15	15	16	20	23	25	26	24	23	21	17	16
83-84 PK		25	25	34	35	36	39	40	37	35	33	31	26
83-84 AV	21.17	15	16	17	21	24	27	28	25	24	22	18	17
84-85 PK		26	26	36	37	38	41	42	39	37	35	32	27
84-85 AV	22.00	16	16	18	22	25	28	29	26	25	23	18	18
85-86 PK		27	28	38	39	41	44	44	41	39	37	34	28
85-86 AV	23.08	17	17	19	23	27	29	31	27	26	24	19	18
86-87 PK		29	29	40	41	43	46	47	44	41	39	36	30
86-87 AV	24.25	18	18	20	24	28	31	32	29	27	25	20	19
87-88 PK		30	31	43	43	45	49	49	46	44	41	38	32
87-88 AV	25.50	19	19	21	25	29	32	34	30	29	27	21	20
88-89 PK		32	32	45	46	48	51	52	48	46	43	40	33
88-89 AV	26.83	20	20	22	27	31	34	35	32	30	28	22	21
89-90 PK		34	34	47	48	50	54	55	51	48	45	42	35
89-90 AV	28.17	21	21	24	28	32	36	37	33	32	29	23	22

LOAD-PORTLAND G E CO.	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		1856	1890	1951	2302	2561	2659	2818	2647	2503	2275	2156	1962
79-80 AV	1676.67	1401	1470	1467	1582	1823	1947	2000	1947	1830	1684	1510	1459
80-81 PK		1974	2010	2051	2410	2680	2778	2940	2777	2607	2376	2255	2060
80-81 AV	1762.67	1492	1566	1543	1661	1912	2041	2092	2052	1910	1766	1581	1536
81-82 PK		2056	2069	2124	2489	2779	2904	3054	2883	2705	2464	2340	2135
81-82 AV	1831.25	1558	1610	1597	1716	1990	2139	2177	2135	1985	1834	1641	1593
82-83 PK		2131	2142	2191	2577	2877	3013	3177	3002	2818	2566	2445	2231
82-83 AV	1904.92	1615	1668	1654	1777	2062	2222	2269	2227	2071	1915	1714	1665
83-84 PK		2224	2240	2304	2690	3003	3148	3308	3126	2944	2673	2554	2325
83-84 AV	1976.75	1687	1611	1732	1860	2158	2327	2359	2316	2154	1993	1787	1737
84-85 PK		2327	2389	2409	2789	3130	3278	3431	3242	3055	2775	2653	2417
84-85 AV	2068.00	1760	1822	1806	1938	2246	2420	2448	2405	2237	2071	1857	1806
85-86 PK		2420	2483	2504	2895	3246	3401	3563	3366	3174	2885	2763	2517
85-86 AV	2150.17	1830	1895	1878	2015	2332	2512	2544	2500	2325	2155	1934	1882
86-87 PK		2521	2588	2609	3006	3374	3532	3690	3486	3290	2992	2867	2613
86-87 AV	2233.92	1907	1975	1957	2098	2424	2611	2637	2591	2410	2236	2007	1954
87-88 PK		2618	2687	2708	3114	3490	3659	3828	3618	3417	3110	2983	2719
87-88 AV	2320.17	1981	2051	2032	2177	2513	2706	2738	2692	2504	2325	2089	2034
88-89 PK		2726	2798	2818	3232	3621	3797	3952	3734	3528	3212	3083	2812
88-89 AV	2405.17	2063	2137	2116	2265	2611	2811	2828	2780	2586	2403	2159	2103
89-90 PK		2819	2894	2914	3336	3738	3920	4072	3850	3638	3313	3181	2901
89-90 AV	2483.08	2134	2210	2188	2341	2697	2903	2915	2867	2667	2478	2227	2170

LOAD-PUGET SOUND P&L CO.	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		1605	1636	1859	2251	2651	2853	2918	2641	2517	2206	1990	1839
79-80 AV	1639.17	1205	1231	1300	1529	1893	2089	2153	1986	1873	1639	1442	1330
80-81 PK		1695	1728	1965	2380	2804	3018	3108	2814	2680	2351	2120	1960
80-81 AV	1739.75	1273	1299	1374	1616	2002	2209	2293	2116	1994	1747	1537	1417
81-82 PK		1807	1843	2094	2536	2986	3214	3247	2940	2800	2456	2215	2048
81-82 AV	1834.58	1357	1386	1464	1722	2132	2352	2396	2211	2083	1825	1606	1481
82-83 PK		1888	1926	2188	2649	3120	3358	3396	3075	2929	2569	2317	2142
82-83 AV	1917.92	1418	1448	1529	1799	2228	2458	2506	2312	2179	1909	1680	1549
83-84 PK		1975	2014	2288	2771	3263	3512	3522	3188	3037	2664	2402	2220
83-84 AV	1996.58	1483	1514	1600	1881	2330	2571	2599	2397	2259	1979	1741	1605
84-85 PK		2046	2086	2372	2873	3383	3643	3691	3342	3184	2793	2519	2330
84-85 AV	2082.25	1536	1569	1658	1951	2416	2666	2724	2513	2369	2075	1826	1684
85-86 PK		2147	2189	2488	3012	3547	3818	3858	3493	3328	2919	2633	2435
85-86 AV	2179.83	1612	1646	1739	2045	2533	2794	2847	2627	2476	2169	1909	1761
86-87 PK		2244	2288	2600	3148	3707	3990	4056	3672	3498	3069	2767	2560
86-87 AV	2285.33	1685	1721	1817	2138	2647	2921	2993	2762	2603	2280	2006	1851
87-88 PK		2358	2405	2713	3310	3897	4194	4229	3829	3647	3199	2885	2667
87-88 AV	2391.83	1771	1809	1910	2247	2783	3070	3121	2880	2714	2377	2092	1928
88-89 PK		2457	2506	2849	3451	4064	4374	4453	4032	3840	3369	3038	2810
88-89 AV	2506.75	1845	1884	1992	2343	2902	3202	3286	3032	2857	2503	2203	2032
89-90 PK		2589	2640	3001	3633	4279	4605	4654	4215	4015	3522	3176	2937
89-90 AV	2629.42	1944	1985	2097	2467	3055	3371	3435	3169	2987	2616	2303	2124

LOAD-PUGET SOUND P&L CO.

LOAD-SEATTLE CITY LIGHT	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		1161	1144	1230	1437	1613	1714	1684	1624	1552	1458	1357	1243
79-80 AV	971.33	803	782	830	962	1059	1139	1161	1112	1059	993	907	849
80-81 PK		1187	1169	1257	1469	1649	1753	1723	1662	1588	1491	1388	1272
80-81 AV	993.42	821	800	849	984	1082	1165	1178	1137	1083	1016	928	868
81-82 PK		1215	1196	1286	1503	1687	1793	1781	1718	1641	1541	1434	1314
81-82 AV	1021.83	840	818	869	1006	1107	1192	1228	1176	1120	1050	959	897
82-83 PK		1255	1236	1329	1553	1744	1854	1873	1806	1726	1621	1508	1382
82-83 AV	1066.33	867	845	898	1040	1144	1232	1292	1237	1178	1108	1010	945
83-84 PK		1319	1299	1397	1633	1834	1950	1929	1860	1777	1670	1554	1424
83-84 AV	1110.75	915	893	948	1097	1207	1300	1331	1275	1214	1139	1038	972
84-85 PK		1360	1339	1440	1683	1889	2008	1967	1897	1812	1702	1584	1452
84-85 AV	1136.67	939	917	973	1126	1240	1335	1358	1301	1239	1162	1059	991
85-86 PK		1386	1365	1467	1716	1926	2047	2016	1944	1857	1744	1623	1487
85-86 AV	1162.25	958	935	992	1149	1265	1362	1392	1333	1270	1191	1085	1015
86-87 PK		1420	1398	1504	1758	1974	2098	2047	1974	1886	1771	1648	1510
86-87 AV	1185.17	981	958	1017	1177	1296	1396	1413	1354	1289	1210	1101	1030
87-88 PK		1442	1420	1527	1785	2004	2130	2107	2031	1941	1823	1696	1554
87-88 AV	1211.92	996	973	1032	1195	1316	1418	1455	1393	1327	1245	1133	1060
88-89 PK		1484	1461	1571	1837	2063	2193	2123	2047	1956	1837	1709	1566
88-89 AV	1233.50	1024	1001	1062	1230	1354	1459	1466	1404	1337	1255	1142	1068
89-90 PK		1495	1472	1583	1851	2079	2210	2125	2049	1958	1839	1710	1567
89-90 AV	1238.50	1032	1009	1070	1239	1364	1470	1467	1405	1338	1256	1143	1069

LOAD-SNOHOMISH PUD 1/

	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		651	688	788	980	1095	1181	1236	1142	1091	1026	921	810
79-80 AV	579.50	382	405	437	556	684	723	785	730	696	595	513	448
80-81 PK		686	724	825	1026	1144	1236	1277	1178	1127	1064	955	838
80-81 AV	602.75	400	424	456	583	716	758	812	754	720	616	531	463
81-82 PK		711	751	851	1060	1183	1277	1320	1219	1165	1100	987	866
81-82 AV	623.50	414	438	473	602	741	784	839	780	745	637	549	480
82-83 PK		735	776	881	1095	1223	1320	1352	1249	1193	1125	1010	887
82-83 AV	640.33	429	454	488	623	766	810	857	797	760	650	560	490
83-84 PK		752	794	902	1122	1252	1353	1386	1279	1223	1150	1032	905
83-84 AV	653.42	437	462	499	636	782	827	875	813	775	663	572	500
84-85 PK		767	812	925	1150	1284	1386	1418	1310	1252	1173	1053	924
84-85 AV	667.00	446	473	509	649	798	845	893	829	792	677	584	509
85-86 PK		784	828	946	1176	1314	1419	1449	1339	1279	1197	1074	942
85-86 AV	680.17	456	482	520	662	814	861	910	845	807	690	595	520
86-87 PK		799	844	966	1202	1342	1450	1483	1368	1308	1222	1097	963
86-87 AV	692.83	465	491	529	674	830	878	927	861	821	703	606	529
87-88 PK		817	861	988	1229	1372	1483	1512	1396	1334	1246	1118	982
87-88 AV	705.42	473	500	539	688	845	895	943	876	836	715	617	538
88-89 PK		832	879	1009	1255	1400	1512	1541	1423	1361	1269	1138	999
88-89 AV	717.58	482	509	550	699	860	910	958	890	850	727	627	549
89-90 PK		847	895	1029	1279	1428	1543	1570	1450	1386	1290	1157	1016
89-90 AV	729.17	489	517	558	712	875	925	973	904	864	739	637	557

LOAD-SNOHOMISH PUD 1/

1/ These loads are included in BPA loads.

LOAD-TACOMA CITY LIGHT	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		548	573	620	714	811	841	885	819	791	747	671	643
79-80 AV	557.75	429	457	470	542	623	642	679	639	632	576	514	490
80-81 PK		579	605	655	755	858	889	935	865	836	789	708	679
80-81 AV	589.42	453	483	496	573	659	679	718	675	668	608	543	518
81-82 PK		611	639	691	798	906	940	970	897	866	818	734	703
81-82 AV	616.33	478	509	524	605	696	718	744	700	693	630	563	536
82-83 PK		632	661	716	827	940	975	1005	930	898	847	760	727
82-83 AV	638.58	495	527	543	627	721	745	771	725	718	653	583	555
83-84 PK		654	684	741	856	973	1010	1038	960	927	875	784	750
83-84 [illegible]	660.17	512	545	562	649	747	772	797	749	741	674	602	572
84-85 PK		674	705	764	883	1005	1043	1071	990	956	902	809	773
84-85 AV	681.00	528	562	579	670	772	797	822	773	764	695	620	590
85-86 PK		695	727	788	911	1037	1077	1105	1021	986	930	833	797
85-86 AV	702.17	544	579	597	691	796	822	848	797	788	717	639	608
86-87 PK		715	748	811	939	1069	1110	1139	1053	1016	959	858	820
86-87 AV	723.42	560	596	615	712	821	848	874	821	812	739	658	625
87-88 PK		736	770	835	967	1101	1145	1173	1084	1046	987	884	844
87-88 AV	745.08	577	614	633	733	846	874	900	846	836	761	678	643
88-89 PK		757	791	859	996	1134	1179	1208	1116	1077	1016	909	868
88-89 AV	766.92	593	631	651	755	871	901	927	871	861	783	697	662
89-90 PK		778	813	883	1024	1167	1214	1243	1149	1108	1045	935	892
89-90 AV	788.92	610	649	670	777	896	927	954	896	886	805	717	680

LOAD-WASH. WATER POWER CO.	JUL-JUN AV	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		1016	997	1001	1125	1345	1494	1516	1390	1277	1155	1042	1001
79-80 AV	878.25	731	738	741	821	981	1098	1122	1014	958	843	761	731
80-81 PK		1047	1029	1035	1173	1412	1574	1599	1464	1340	1208	1083	1038
80-81 AV	917.67	754	762	766	856	1031	1157	1183	1068	1005	882	791	757
81-82 PK		1086	1065	1070	1219	1476	1646	1625	1485	1358	1217	1085	1040
81-82 AV	940.67	782	788	792	890	1078	1210	1206	1084	1018	889	792	759
82-83 PK		1092	1069	1073	1229	1496	1673	1696	1546	1409	1258	1116	1066
82-83 AV	961.92	786	791	794	897	1092	1229	1258	1129	1057	918	814	778
83-84 PK		1121	1098	1100	1265	1550	1735	1762	1605	1459	1299	1147	1094
83-84 AV	993.25	807	812	814	924	1131	1275	1307	1171	1094	948	837	799
84-85 PK		1152	1128	1131	1310	1613	1809	1840	1672	1517	1345	1181	1124
84-85 AV	1029.33	830	835	837	956	1178	1330	1365	1220	1138	981	862	820
85-86 PK		1184	1159	1163	1354	1674	1882	1915	1737	1572	1389	1214	1153
85-86 AV	1064.42	852	857	861	988	1222	1383	1421	1268	1179	1014	886	842
86-87 PK		1215	1189	1193	1395	1734	1950	1986	1797	1625	1431	1247	1182
86-87 AV	1098.00	875	880	883	1018	1265	1433	1473	1312	1219	1045	910	863
87-88 PK		1246	1219	1223	1435	1790	2016	2054	1857	1677	1473	1279	1210
87-88 AV	1130.67	897	902	905	1048	1307	1482	1524	1355	1257	1075	933	883
88-89 PK		1277	1249	1253	1475	1846	2081	2122	1915	1727	1513	1311	1239
88-89 AV	1163.00	919	924	927	1077	1347	1529	1574	1398	1295	1105	957	904
89-90 PK		1308	1280	1284	1515	1901	2145	2187	1972	1777	1554	1342	1268
89-90 AV	1195.25	942	947	950	1106	1387	1576	1623	1440	1333	1134	980	925

LOAD-CITES PUBLIC AGENCIES 1/ JUL-JUN AV

		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
79-80 PK		2929	2987	2974	3088	3410	3766	3951	3634	3422	3359	3256	3231
79-80 AV	2475.00	2235	2279	2154	2183	2463	2840	2979	2757	2561	2470	2363	2416
80-81 PK		3151	3203	3226	3342	3686	4067	4237	3885	3647	3570	3461	3431
80-81 AV	2651.00	2411	2448	2333	2362	2667	3065	3174	2940	2725	2618	2508	2561
81-82 PK		3334	3374	3398	3527	3895	4301	4495	4109	3854	3774	3661	3628
81-82 AV	2802.75	2551	2584	2458	2489	2815	3241	3364	3111	2883	2770	2654	2713
82-83 PK		3529	3564	3594	3742	4134	4565	4752	4341	4072	3993	3871	3837
82-83 AV	2967.92	2707	2735	2602	2647	2992	3441	3555	3287	3045	2927	2805	2872
83-84 PK		3728	3766	3796	3943	4363	4820	5012	4578	4291	4204	4080	4045
83-84 AV	3127.17	2860	2892	2752	2767	3151	3628	3749	3461	3207	3079	2953	3027
84-85 PK		3924	3967	3998	4151	4599	5085	5295	4833	4527	4445	4307	4271
84-85 AV	3298.67	3017	3049	2897	2934	3320	3826	3958	3652	3380	3246	3113	3192
85-86 PK		4147	4186	4219	4380	4859	5374	5620	5127	4811	4737	4592	4561
85-86 AV	3483.17	3182	3217	3052	3089	3502	4035	4181	3856	3569	3431	3294	3390
86-87 PK		4420	4473	4504	4669	5174	5704	5942	5419	5080	5001	4849	4818
86-87 AV	3684.50	3391	3423	3237	3268	3701	4264	4418	4072	3766	3619	3476	3579
87-88 PK		4668	4723	4754	4928	5470	6033	6280	5722	5361	5276	5115	5084
87-88 AV	3885.17	3580	3614	3414	3447	3907	4505	4661	4291	3965	3809	3660	3769
88-89 PK		4921	4985	5010	5197	5777	6378	6644	6049	5664	5573	5402	5369
88-89 AV	4096.16	3771	3807	3574	3628	4118	4753	4926	4529	4181	4014	3856	3977
89-90 PK		5195	5264	5286	5486	6109	6743	7062	6432	6013	5922	5741	5708
89-90 AV	4336.41	3975	4016	3786	3825	4345	5016	5232	4811	4441	4264	4098	4228

LOAD-CITES PUBLIC AGENCIES 1/

1/ These loads are included in BPA loads.

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