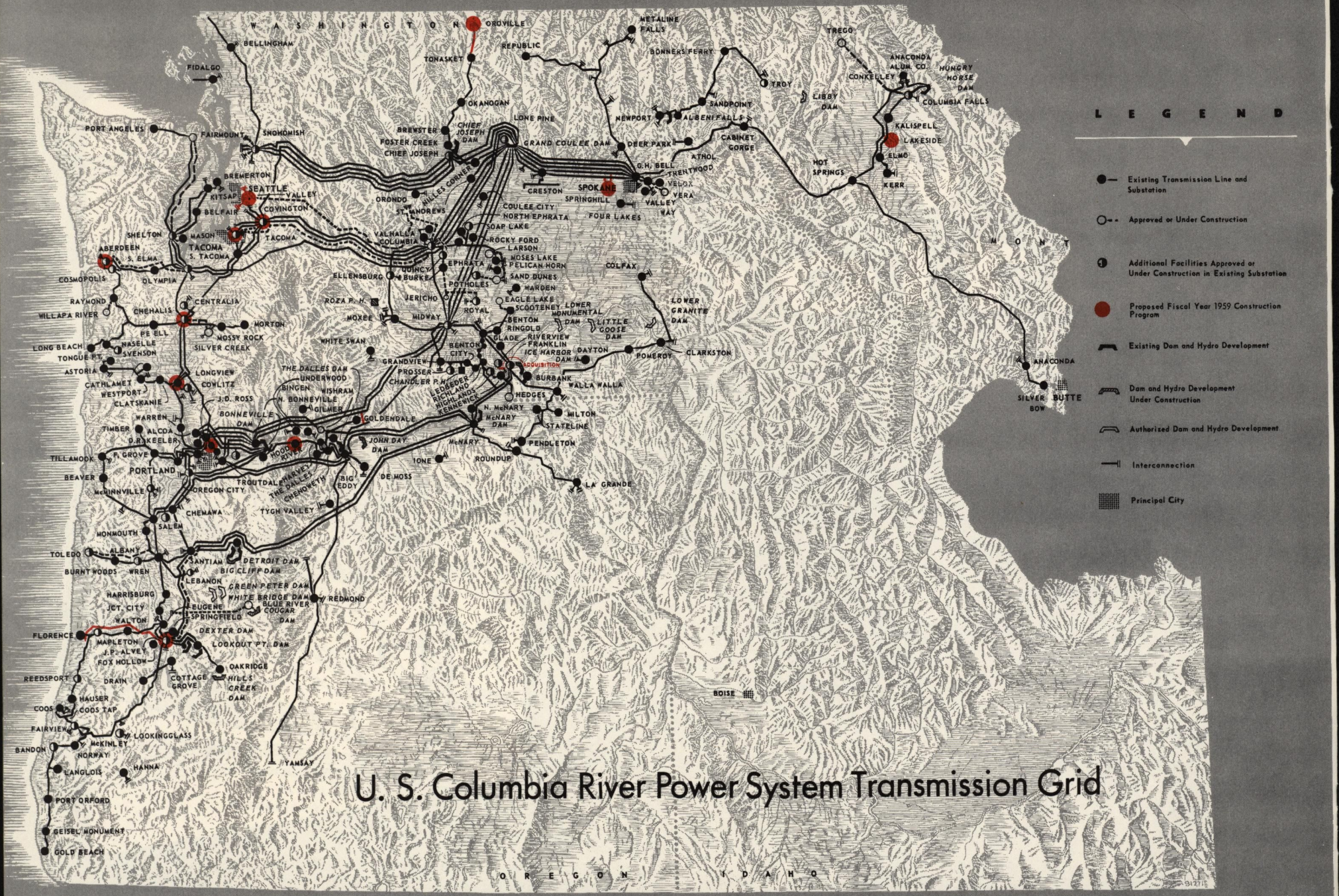
power outlook

1958-1968

U. S. DEPARTMENT OF THE INTERIOR

BONNEVILLE POWER ADMINISTRATION

NOVEMBER 1958



U. S. Columbia River Power System Transmission Grid

U. S. DEPARTMENT OF THE INTERIOR · BONNEVILLE POWER ADMINISTRATION

As of June 30, 1958

POWER OUTLOOK -- 1958-1968

DISTRIBUTION OF FEDERAL POWER

Bonneville Power Administration as marketing agent for power produced at Federally owned plants of the U. S. Columbia River Power System transmits and sells power to 75 publicly owned electric utility systems, 9 privately owned utilities, 11 Federal agencies, and 19 industrial customers in Oregon, Washington, northern Idaho, and western Montana. On June 30, 1958, the 12 existing plants in the Federal system had a generator installation of 5,334,000 kilowatts of nameplate rating, which will be increased by 2,484,650 kilowatts (47 per cent) to a total of 7,818,650 kilowatts when six projects in construction status are completed in February 1968.

Principal additions to the system will consist of 10 more generators at The Dalles by November 1960, 4 generators at Ice Harbor by December 1961, and 12 generators at John Day between June 1966 and February 1968. (See table I for the schedule of generator installations.)

These new installations will increase the present prime power capability (power continuously available under conditions equivalent to the minimum streamflows of record) of the Federal plants by 861,000 average kilowatts--from 3,826,000 average kilowatts in the current operating year to 4,688,000 average kilowatts in the 1967-68 operating year. Estimated distribution of this power for the next 10 years is shown in table II and the accompanying chart A.

The full requirements of the public agencies in excess of their own resources can be supplied throughout the 10-year period of the estimate. Deliveries of firm power to the public agencies will more than double during the decade from 1,435,000 kilowatts in the 1958-59 year to 3,128,000 kilowatts in 1968-69.

Firm industrial loads in the amount of 1,097,000 kilowatts will also be served through the 10-year period. This amount includes 70,000 kilowatts formerly served on an interruptible basis which the Administration may make available after serving 500,000 kilowatts of firm power to the private utilities. In 1958-59 Bonneville Power Administration has this later amount available for the private utilities.

For the first time, the Administration has been able to assure the private utilities of meeting their firm power requirements for a period of at least four years. These requirements are therefore calculated, as provided by contract, on a computed demand basis. This means that one of the billing demand factors becomes the difference between each company's load and its net assured capability, including steam and purchased power.

Both public agency and private utility estimated requirements on the Federal system are less than those in the 1957 Power Outlook. The reduced requirements were brought about by a decrease in their own load estimates and an increase in the non-Federal resources allocated to meet loads. Comparisons are shown below:

COMPARISON OF PUBLIC AGENCY REQUIREMENTS
1957 AND 1958 POWER OUTLOOK Critical Year
Average Energy During Storage Drawdown Period (1936-37)
Thousands of Kilowatts

Public Agency Requirements (After Use of Own Resources)	1958-59	1959-60	1960-61	1961-62
1957 Power Outlook--Hydro Only	1,778	1,927	2,088	2,237
1958 Power Outlook--Computed Demand	1,435	1,631	1,788	1,998
Difference in Public Agency Requirements	343	296	300	239
Reconciliation				
Resources Differences:				
Use of Steam	124	118	115	115
Priest Rapids Allocation	-	33	62	62
Rocky Reach Allocation to Alcoa	-	-	-	92
All Other	12	-3	-	-22
Net Increase in Resources	136	148	177	247
Net Decrease in Loads	207	148	123	-8
Difference in Public Agency Requirements	343	296	300	239

The public agency load estimates vary from a 207,000-kilowatt decrease in 1958-59 to an 8,000-kilowatt increase in 1961-62 when Chelan County Public Utility District starts to supply 99,000 kilowatts of energy to the Alcoa aluminum reduction plant at Wenatchee, Washington. Public agency resources available to meet their loads have increased from 136,000 kilowatts in 1958-59 to 247,000 kilowatts in 1961-62. In the comparison shown above, it will be noted that public agency steam resources are now used to reduce their firm requirements on the Federal system.

Contracts between public agencies on a computed demand basis and Bonneville Power Administration provide for full use of each public agency's assured capability including steam. The Administration will replace this steam with secondary, if available.

The 1957 Power Outlook showed public agency requirements after displacement of all steam. The 1958 report shows use of steam. The reasons for the difference in presentation of the public agency requirements are provisions in the contracts with the private utilities. The private utility contracts provide that, in calculating the firm power commitments to these utilities, Bonneville Power Administration shall consider displacement of the steam generation of the public agencies prior to determining the firm power available for the private utilities. No such con-

COMPARISON OF PRIVATE UTILITY REQUIREMENTS
1957 AND 1958 POWER OUTLOOK Critical Year
Average Energy During Storage Drawdown Period (1936-37)
Thousands of Kilowatts

Private Utility Requirements (After Use of Own Resources)	1958-59	1959-60	1960-61	1961-62
1957 Power Outlook	1,073	811	914	922
1958 Power Outlook	648	565	581	499
Reduction in Contractual Requirements	425	246	333	423
Reconciliation				
Resources Differences:				
Increased Use of Steam	109	69	104	43
Montana Import	91	-	-	-
Idaho Import	78	46	46	46
Priest Rapids Allocation	-3	-10	119	117
Rocky Reach Allocation	-	-	-	136
All Other	11	33	13	12
Net Increase in Resources	286	138	282	354
Net Decrease in Loads	139	108	51	69
Reduction in Contractual Requirements of Private Utilities	425	246	333	423

TABLE I

GENERATOR INSTALLATION SCHEDULE "AA"
U. S. COLUMBIA RIVER POWER SYSTEM
Revised September 10, 1958

Project	Stream	Cumulative Nameplate Rating Thousands of Kw 1/	Date Scheduled
The Dalles	Columbia R.		
Unit # 5		417.0	October 1958
# 6		495.0	November 1958
# 7		573.0	February 1959
# 8		651.0	May 1959
# 9		729.0	August 1959
#10		807.0	November 1959
#11		885.0	February 1960
#12		963.0	May 1960
#13		1,041.0	August 1960
#14		1,119.0	November 1960
Chief Joseph	Columbia R.		
Unit # 1		1,024.0	October 1958
Hills Creek	M. Fk. Willamette R.		
Unit # 1 & # 2		30.0	November 1961
Cougar	S. Fk. McKenzie R.		
Unit # 1 & # 2		25.0	November 1961
Ice Harbor	Snake R.		
Unit # 1, # 2, & # 3		270.0	December 1961
John Day	Columbia R.		
Unit # 1 & # 2		217.4	June 1966
# 3		326.1	August 1966
# 4		434.8	October 1966
# 5		543.5	December 1966
# 6		652.2	February 1967
# 7		760.9	April 1967
# 8		869.6	June 1967
# 9		978.3	August 1967
#10		1,087.0	October 1967
#11		1,195.7	December 1967
#12		1,304.4	February 1968

1/ Manufacturer's rating and does not necessarily represent maximum capability.

sideration of steam displacement has been made this year since the Administration can meet the firm requirements of the private utilities.

After the 1962-63 year large blocks of firm power will continue to be available to the private utilities after meeting the firm power requirements of preference customers and firm industrial loads. However, the private utilities' total requirements will exceed the power available to them from the Federal system. Their additional requirements, which increase from 253,000 kilowatts in 1963-64 to 1,524,000 kilowatts in 1968-69, possibly can be met, in part, from surpluses from projects scheduled by public agencies and utilities in the East Group.

The remaining requirements in the later years of the estimate will undoubtedly be served from the many hydro projects currently under investigation. In the first five years of the estimate it will be noted that there is a quantity of Federal power for which no distribution has

TABLE II

ESTIMATED DISTRIBUTION OF FEDERAL POWER
ADDITIONAL UTILITY REQUIREMENTS AND AVAILABLE RESOURCES

Average Energy During Critical Year Storage Drawdown Period (September 16-April 15)
Thousands of Kilowatts

	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
Federal Resources 1/											
At Plant	3,826	3,875	3,882	4,035	4,098	4,093	4,092	4,103	4,617	4,688	4,687
Losses	230	232	233	242	246	246	246	246	277	281	281
At Points of Delivery	3,596	3,643	3,649	3,793	3,852	3,847	3,846	3,857	4,340	4,407	4,406
Distribution of Federal Power											
Public Agencies 2/	1,435	1,631	1,788	1,998	2,126	2,281	2,402	2,581	2,758	2,935	3,128
Industries - Firm	990	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097
Private Utilities 3/	648	565	581	499	577	469	347	179	485	375	181
Total	3,073	3,293	3,466	3,594	3,800	3,847	3,846	3,857	4,340	4,407	4,406
Balance Available	523	350	183	199	52	-	-	-	-	-	-
Steam Resources Used 4/											
Public Agencies	124	118	115	115	113	105	110	94	81	51	35
Private Utilities	130	90	125	64	130	212	212	212	212	212	212
Total	254	208	240	179	243	317	322	306	293	263	247
Additional Requirements											
Public Agencies	-	-	-	-	-	-	-	-	-	-	-
Private Utilities	-	-	-	-	-	253	334	728	666	1,043	1,524
Unallocated Non-Federal Resources											
Hydro 5/	15	28	58	122	79	113	128	238	235	243	239
Steam	179	176	144	205	141	67	62	78	91	121	137
East Group Surplus 6/	140	218	123	158	91	153	270	201	251	306	233
Total	334	422	325	485	311	333	460	517	577	670	609
Area Surplus or (Deficit)	857	772	508	684	363	80	126	(211)	(89)	(373)	(915)
Interruptible Industrial Loads Not Included	107	461	466	372	367	367	367	367	367	397	397

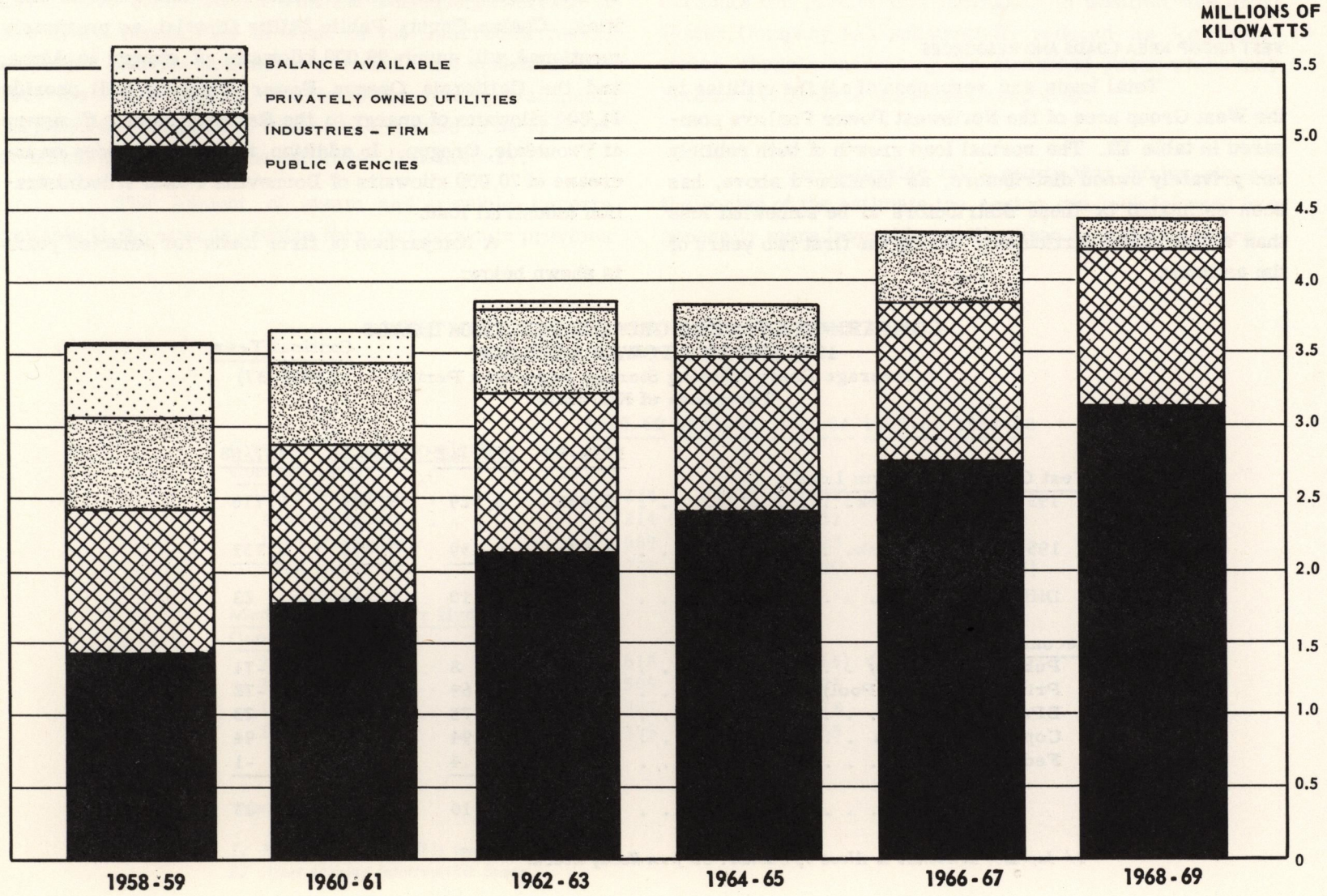
1/ Generator Installation Schedule "AA" revised September 10, 1958.
2/ Based on energy requirements under computed demand for those agencies with generation.
3/ Includes storage agreements and geographic preference. Computed demand requirements are fulfilled through 1962-63.
4/ Estimated steam required under computed demand in all years for the public agencies and through 1962-63 for the private utilities. Subsequent to 1962-63 all private utility steam has been used.
5/ Includes primarily Mayfield and Mossyrock plus small amounts from Priest Rapids and Wanapum.
6/ East Group Surplus reflects construction of Brownlee, Oxbow, Hells Canyon, and Utah Power & Light Company's new steam plants.

10/9/58

CHART A

ESTIMATED DISTRIBUTION OF FEDERAL POWER

Average Energy During the Storage Drawdown Period
Critical Year (September 16 – April 15)



been indicated. This power can be used to serve new firm loads, to displace existing steam generation, or to serve interruptible loads.

WEST GROUP AREA LOADS AND RESOURCES

Total loads and resources of all the utilities in the West Group area of the Northwest Power Pool are compared in table III. The normal load growth of both publicly and privately owned distributors, as mentioned above, has been estimated by these distributors to be somewhat less than a year ago, particularly during the first two years of the estimate.

This decrease in firm load has been largely offset by industries "firming up" about 200,000 kilowatts of interruptible through purchase from non-Federal utilities. Chelan County Public Utility District, as previously mentioned, will supply 99,000 kilowatts of energy to Alcoa, and the California Oregon Power Company will provide 94,000 kilowatts of energy to the Reynolds Metals Company at Troutdale, Oregon. In addition, the table includes an increase of 70,000 kilowatts of Bonneville Power Administration industrial load.

A comparison of firm loads for selected years is shown below:

COMPARISON OF WEST GROUP AREA FIRM LOADS
1957 AND 1958 POWER OUTLOOK — Critical Year (1936-37)
Average Energy During Storage Drawdown Period
Thousands of Kilowatts

	1958-59	1961-62	1964-65	1967-68
West Group Area Firm Load				
1957 Power Outlook	5,433	6,329	7,427	8,716
1958 Power Outlook	5,026	6,439	7,495	8,739
Difference	-407	110	68	23
Reconciliation				
Public Agencies 1/	-207	8	-34	-71
Private Utilities (Pool)	-139	-69	-67	-72
BPA Industries	-104	73	73	73
Copco to Reynolds	42	94	94	94
Federal Losses	1	4	2	-1
Total	-407	110	68	23

1/ Includes deliveries to Alcoa by Chelan PUD from Rocky Reach.

Although regional hydro capabilities in the last two years of this study have not been changed, new installations have been delayed with the consequent decrease in area hydro capabilities in some of the intervening years. The major changes in generator installation schedules include the Priest Rapids, Mayfield, Mossyrock, Wanapum, and John Day plants, all of which are expected to be in service within the period of the estimate. (See table IV.)

The amount of steam and possible imports available to the area is greater than that shown in previous years. The California Oregon Power commitment to the Reynolds Metals Company, amounting to 94,000 kilowatts, accounts for part of this increase. In addition, the Idaho Power Company has substantially reduced its load estimates, thereby increasing the amount of power which may become available to the West Group area.

The following table shows that during most of the period of the estimate the region can look forward to a generally more favorable position than in previous years.

WEST GROUP AREA SURPLUS OR (DEFICIT)
Thousands of Average Kilowatts

	1959-60	1961-62	1963-64	1965-66	1967-68
Critical Year Hydroelectric Conditions 1/					
1955 Program.	234	(97)	(651)	(1,335)	*
1956 Program.	214	290	131	(676)	*
1957 Program.	669	670	423	(96)	(622)
1958 Program.	772	684	80	(211)	(373)
Median Month Year Hydroelectric Conditions 2/					
1955 Program.	618	193	(365)	(1,070)	*
1956 Program.	505	745	723	(13)	*
1957 Program.	1,307	1,392	1,218	714	344
1958 Program.	1,395	1,591	1,055	853	845

**Not estimated.*

1/ Excludes interruptible loads.
2/ After serving interruptible loads.

Table III shows that even under critical year hydroelectric conditions the region is now estimated to be able to meet all firm loads through 1964-65 year. The surplus shown in each of the years from 1958-59 through 1964-65 probably will make it unnecessary to operate the high-cost steam generation during most of this period.

Under median month year hydroelectric conditions, area resources are sufficient to serve both firm and interruptible loads throughout the period of the estimate. Since approximately 150,000 kilowatts of resources available for import into the area is known to consist of hydro, a hydro surplus will exist through the 1966-67 year even after displacing the use of steam generation. Methods of marketing the surplus secondary hydro energy are being actively investigated at the present time.

TABLE III

LOADS AND RESOURCES
WEST GROUP AREA 1/
Average Energy During Storage Drawdown Period
Thousands of Kilowatts

	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
Critical Year Hydroelectric Conditions (1936-37)											
Firm Loads 2/	5,026	5,603	5,985	6,439	6,782	7,122	7,495	7,886	8,329	8,739	9,208
Area Capabilities:											
Hydro	5,067	5,591	5,805	6,400	6,489	6,484	6,786	6,909	7,424	7,495	7,495
Steam and Imports	816	784	688	723	656	718	835	766	816	871	798
Total	5,883	6,375	6,493	7,123	7,145	7,202	7,621	7,675	8,240	8,366	8,293
Surplus or (Deficit)	857	772	508	684	363	80	126	(211)	(89)	(373)	(915)
Interruptible Loads Not Included	107	461	466	372	367	367	367	367	367	397	397
Median Month Year Hydroelectric Conditions											
Loads - Firm 2/	5,080	5,665	6,050	6,505	6,852	7,195	7,570	7,963	8,409	8,834	9,304
- Interruptible	107	461	466	372	367	367	367	367	367	397	397
Total	5,187	6,126	6,516	6,877	7,219	7,562	7,937	8,330	8,776	9,231	9,701
Area Capabilities:											
Hydro	5,972	6,654	6,946	7,647	7,792	7,801	8,167	8,294	8,814	9,081	9,080
Steam and Imports	896	867	772	821	753	816	956	889	940	995	921
Total	6,868	7,521	7,718	8,468	8,545	8,617	9,123	9,183	9,754	10,076	10,001
Surplus or (Deficit)	1,681	1,395	1,202	1,591	1,326	1,055	1,186	853	978	845	300

1/ Includes most of Oregon, all of Washington, northern Idaho, and western Montana.
2/ Includes transmission losses.

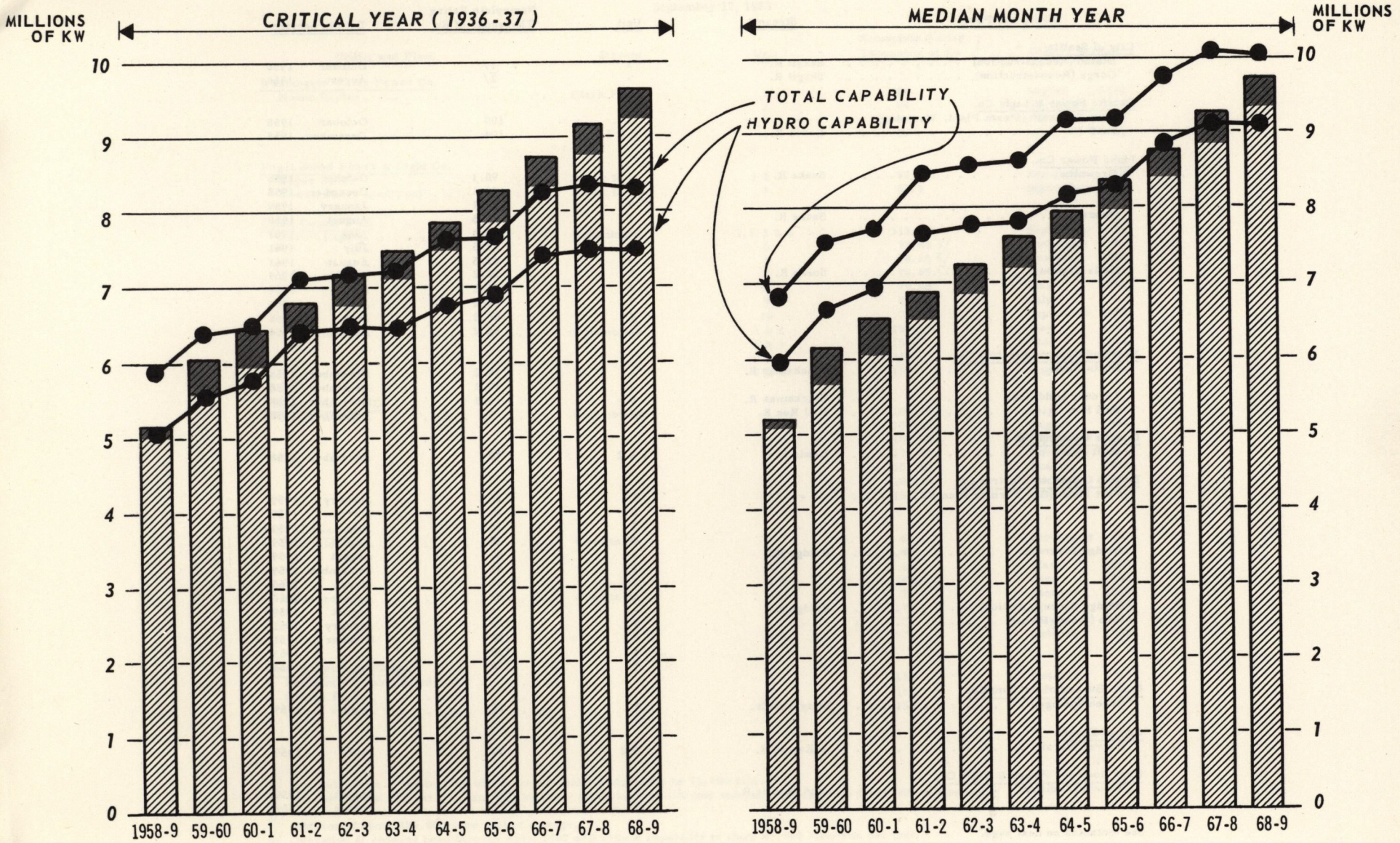
9/23/58

CHART B

LOADS & RESOURCES*
West Group Area

AVERAGE ENERGY
DURING STORAGE
DRAWDOWN PERIOD

INTERRUPTIBLE LOAD
FIRM LOAD



*Resources include projects licensed or under construction and all available steam and imports.

Federal generator installation Schedule "AA" revised Sept. 10, 1958.

TABLE IV

INSTALLATION SCHEDULE OF GENERATORS LICENSED OR UNDER CONSTRUCTION
NORTHWEST UTILITIES OTHER THAN U. S. COLUMBIA RIVER POWER SYSTEM
September 19, 1958

Utility and Plant	Stream	Unit	Nameplate Rating Thousands of Kw	Date in Service
City of Seattle				
Diablo (Reconstruction)	Skagit R.	2	1/	October 1958
Gorge (Reconstruction)	Skagit R.	-	2/	August 1960
Pacific Power & Light Co.				
Dave Johnston (Steam Plant, Wyoming)	-	1	100	October 1958
Swift No. 1	Lewis R.	1, 2 & 3	204	December 1958
Idaho Power Co.				
Brownlee	Snake R.	2	90.1	October 1958
		3	90.1	December 1958
		4	90.1	January 1959
Oxbow	Snake R.	1	47.5	August 1960
		2	47.5	June 1961
		3	47.5	July 1961
		4	47.5	August 1961
Hells Canyon	Snake R.	1	68.2	April 1964
		2	68.2	May 1964
		3	68.2	June 1964
		4	68.2	July 1964
		5	68.2	August 1964
Portland General Electric Co.				
North Fork	Clackamas R.	1	19.2	November 1958
		2	19.2	December 1958
Faraday (Addition)	Clackamas R.	6	19.2	November 1958
Bull Run	Bull Run R.	-	3/	December 1958
Cowlitz County PUD				
Swift No. 2	Lewis R.	1 & 2	70	December 1958
British Columbia Electric Co.				
Port Mann (Gas Turbine Plant)	-	1	25	January 1959
		2	25	March 1959
		3	25	July 1959
		4	25	August 1959
Bridge River No. 2	Bridge R.	1	62	August 1959
		2	62	September 1959
		3	62	March 1960
		4	62	August 1960
Bridge River (Addition)	Bridge R.	-	4/	August 1959
Ioco (Steam Plant)	-	1	150	January 1961
		2	150	October 1961
		3	150	1963
		4	150	1964
U. S. Bureau of Reclamation				
Green Springs	Emigrant Cr.	1	16	April 1959
City of Eugene				
Beaver Marsh	McKenzie R.	1 & 2	30	July 1959
West Kootenay Power & Light Co.				
Waneta (Addition)	Pend Oreille R.	3	72	August 1959
		4	72	August 1962

See footnotes on next page.

TABLE IV (Cont.)

INSTALLATION SCHEDULE OF GENERATORS LICENSED OR UNDER CONSTRUCTION
NORTHWEST UTILITIES OTHER THAN U. S. COLUMBIA RIVER POWER SYSTEM
September 19, 1958

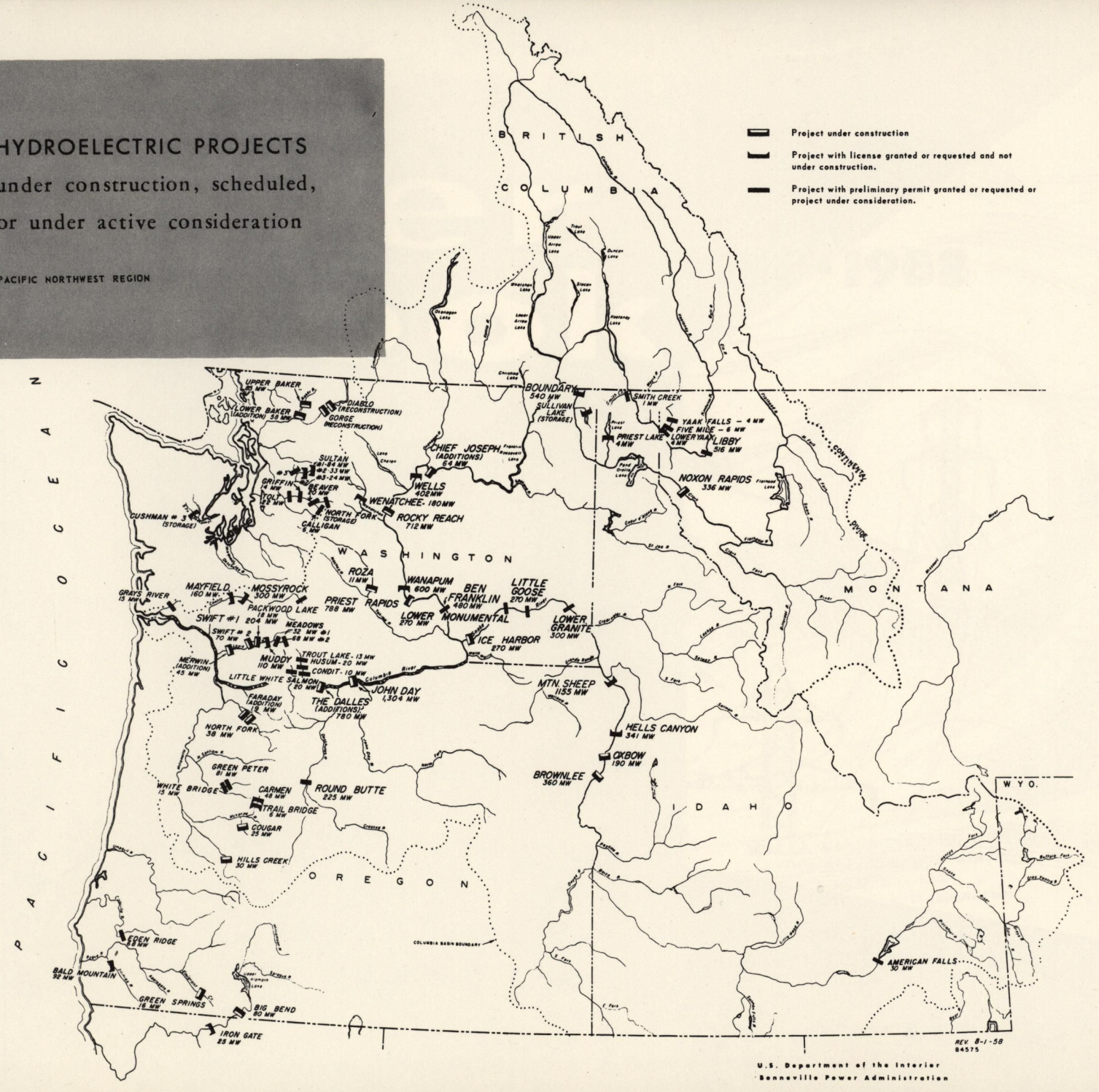
Utility and Plant	Stream	Unit	Nameplate Rating Thousands of Kw	Date in Service
Washington Water Power Co.				
Noxon Rapids	Clark Fork	1	84	August 1959
		2	84	November 1959
		3	84	February 1960
		4	84	May 1960
Puget Sound Power & Light Co.				
Upper Baker	Baker R.	1 & 2	85	September 1959
Lower Baker (Addition)	Baker R.	3	57.6	September 1960
Grant County PUD				
Priest Rapids	Columbia R.	1, 2, 3 & 4	315.4 5/	September 1959
		5	78.85 5/	November 1959
		6	78.85 5/	January 1960
		7	78.85 5/	March 1960
		8	78.85	May 1960
		9	78.85	July 1960
		10	78.85	September 1960
Wanapum	Columbia R.	1 & 2	150	May 1964
		3 & 4	150	June 1964
		5 & 6	150	July 1964
		7 & 8	150	August 1964
Chelan County PUD				
Rocky Reach	Columbia R.	1	101.65	July 1961
		2	101.65	August 1961
		3	101.65	September 1961
		4	101.65	November 1961
		5	101.65	January 1962
		6	101.65	March 1962
		7	101.65	May 1962
City of Tacoma				
Mayfield	Cowlitz R.	1	40	September 1961
		2	40	December 1961
		3	40	March 1962
		4 6/	40	June 1962
Mossyrock 7/	Cowlitz R.	1	75	January 1965
		2	75	April 1965
		3	75	July 1965
		4 6/	75	October 1965
Utah Power & Light Co.				
Kemmerer (Steam Plant)	-	1	150	October 1963
(Steam Plant)	-	1	150	October 1966
(Steam Plant)	-	1	150	October 1967

1/ Reconstruction of the turbine will increase peaking capability by 13,000 kilowatts.
2/ Reconstruction of diversion dam will increase gross head by 100 feet and peaking capability by 57,000 kilowatts.
3/ Additional water will increase energy generation 55 Mw-Mo.
4/ Addition of about 800,000 acre feet of storage.
5/ Operation at reduced head through April 1960 will reduce capability to about 47,000 kilowatts per unit.
6/ If authorized.
7/ Mossyrock construction dates are tentative only, actual construction dates are presently indeterminate.

HYDROELECTRIC PROJECTS

under construction, scheduled, or under active consideration

PACIFIC NORTHWEST REGION



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U.S. Department of the Interior
Bonneville Power Administration