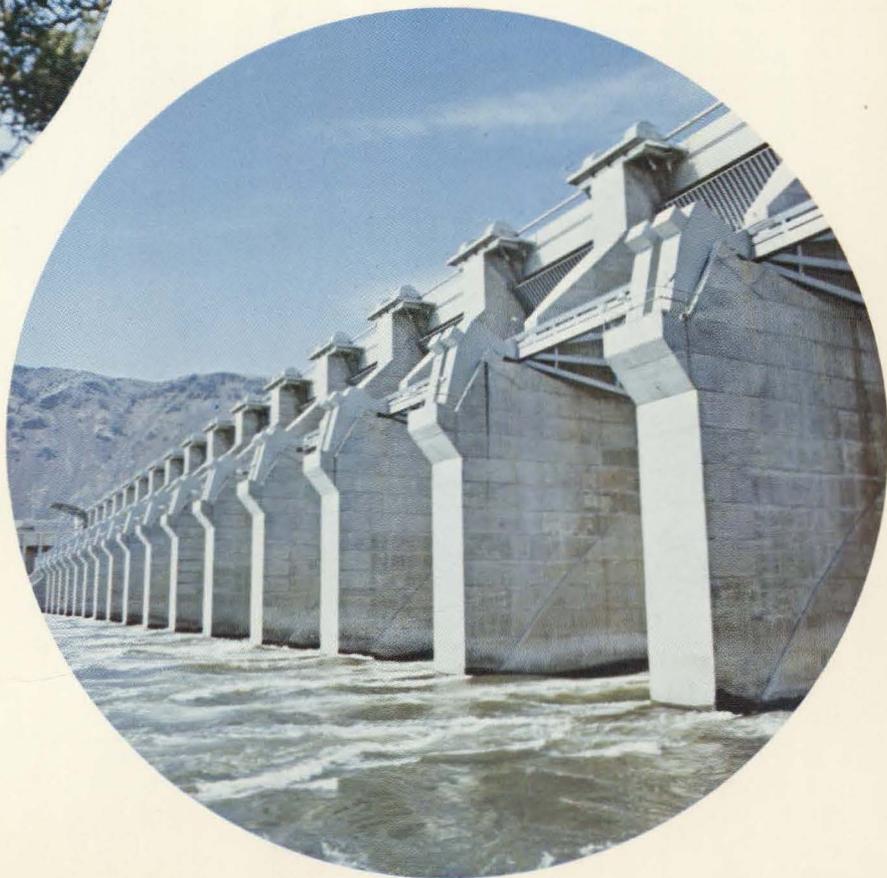
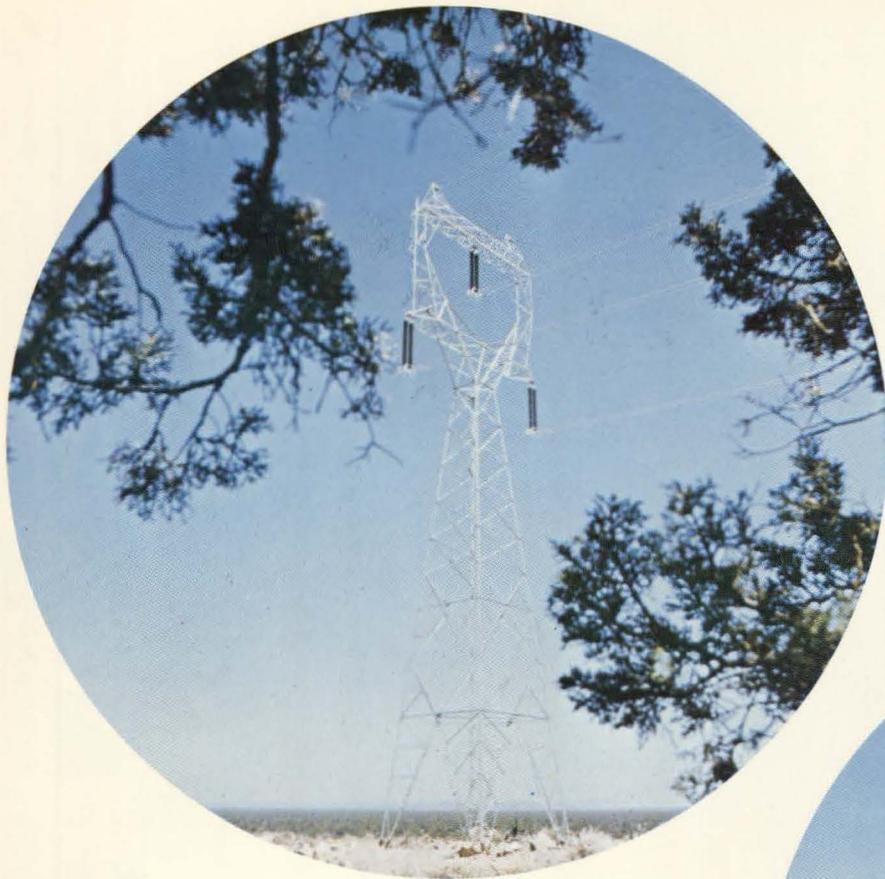


1966 REPORT

U.S. COLUMBIA RIVER
POWER SYSTEM



U.S. DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION



DECEMBER 1966

1966 Report

U. S. COLUMBIA RIVER POWER SYSTEM

U.S. DEPARTMENT OF THE INTERIOR
Stewart L. Udall, Secretary

BONNEVILLE POWER ADMINISTRATION
David S. Black, Administrator

At BPA this year our colors have begun to change.

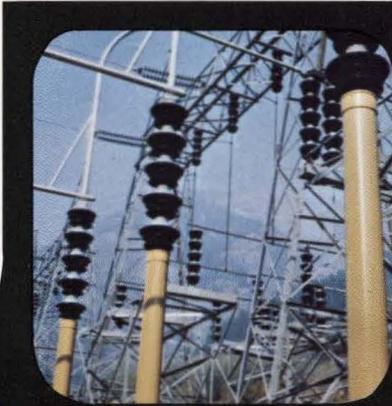
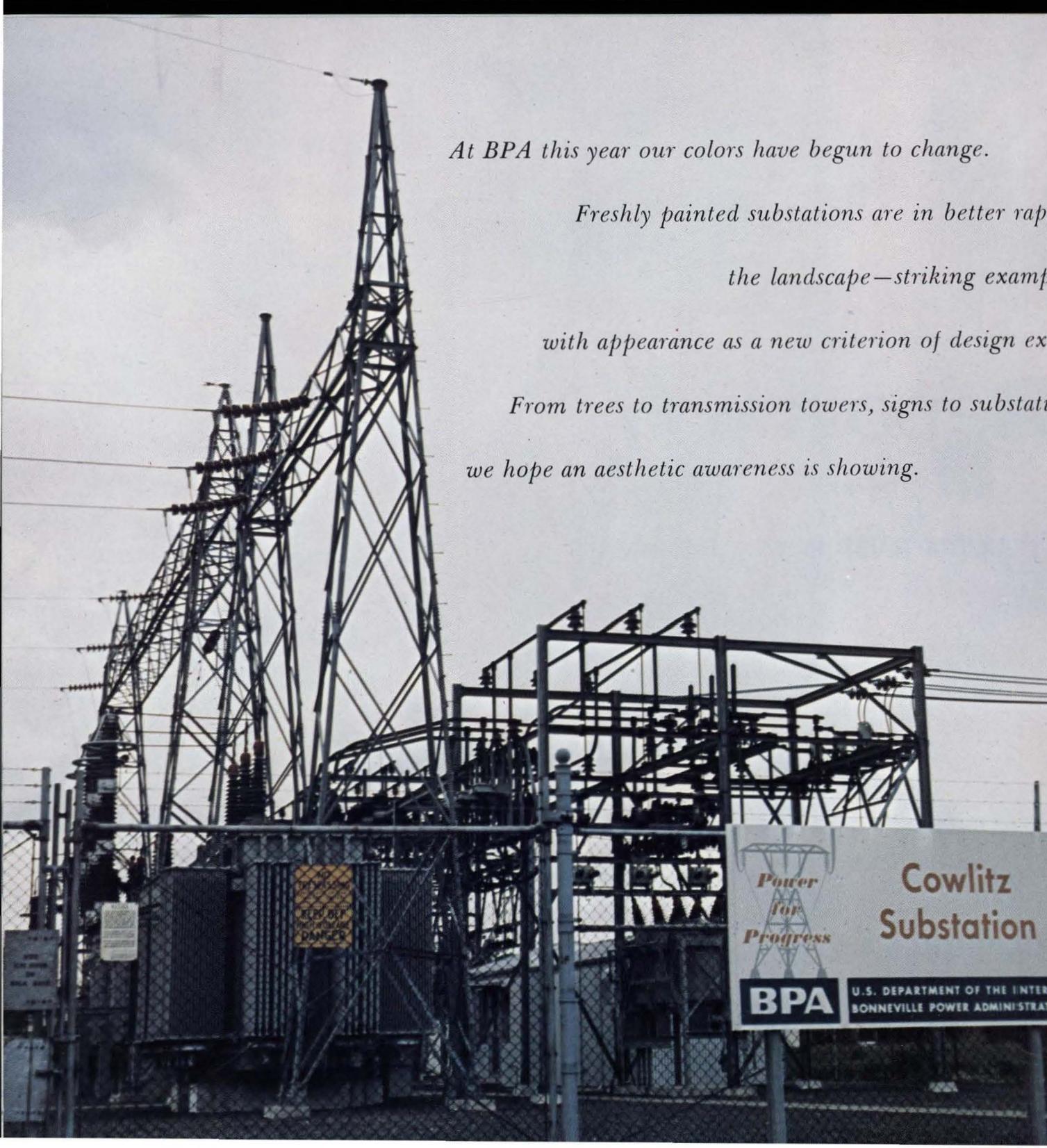
Freshly painted substations are in better rapport with

the landscape—striking examples of our concern

with appearance as a new criterion of design excellence.

From trees to transmission towers, signs to substations,

we hope an aesthetic awareness is showing.



William J. Lindberg, David S. Black, Stewart L. Udall



letter to the



Charles F. Luce

December 31, 1966

Honorable Stewart L. Udall
Secretary of the Interior
Washington, D.C. 20240

Dear Mr. Secretary:

Public Law 89-448 which authorized the Grand Coulee Third Powerplant also repealed Subsection 9 (c) of the Bonneville Project Act which required an annual report each December. It substituted in lieu thereof the requirement for an annual financial statement on a payout basis. We propose to issue annual reports which will meet the new requirement and contain additional information on our operations as well, including financial statements prepared on a cost accounting basis. Herewith, then, is the Twenty-ninth Annual Report of the Bonneville Power Administration. It is also my final report as Bonneville Power Administrator.

This transmittal letter reports highlights not only for Fiscal Year 1966 but also through September 13, 1966, when my term as Administrator ended. In some cases, where complete discussion of the subject requires, the letter reports events through December 31, 1966. The new Administrator, David S. Black, in a separate transmittal letter describes significant developments during the first few months of his term and sets forth his major goals for Bonneville.

REVENUES

BPA revenues were \$100,461,000, up \$13,178,000 from 1965. U. S. Columbia River Power System revenues, which include BPA revenues and miscellaneous receipts at the generating projects (mainly irrigation pumping and headwater storage payments), totaled \$103,168,000, up \$13,056,000 from 1965.

Booming industrial sales and increased sales by distributing utilities which buy their wholesale power from BPA accounted for most of the increase. Publicly owned utilities bought \$6.8 million more power from BPA in Fiscal 1966 than in 1965, private utilities \$3.7 million more, and industries also \$3.7 million more. Only about \$1.3 million of our increased revenues resulted from the modest rate increase in effect the last half of Fiscal 1966.

PAYOUT PROGRESS

On a "cost accounting" basis, favored by the General Accounting Office, net income for the power system was about \$18 million in Fiscal 1966 compared to about \$6.5 million in 1965. Cumulative net revenues on this basis since the beginning of BPA power operations reached \$233 million. However, because "cost accounting" is based on average service life of the projects, which is considerably longer than the 50 years Congress expects for repayment of each project, it is not a true measure of our ability to pay out the system in accordance with the desires of Congress.

The true measure is our new system payout schedule required by P.L. 89-448 and explained in last year's annual report. Revenue and expense forecasts we have made as a requirement of that schedule show that we should be able to meet all our obligations, including assistance to irrigation, within the periods prescribed by Congress.

Secretary



Under that payout schedule there is no fixed annual repayment requirements, but total amortization payments within the prescribed payout period must equal or exceed the capital investment. We are pleased to report that in Fiscal 1966, after applying \$35.5 million of our revenues to interest and \$28.9 million to operation and maintenance expenses, about \$39 million remained for amortization—to reduce our “mortgage.” In 1965 we had \$26 million for amortization after payment for interest and O&M.

RATE REDUCTIONS

We are also pleased to report that since December 20, 1965, when our small wholesale rate increase became effective, 19 distributing utilities which buy their wholesale power from BPA reduced their resale rates a combined total of \$3 million per year. Since May 1964, when it first became certain any BPA rate increase would be small, 48 utilities—all of them publicly or cooperatively owned—have made 70 rate reductions totaling more than \$6 million per year.

INDUSTRIAL SALES

Industrial sales also have boomed since our wholesale rate increase was instituted December 20, 1965. Between then and October 17, 1966, we contracted for 836,000 kilowatts of new firm power sales to industry. This brings total new industrial sales of firm power in the past three years to more than 1.3 million kilowatts. These new sales contracts also call for 152,000 kilowatts of interruptible power as available. We also have additional industrial contracts pending for 280,000 kilowatts of firm power and 47,500 kilowatts of interruptible power. This is the greatest period of industrial sales in BPA history, and commits nearly all the power BPA can sell to industry until new resources are assured.

On the basis of presently assured resources we will be able to serve the load growth of preference customers until about 1980 or 1981 if we make no additional sales to industry and if, between 1974 and 1980, we gradually withdraw sales to private utilities.

The commitments we have made to industry will assure that no power is wasted in the meantime, and thus help maintain our low rates. Further, the sales we have made to industry are coming at a fortunate time for the over-all economy of the Pacific Northwest. The region's basic industry, wood products, is declining with employment declining. Power contracts signed in the past year in the aluminum industry, alone, will create about 1600 new full-time jobs with annual wages of about \$12.5 million. The new aluminum plant investment of over \$250 million will also provide additional jobs to help offset any employment losses in the wood products industry.

1966-67 POWER SITUATION

BPA will be in a touch-and-go supply and demand situation for the 1966-67 storage drawdown season. We will be able to serve firm loads through the season, but to do so may require an abnormal drawdown of the reservoir behind Grand Coulee Dam and we may even have to import a small quantity of firm energy from outside the region. Summer surplus sales outside the region were stopped August 17 and interruptible sales to industries and public and private utilities were terminated in late August and early September. Interruptible sales were resumed in mid-November 1966 when streamflows improved.

Low water conditions on the Columbia River and its tributaries were compounded by a delay from September 1966 until December 1966 in full production from the Hanford atomic steamplant. Principal cause of the delay was the late delivery of the 500-kv transformers re-

quired to get the Hanford power into our grid. To help meet firm power loads through the winter we have arranged with the Bureau of Reclamation to draft storage from Franklin D. Roosevelt Lake, behind Grand Coulee Dam, as much as 60 feet below its normal minimum elevation. We will protect the irrigators by making sure Banks Lake is full for the beginning of the 1967 irrigation season.

Through September our industrial customers were able to continue full operations, despite the curtailment of interruptible power, by taking "provisional" energy from Hungry Horse Dam. "Provisional" energy is produced with water stored at Hungry Horse Dam for firm power production later in the season. If water conditions improve and the reservoir refills to the critical energy content curve, purchasers of provisional energy simply pay for it at the same rate as secondary energy. However, if the reservoir does not refill, the industries must either curtail their firm power deliveries later in the season to the extent they have taken provisional energy or replace the energy from old and expensive Northwest steamplants or from imports. The industries also were able to carry the interruptible portion of their power supplies during the time BPA could not supply them by imports over the partly completed Intertie line and by securing, with the assistance of West Kootenay Power and Light Company, an International Joint Commission order permitting the elevation of Kootenay Lake to be raised two feet during September to permit greater downstream power production in October.

The supply and demand situation will continue to be tight, even under median water conditions, for the next several storage drawdown seasons. This makes it imperative that present schedules for additional generation be maintained if BPA is to meet its firm loads.

THIRD POWER PLANT

President Johnson signed the bill authorizing the Third Powerplant at Grand Coulee Dam on June 14. It had passed the House April 18 and the Senate the previous year.

The Third Powerplant will help meet the region's firm power requirements through 1975, and assure maximum utilization of the Pacific Northwest-Pacific Southwest intertie as well as maximum use of Canadian Treaty storage projects. Without the Third Powerplant, the Grand Coulee project could not make full effective use of the storage being provided by the three dams on the Upper Columbia now being built by Canada.

The Third Powerplant will be built by the Bureau of Reclamation. It will have 12 units of 300,000 kilowatts capacity each, although even larger units are under consideration. It will make Grand Coulee once again the largest power station in the world, with some 5.6 million kilowatts of capacity, at least until Russia builds a larger one (Krasnoyarsk) in Siberia which we understand will have 12 units of 500,000 kilowatts each.

The first four units of the Third Powerplant are scheduled for completion in Fiscal 1973-74 and the other eight by 1982. The first four will add about 150,000 kilowatts of firm energy to the BPA system as well as 1.2 million kilowatts of peaking capacity. The ultimate 3.6 million kilowatts of capacity in the Third Powerplant will be needed to provide peaking power for thermal plants which, by 1982, will be carrying much of the region's base load, as well as for sale over the intertie and to provide reserves for the region.

The President requested and the Congress also granted \$3 million to start construction of the

project in Fiscal 1967 so its first four units can be in operation by 1973. BPA staff members have been working with Bureau of Reclamation engineers on reservoir storage operations required during the construction period, plans for changes to existing substation and transmission line facilities, development of new transmission and substation facilities, and criteria for design of minimum turbine settings.

BASIN ACCOUNT

The Third Powerplant bill, which became P.L. 89-448, was passed with an amendment sponsored by Congressman Aspinall establishing a "Basin Account" for the Pacific Northwest. It provided for repayment from BPA revenues of irrigation costs for reclamation projects hereafter authorized within the Pacific Northwest which are beyond the ability of the water users to repay within their prescribed repayment period and which cannot be repaid from other sources within the same period. As noted in the beginning of this letter, it also provides for a consolidated financial statement on a payout basis.

When the Senate accepted the Basin Account amendment it did so on the recommendation of



Senator Jackson with the understanding that he would propose in future legislation some limitations on the amount of irrigation assistance to be provided from BPA revenues. The Senate Interior Committee, of which he is chairman, wrote such limitations into S. 3034, an omnibus bill to authorize feasibility studies for new reclamation projects in most of the western states. The bill went to Conference between the house and Senate and the Jackson limitations were accepted and became law. They are:

- New reclamation projects are to be scheduled so that assistance required by them, together with assistance for previously authorized reclamation projects, will not result in an increase in BPA's rates.
- The total assistance to all irrigation projects shall not average more than \$30 million annually in any period of 20 consecutive years.

These limitations, or ground rules, had been hammered out in a series of conferences in the Pacific Northwest between representatives of Bonnaville power users and reclamationists. We believe that this is the first time in our region that such widespread understanding has been achieved between these interests, whose viewpoints necessarily are quite different.

INTERTIE

The first 500-kv a-c intertie line is partially completed and operating at 230 kv. We expect that it will be completed and energized at 500 kv in May 1967, on schedule.

The second 500-kv a-c line is scheduled for energization in May 1968. Both BPA and Portland General Electric Company, which is building the southern 195 miles of the line in Oregon, have experienced late deliveries of tower steel but we still expect to meet the 1968 energization date.

The first 750-kv d-c line has slipped a year, partly because of the delay by Los Angeles Department of Water and Power and Southern California Edison Company in contracting for the Sylmar terminal. This line has been rescheduled for partial operation in April 1969 and full operation by December 1969.

The second 750-kv d-c line has been rescheduled for initial operation from May 1971 to January 1972 because of the relatively small need for peaking capacity from the Northwest during the period of postponement and in order to reduce our budget requirements in Fiscal 1968. Contracts between participating utilities in the Pacific Northwest and Pacific Southwest are in various stages of completion and, generally, on schedule.

CANADIAN TREATY

Construction of the three Canadian Treaty storage projects—Duncan, High Arrow and Mica Creek—continues on or ahead of schedule. The earthfill at Duncan is being completed ahead of schedule. Consultants for Canada have recommended that the reservoir be filled slowly but on schedule to insure stability of the earthfill.

The Corps of Engineers has started construction of the Libby project.

HANFORD ATOMIC STEAM PLANT

The Hanford Atomic Steamplant is now pouring over one-half of its full 800,000 kilowatt production into the Northwest power grid, just in time to help avert a power brownout in the region should low water conditions prevail through the balance of the storage drawdown season.





The first 25,000 kilowatts of power from the plant came on the line at 5:25 p.m., April 8, 1966—a historic moment for the Pacific Northwest. Initial production had been delayed by late deliveries of materials, bad weather and strikes. Production was up to 200,000 kilowatts by April 16 and to 400,000 kilowatts by June 24. Total generation passed the 500,000,000 kilowatt-hour mark on October 25.

Both 400,000-kw turbine-generator units were operational by June 12, but could be operated only at half capacity because of a delay in delivery of transformers which still had not arrived at this writing. In the meantime, however, temporary arrangements were made to bring the full output to load centers starting early in December, 1966, some 14 months later than full production originally had been scheduled. Then, however, key transformers failed and at publication deadline the plant was continuing to be operated at less than full capacity. Final cost figures are not yet in, but it appears the project is running about \$25 million under original estimates.

SOUTHERN IDAHO

The situation in southern Idaho remains basically unchanged. We still have not started a Federal transmission line into the area, nor have we been able to reach agreement with the Idaho and Utah private power companies on a wheeling agreement that would make a Federal line unnecessary. Time is running out for a decision on wheeling versus Federal construction, for local Federal generation no longer is sufficient to take care of our growing loads in the area and we must bring in power from the main system.

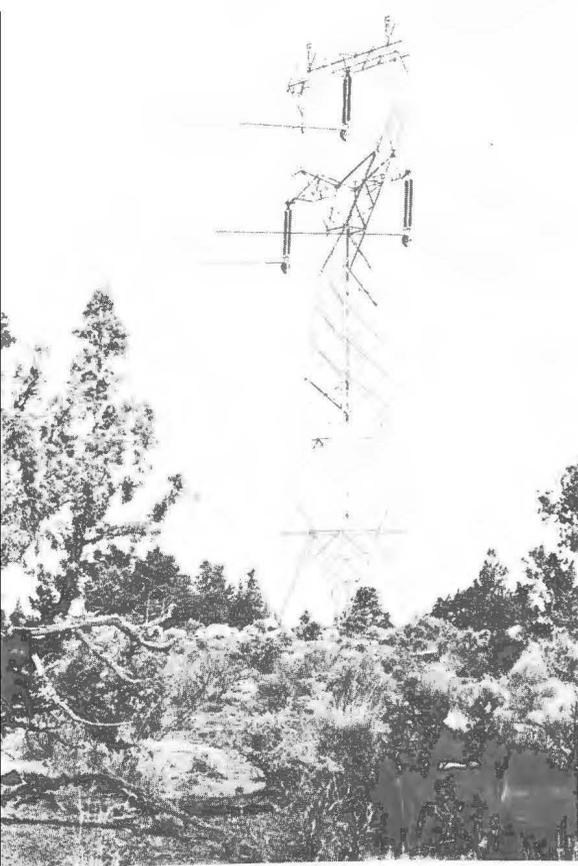
Negotiations between BPA and the companies were resumed in October following further clarification of Congressional intent. Negotiations had been stalled for several months on the question of wheeling capacity for future preference customers. The companies had offered to provide firm transmission capacity for service to existing preference customers, but for service to future preference customers only such surplus capacity as might exist from time to time on the 230-kv system. We requested the companies to provide firm capacity for service to both existing and future preference customers. The House Report of the Committee on Appropriations on the Public Works Appropriation Bill of 1967 clarified this issue, declaring:

“ . . . There should be no discrimination against future preference customers in any way . . . they should be assured a firm transmission capacity. This is essential as there are no Federal lines in the area to fall back on should there be no surplus transmission in the companies' lines.”

The Committee expressed the hope that with this further clarification the companies will execute a wheeling contract with Bonneville. If a satisfactory agreement cannot be reached, we will report to House and Senate Appropriations Committees before expending the \$1 million previously appropriated for planning a Federal line into southern Idaho.

APPEARANCE PROGRAM

In May we received the report of our consulting architects on BPA's appearance program and problems. It was written by Jack R. McFarland of the Portland firm of Stanton, Boles, McGuire and Church. Mr. McFarland did not hesitate to criticize many of our present practices. We already are implementing some of his recommendations and intend to implement other recommendations as rapidly and extensively as we can.



SUMMING UP

For example, we have adopted the report's color scheme for our substations. As part of our maintenance program we have repainted about 10 substations in the new colors which blend as much as possible with the surrounding areas. As other substations require maintenance painting, the new colors will gradually be applied to our entire system. All original painting, of course, will be in the new colors.

The report recognizes that transmission lines are a "necessary evil" associated with power development and a better life for our people. It also recognizes that at the present state of the art it is not economically feasible to use cable and place lines underground at the high voltages at which we must transmit power from dams to load centers. So it recommends that our main efforts at present be directed toward reducing the impact of transmission line rights of way on the natural landscape, a goal in which we concur. To heal the scars made by rights of way, stumps are being cut flush with the ground; grass, deer browse and low-growing native shrubbery are being planted; water bars are being constructed to prevent soil erosion; and land owners are being encouraged to utilize rights of way for Christmas trees and other low-growing cover crops.

For several years we have held semiannual or annual meetings with the Forest Service and the Bureau of Land Management to coordinate our advance plans for transmission facilities crossing areas managed by those two bureaus. Occasionally such consultations have led us to change original plans for routing lines in order to reduce their impact, even in some cases where this has resulted in longer lines and higher costs.

Besides attempting to set high standards for utility appearance programs by example, we have sponsored utility appearance conferences in an effort to develop appearance consciousness among the distributing utilities which purchase wholesale power from us. At the same time we recognize that some of our utility customers are ahead of us in appearance programs.

Our consulting architects' appearance report has been widely circulated throughout the industry and has received highly favorable comments. Requests for copies of the report have come not only from power systems throughout America but also from abroad.

The past five and one half years as Bonneville Power Administrator have been the most rewarding of my life. I am proud of our agency's accomplishments during this time, and of the dedicated and able people who work for BPA. I am grateful, too, for the support we have had from the people of the region for the Bonneville program.

The Pacific Northwest is fortunate in the selection of former FPC Commissioner David S. Black as the new Bonneville Administrator. He is an able lawyer and a capable executive. He is thoroughly familiar with the power needs of the region and the program of BPA. I am confident he will provide the leadership necessary to keep the Pacific Northwest out front with the Nation's highest power use and lowest rates.

Sincerely yours,

Charles F. Luce



*John Day Dam
Power Giant*

December 31, 1966

Hon. Stewart L. Udall
Secretary of the Interior
Washington, D. C.

Dear Mr. Secretary:

I assume the duties of Bonneville Power Administrator at a challenging and pivotal point in the power history of the Pacific Northwest.

For 30 years this region has enjoyed the economic advantage of the lowest cost electric power in the nation because we are blessed with the greatest power producing stream on the North American continent. But the energy potential of the Columbia River soon will have been developed, and the region must turn to thermal power to help carry base load.

How well our electric utility industry accomplishes the transition from all hydro to combined use of hydro for peaking and steam for base load will determine how much of its low-cost power advantage the region can retain. The nature of Bonneville's role in the thermal future of the region will determine the extent to which we can continue to serve preference customer and industrial load growth, and the level of our rates.

REGIONAL PROBLEM This is a regional problem—not one just for BPA or just for the nonfederal utilities of the region. It must be approached as a regional problem. It requires the kind of joint effort which produced the Canadian Treaty, the Hanford atomic steam plant and the Pacific Northwest-Pacific Southwest Intertie. I believe our mutual objectives can be achieved only if we recognize clearly at the very outset that our goals are identical, and that we are mutually dependent on each other for the accomplishment of our objectives.

The dimensions of the problems are set forth in BPA's new Advance Program, published in October 1966. It shows that most of the major hydro sites will be developed by 1975, and that the area will require at least one million kilowatts of new thermal generation for energy purposes each year thereafter. It shows further, in fact, that it would be desirable to have a large new thermal plant in service in the region by 1972 or 1973.

BPA'S ROLE BPA does not see its role as the builder of thermal plants. There are other approaches which should be tried first and which should obviate the need for Federal construction. But we expect to assist in planning the thermal plants, to provide backup, peaking capacity and transmission to make them highly efficient, and to acquire energy by purchase or exchange from thermal plants built by others. The blending of Federal secondary and peaking with thermal generation will help keep overall power costs low.

If we can acquire power by one or both of the above means we can continue to serve the load growth of preference customers and serve new industry. We could even supply that part of the load growth of privately-owned electric utilities of the region that such utilities may wish to continue to buy from BPA. We view our ability to serve new industry as particularly important, for without a continued supply of low cost BPA power the region will have to forego significant economic growth in the electroprocess industries.

This is the overriding problem confronting BPA in the years ahead. For, on the basis of pres-

ently assured resources. BPA can continue to serve preference customer load growth until about 1980, then only if industrial sales are restricted to the level of 1966 commitments and we withdraw gradually, between 1974 and 1980, all sales to private utilities.

PLANNING START

To help get the necessary regional planning started, BPA has taken three important steps since September 1966. The first was to appoint a thermal generation task force within BPA to identify the problems associated with the transition to thermal, to study the means by which BPA can best share in thermal production, and to work closely with the utility industry of the region in solving these problems. Second, we have initiated meetings with the utility industry to discuss these problems. Third, we have signed a contract with Battelle-Northwest for a study of potential sites for up to 30 million kilowatts of thermal generation in the region.

OTHER PROBLEMS

Besides location considerations such as seismic, air and water pollution, public acceptance, transmission costs and others, these additional factors are of prime importance:

- The thermal plants must be of the right size. Economies of scale dictate that each should have at least 1 million kilowatts capacity. But since no one utility in the region has the load growth alone to utilize the output of such a large thermal plant, this means the utilities will have to share the output, and perhaps the financing, construction and operation of the thermal plants.

- The plants must be built on an orderly schedule.

- The lowest possible costs must be obtained to keep the price of power to the ultimate consumer as low as possible.

- Legal questions concerning joint undertakings must be resolved.

- The precise method or methods by which BPA is to share in the output of thermal plants built by nonfederal entities must be worked out.

OTHER LONG-RANGE GOALS

We view the decisions to be made concerning thermal generation as the most important now facing us, the utilities, the industries and all the power consumers of the region.

Besides the twin long-range goals of a continued adequate power supply and maintenance of our low rates, both associated with the transition to thermal generation, I see these three additional long-range objectives for BPA.

- To maintain our fiscal responsibility by continuing to meet our repayment obligation on schedule.

- To continue to improve the appearance of our transmission facilities.

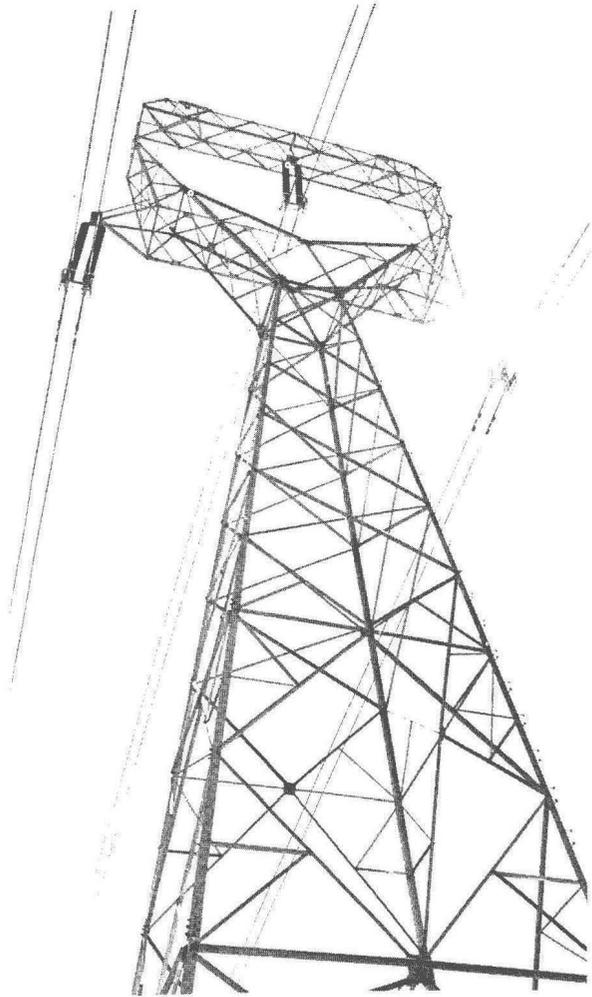
- To fully automate our operations.

Only the latter point needs elaboration at this time.

SYSTEM AUTOMATION

The need for system automation within the next few years will exceed anything now utilized by or known to the electric utility industry, continued manual and semiautomatic operation of the rapidly developing transmission grid and hydro generating system has about reached its practical limit, and our problems will be compounded by the Intertie, the Canadian Treaty storage projects and the advent of thermal generation in the region.

The Treaty projects, for example, give us for the first time the power to truly control the flow of the Columbia. This raises new problems in scheduling water releases for the downstream



dams. All the projects on the river and its tributaries must be coordinated hourly to maximize power production.

The Intertie opens for the first time a market for power surplus to regional needs. We will have to prepare precise weekly, daily and hourly estimates of loads and resources in the Northwest and make short-term commitments for surplus energy and capacity on an hourly basis to purchasers outside the region. Further, with the Intertie the vast hydro system of the Northwest will be interconnected with the even larger steam system of the Southwest, requiring a degree of precise coordination never before attempted so that a regional or West Coast blackout does not occur.

The advent of thermal in this region will further increase the complexity of operations.

Humans simply do not have the ability to receive and digest, within tolerable time limits, the growing amount of system data necessary to make accurate decisions for power scheduling and system control. The system is getting too big, too complex, and the consequences of mistakes too serious, to consider using conventional methods in the future.

Therefore we propose to undertake a power system automation program that will break the bounds of conventional utility practices in controlling power system operations. This includes data collection and analysis, load forecasting, scheduling of generation, inter-utility information exchanges and coordination, system dispatch and control, and computer help in making marketing decisions related to the Intertie.

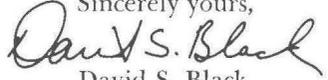
A computer complex will be developed, consisting of a system control computer, a general purpose computer and several area control computers. An integral communication system will provide highly reliable channels and auxiliary equipment required to transmit operating data and control directions throughout the critical power system.

The automation program must involve other Federal entities and publicly and privately owned utilities to properly integrate the power, irrigation, flood control, recreation, navigation and other river functions and make optimum use of the region's resources. It also will involve utilities in other regions in order to have an integrated and comprehensive power system control network.

This program aims to make the BPA system the most advanced and reliable power system in the world.

The degree of cooperation among utilities in the Northwest is the highest in the nation. Together, BPA and the utilities of the region have been able to accomplish programs none could have achieved alone. The tasks ahead will be accomplished only with the continued cooperation of all segments of the industry, and it will be my goal to maintain and foster such cooperative relations.

I undertake the challenges ahead with enthusiasm, with the knowledge that I will have help from a highly competent staff, and with high hopes that our growing program will have the broad support from the region that it has had in the past.

Sincerely yours,

David S. Black



power deliveries

Bonneville Power Administration sold 40 billion kilowatt-hours of energy to 145 wholesale customers in fiscal year 1966. Sales revenues rose 15 per cent and totaled \$94,664,000, a new high. Energy sales went up 14 per cent over last year. BPA's total revenues increased 14 per cent to \$103,168,000. This figure includes \$8,504,000 from sources other than sales, mainly wheeling, coordination, and headwater benefits payments.

Publicly owned utilities, numbering 103, took 44 per cent of total energy sales. Nine privately owned utilities bought 10 per cent. The City of Seattle purchased 3 billion kilowatt-hours, and Snohomish County PUD 2 billion kilowatt-hours. Seattle and Snohomish led all public utility purchases. Portland General Electric led the privately owned utilities with purchases of 2 billion kilowatt-hours.

BPA's private utility customers increased their purchases from BPA 70 per cent during fiscal year 1966. Firm energy purchases were up 57 per cent while nonfirm energy jumped 182 per cent over fiscal year 1965. Aluminum and other industries increased their demand for firm power 7 per cent, and for interruptible power 24 per cent. Deliveries to publicly owned utilities rose 13 per cent.

Aluminum plants bought 34 per cent of the total energy sold and 23 other industries and Federal agencies 12 per cent. Kaiser Aluminum and Chemical Corporation purchased the largest amount—4.2 billion kilowatt-hours. Reynolds Metals Company was second with 2.7 billion kilowatt-hours while the Aluminum Company of America dropped to third place with 2.5 billion kilowatt-hours. Among industrial customers other than aluminum, Hanna Nickel Smelting Company led with purchase of 714 million kilowatt-hours.

Power sales brought an average of 2.38 mills per kilowatt-hour. By class of customer, sales ranged from an average of 2.01

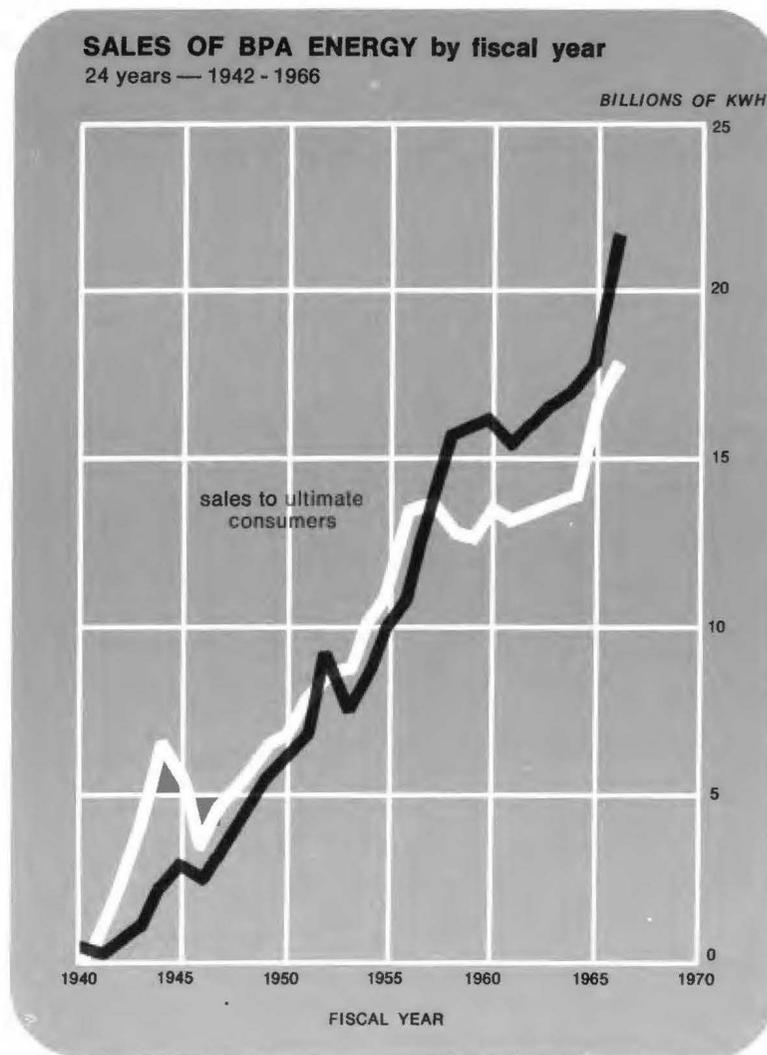


TABLE 1
ELECTRIC ENERGY SALES TO CUSTOMERS OF THE
BONNEVILLE POWER ADMINISTRATION

Fiscal Year Ended June 30, 1966

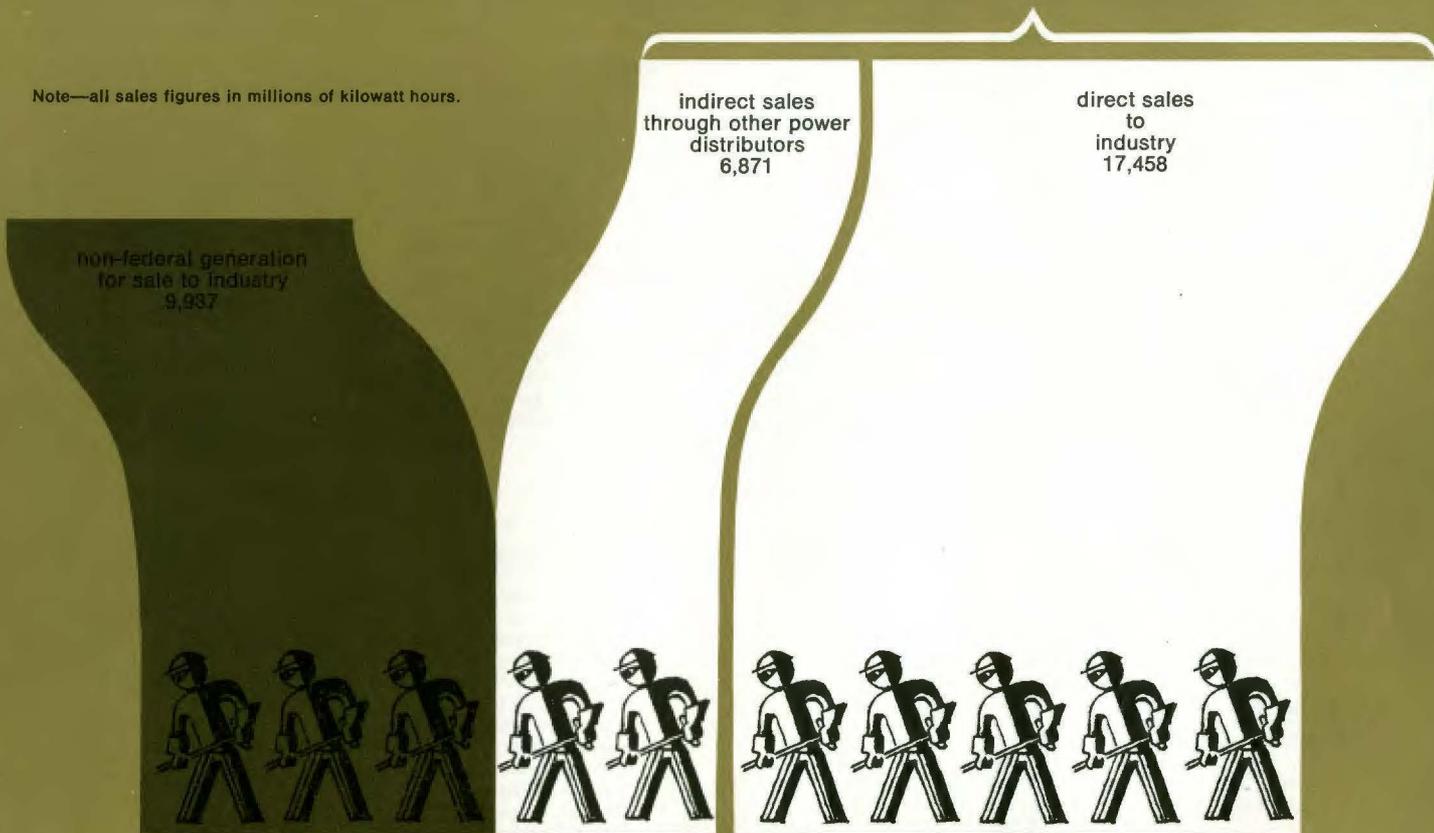
Customers	Energy Delivered for Year (000)	Revenue from Sales of Energy	Customers	Energy Delivered for Year (000)	Revenue from Sales of Energy
Publicly Owned Utilities			Central Electric Coop.	43,083	126,801
Municipalities			Clearwater Power Co.	63,599	219,266
Albion, Idaho	1,860	\$ 6,035	Columbia Basin Elec. Coop.	55,323	182,472
Bandon, Oregon	30,612	106,575	Columbia Power Coop. Assn.	22,245	76,440
Bonnors Ferry, Idaho	6,686	37,245	Columbia Rural Elec. Assn.	41,517	118,296
Burley, Idaho	49,263	154,636	Consumers Power	171,481	584,401
Canby, Oregon	27,446	103,121	Coos-Curry Elec. Coop.	162,973	539,766
Cascade Locks, Oregon	11,759	40,885	Douglas Elec. Coop.	60,173	207,027
Centralia, Washington	19,374	115,868	East End Mutual Elec. Co.	2,968	10,121
Cheney, Washington	38,035	128,354	Eastern Oregon Elec. Coop.	515	2,018
Coulee Dam, Washington	19,920	35,692	Fall River Elec. Coop.	24,600	85,153
Declo, Idaho	1,412	4,794	Farmers Elec. Coop.	2,342	7,433
Drain, Oregon	14,635	57,080	Flathead Elec. Coop.	36,930	114,806
Ellensburg, Washington	82,049	269,209	Harney Elec. Coop.	52,791	137,288
Eugene, Oregon	709,109	1,660,831	Hood River Elec. Coop.	35,477	115,165
Forest Grove, Oregon	72,071	256,316	Idaho Co. L & P Coop. Assn.	20,432	69,707
Grand Coulee, Washington	20,780	45,189	Inland P & L Co.	159,789	522,075
Heyburn, Idaho	32,880	102,319	Kootenai Elec. Coop.	31,764	99,196
Idaho Falls, Idaho	115,776	453,135	Lane Co. Elec. Coop.	145,306	514,084
McCleary, Washington	14,265	46,040	Lincoln Elec. Coop.—Montana	21,195	71,997
McMinnville, Oregon	106,053	362,864	Lincoln Elec. Coop.—Washington	47,331	135,785
Milton-Freewater, Oregon	61,241	208,824	Lost River Elec. Coop.	13,305	40,453
Minidoka, Idaho	700	2,343	Lower Valley P & L Inc.	39,949	136,048
Monmouth, Oregon	29,285	109,219	Midstate Elec. Coop.	28,879	84,087
Port Angeles, Washington	281,917	751,964	Missoula Elec. Coop.	26,124	83,786
Richland, Washington	207,817	712,053	Nespelem Valley Elec. Coop.	12,934	40,142
Rupert, Idaho	27,601	88,867	Northern Lights	46,273	154,916
Seattle, Washington	2,806,097	5,897,099	Okanogan Co. Elec. Coop.	8,460	27,002
Springfield, Oregon	168,798	514,693	Orcas P & L Co.	31,727	96,139
Tacoma, Washington	1,441,030	3,024,205	Prairie Power Coop.	1,905	6,665
Vera Irrigation Dist. #15	50,336	168,823	Quinalt Light Co.	5,682	16,760
Washington Public Power Sup. System	5,410	13,528	Raft River Rural Coop.	69,542	189,392
Total Municipalities (30)	6,454,217	\$15,477,806	Ravalli Co. Elec. Coop.	25,145	85,622
Cooperatives			Riverside Elec. Co.	2,041	7,219
Benton Rural Elec. Assn.	78,697	247,463	Rural Elec. Co.	12,441	40,831
Big Bend Elec. Coop.	132,912	353,819	Salem Electric	107,076	365,796
Blachly-Lane Co. Coop. Elec. Assn.	54,573	178,099	Salmon River Elec. Coop.	10,552	29,075
			South Side Elec. Lines	8,486	25,121
			Surprise Valley Elec. Corp.	26,986	86,292
			Tanner Electric	3,086	10,319
			Umatilla Elec. Coop. Assn.	66,388	200,943
			Unity Light & Power Co.	15,891	51,417
			Wasco Elec. Coop.	74,428	235,010
			West Oregon Elec. Coop.	31,765	107,966
			Total Cooperatives (47)	2,137,081	\$ 6,839,679

Customers	Energy Delivered for Year (000)	Revenue from Sales of Energy	Customers	Energy Delivered for Year (000)	Revenue from Sales of Energy
Public Utility Districts			Federal Agencies (9)	2,321,907	5,551,396
Benton Co. PUD No. 1	408,702	1,255,583	Industries		
Central Lincoln PUD	615,272	1,810,602	Aluminum		
Chelan Co. PUD No. 1	186,011	431,815	Aluminum Co. of America		
Clallam Co. PUD No. 1	126,667	391,535	Vancouver Plant	1,901,075	3,861,657
Clark Co. PUD No. 1	1,056,221	3,360,290	Wenatchee Plant	598,050	1,227,389
Clatskanie PUD	88,335	283,386	Anaconda Aluminum Co.	1,862,213	3,348,799
Cowlitz Co. PUD No. 1	1,421,861	3,306,833	Harvey Aluminum Co.	1,552,193	2,619,099
Douglas Co. PUD No. 1	242,236	661,310	Intalco Aluminum Co.	63,105	157,763
Ferry Co. PUD No. 1	25,759	76,518	Kaiser Alum. & Chem. Corp.		
Franklin Co. PUD No. 1	211,847	699,840	Spokane Reduction Plant	3,638,880	7,386,392
Grays Harbor Co. PUD No. 1	643,401	1,815,056	Spokane Rolling Mill	369,130	893,936
Kittitas Co. PUD No. 1	16,593	53,365	Tacoma Reduction Plant	680,024	1,366,101
Klickitat Co. PUD No. 1	108,860	343,028	Reynolds Metals Co.		
Lewis Co. PUD No. 1	231,347	723,490	Longview Plant	1,234,233	2,503,520
Mason Co. PUD No. 1	17,668	59,500	Troutdale Plant	1,457,078	2,930,947
Mason Co. PUD No. 3	156,940	472,665	Other Industries		
Northern Wasco Co. PUD	46,114	164,928	Carborundum Co.	241,406	496,656
Okanogan Co. PUD No. 1	204,628	586,566	Cominco American, Inc.	42,525	142,966
Pacific Co. PUD No. 2	128,044	433,284	Crown Zellerbach Corp.	174,557	395,103
Pend Oreille Co. PUD No. 1	26,283	55,245	Georgia Pacific Corp.	105,445	237,792
Skamania Co. PUD No. 1	53,336	179,138	Hanna Nickel Smelting Co.	714,286	1,584,103
Snohomish Co. PUD No. 1	1,839,703	5,506,182	Ida Gem Dairymen	278	1,789
Tillamook PUD	200,624	691,061	Keokuk Electro-Metals Co.	122,571	270,523
Wahkiakum Co. PUD No. 1	24,607	83,644	Pacific Carbide & Alloys	46,516	102,746
Whatcom Co. PUD No. 1	58,800	147,206	Pacific Northwest Alloys		101,978
Total Public Utility Dist. (26)	8,516,248	\$24,826,866	Pennsalt Chemical Corp.	325,126	671,796
B C Hydro & Power Authority	402,041	994,047	Rayonier, Incorporated	59,652	130,679
Total Publicly Owned (104)	17,509,587	\$48,138,398	Stauffer Chemical Co.	399,154	897,381
Privately Owned Utilities			Stewart Elsnor	49	322
California-Pacific Utilities	24,221	53,069	Union Carbide Metals Co.	154,374	337,659
Idaho Power Co.	126,000	346,501	Total Industries (24)	15,741,920	\$31,667,096
Montana Power Co.	397,650	1,020,627	Total Sales of Electric Energy (145)	39,713,398	\$94,664,217
Pacific Power & Light Co.	1,591,560	3,555,995			
Paul Electric Co.	8,556	27,000			
Portland General Electric Co.	1,818,739	3,870,985			
Puget Sound P & L Co.	9,743	24,359			
Washington Water Power Co.	163,515	408,791			
Total Privately Owned Util. (8)	4,139,984	\$ 9,307,327			

**BPA CONTRIBUTION TO PACIFIC NORTHWEST
INDUSTRIAL POWER SUPPLY**

**BPA TOTAL SALES
24,329 (1965)**

Note—all sales figures in millions of kilowatt hours.



SEVEN OUT OF EVERY TEN KILOWATT HOURS
PURCHASED BY NORTHWEST INDUSTRY ARE
SUPPLIED DIRECTLY OR INDIRECTLY BY BPA

mills per kilowatt-hour for industries (including at-site deliveries), 2.25 mills for privately owned utilities, and 2.75 mills for publicly owned utilities.

As a general rule, it costs less to supply power to a purchaser who buys at high load factor. The load factor is the ratio of the average load over a designated period, such as a month, to the peak load occurring in that period. Our industrial customers buy at nearly 100 per cent load factors, and their average cost of power is therefore the lowest of any class of customer.

Private utilities, who use large amounts of their own generation to meet their peak loads, also purchase power from BPA at a high load factor. This results in a lower cost to them as a class.

Many public agencies buy all of their power, including peak needs, from BPA. This results in a slightly higher average cost of power, as compared with industrial and private purchasers.

generation

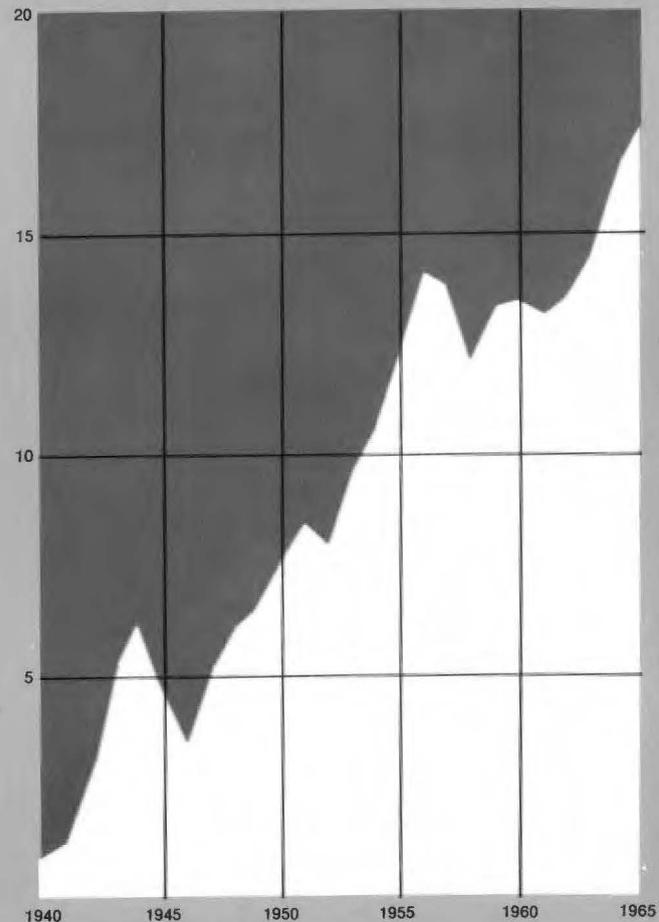
The region now has 14,045,123 kilowatts of capacity installed at Federal and nonfederal projects.

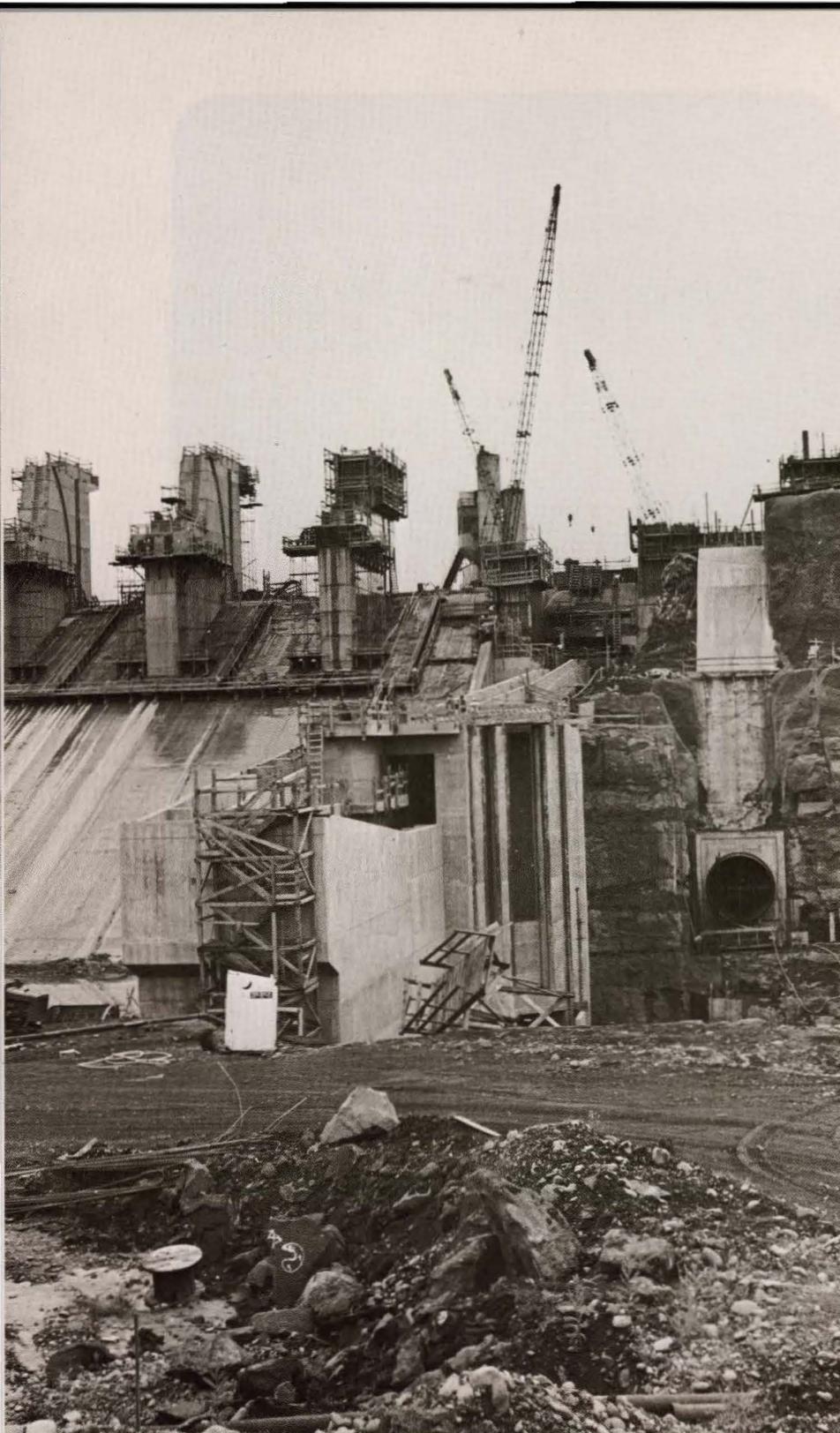
The 21 existing Federal dams have a capacity of 6,678,150 kilowatts.

These figures do not include some isolated Federal projects with a total capacity of 39,122 kilowatts. These plants do not produce power for BPA's commercial sales. They are operated by the Navy, Bureau of Reclamation, National Park Service, and Bureau of Indian Affairs.

Nonfederal plants, exclusive of the Hanford Generating Plant, have a capacity of 7,366,973 kilowatts, plus about 456,839 kilowatts in old steam plants.

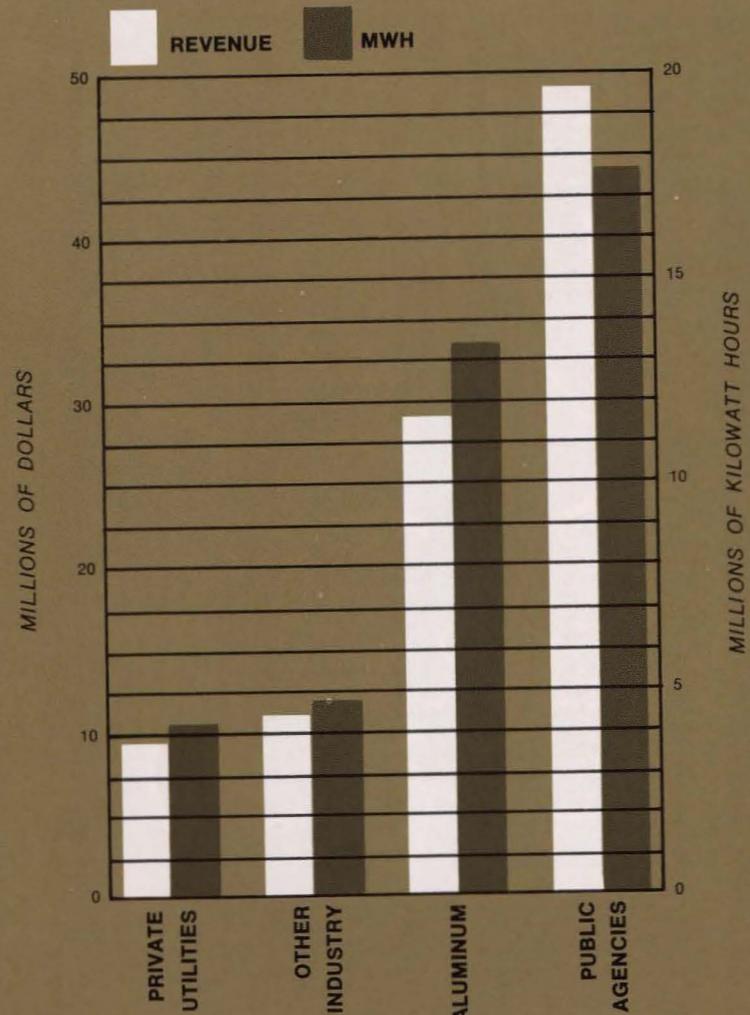
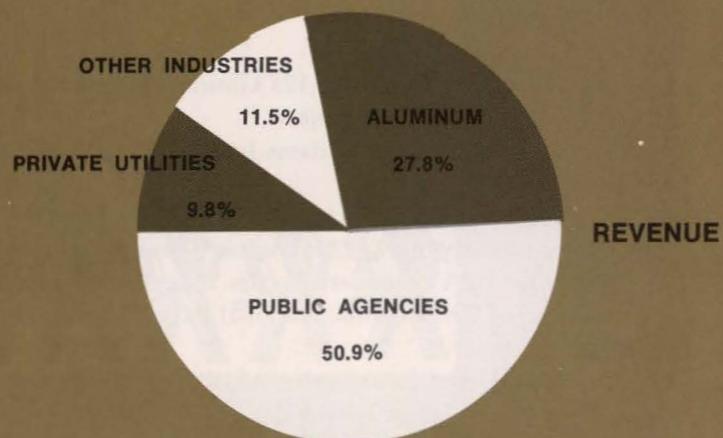
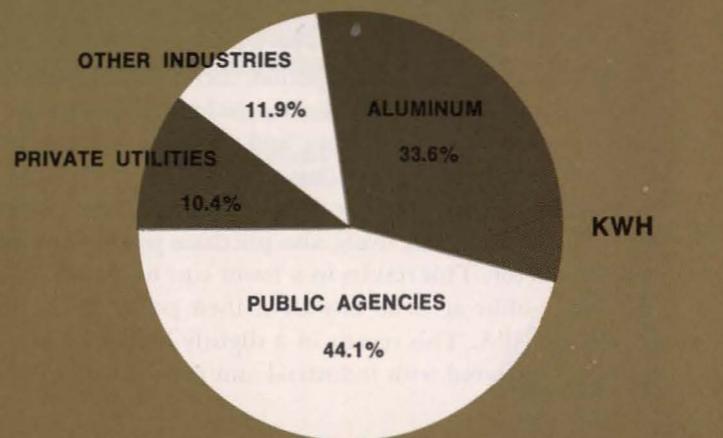
**BPA TOTAL DIRECT SALES TO INDUSTRY
(IN BILLIONS OF KWH)**





Forming Foster Dam

SALES TO CLASSES OF CUSTOMERS FY 1966



The Hanford plant has a nameplate rating of 800,000 kilowatts during the period when the new Production Reactor is used to produce both electricity and plutonium. It has been operating at less than full capacity because of transformer difficulties, including late deliveries.

Northwest electrical loads are growing. They will nearly double in the next 10 years. To meet this growth the region's utilities must install about 13,200,000 kilowatts of new generating capacity.

Ten years from now the generating capacity installed at Federal plants will total about 16,488,600 kilowatts.

There is more Federal generation being built now in the Northwest than at any time in the past. Eight Federal dams, besides the 21 existing dams, are under construction. About 4,295,000 kilowatts of capacity will be installed at these new projects by June 30, 1976. They are Green Peter, Foster, John Day (16 units), Lower Monumental, Little Goose, Lower Granite, Dworshak, and Libby Dams.

On June 14, 1966, Congress authorized a third powerhouse at Grand Coulee Dam. It will add 3.6 million kilowatts and raise the capacity of the dam to about 5.6 million kilowatts. This is more capacity than is presently installed at any dam in the world.

The law gives the Secretary of the Interior flexibility to modify the size and number of units and even, subject to further Congressional authorization, to increase the capability of the third powerhouse beyond 3.6 million kilowatts.

About half of the capacity of the third powerhouse will be installed in the next 10 years.

Other new Federal sources of power authorized by Congress include Asotin Dam on the Snake River, Lost Creek Dam on the Rogue River and Teton Dam on the Teton River. In addition, generation will be added at existing dams.

In ten years the nonfederal plants, including Hanford, will

TABLE 2
U.S. COLUMBIA RIVER POWER SYSTEM
 General Specifications, Projects Existing, Under Construction and Authorized
 Installations as of June 30, 1966

Project	Operating Agency 1/	Location	Stream	Initial Date in Service	Existing		Under Construction		Authorized		Total	
					Number of Units	Total Capacity Kilowatts 2/	Number of Units	Total Capacity Kilowatts 2/	Number of Units	Total Capacity Kilowatts 2/	Number of Units	Total Capacity Kilowatts 2/
Bonneville	CE	Ore.-Wash.	Columbia	June 1938	10	518,400	—	—	6	324,000	16	842,400
Grand Coulee	BR	Washington	Columbia	Sept. 1941	18	1,944,000	—	—	18	3,891,000 3/	36	5,835,000 3/
Hungry Horse	BR	Montana	S. Fk. Flathead	Oct. 1952	4	285,000	—	—	—	—	4	285,000
Detroit	CE	Oregon	North Santiam	July 1953	2	100,000	—	—	—	—	2	100,000
McNary	CE	Ore.-Wash.	Columbia	Nov. 1953	14	980,000	—	—	6	420,000	20	1,400,000
Big Cliff	CE	Oregon	North Santiam	June 1954	1	18,000	—	—	—	—	1	18,000
Lookout Point	CE	Oregon	M. Fk. Willamette	Dec. 1954	3	120,000	—	—	—	—	3	120,000
Albani Falls	CE	Idaho	Pend Oreille	Mar. 1955	3	42,600	—	—	—	—	3	42,600
Dexter	CE	Oregon	M. Fk. Willamette	May 1955	1	15,000	—	—	—	—	1	15,000
Chief Joseph	CE	Washington	Columbia	Aug. 1955	16	1,024,000	—	—	11	704,000	27	1,728,000
Chandler	BR	Washington	Yakima	Feb. 1956	2	12,000	—	—	—	—	2	12,000
The Dalles	CE	Ore.-Wash.	Columbia	May 1957	16	1,119,000	—	—	8	624,000	24	1,743,000
Roza	BR	Washington	Yakima	Aug. 1958	1	11,250	—	—	—	—	1	11,250
Ice Harbor	CE	Washington	Snake	Dec. 1961	3	270,000	—	—	3	270,000	6	540,000
Hills Creek	CE	Oregon	M. Fk. Willamette	May 1962	2	30,000	—	—	—	—	2	30,000
Minidoka	BR	Idaho	Snake	May 1909	7	13,400	—	—	—	—	7	13,400
Boise Diversion	BR	Idaho	Boise	May 1912	3	1,500	—	—	—	—	3	1,500
Black Canyon	BR	Idaho	Payette	Dec. 1925	2	8,000	—	—	—	—	2	8,000
Anderson Ranch	BR	Idaho	S. Fk. Boise	Dec. 1950	3	27,000	—	—	1	13,500	4	40,500
Palisades	BR	Idaho	Snake	Feb. 1957	4	114,000	—	—	—	—	4	114,000
Cougar	CE	Oregon	S. Fk. McKenzie	Feb. 1964	2	25,000	—	—	1	35,000	3	60,000
Green Peter	CE	Oregon	Middle Santiam	—	—	—	2	80,000	—	—	2	80,000
Foster	CE	Oregon	South Santiam	—	—	—	2	20,000	—	—	2	20,000
John Day	CE	Ore.-Wash.	Columbia	—	—	—	16	2,160,000	4	540,000	20	2,700,000
Lower Monumental	CE	Washington	Snake	—	—	—	3	405,000	3	405,000	6	810,000
Little Goose	CE	Washington	Snake	—	—	—	3	405,000	3	405,000	6	810,000
Lower Granite	CE	Washington	Snake	—	—	—	3	405,000	3	405,000	6	810,000
Teton	BR	Idaho	Teton	—	—	—	—	—	2	22,000	2	22,000
Lost Creek	CE	Oregon	Rogue	—	—	—	—	—	2	52,000	2	52,000
Dworshak	CE	Idaho	N. Fk. Clearwater	—	—	—	3	400,000	3	660,000	6	1,060,000
Strube	CE	Oregon	S. Fk. McKenzie	—	—	—	—	—	1	4,500	1	4,500
Libby	CE	Montana	Kootenai	—	—	—	4	420,000	4	420,000	8	840,000
Asotin	CE	Wash.-Ida.	Snake	—	—	—	—	—	4	540,000	4	540,000
Total number of project and Installed Capacity					21	6,678,150	8	4,295,000	4	9,735,000	33	20,708,150

1/ CE—Corps of Engineers; BR—Bureau of Reclamation.

2/ Nameplate Rating.

3/ Includes 3,600,000 kw in Third Powerhouse and 291,000 from 6 pump-turbine units.

TABLE 3
PACIFIC NORTHWEST GENERATION
Nameplate Rating of Plants Existing, Under Construction and Authorized or Licensed
Kilowatts

June 30, 1966

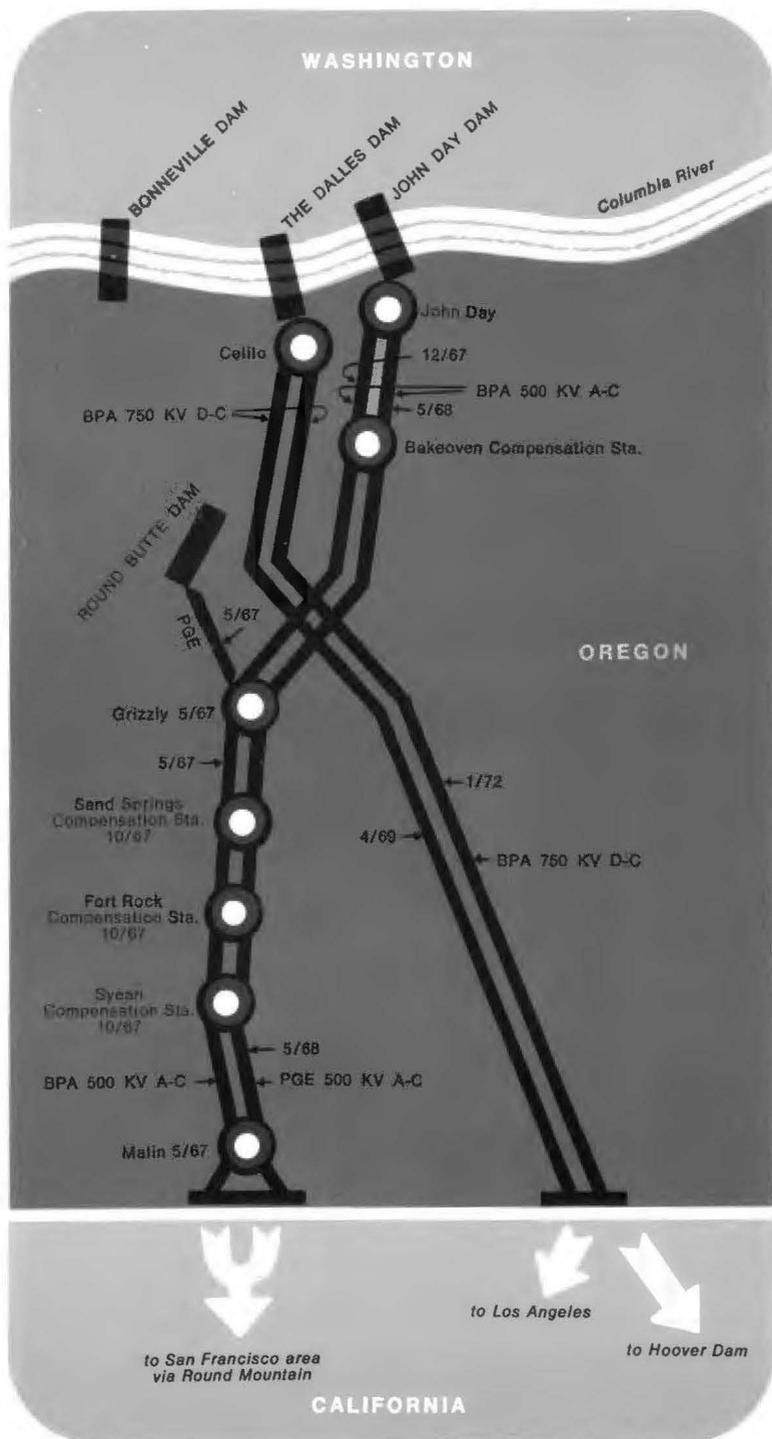
Ownership	Existing		Under Construction		Licensed or Authorized		Total	
	No. of Plants	Nameplate Rating	No. of Plants	Nameplate Rating	No. of Plants	Nameplate Rating	No. of Plants	Nameplate Rating
<u>Federal Agencies</u>								
Hydro	26	6,698,710	8	4,295,000	4	9,735,000 1/	38	20,728,710
Thermal	7	18,562	0	0	0	0	7	18,562
Total Federal Agencies	33	6,717,272	8	4,295,000	4	9,735,000	45	20,747,272
<u>Publicly Owned Agencies</u>								
Hydro	43	3,887,636	3	1,625,250	3	564,080 1/	49	6,076,966
Thermal	23	196,059	1	800,000	0	0	24	996,059
Total Publicly Owned Agencies	66	4,083,695	4	2,425,250	3	564,080	73	7,073,025
<u>Privately Owned Agencies</u>								
Hydro	96	3,479,337	1	391,500	0	0	97	3,870,837
Thermal	14	260,780	0	7,500	0	0	14	268,280
Total Privately Owned Agencies	110	3,740,117	1	399,000	0	0	111	4,139,117
<u>Pacific Northwest Agencies</u>								
Hydro	165	14,065,683	12	6,311,750	7	10,299,080	184	30,676,513
Thermal	44	475,401	1	807,500	0	0	45	1,282,901
Total Pacific Northwest Agencies	209	14,541,084	13	7,119,250	7	10,299,080	229	31,959,414

1/ Includes authorized or licensed additions to projects existing or under construction.

add about 3,388,330 kilowatts of capacity to the region's resources. The nameplate capacity of nonfederal plants will total about 11,212,142 kilowatts by 1977. This figure does not include High Mountain Sheep Dam which will add about 900,000 kilowatts of capacity. The Federal Power Commission has granted a license to Pacific Northwest Power Company for the dam, but the project is still in litigation.

TABLE 4
ELECTRIC ENERGY ACCOUNT FOR FISCAL 1966

Energy Received (millions of kilowatt hours)	
Energy Generated for BPA	
Bureau of Reclamation	14,901
Corps of Engineers	26,948
Washington Public Power Supply System	89
Power Interchanged In	17,472
Total Received	59,410
Energy Delivered (millions of kilowatt hours)	
Sales	39,713
Power Interchanged Out	17,043
Used by Administration	44
Total Delivered	56,800
Energy losses in transmission and transformation	
Total	2,610
Losses in percent of total received — 4.4%	
Maximum demand on Federal plants (kilowatts)	
December 17, 1965, 5- 6 p.m. PST	6,378,000
Load Factor in percent of total generated for BPA	75.1%



the intertie

The first tangible benefits to the Northwest from the Pacific Northwest-Southwest Intertie came in November 1966. During much of that month between 200,000 and 300,000 kilowatts of steam energy from the Southwest flowed north over the first partly completed Intertie line. This power helped serve Northwest interruptible loads and helped prevent layoffs at aluminum plants where some potlines otherwise might have been shut down.

In May, 1966, Pacific Power and Light Company had completed in southern Oregon and northern California its 47-mile section of the first 500,000-volt Intertie line, interconnecting with a section previously completed in California by Pacific Gas and Electric Company. The partially completed line was energized at 230,000 volts, and was used during the summer to transmit surplus Northwest secondary energy to California. In September the line was taken out of service for modifications.

In late August and early September, low water conditions in the Northwest forced BPA to cut off sales of interruptible power to utilities and industries. The industries were able to make other arrangements to keep operating through September and October, but faced a critical power supply situation in November. The partially-completed Intertie line came back in service November 2, just in time to carry power north to serve interruptible loads until Northwest water conditions improved later in the month and BPA was again able to serve interruptible loads from hydro resources.

Thus, even before the first line was completed, the "two way street" nature of the Intertie was demonstrated.

Meanwhile, construction by BPA and Portland General Electric Company went forward on the first two 500,000-volt Intertie lines through Oregon. By December 1 some 242 miles of steel



towers stood gleaming above the sage and juniper lands of central Oregon. Conductor had been strung along 145 miles of the first 500,000-volt line.

The Intertie consists of four major transmission lines. When completed, three lines will run from the vicinity of The Dalles and John Day dams to Los Angeles, and the fourth to Hoover Dam. BPA is building the entire Oregon portion of one 500,000-volt alternating current line and the two 750,00-volt direct current lines, plus the northernmost 87-mile section of the second 500-000-volt line.

By the fall of 1966 the first 500,000-volt line was nearly complete from Grizzly Substation to Malin Substation near Klamath Falls. (See sketch.) This section is scheduled to begin carrying power in May 1967.

Four parties are involved in a cooperative program to build the substation at Malin: BPA, Portland General Electric, PP&L, and the Bureau of Reclamation. The four parties have an agreement where each will purchase major items of equipment for their own areas of the ring bus. BPA will design, purchase, install and operate the main part of the substation.

Parts of Malin and Grizzly substations must be completed by May 1967 when the first line is to be energized. Grizzly is a joint project of BPA and PGE. They reached an agreement whereby BPA is to build, operate and maintain the substation. PGE will purchase and own major items of equipment in its part of the substation.

In May power will flow south via the Intertie from PGE's Round Butte Dam in Central Oregon. Power will begin flowing south from BPA's main grid in December after BPA completes an 87-mile section of the first line from Grizzly north to John Day Substation. John Day and Big Eddy substation are wholly BPA projects.

The second 500,000-volt line from Grizzly to Malin is being build by PGE. Construction of this line is well along. BPA's second 87-mile section from Grizzly north to John Day will connect the PGE line to the main grid. These two sections are to be energized in May 1968, when Grizzly and Malin substations are completed.

We began building the direct current terminal near The Dalles in 1966. The station, named the Celilo Converter Station, will stand on a site 1½ miles south of the dam. There, a building three stories high, 126 feet wide, and 790 feet long, will house a terminal for each of the two d.c. lines. The structure will have two wings and a central core.

Construction of the building and the electrical yard is to start in 1967. The site was graded and excavated this past summer. The first terminal, with its mercury arc valves and other equipment, is scheduled to go into service with the first d.c. line in April 1969. This line will run from The Dalles to Los Angeles.

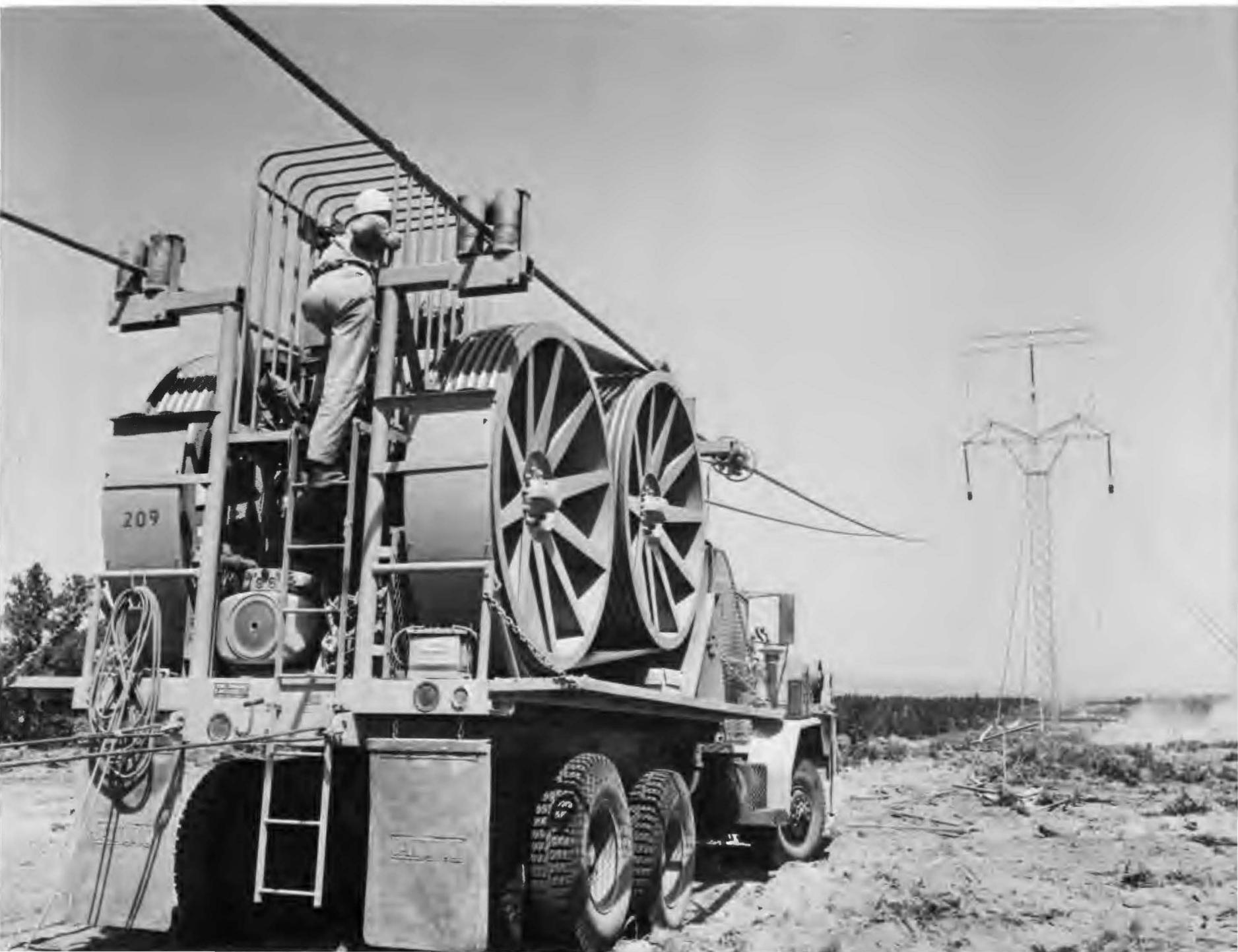
The first d.c. line will operate at one-half capacity from April 1969 until December 1969, when it will go to full capacity. This delay in full commercial operation resulted because the City of Los Angeles did not sign a contract for its d.c. terminal until April 1966, 11 months after BPA contracted for its first terminal at Celilo.

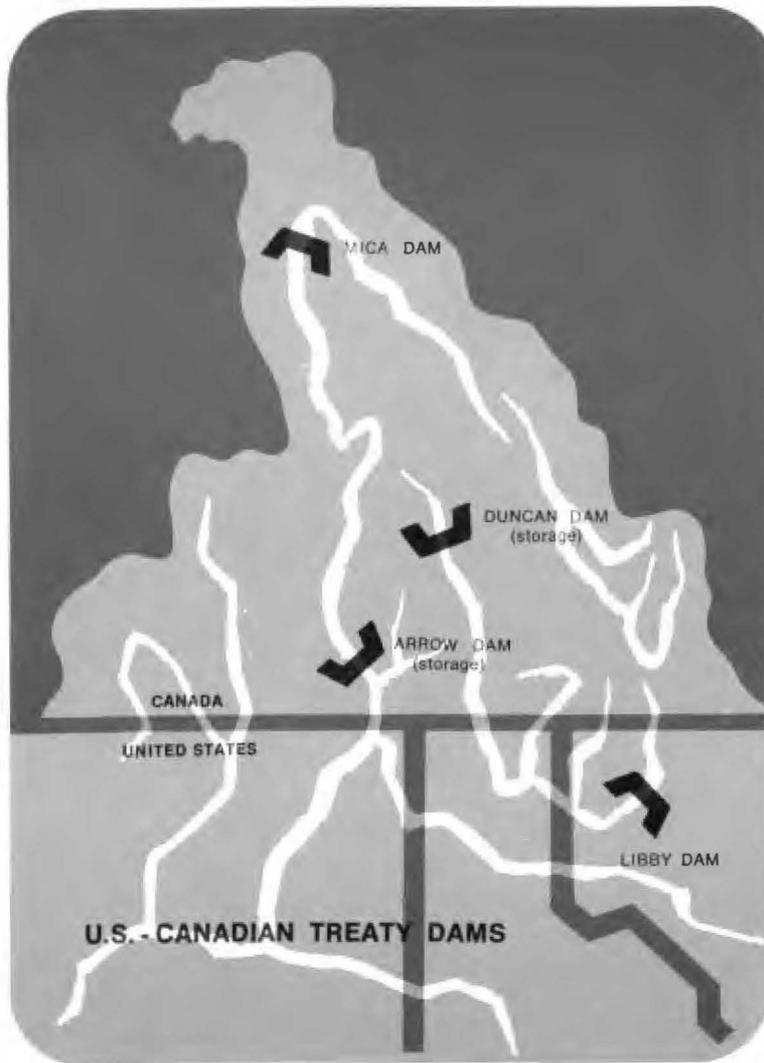
BPA's section of the first d.c. line will include 110 miles of line constructed with guyed aluminum towers, instead of steel towers. The purpose is to permit an evaluation of aluminum towers for extra-high voltage lines.

The second d.c. line, which is to run to Hoover Dam, is now scheduled to be completed, together with the second terminal at Celilo, in January 1972, eight months later than was originally scheduled, partly because the Southwest will need relatively little Northwest peaking capacity in those eight months.

Various sections of the four intertie lines to the Southwest are







being built separately by private and public utilities and the Federal government. The total capacity of the four lines will be about 4.6 million kilowatts. When BPA's lines and those to the south are energized, they will permit the exchange and sale of surplus Northwest secondary energy and peaking capacity. The Intertie will be used to "firm up"—with Southwest power—a large block of Northwest power which otherwise would be available only when river flows are up.

BPA expects to net \$10 to \$12 million annually from these transactions. Benefits of the Intertie will accrue to utilities and their customers in eleven western states.

treaty progress

The four projects made possible by the Columbia River Treaty are now under construction. They will almost complete the job of harnessing the Columbia River and control floods as great as any in its recorded history.

Canada is building Duncan Dam on Duncan River and Arrow and Mica dams on the Columbia River. These are storage projects designed to hold back 15.5 million acre-feet of water and level out the flow of the Columbia downstream.

Water released from the Canadian projects will increase the dependable capacity at 11 U.S. dams downstream by 2.8 million kilowatts. Canada and the United States will share this power equally. Canada has sold her share to purchasers in the United States for 30 years.

The United States is building Libby Dam on the Kootenai River which will store another 5 million acre-feet and make it possible to generate 750,000 kilowatts at site and downstream in the United States.

Arrow project



The Kootenai River flows north into Canada. Canadian dams downstream from Libby will gain about 200,000 kilowatts in firm power capability after Libby is built.

Duncan and Arrow dams are well underway. Duncan is an earthfill dam about half a mile long and 120 feet high. About 75 per cent of the fill is in place. Under terms of the Treaty Duncan was to be finished in April 1968, but it may be completed as much as a year ahead of schedule. Duncan will store 1.4 million acre-feet.

The big construction push in 1966 was at Arrow, five miles

Mica project



west of Castlegar, B.C. Arrow is an earthfill and concrete dam. It will store 7.1 million acre-feet of water in Arrow Lakes. The dam will be 2,850 feet long and 190 feet high. By fall the contractor had placed 190,000 cubic yards of concrete and 2,650,000 cubic yards of fill. Arrow is to be completed by April 1969 under the Treaty, but it, too, is ahead of schedule.

Mica will be the largest of the three Canadian dams. It will be 2,500 feet long and 645 feet high. It is in the early stages of construction. Two diversion tunnels, each 45 feet in diameter, have

Duncan project



been bored through about 3,000 feet of rock. When the Columbia is diverted in the spring of 1967, these tunnels will be able to carry nearly a million gallons per second. When completed, Mica will store, initially, 7 million acre-feet.

Construction of a townsite downstream from Mica is also well underway. About 85 per cent of the project roads are completed. Mica is to be finished under the Treaty in 1973.

The construction of Libby Dam on the Kootenai River in Montana began May 4, 1966, under direction of the Corps of Engineers. The reservoir will extend 42 miles into Canada. The first two generating units are scheduled to go on the line in July 1973, a third in September 1973, and the fourth in November 1973.



Hanford

The Hanford atomic steam plant, constructed by Washington Public Power Supply System, began delivering power to the Bonneville main grid at 5:52 p.m. April 8, 1966. The initial amount was only 25,000 kw. But by April 16, the plant was delivering 200,000 kw and by June 24, 400,000 kw. Full output of 800,000 kw came on the line December 10, 1966, but only for a few hours because transformer troubles restricted our ability to take the full output into our system. For the balance of this winter, most likely, it will have to be operated at a maximum output of 600,000 kilowatts.

In many ways, as U. S. Senator Henry M. Jackson said in a Senate speech noting its start-up, the Hanford atomic steam plant is a turning point in the power history of the Northwest. First, it assures the region will not have a firm power shortage during the 1966-67 winter. Second, it has opened a new era of industrial growth in the region— industrial expansion that might have gone abroad but for the assured supply of low-cost power that Hanford will provide. Third, it is the first large steam plant whose operation is being integrated into the all-hydro operation of the Columbia River power system for which BPA markets power. Fourth, and finally, it marks the start of the transition of the Pacific Northwest from an all-hydro power operation to a combination of steam plants and hydro.

Hanford was operated at half capacity until December because a manufacturer was late in delivering three large autotransformers. The delay was caused by a long labor dispute and the failure of the transformers to meet initial performance tests. BPA had planned to install the transformers at Vantage Substation where power from Hanford is integrated into the main grid. By

December, we had made temporary arrangements to take the full output of the Hanford plant into the Puget Sound area over our new 500,000 volt Vantage-Covington line. However, two transformers on this line failed within a few days after energization and the line had to be operated at a reduced voltage which limited Hanford to less than full output.

During its first months of operation, the Hanford plant was down much of the time because of a strike at the Hanford atomic works and other difficulties. The plant did, however, make a substantial contribution to the economy of the Northwest by delivering power during the fall when streamflows were so low that BPA cut off deliveries of interruptible power.

The Washington Public Power Supply System issued \$122 million in revenue bonds in May 1963 to finance the Hanford plant. This amount was to cover cost of construction, interest, reserves, etc.

There is still some work to be done, but as the plant neared completion this year costs were running well below the original estimates. As of October 1, the Supply System had issued contracts and purchase orders totaling about \$62 million. We estimate that the actual cost of construction will be about \$25 million under original estimates.

the appearance program

For more than a quarter of a century BPA engineers based their designs on function, cost and safety. Early in 1965 they added a fourth criterion—beauty.

In June 1965 BPA hired a firm of architects, Stanton, Boles, Maguire and Church of Portland, Oregon, to chart a new course in aesthetics. In the year that followed the firm examined a big part of BPA's 270 substations and nearly 10,000 circuit miles of transmission lines. The architects also looked at BPA's plans for the future.

BPA's transmission lines carry energy across forests, over mountains, through valleys, and across vast stretches of semi-arid, broken lands left by ancient lava flows. The lines serve Washington, Oregon, Idaho, Montana west of the Continental Divide, and small adjacent parts of California, Nevada, Utah, and Wyoming.

In June 1966 the architects submitted a report which was acclaimed by the utility industry, and BPA began to translate the report into action.

Sites for new substations are being chosen on the basis of aesthetics as well as for engineering needs. Consideration is given to surroundings. Substations are being set well back from main highways so that a transition zone softens the hard lines of the station yard and the transmission lines. Whenever possible, trees near the site are left undisturbed so that the new facility fits smoothly into its environment.

The routes by which transmission lines approach the new substations are getting considerable study during the planning stage. The goal is to use rights-of-way in a manner that will be efficient as well as inoffensive to the eye.

Our engineers are seeking more attractive designs to take the place of older standard designs for structures and supports—low profile designs, wide flange and box beam structures that avoid the clutter of lattice steel.

New plans are in the works for control and maintenance buildings, ground cover for yards, signs, flagpoles, microwave towers, lighting, and even trash barrels. Some yards are being

screened with low growing trees. Others will be built below ground level. In certain locations, even the hum created by large transformers is being dampened as BPA strives to become a better neighbor. New and quieter transformers are being purchased for other locations.

In existing substations where it is not practical to replace structures, a balanced color system is being used. The paints have been carefully selected for color and durability. When painted with these softer colors, the substations blend with the scenery. The entrance roads and landscaping are being improved at a number of locations. At some places where BPA's substation is next to that of a distributor, BPA and the local utility are working together to improve appearance.

Architectural designs have been made for new medium size maintenance and control buildings. The main considerations were appearance, economy and utility. Modular wall panels were incorporated in these plans. They permit expansion of the building unit and lend themselves to the use of colorful stains. Some of the smaller buildings also have been redesigned.

On transmission rights-of-way visible to passersby stumps are being cut flush with the ground. Grass, deer browse and low native shrubs are being planted. Water bars are being built to prevent soil erosion. And landowners are being encouraged to plant some rights-of-way to special crops, such as Christmas trees. Plans are underway in other locations to soften the severe, straight lines at the edge of transmission corridors with low vegetation.

One of the first projects to feel the impact of "beautility" will be the Celilo Converter Station. The station will be the northern terminal for two 750,000 direct current lines to the Pacific Southwest. Because it is the first of its kind in the United States, because of its location, and because of the striking design of the building, the terminal will be a tourist attraction. The sta-

tion complete with visiting facilities and parking lot will stand on a high bluff overlooking the Columbia River near The Dalles, Oregon. The site commands a sweeping view of Mt. Hood, the city, the broad trench of the river, and the brown, bare hills to the east.

BPA's program of aesthetics is a new dimension in community responsibility. It is not expected on a long range basis to result in significantly higher construction costs, except where circumstances may dictate that large, high voltage lines be placed underground.

wheeling

In electrical parlance "wheeling" describes the transportation of electric energy owned by one party over transmission lines owned by another. In fiscal 1966 BPA wheeled or transferred 12.5 billion kilowatt-hours of energy for other utilities.

BPA's wheeling program is an important revenue producer. In fiscal 1966 it produced \$4,314,000, or over 4 per cent of BPA's total revenues.

By 1970 we expect wheeling to bring in about \$10.4 million, or 7 per cent of our total revenues.

BPA's wheeling policy originated in the 1950's when Grant and Chelan County PUD's built Priest Rapids and Rocky Reach dams. To facilitate the financing of these projects, BPA agreed to wheel power from the dams to utilities who owned a fractional share of their output. The policy developed further when Grant County built Wanapum Dam. BPA agreed to wheel secondary power, although some of this power displaced its own sales.

Our wheeling policy now conceives as its goal the construction, in cooperation with other utilities, of a regional transmission system as reliable and efficient as could be built if a single utility owned all the Northwest's electrical facilities. We not only make

our lines available to wheel for others but, where circumstances warrant, use the lines of non-Federal utilities to wheel BPA power.

The wheeling program has saved many millions of dollars for Northwest non-Federal utilities and for BPA. And this has meant lower electric bills for Northwest consumers.

TABLE 5
GENERATION BY THE PRINCIPAL ELECTRIC UTILITIES
SYSTEMS OF THE PACIFIC NORTHWEST 1/

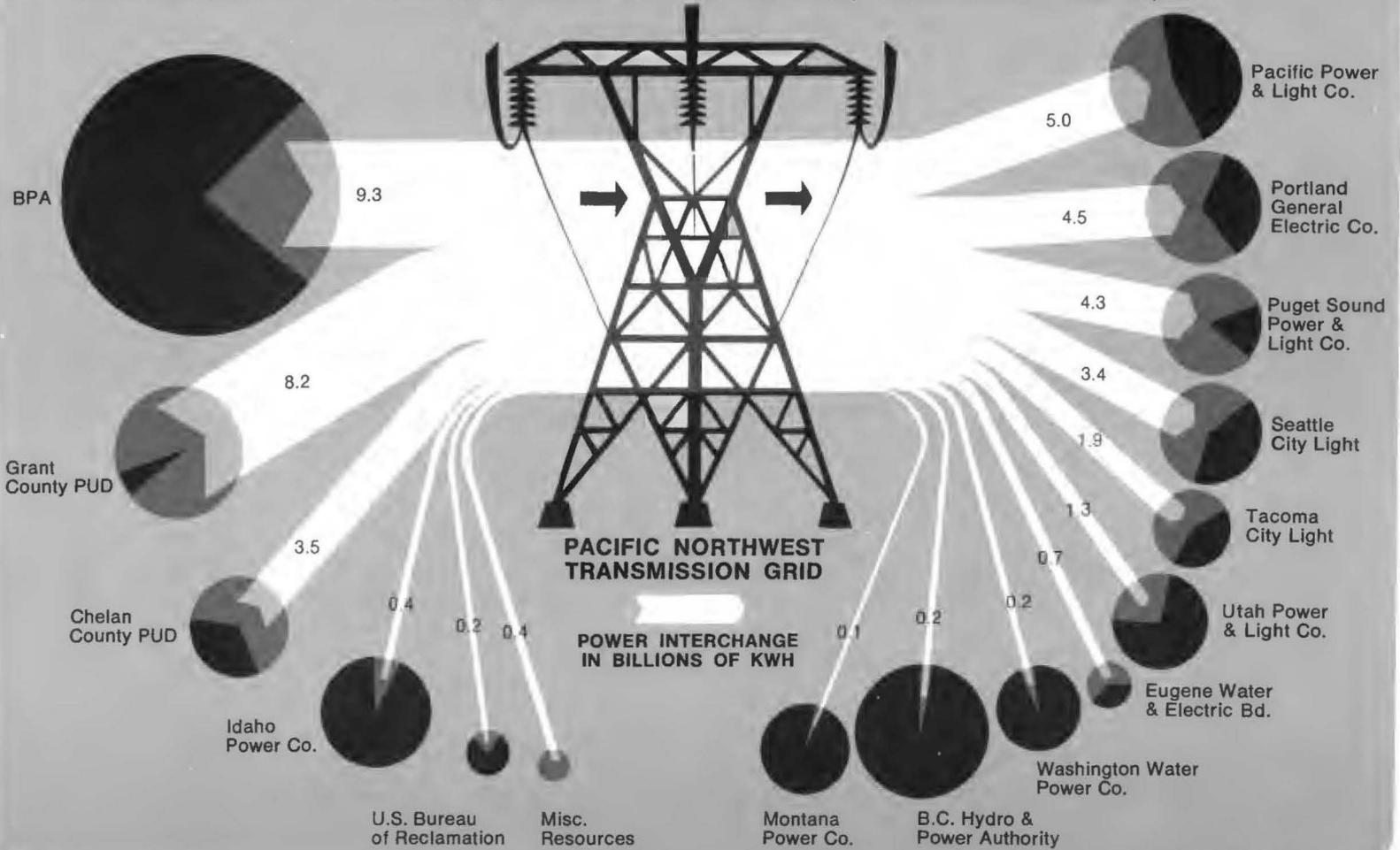
Fiscal Year 1966

	Kilowatt- hours (Billion)	Of Total Generation (Percent)
Publicly Owned:		
U.S. Columbia River System 2/	41.0	51.2
Grant County PUD	8.7	10.9
Chelan County PUD	5.2	6.5
Seattle City Light	2.3	2.9
Tacoma City Light	1.3	1.6
Pend Oreille County PUD	0.5	0.6
Eugene Water and Electric Board	0.4	0.5
Total Publicly Owned	59.4	74.2
Privately Owned:		
Idaho Power Company	5.6	7.0
Montana Power Company	4.2	5.2
Pacific Power & Light Co.	4.1	5.1
Washington Water Power Co.	3.7	4.6
Portland General Electric Co.	2.2	2.8
Puget Sound Power & Light Co.	0.9	1.1
Total Privately Owned	20.7	25.8
Total Generation	80.1	100.0

1/ Generation shown is for members of the Northwest Power Pool plus Pend Oreille County PUD and Washington Public Power Supply System. Utah Power & Light Co., British Columbia Hydro and Power Authority and U.S. Bureau of Reclamation, who are members of the Power Pool, are not included because their service area lies outside the Pacific Northwest region.

2/ Includes generation from the Washington Public Power Supply System's Hanford steam plant (NPR).

PACIFIC NORTHWEST COORDINATED SYSTEM NET OPERATIONS, YEAR ENDING JUNE 30, 1966





San Juan cable

A new cable to serve the San Juan Islands was laid in 1966, supplementing the 15-year-old cable that has failed twice. At midsummer more than six miles of 34,500-volt submarine cable was loaded on a cable laying vessel, the Inagua Shipper. She set sail from Newington, N. H., for Anacortes, Washington, via the Panama Canal.

On September 6, during a period when there was a minimum difference between flood and ebb tides, the first 2.1-mile section of cable was laid across Lopez Sound. The 4.8-mile section across Rosario Strait where the water goes to a depth of 300 feet, was laid the next day. Shore teams went to work backfilling the trenches on the beaches, and splicers began making connections. A switch was thrown October 17 and the cable began carrying electricity.

The cable was manufactured and laid under a \$1,150,000 contract with Simplex Wire and Cable Company of Cambridge, Massachusetts.

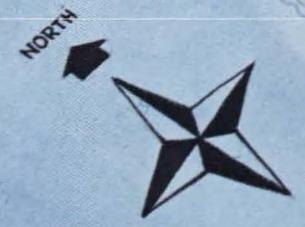
The first San Juan cable was laid in April 1951. In 1964 in a "first" for the utility industry BPA used a two-man submarine to inspect the cable. It was deteriorating. BPA immediately took steps to design and purchase a new cable. However, before the new cable could be installed, the old cable failed twice—first in November 1964 and again in August 1965.

Both the new and old cables are now in service. They are being operated at 25,000 volts. The cables deliver power from the mainland to Orcas Power and Light Company which serves some 6,000 persons on six main islands of the archipelago.



INTERCONNECTED BPA GRID

- — Bonneville Power Administration, Existing
- — Bonneville Power Administration, Under Construction
- Portland General Electric
- Pacific Power & Light
- California Power Pool
- Bureau of Reclamation
- City of Los Angeles
- Arizona Public Service Company
- Non-federal: Builder to be determined
- ★ CANADIAN TREATY STORAGE DAMS
- PRINCIPAL FEDERAL DAMS



Pacific Ocean

San Francisco

Los Angeles

Willard Crocker

Phoenix

Hoover Dam

NEVADA

OREGON

SNAKE RIVER

WASHINGTON

Spokane

RIVER

IDAHO

COLUMBIA RIVER

MONTANA

UTAH

WYOMING



main grid construction

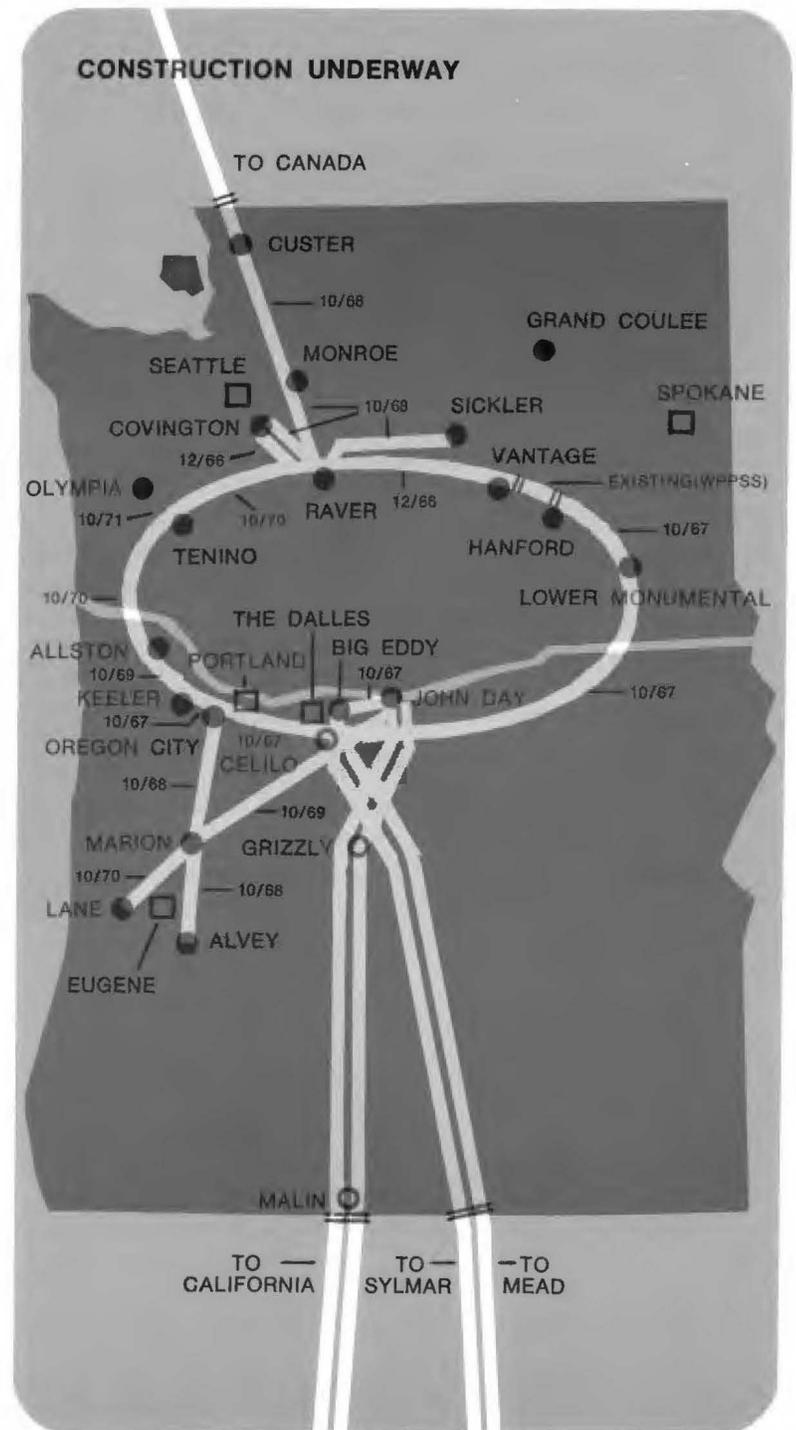
During Fiscal 1966 the following transmission projects were being added to BPA's main grid. The lines are in various stages of construction. Some will require several years to complete. Lines listed here will greatly enlarge BPA's 500,000-volt grid, which when finished will be the largest 500,000-volt grid in the United States.

LOWER MONUMENTAL-HANFORD: 58 miles, 500-kv from Lower Monumental Dam on the Snake River in Washington to a switching station at Washington Public Power Supply System's Hanford generating plant. Material is being delivered. The purchase of rights-of-way was completed in fiscal 1966. Construction will start early in 1967. Energization date: October 1967.

LOWER MONUMENTAL-JOHN DAY: 138 miles, 500-kv from Lower Monumental Dam to John Day Substation. This line and the Lower Monumental-Hanford line will integrate in the main grid power generated at Hanford and Federal dams on the Lower Snake River. Energization date: October 1967.

HANFORD-JOHN DAY: 97 miles, 500-kv from Hanford to John Day Substation. This line will increase transmission capacity from Vantage, Hanford and the Lower Snake plants to western Oregon. Energization date: October 1968.

JOHN DAY-KEELER: 130 miles, 500-kv from John Day Substation to Keeler Substation near Portland. Seventy-one and a half miles have been completed between Big Eddy Substation at The Dalles and Keeler and are now in operation at 230 kv. When completed in the fall of 1967, the entire line will be



energized at 500 kv, providing capacity to serve increasing loads in Portland and the Willamette Valley. Energization date: October 1967.

KEELER-ALLSTON: 43 miles, 500-kv from Keeler Substation to Allston Substation located in Oregon across the Columbia River from Longview, Washington. This is the first link of a tie between Puget Sound area and Portland. Initially, it will provide capacity to serve increased loads along the Lower Columbia River. Land acquisition is in progress. Major material is being ordered. Energization date: October 1969.

TENINO-ALLSTON: 57 miles, 500-kv from Tenino Substation at Tenino, Washington, to the Allston Substation. This is the second link in the tie between Puget Sound and Portland. Energization date: October 1970.

TENINO-OLYMPIA: 9 miles, 500-kv from Tenino Substation to Olympia Substation. The Olympia terminus will provide capacity to serve new loads in the Olympia and Tacoma areas as well as on the Olympic Peninsula. Energization date: October 1971.

RAVER-TENINO: 62 miles, 500-kv from Raver Substation on the Vantage-Covington line to Tenino Substation. This line will complete the Puget Sound-Portland tie and provide a high degree of reliability for transmountain lines into both areas. Energization date: October 1970.

SICKLER-RAVER-COVINGTON: 127 miles, 500-kv from Sickler Substation near Rocky Reach Dam to Raver Substation southeast of Seattle, then west to Covington Substation near Kent. This will will integrate generation from Douglas County PUD's Wells Dam into the BPA system and add capacity to serve new loads in northwestern Washington. Energization date: October 1968.

RAVER-MONROE-CUSTER: 65 miles, 500-kv from Raver Substation to Arlington, Washington. An initial 70-mile section

to the north of this line was completed between Arlington and Blaine and energized at 230 kv August 20, 1965. When the new 65-mile section is completed, the two line sections together with substation facilities will strengthen the BPA grid in northwest Washington and provide for Canadian interchanges with B.C. Hydro at Blaine. Energization date: October 1968.

OREGON CITY-MARION: 42 miles, 500-kv from Oregon City Substation to Marion Substation near Santiam, Oregon. Increasing load growth in the Willamette Valley will be served by this line. It will be strongly tied to the main grid at Oregon City. Energization date: October 1968.

MARION-ALVEY: 67 miles, 500-kv from Marion Substation to Alvey Substation near Eugene, Oregon. As an extension of the Oregon City-Marion line, it will provide main grid 500-kv service to the southern Willamette valley to serve new load. Energization date: October 1968.

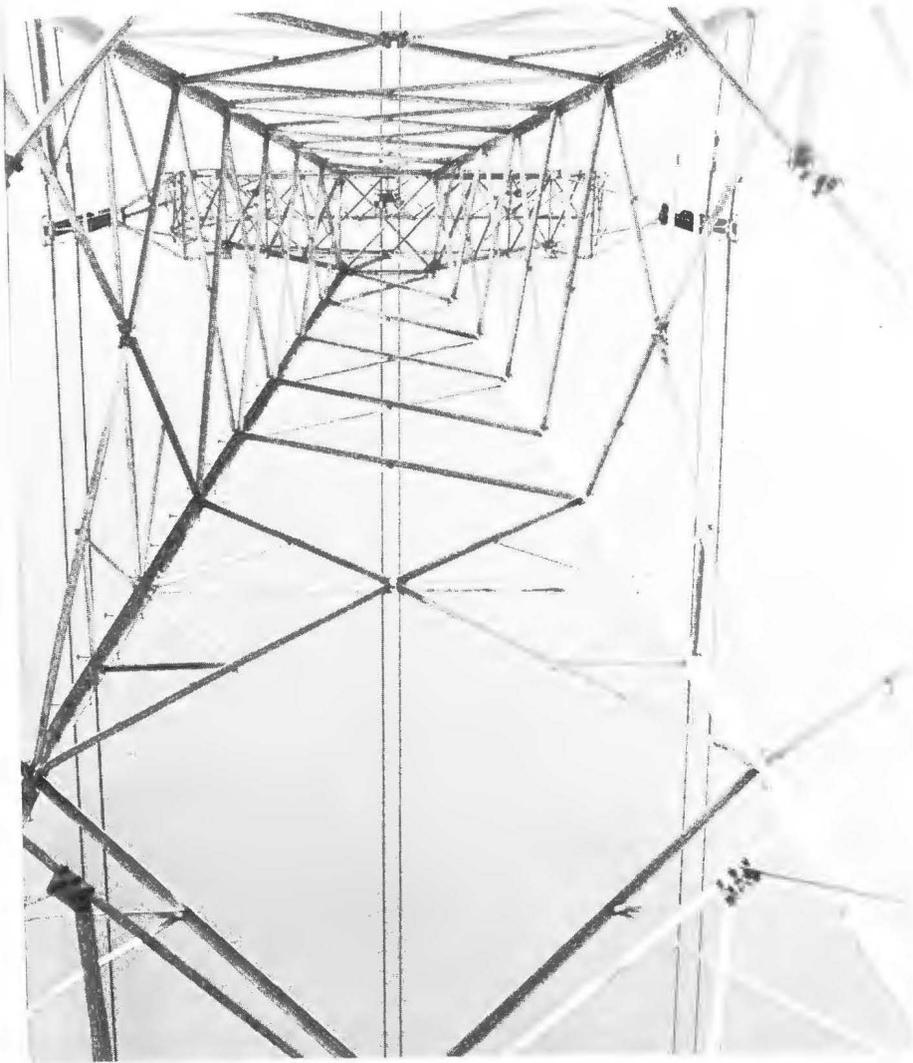
JOHN DAY-MARION: 129 miles, 500-kv from John Day Substation to Marion Substation. This line will complete the 500-kv loop from the main grid into Marion Substation providing alternate East-West transmission into the Willamette Valley. Energization date: October 1968.

MARION-LANE: 72 miles, 500-kv from Marion Substation to Lane Substation near Eugene, Oregon. With the Marion-Alvey line, this line will provide the second 500-kv line to Eugene. Energization will be scheduled somewhat later than the first line, depending on load growth in the area. Energization date: October 1970.

BELL-BOUNDARY NO. 2: 91 miles, 230-kv from Bell Substation at Spokane to Boundary Substation at Boundary Dam. The first line was energized November 5, 1965. It serves as an interconnection with Canada. When the second line is completed, the two lines will integrate the power from Boundary into the

*Clearing for the
Celilo Converter Station*

BPA grid. Energization date: July 1967.
 NOXON-CONKELLEY: 103 miles, 230-kv from Washington
 Water Power's Noxon Switchyard at Noxon Dam, Montana,
 to Conkelley Substation at Columbia Falls, Montana. The
 line will serve new loads at Columbia Falls and will help to
 integrate power from Libby Dam when that project is finished.
 Energization date: July 1968.



SYSTEM STATISTICS TABLE (Design Voltage)
 (as of June 30, 1966)

Transmission Lines under Construction F.Y. 1967

Voltage	Circuit Miles in Operation	Circuit Miles Under Construction
750 kv Direct Current		534.0
500 kv	199.0	1928.2
345 kv	731.4	17.0
287 kv	1663.3	
230 kv	3086.8	388.3
115 kv and lower	3918.3	87.0
Totals	9598.8	2954.5

the control system

During Fiscal 1966 BPA entered into a \$1,995,000 contract with Collins Radio Corporation for microwave facilities that will be used to operate and control the Pacific Northwest-Pacific Southwest Intertie. These facilities will increase the capacity of BPA's present control system by one third.

The control system for a large network of power lines must work without a second's interruption or the supply of electric energy to vast areas can suddenly be cut off.

BPA's power operations are controlled with a system of ex-



tremely reliable communications channels supported by two small, custom built computers. The system is more than a communications system. It senses the changing conditions on the power network and gives the dispatchers the long arm they need to reach out across the network and respond. It also permits dispatchers to balance generation with loads in ways that make the most efficient use of the dams and the water flowing from one dam to another and on to the sea.

When BPA first began to dispatch power, one operator simply telephoned another and waited while the second man walked out into the yard and threw a switch. Today the electronic impulses flash through the control system in a weird series of sounds that strike the ear like a cacophony from space. These impulses operate relays, routinely close and open switches, locate faults, and even measure the thickness of ice on lines at remote points.

Humans simply do not have the ability to receive information, digest it, and make decisions within time limits the transmission network can tolerate. As a result, the control system has evolved to where it now provides semi-automatic protection for the transmission network.

The communications channels *must* be reliable. BPA now has 56 microwave radio stations and more than 65,000 circuit miles of audio channels, some of which can carry up to 600 messages at once. To operate its sections of the Intertie BPA plans to install 22 radio stations equipped for 38,600 circuit miles of control channels.

Out of a total of 273 substations BPA has 15 which are operated by remote control from central locations. Operators at these central points use the control channels to operate circuit breakers, control voltages and meter the flow of power at stations that are miles away.

To keep pace with its responsibilities BPA must further automate its control system in the next few years. When the Canadian Treaty dams are built, we will be able to control the Columbia

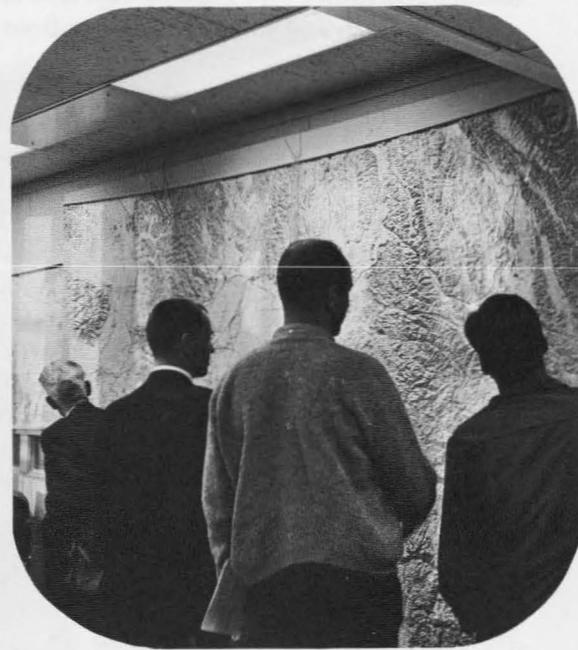
River more effectively. Hence, we face new concepts in managing the river. And when the Pacific Intertie is in operation huge amounts of power will flow in and out of the region. Loads and resources will have to be estimated on an hourly basis so that we may deliver our surpluses to utilities in the Southwest, or receive imports on the most economical basis.

The solution to the problems of automation will be computers linked to the system by highly reliable communications channels. The channels will collect great amounts of data, feed it to the computers, and relay instantaneous decisions to distant points so that we can get the greatest use and the highest return from our power resources.

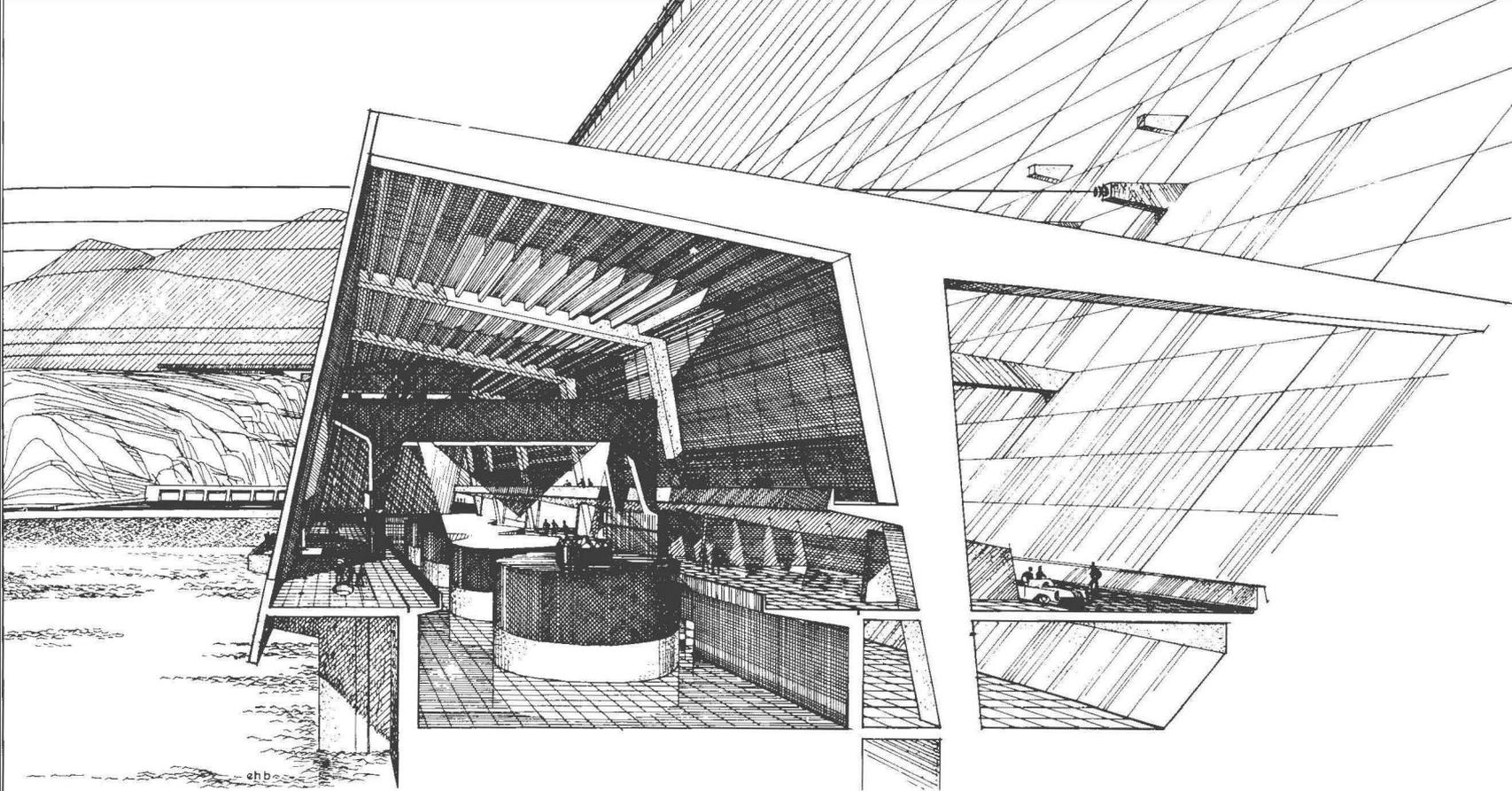
The work of the automatic control system will include, besides data collection and analysis: Load forecasting, generation scheduling, the exchange of information among utilities, system dispatch and control, and the information needed to make marketing decisions embracing millions of dollars.

The computers also will be programmed to make emergency decisions when something goes wrong on the transmission network. The human eye and the human hand can no longer be depended on always to respond quickly enough. The grid will soon be too big, too complex, and the consequences of mistakes too serious, to use present methods of control.

The present control center in the headquarters building at Portland is not adequate to house the control center for a new automated system. Because the present center is above ground and its microwave antennae clustered on the roof, it is somewhat of a security risk. An architect is now making preliminary plans for locating the control center at Rose Substation near Vancouver, about 12 miles from the present headquarters building. It was located there prior to 1951. There is ample space at Ross for an underground center that would be protected from blast, fallout and other hazards.



This year, May 26 was BPA night—an open house for employees, their families and guests, offering an inside look at how BPA does its job. Visitors saw nearly 25 exhibits and special demonstrations, including closeup looks at a BPA helicopter, 500-KV hardware, computer rooms and the control center. A prize winning new film, BPA's "The World Behind Your Lightswitch," ran to a packed house in the auditorium.



financial report

Our program to improve BPA's financial status reached fruition in fiscal 1966. Annual revenues exceeded \$100 million, the highest in history. Cost increases were moderate.

In the years since BPA operations began, its revenues through

June 30, 1966, have totaled \$1,254,607,000. A total of \$433,055,000 has been applied to interest costs, \$365,709,000 to operation and maintenance costs, and \$455,843,000 has gone to repay the investment in the Columbia River Federal Power System.

A significant development occurred in June when Congress passed the bill authorizing construction of the third powerhouse at Grand Coulee Dam. This bill eliminated the Bonneville Project Act requirements for an annual financial report for BPA by December of each year and substituted a requirement for an annual consolidated system financial report.

REPAYMENT OF PLANT INVESTMENT ALLOCATED TO COMMERCIAL POWER

Authorized projects of the Columbia River Federal Power System

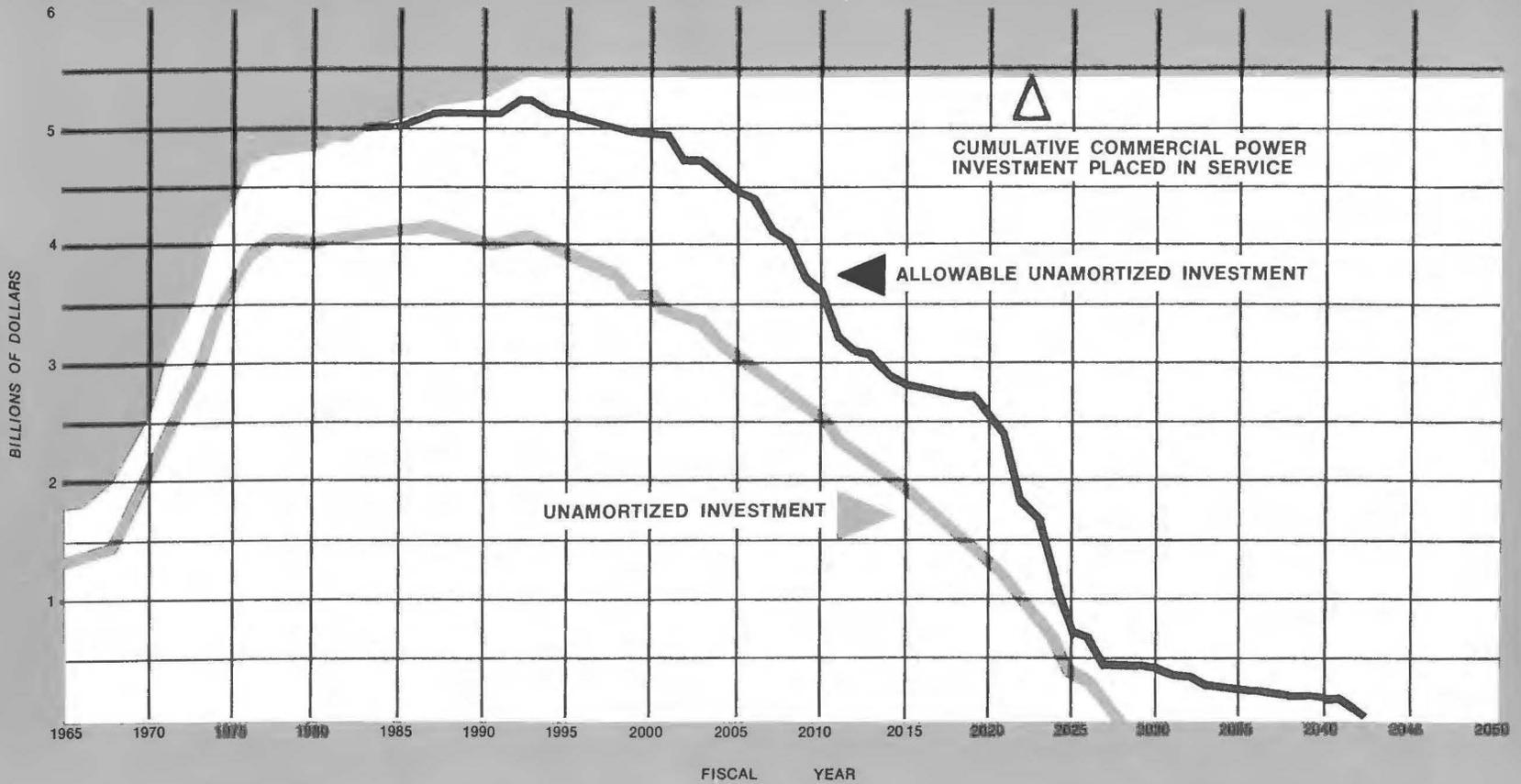


TABLE 6
COLUMBIA RIVER FEDERAL POWER SYSTEM

Operating Results on the Repayment Basis
 Fiscal Years 1966 and 1965

(In thousands of dollars)

REVENUES	F.Y. 1966	F.Y. 1965	Increase (Decrease)	
			Amount	Percent
Bonneville Power Administration				
Sales of electric energy:				
Publicly owned utilities	48,516	41,738	6,778	16.2
Privately owned utilities	9,262	5,537	3,725	67.3
Federal agencies	5,571	6,746	(1,175)	(17.4)
Aluminum industry	26,293	22,998	3,295	14.3
Other industry	5,370	4,950	420	8.5
Total	<u>95,012</u>	<u>81,969</u>	<u>13,043</u>	15.9
Other operating revenues:				
Wheeling revenues	4,314	4,397	(83)	(1.9)
Other revenues	1,135	917	218	23.8
Total	<u>5,449</u>	<u>5,314</u>	<u>135</u>	2.5
Total Bonneville Power Administration revenues	100,461	87,283	13,178	15.1
Associated Projects				
Other operating revenues	2,707	2,829	(122)	(4.3)
Total power system operating revenues	<u>103,168</u>	<u>90,112</u>	<u>13,056</u>	14.5
 EXPENSES				
Purchased power	1,226	1,615	(389)	(24.1)
Operation expenses	17,305	16,695	610	3.7
Maintenance and other expenses	10,335	10,354	(19)	(0.2)
Total power system expenses	<u>28,866</u>	<u>28,664</u>	<u>202</u>	0.7
 INTEREST				
Interest on Federal investment	36,676	36,130	546	1.5
Less interest charged to construction	1,152	906	246	27.2
Total power system interest	35,524	35,224	300	0.9
Total power system expenses and interest	<u>64,390</u>	<u>63,888</u>	<u>502</u>	0.8
 BALANCE AVAILABLE FOR REPAYMENT OF POWER SYSTEM INVESTMENT	<u>38,778</u>	<u>26,224</u>	<u>12,554</u>	47.9

The legislative history of the "basin account" provisions of the new law make it clear that the power system financial report should be on the repayment basis, the basis which governs wholesale power rates. This is the basis evaluated by the Federal Power Commission in its review and approval of our rates in December 1965. The financial discussions which follow are on the repayment basis, rather than a depreciation cost accounting basis.

Table 6 is a summary on the repayment basis of financial results for fiscal 1966 as compared with fiscal 1965. The revenue section of the table shows the details by class of customer of the 15.9% increase in power sales over the prior year. The increase of 14.3% for the aluminum industry is especially important to the Pacific Northwest economy. Plants were operating near full capacity. New contracts signed in the past year assure a continuation of the boom in this industry.

The region's basic industry, wood products, is down from last year's high; employment is declining. The employment to be provided by the construction and operation of new aluminum facilities will help offset the drop in the wood products industry.

The 16.2% increase over the previous year in sales to our publicly-owned customers is the largest in more than a decade. It reflects a healthy growth in the economy, the increased use of power by individual customers of these utilities, and, to a small extent, revenues from the wholesale power rate increase December 20, 1965. The rate increase added about \$1.3 million to BPA's total revenue for fiscal 1966. This is less than 10% of the total increase in power sales.

The upswing in revenues was not accompanied by corresponding increases in costs. In fact, the two major cost categories for the power system—interest, and operation and maintenance—are up less than 1% each over the previous year. Table 6 shows some of the details. The net result is that we have a much larger amount than last year to apply to repayment of the investment—\$38.8 million for fiscal 1966, as compared with \$26.2 million for fiscal 1965.

The repayment basis recognizes that the current requirements—to cover interest on the Government's investment, and to pay the operation and maintenance costs—come first. The balance in excess of these requirements each year is applied to repay the investment. A 50-year repayment period has been established for each generating project, and 40 years, the average service life, is used as the repayment period for each year's increment of transmission investment.

The repayment analysis projects these requirements to the end of the repayment period for the last project to be added to the system. So long as the actual unpaid balance is less than the allowable unpaid balance, we are meeting our repayment obligations.

Under this method, the amount repaid in any one year is not in itself significant to demonstrate our repayment ability for the entire payout period. The important test is whether revenues will fully repay the power investment, and the required aid to irrigation, within the total period allowed. This method has the advantage of averaging repayment requirements over the entire repayment period. It levels out year-to-year fluctuations and permits stable rates for extended periods.

The current repayment analysis, Table 7, indicates that the present rate schedule will accomplish repayment within the period described. The chart on page 31 shows that the projected unpaid balance is less than the allowable unpaid balance throughout the period.

The General Accounting Office does not audit the projections made in the repayment analysis presented in Table 7. Power system financial statements for fiscal year 1966 on the cost accounting basis, which include depreciation on the compound interest method as one of the elements of costs, have been audited by the General Accounting Office. These statements, and the GAO's opinion letter are included as an addendum to this report, starting after page 37.

TABLE 7
COLUMBIA RIVER FEDERAL POWER SYSTEM — REPAYMENT STUDY
 Authorized Projects
 (All Amounts in \$1,000)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fiscal Year	Revenues	Operation and Maintenance Expense	Replacements (Annuity Basis) 2/	Interest Expense	Investment Placed in Service	Cumulative Investment in Service	Amortization	Unamortized Investment	Allowable Unamortized Investment	Cumulative Amount in Service	Amortization	Unamortized Amount	Allowable Unamortized Amount	Cumulative Surplus Revenues
Cumulative to 6-30-66 1/	1,254,607	365,709	—	433,055	1,835,839	1,835,839	455,843	1,379,996	1,834,293	346,108	—	346,108	346,108	
1967	111,900	37,152	11,403	35,052	73,345	1,909,184	28,293	1,425,048	1,900,293	353,641				
68	125,500	39,746	11,967	36,196	106,872	2,016,056	37,591	1,494,329	2,020,019	376,503				
69	137,600	44,320	14,454	37,956	311,042	2,327,098	40,870	1,764,501	2,173,019	398,176				
1970	149,600	48,384	15,208	49,230	301,775	2,628,873	36,778	2,029,498	2,440,166	416,752				
71	161,600	51,595	18,265	56,623	385,463	3,014,336	35,117	2,379,844	2,675,892	429,354				
72	172,400	53,853	19,831	66,398	280,028	3,294,364	32,318	2,627,554	3,320,500	445,676				
73	185,300	61,068	20,761	73,309	318,240	3,612,604	30,162	2,915,632	3,609,310	469,474				
74	183,600	67,952	22,055	81,346	496,030	4,108,634	12,247	3,399,415	4,116,927	493,029				
1975	195,700	70,298	24,220	96,883	320,900	4,429,534	4,299	3,716,016	4,557,408	511,815				
76	214,600	73,022	24,236	105,906	262,058	4,691,592	11,436	3,966,638	4,807,721	529,179				
77	225,000	74,646	25,493	113,049	89,850	4,781,442	11,812	4,044,676	4,874,062	547,332				
78	229,900	75,066	25,989	115,273	35,432	4,816,874	13,572	4,066,536	4,874,062	565,989				
79	237,600	75,678	25,989	115,896	—	4,816,874	20,037	4,046,499	4,872,515	582,539				
1980	243,600	76,271	26,641	115,730	10,899	4,827,773	24,958	4,032,440	4,888,653	596,311				
81	250,200	76,771	26,855	115,328	79,761	4,907,533	31,246	4,080,955	4,949,667	617,199				
82	250,600	77,266	26,855	116,715	35,987	4,943,521	29,764	4,087,178	4,939,462	634,563				
83	257,200	77,900	27,429	116,893	77,499	5,021,020	34,978	4,129,699	5,017,617	652,716				
84	260,400	78,090	27,429	118,109	58,619	5,079,639	36,772	4,151,546	5,010,111	673,238				
1985	263,600	78,553	27,771	119,149	30,869	5,110,508	38,127	4,144,288	5,027,856	687,443				
86	267,900	78,980	28,168	118,941	43,918	5,154,426	41,811	4,146,395	5,079,110	701,648				
87	274,200	79,438	28,474	119,002	59,217	5,213,643	47,286	4,158,326	5,130,408	716,645				
88	277,900	79,901	28,857	119,344	35,184	5,248,827	49,798	4,143,712	5,149,442	734,009				
89	278,700	79,863	29,186	118,925	7,617	5,256,444	50,726	4,100,603	5,139,071	751,368				
1990	282,000	81,617	29,247	118,097	24,569	5,281,013	53,039	4,072,133	5,132,446					
91	286,200	82,537	29,654	117,277	53,010	5,334,022	56,732	4,068,411	5,129,400					
92	290,600	83,221	29,848	117,170	77,054	5,411,076	60,361	4,085,104	5,230,182					
93	295,400	83,681	30,427	117,651	66,032	5,477,109	63,641	4,087,495	5,231,652					
94	295,800	83,874	30,904	117,720	14,269	5,491,378	63,302	4,038,462	5,124,687					
1995	296,400	83,974		116,308	0		65,214	3,973,248	5,089,560					
96	296,800	84,374		114,430			67,092	3,906,156	5,049,038					
97	286,600	63,174		112,497			69,232	3,836,924	5,023,299		10,793	751,368	751,368	
98	285,400	58,874		110,503			85,119	3,751,805	4,991,006			740,575	740,575	
99	285,400			108,052			87,570	3,664,235	4,969,794			740,575	740,575	
2000	284,700			105,530			89,392	3,574,843	4,960,726			740,575	740,575	
01	285,000			102,955			74,920	3,499,923	4,939,643		17,347	723,228	723,228	
02	285,100			100,798			94,524	3,405,399	4,727,309			723,228	723,228	
03	285,300			98,075			97,447	3,307,952	4,711,626			723,228	723,228	
04	289,700			95,269			103,872	3,204,080	4,574,819		781	722,447	722,447	
2005				92,278			107,644	3,096,436	4,467,740			722,447	722,447	
06				89,177			110,745	2,985,691	4,427,909			722,447	722,447	
07				85,988			113,934	2,871,757	4,104,056			722,447	722,447	
08				82,707			117,215	2,754,542	4,010,182			722,447	722,447	
09				79,331			113,081	2,641,461	3,701,211		7,510	714,937	714,937	
2010				76,074			123,848	2,517,613	3,592,211			714,937	714,937	
11				72,507			127,415	2,390,198	3,249,772			714,937	714,937	
12				68,838			130,526	2,259,672	3,080,820		558	714,379	714,379	
13				65,079			106,863	2,152,809	3,044,290		27,980	686,399	686,399	
14				62,001			106,712	2,046,097	2,884,377		31,209	655,190	655,190	
2015				58,928			115,159	1,930,938	2,791,207		25,835	629,355	629,355	
16				55,611			113,167	1,817,771	2,767,687		31,144	598,211	598,211	
17				52,352			121,106	1,696,665	2,737,687		26,464	571,747	571,747	
18				48,864			131,875	1,564,790	2,700,961		19,183	552,564	552,564	
19				45,066			120,907	1,443,883	2,700,961		33,949	518,615	518,615	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fiscal Year	Revenues	Operation and Maintenance Expense	Replacements (Annuity Basis) 2/	Interest Expense	Investment Placed in Service	Plant Allocated to Commercial Power Cumulative Investment in Service	Amortization	Unamortized Investment	Allowable Unamortized Investment	Cumulative Amount in Service	Irrigation Assistance Amortization	Unamortized Amount	Allowable Unamortized Amount	Cumulative Surplus Revenues
2020	289,700	58,874	30,904	41,584		5,491,378	140,229	1,303,654	2,540,839	751,368	18,109	500,506	500,506	
21				37,545			155,972	1,147,682	2,389,373		6,405	494,101	494,101	
22				33,053			159,831	987,851	1,806,375		7,038	487,063	487,063	
23				28,450			165,365	822,486	1,517,345		6,107	480,956	480,956	
24				23,688			164,532	657,954	1,131,168		11,702	469,254	469,254	
2025				18,949			168,205	489,749	770,357		12,768	456,486	456,486	
26				14,105			163,715	326,034	517,214		22,102	434,384	434,384	
27				9,390			184,207	141,827	453,873		6,325	428,059	428,059	
28				4,085			141,827	0	440,373		54,010	374,049	422,611	
29				0				0	440,373		199,922	174,127	417,312	
2030									409,026		174,127	0	412,469	25,795
31									349,025				408,808	225,717
32									327,525				401,020	425,639
33									257,115				375,759	625,561
34									244,515				360,155	825,483
2035									229,728				338,510	1,025,405
36									202,055				323,800	1,225,327
37									172,655				310,369	1,425,249
38									154,455				294,896	1,625,171
39									154,455				275,441	1,825,093
2040									139,667				255,281	2,025,015
41									139,667				237,552	2,224,937
42									28,539				226,501	2,424,859
43									0				209,137	2,624,781
44													190,984	2,824,703
2045													175,198	3,024,625
46													161,781	3,224,547
47													151,533	3,424,469
48													134,169	3,624,391
49													116,805	3,824,313
2050													98,652	4,024,235
51													78,130	4,225,157
52													63,925	4,424,079
53													49,720	4,624,001
54													34,723	4,823,923
2055													17,359	5,023,845
56	289,700	58,874	30,904			5,491,378				751,368			0	5,223,767
TOTALS	25,604,007	6,041,540	2,603,664	5,492,290		5,491,378	5,491,378			751,368	751,368			5,223,767

1/ The addition to the system of the Bureau of Reclamation's Southern Idaho projects as of July 1, 1963, is reflected in the cumulative totals as follows: Revenues and expenses attributable to the Southern Idaho projects since July 1, 1963, are included. Expenses prior to that date have been excluded. The cumulative commercial power plant investment, however, includes the entire investment in the Southern Idaho projects since their inception. This is necessary to show the total investment repayable from system revenues. To reconcile this amount to the unamortized investment, therefore, the cumulative amount of amortization includes the \$11,153,000 of plant investment amortized by the Bureau of Reclamation through June 30, 1963. This amount has also been included in the cumulative revenues so that they will equal the sum of cumulative operation and maintenance expense, cumulative interest, and cumulative amortization.

2/ The replacement annuity is the result of a calculation to determine the amount of revenues needed to repay, with interest, the investment in new facilities which are required to replace worn out or obsolete facilities. The Administration's policy is to repay the investment in replacement facilities within their service lives. The replacement annuity, however, is strictly a calculation of the amount of revenues required to meet this objective, and does not represent how revenues are actually applied. In actual practice, revenues are applied first to cover the costs of operations, maintenance, and interest.

All remaining revenues are applied to repay the capital investment. When replacements are made, they are added to the capital investment and repaid as a part thereof. Provided the replacement annuity has been calculated correctly, and provided that revenues are sufficient to cover the annuity in addition to other costs, revenues will be sufficient to amortize both the initial capital investment and the replacement investment within the allowable repayment periods for each.

As a result of this procedure, however, the replacement annuity must be recalculated whenever the repayment study is updated to show actual cumulative results through another fiscal year. This is because the amount of the annuity for each year is not actually set aside for future replacements, but is used to repay the capital investment. Mathematically, the effect is to reduce by one year the period over which the annuity is calculated. Hence, each time the repayment study is updated by one year, the amount of the annuity must be increased. The amount of the increase for fiscal year 1966 was \$372,000 per year.

As the annuity method does not reflect how revenues are actually applied, the Administration plans to discontinue it and in lieu thereof show expected future replacements as additions to the capital investment in the year they are expected to occur. However, the changeover must await completion of a compilation of expected future replacements at all of the projects included in the system.

TABLE 8
UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
REVENUE AND REVENUE TRENDS

Sales of energy, firm and nonfirm
by class of customer and miscellaneous power revenues

<u>Class of Customer</u>	(In thousands of dollars)									
	<u>F.Y. 1957</u>	<u>F.Y. 1958</u>	<u>F.Y. 1959</u>	<u>F.Y. 1960</u>	<u>F.Y. 1961</u>	<u>F.Y. 1962</u>	<u>F.Y. 1963</u>	<u>F.Y. 1964</u>	<u>F.Y. 1965</u>	<u>F.Y. 1966</u>
<u>Aluminum Industry</u>										
Firm	\$13,693	\$13,980	\$14,227	\$15,293	\$14,978	\$14,341	\$14,382	\$15,733	\$16,068	\$17,299
Nonfirm	6,333	3,512	2,384	2,168	1,981	3,042	3,715	5,297	6,930	8,994
Total Aluminum.....	<u>20,026</u>	<u>17,492</u>	<u>16,611</u>	<u>17,461</u>	<u>16,959</u>	<u>17,383</u>	<u>18,097</u>	<u>21,030</u>	<u>22,998</u>	<u>26,293</u>
Trend Percentages 1/.....	100%	87%	83%	87%	85%	87%	90%	105%	115%	131%
<u>Other Industry</u>										
Firm	2,836	3,006	3,138	3,163	3,205	3,194	2,927	3,431	3,608	3,801
Nonfirm	748	407	680	868	613	855	625	1,064	1,342	1,569
Total Other Industry.....	<u>3,584</u>	<u>3,413</u>	<u>3,818</u>	<u>4,031</u>	<u>3,818</u>	<u>4,049</u>	<u>3,552</u>	<u>4,495</u>	<u>4,950</u>	<u>5,370</u>
Trend Percentages 1/.....	100%	95%	107%	112%	107%	113%	99%	125%	138%	150%
<u>Publicly Owned Utilities</u>										
Firm	21,384	22,593	24,861	28,304	29,520	32,598	35,466	36,965	41,230	46,643
Nonfirm	660	981	768	357	583	1,340	682	746	508	1,873
Total Publicly Owned Utilities.....	<u>22,044</u>	<u>23,574</u>	<u>25,629</u>	<u>28,661</u>	<u>30,103</u>	<u>33,938</u>	<u>36,148</u>	<u>37,711</u>	<u>41,738</u>	<u>48,516</u>
Trend Percentages 1/.....	100%	107%	116%	130%	137%	154%	164%	171%	189%	220%
<u>Privately Owned Utilities</u>										
Firm	10,476	11,526	11,846	9,907	8,338	5,678	6,900	4,974	4,875	7,743
Nonfirm	3,974	2,645	2,552	2,659	1,301	1,536	332	781	662	1,519
Total Privately Owned Utilities.....	<u>14,450</u>	<u>14,171</u>	<u>14,398</u>	<u>12,566</u>	<u>9,639</u>	<u>7,214</u>	<u>7,232</u>	<u>5,755</u>	<u>5,537</u>	<u>9,262</u>
Trend Percentages 1/.....	100%	98%	100%	87%	67%	50%	50%	40%	38%	64%
<u>Federal Agencies</u>										
Firm	4,777	5,860	6,015	5,986	6,194	6,217	6,646	7,089	5,874	3,346
Nonfirm	90	194	388	239	281	253	303	182	872	2,225
Total Federal Agencies.....	<u>4,867</u>	<u>6,054</u>	<u>6,403</u>	<u>6,225</u>	<u>6,475</u>	<u>6,470</u>	<u>6,949</u>	<u>7,271</u>	<u>6,746</u>	<u>5,571</u>
Trend Percentages 1/.....	100%	124%	132%	128%	133%	133%	143%	149%	139%	114%
<u>Total Sales of Electric Energy</u>										
Firm	53,166	56,965	60,087	62,653	62,235	62,028	66,321	68,192	71,655	78,832
Nonfirm	11,805	7,739	6,772	6,291	4,759	7,026	5,657	8,070	10,314	16,180
Total Sales of Energy.....	<u>64,971</u>	<u>64,704</u>	<u>66,859</u>	<u>68,944</u>	<u>66,994</u>	<u>69,054</u>	<u>71,978</u>	<u>76,262</u>	<u>81,969</u>	<u>95,012</u>
Trend Percentages 1/.....	100%	100%	103%	106%	103%	106%	111%	117%	126%	146%
<u>Miscellaneous Power Revenues</u>										
.....	1,299	1,871	1,615	2,054	2,707	5,429	5,726	6,589	5,314	5,449
Trend Percentages 1/.....	100%	144%	124%	158%	208%	418%	441%	507%	409%	419%
<u>Total Revenue</u>										
.....	<u>66,270</u>	<u>66,575</u>	<u>68,474</u>	<u>70,998</u>	<u>69,701</u>	<u>74,483</u>	<u>77,704</u>	<u>82,851</u>	<u>87,283</u>	<u>100,461</u>
Trend Percentages 1/.....	100%	100%	103%	107%	105%	112%	117%	125%	132%	152%

1/ F.Y. 1957 base year.



COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

March 1, 1967

financial statements

Dear Mr. Secretary:

The General Accounting Office has examined the accompanying financial statements prepared by the Bonneville Power Administration, Department of the Interior, for the Columbia River Federal Power System for fiscal year 1966. The designation "Columbia River Federal Power System" is used to describe the integrated power system in the Pacific Northwest, consisting of (1) power generating facilities of the Corps of Engineers (Civil Functions), Department of the Army, and of the Bureau of Reclamation, Department of the Interior, and (2) transmission facilities of the Bonneville Power Administration. The Administration markets the power generated by the integrated system.

The accompanying statements present the financial results of operations for fiscal year 1966 in the generating, transmitting, and marketing of electric power and the financial position of the System at June 30, 1966. The Administration has also included a statement presenting the source and application of funds for the fiscal year. Except for the statement of source and application of funds, which was not prepared in previous years, the financial statements are presented on a comparative basis with those for fiscal year 1965. The statements are not comparable with those presented for fiscal years 1963 and 1964, which were statements for the Administration only. Also, comparability with prior years' statements is affected because the method of measuring financial conditions and operating results of the System changed substantially during fiscal years 1963, 1964, and 1965, principally by recognizing depreciation computed on the compound-interest basis as an operating expense, as disclosed in the notes to the financial statements for fiscal year 1965.

Our examination of the financial statements was made in accordance with generally accepted auditing standards and included such tests of the accounting records of the Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration and such other auditing procedures as we considered necessary in the circumstances. Our previous examination of financial statements of the System was made for fiscal year 1965. Our examinations were made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Late in fiscal year 1966, the Corps approved conversion to the compound-interest method of depreciating plant costs, consistent with similar action previously taken by the Administration and the Bureau of Reclamation. The Corps developed shortcut procedures for computing depreciation on the compound-interest basis because time did not permit computing the adjustments by using customary procedures.

Annual and accumulated depreciation included in the financial statements for Corps of Engineers projects, based on the shortcut procedures, in our opinion, are not fully acceptable. The amounts computed by the Corps replaced amounts included in the financial statements for fiscal year 1965 by the Bonneville Power Administration as an interim measure pending Corps' consideration of conversion from the straight-line method of depreciation to the compound-interest method. (See note 3 to the financial statements.)

Our tests indicated that, while the shortcut procedures produced a reasonably accurate estimate of compound-interest depreciation at June 30, 1966, considering all projects combined, these procedures also produced relatively large overstatements of depreciation for certain projects and relatively large understatements for others. If not corrected, the variations by project could significantly distort future financial statement presentations. Effective with fiscal year 1967, the Corps plans to use more acceptable procedures in computing final depreciation adjustments for recognition in the official accounts and in the financial statements.

At June 30, 1966, composite service lives used in computing depreciation on plant costs for multiple-purpose projects of the Corps of Engineers were not uniform for similar project features. (See note 3 to the financial statements.) On April 20, 1966, the Office of the Chief of Engineers established uniform service lives for plant features and sub-features to be applied effective with fiscal year 1967. The Corps plans to apply the new service lives retroactively to the start of project operations. At two of the projects, McNary and Ice Harbor, composite service lives for turbines and generators were revised in fiscal year 1965 from 35 to 65 years. This had the effect of increasing net power revenues about \$7.6 million through June 30, 1964, and about \$979,000 for fiscal year 1965. Additional adjustments are expected when the new service lives are applied at all multiple-purpose projects of the Corps.

The accounts and financial statements are also subject to additional adjustment because firm allocations of the cost of constructing joint-use facilities at 7 of the 16 generating projects in operation at June 30, 1966, had not been made to power and nonpower purposes. (See note 5 to the financial statements.) The cost of joint-use facilities at the seven projects amounted to about \$399.9 million at June 30, 1966, of which about \$178.1 million was tentatively allocated to power. Changes in allocations may require significant adjustments. For example, changes in fiscal year 1963 for The Dalles, McNary, and Columbia Basin projects resulted in transferring about \$63 million of the cost of joint-use facilities from power to nonpower purposes and decreasing annual operating expenses allocated to power. Further, the amount of net power revenues accumulated before fiscal year 1963 was increased by about \$5

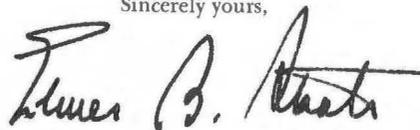
million because the accounts for The Dalles and McNary projects were adjusted retroactively to the start of project operations. In contrast, the change in fiscal year 1966 for the Ice Harbor project, as described in note 5 to the financial statements, illustrates that adjustments to allocations can be relatively insignificant. The Department of the Army advised us by letter dated January 27, 1967, that it was expected that firm cost allocations would be adopted for all Corps projects prior to our next report.

The foregoing matters and certain others discussed in the notes to the accompanying financial statements remain to be resolved for improved disclosure of the financial position and results of operations of the integrated power system. The more important of these other matters relate to (1) the inconsistency in the bases for determining interest expense and in the capitalization of interest costs during construction, (2) the inconsistency in capitalization of preliminary survey and investigation costs, and (3) the exclusion from the accounts of the costs applicable to power system operations for space rental and audit service furnished by other Federal agencies.

Subject to the financial effects, not now fully determinable, of adjustments for adoption of firm cost allocations, revisions of accrued depreciation, and the resolution of other matters described in the foregoing paragraphs, the accompanying financial statements, in our opinion, present fairly the assets and liabilities of the Columbia River Federal Power System at June 30, 1966, the financial results of its power operations, and the source and application of its funds for the year then ended, in conformity with accounting principles and standards prescribed for executive agencies of the Federal Government by the Comptroller General of the United States, applied on a basis consistent with that of the preceding period.

Copies of this report are being sent today to the Administrator, Bonneville Power Administration, the Commissioner of Reclamation, the Secretary of the Army, and the Chief of Engineers.

Sincerely yours,



Comptroller General
of the United States

Enclosures

The Honorable
The Secretary of the Interior

UNITED STATES OF AMERICA
COLUMBIA RIVER FEDERAL POWER SYSTEM
STATEMENT OF COMMERCIAL POWER REVENUES AND EXPENSES
FOR THE FISCAL YEARS ENDED JUNE 30, 1966 AND JUNE 30, 1965

(NOTES 1 AND 2)

(In thousands of dollars)

	Fiscal Year 1966	Fiscal Year 1965
OPERATING REVENUES:		
Sales of electric energy by Bonneville Power Administration:		
Publicly owned utilities	48,516	41,738
Privately owned utilities	9,262	5,537
Federal agencies	5,571	6,746
Aluminum industry	26,293	22,998
Other industry	5,370	4,950
Total	<u>95,012</u>	<u>81,969</u>
Other operating revenues:		
Wheeling revenues	4,314	4,397
Other revenues	3,842	3,746
Total	<u>8,156</u>	<u>8,143</u>
Total operating revenues	<u>103,168</u>	<u>90,112</u>
OPERATING EXPENSES:		
Purchased power	1,226	1,615
Operation	17,305	16,705
Maintenance	10,342	10,349
Depreciation (Note 3)	21,222	19,952
Total operating expenses	<u>50,095</u>	<u>48,621</u>
Net operating revenues	<u>53,073</u>	<u>41,491</u>
INTEREST AND OTHER DEDUCTIONS (Note 4):		
Interest on Federal investment	36,676	36,130
Interest charged to construction	1,152*	906*
Miscellaneous income deductions, net	7*	5*
Net interest and other deductions	<u>35,517</u>	<u>35,219</u>
NET REVENUES	<u>17,556</u>	<u>6,272</u>
ACCUMULATED NET REVENUES:		
Balance at beginning of year	202,791	129,790
Net revenues — current year	17,556	6,272
Prior years adjustments (Note 10)	2,522	66,729
Balance at end of year	<u>222,869</u>	<u>202,791</u>

*Deduction

“Notes to the financial statements”
are an integral part of this statement.

UNITED STATES OF AMERICA
COLUMBIA RIVER FEDERAL POWER SYSTEM
STATEMENT OF ASSETS AND LIABILITIES OF THE COMMERCIAL
POWER PROGRAM AS OF JUNE 30, 1966, AND JUNE 30, 1965 (NOTES 1 AND 2)

(In thousands of dollars)

<u>ASSETS</u>	June 30	
	1966	1965
FIXED ASSETS:		
Completed plant (Schedule A)	1,809,224	1,776,934
Retirement work in progress	2,945	1,611
	1,812,169	1,778,545
Less accumulated depreciation (Note 3)	206,359	189,767
	1,605,810	1,588,778
Construction work in progress (Schedule A)	489,755	318,044
Total fixed assets	2,095,565	1,906,822
CURRENT ASSETS:		
Unexpended funds	160,248	112,516
Special funds	1,323	1,025
Accounts receivable (Note 8)	15,846	13,211
Materials and supplies	6,447	4,906
Total current assets	183,864	131,658
DEFERRED CHARGE FOR PAYMENT OF IRRIGATION ASSISTANCE (SCHEDULE A) (Note 2)	346,108	335,693
OTHER ASSETS AND DEFERRED CHARGES:		
Trust funds	845	1,239
Other assets and deferred charges	2,182	905
Total other assets and deferred charges	3,027	2,144
Total Assets	2,628,564	2,376,317

“Notes to the financial statements”
are an integral part of this statement.

LIABILITIES

	<u>June 30</u>	
	<u>1966</u>	<u>1965</u>
INVESTMENT OF U.S. GOVERNMENT:		
Congressional appropriations	2,680,249	2,424,356
Revenues transferred to continuing fund	3,909	3,909
Transfers from other Federal agencies, net	21,671	16,538
Interest on Federal investment (Note 4)	<u>534,098</u>	<u>488,047</u>
Gross Federal investment	3,239,927	2,932,850
Less funds returned to U.S. Treasury	<u>1,231,704</u>	<u>1,129,334</u>
Net investment of U.S. Government	<u>2,008,223</u>	<u>1,803,516</u>
ACCUMULATED NET REVENUES:		
Balance at start of year	202,791	129,790
Net revenues current year (Exhibit 1)	17,556	6,272
Prior years adjustments (Note 10)	<u>2,522</u>	<u>66,729</u>
Balance at end of year	<u>222,869</u>	<u>202,791</u>
CURRENT LIABILITIES:		
Accounts payable (Note 9)	47,093	29,738
Employees accrued leave	<u>3,143</u>	<u>3,003</u>
Total current liabilities	<u>50,236</u>	<u>32,741</u>
LIABILITY OF U.S. GOVERNMENT FOR PAYMENT OF IRRIGATION ASSISTANCE (SCHEDULE A) (Note 2)	<u>346,108</u>	<u>335,693</u>
OTHER LIABILITIES AND DEFERRED CREDITS:		
Trust fund advances	845	1,239
Other deferred credits	<u>283</u>	<u>337</u>
Total other liabilities and deferred credits	<u>1,128</u>	<u>1,576</u>
Total Liabilities	<u>2,628,564</u>	<u>2,376,317</u>

UNITED STATES OF AMERICA
COLUMBIA RIVER FEDERAL POWER SYSTEM

STATEMENT OF ASSETS AND LIABILITIES OF THE COMMERCIAL
POWER PROGRAM AS OF JUNE 30, 1966, AND JUNE 30, 1965 (NOTES 1 AND 2)

(In thousands of dollars)

ASSETS

	June 30	
	<u>1966</u>	<u>1965</u>
FIXED ASSETS:		
Completed plant (Schedule A)	1,809,224	1,776,934
Retirement work in progress	2,945	1,611
	<u>1,812,169</u>	<u>1,778,545</u>
Less accumulated depreciation (Note 3)	<u>206,359</u>	<u>189,767</u>
	1,605,810	1,588,778
Construction work in progress (Schedule A)	489,755	318,044
Total fixed assets	<u>2,095,565</u>	<u>1,906,822</u>
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Special funds	1,323	1,025
Accounts receivable (Note 8)	15,846	13,211
Materials and supplies	6,447	4,906
Total current assets	<u>183,864</u>	<u>131,658</u>
DEFERRED CHARGE FOR PAYMENT OF IRRIGATION ASSISTANCE (SCHEDULE A) (Note 2)	<u>346,108</u>	<u>335,693</u>
OTHER ASSETS AND DEFERRED CHARGES:		
Trust funds	845	1,239
Other assets and deferred charges	2,182	905
Total other assets and deferred charges	<u>3,027</u>	<u>2,144</u>
Total Assets	<u>2,628,564</u>	<u>2,376,317</u>

"Notes to the financial statements"
are an integral part of this statement.

EXHIBIT 2

LIABILITIES

	June 30	
	<u>1966</u>	<u>1965</u>
INVESTMENT OF U.S. GOVERNMENT:		
Congressional appropriations	2,680,249	2,424,356
Revenues transferred to continuing fund	3,909	3,909
Transfers from other Federal agencies, net	21,671	16,538
Interest on Federal investment (Note 4)	<u>534,098</u>	<u>488,047</u>
Gross Federal investment	3,239,927	2,932,850
Less funds returned to U.S. Treasury	<u>1,231,704</u>	<u>1,129,334</u>
Net investment of U.S. Government	<u>2,008,223</u>	<u>1,803,516</u>
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Balance at start of year	202,791	129,790
Net revenues current year (Exhibit 1)	17,556	6,272
Prior years adjustments (Note 10)	<u>2,522</u>	<u>66,729</u>
Balance at end of year	<u>222,869</u>	<u>202,791</u>
CURRENT LIABILITIES:		
Accounts payable (Note 9)	47,093	29,738
Employees accrued leave	<u>3,143</u>	<u>3,003</u>
Total current liabilities	<u>50,236</u>	<u>32,741</u>
LIABILITY OF U.S. GOVERNMENT FOR PAYMENT OF IRRIGATION ASSISTANCE (SCHEDULE A) (Note 2)	<u>346,108</u>	<u>335,693</u>
OTHER LIABILITIES AND DEFERRED CREDITS:		
Trust fund advances	845	1,239
Other deferred credits	<u>283</u>	<u>337</u>
Total other liabilities and deferred credits	<u>1,128</u>	<u>1,576</u>
Total Liabilities	<u>2,628,564</u>	<u>2,376,317</u>

UNITED STATES OF AMERICA
 COLUMBIA RIVER FEDERAL POWER SYSTEM
 STATEMENT OF SOURCE AND APPLICATION OF FUNDS OF COMMERCIAL
 POWER PROGRAM FOR FISCAL YEAR ENDING JUNE 30, 1966 (NOTES 1 AND 2)
 (In thousands of dollars)

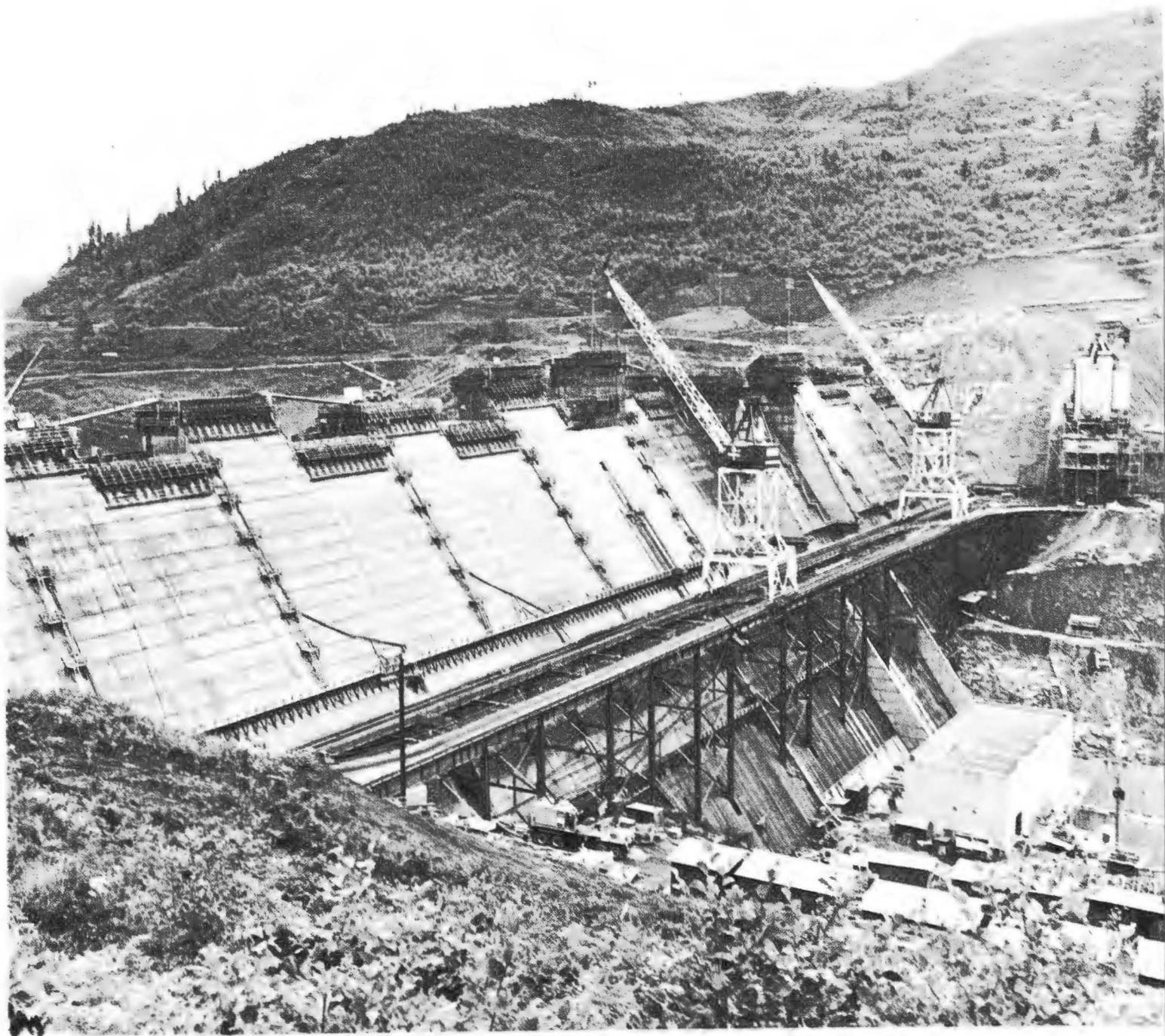
SOURCE OF FUNDS

Congressional appropriations	255,893	
Transfers from other Federal agencies	<u>5,133</u>	
Gross investment		261,026
Revenue from sale of electric energy	95,012	
Other operating revenue	<u>8,156</u>	
Total revenue		<u>103,168</u>
Total source of funds		<u><u>364,194</u></u>

APPLICATION OF FUNDS

Operation and maintenance expense (excluding depreciation expense of 19,165 and interest expense of 34,684)		29,241
Investment in electric utility plant, net (excluding capitalized interest of 11,367)		196,541
Return of funds to U.S. Treasury for:		
Operation and maintenance expense	29,241	
Interest on Federal investment	34,684	
Repayment of capital investment	<u>38,445</u>	
Total funds returned to U.S. Treasury		102,370
Increase in current assets and liabilities, net		34,711
Increase in other assets and deferred charges, net of other liabilities and deferred credits (excluding irrigation assistance)		<u>1,331</u>
Total application of funds		<u><u>364,194</u></u>

“Notes to the financial statements” are
 an integral part of this statement.



Green Peter Dam

UNITED STATES OF AMERICA
 COLUMBIA RIVER FEDERAL POWER SYSTEM
 AMOUNT AND ALLOCATION OF PLANT INVESTMENT
 AS OF JUNE 30, 1966 (NOTES 2 AND 5)
 PROJECTS IN SERVICE AND UNDER CONSTRUCTION

SCHEDULE A

(In thousands of dollars)

Project	COMMERCIAL POWER				Returnable from Commercial Power Revenues (Note 2)	ALLOCATED TO: IRRIGATION							Percent of Total Plant Investment Returnable From Commercial Power Revenues
	Total	Completed Plant (Notes 4, 5, 6 and 7)	Construction Work in Progress	Total		Returnable from Other Sources (Note 5)	Total Irrigation	NONREIMBURSABLE					
								Navigation	Flood Control	Fish and Wildlife	Recreation	Other	
Projects in service													
Transmission facilities (BPA)	673,660	602,637	71,023	673,660									100.0
Albeni Falls (CE)	32,454	31,893		31,893				134	173		254		98.3
Boise (BR)	65,446	4,809	9	4,818	10,792	34,890	45,682		14,946				23.9
Bonneville (CE)	89,225	61,148	190	61,338				27,887					68.7
Chief Joseph (CE)	155,383	155,269		155,269							114		99.9
Columbia Basin (BR)	574,123	171,200	2,138	173,338	288,822	64,140	352,962	1,000	46,320			503	80.5
Cougar (CE)	57,033	17,003		17,003		2,782	2,782	576	36,672				29.8
Detroit-Big Cliff (CE)	66,318	41,946		41,946		3,398	3,398	131	20,432			411	63.3
Hills Creek (CE)	48,714	14,014		14,014		4,987	4,987	623	29,090				28.8
Hungry Horse (BR)	102,118	77,413	36	77,449					24,669				75.8
Ice Harbor (CE)	136,774	93,328	486	93,814				42,221			739		68.6
Lookout Point-Dexter (CE)	94,211	41,914		41,914		5,070	5,070	853	46,297		77		44.5
McNary (CE)	303,788	256,520	28	256,548				46,829			411		84.4
Minidoka (BR)	36,244	1,842	3	1,845		34,077	34,077				28	294	5.1
Palisades (BR)	59,785	10,468	1	10,469	17,404	9,312	26,716		22,456		144		46.6
The Dalles (CE)	265,071	223,275	130	223,405				41,248			418		84.3
Yakima (BR)	63,723	4,545	2	4,547	10,173	47,851	58,024			1,152			23.1
Projects under construction													
Dworshak (CE)	23,290		20,570	20,570				737	1,263		720		88.3
Green Peter-Foster (CE)	69,045		27,499	27,499		2,744	2,744	610	38,089		103		39.8
John Day (CE)	334,107		237,209	237,209				62,784	10,812		774	22,528 ^(a)	71.0
Libby (CE)	13,548		10,338	10,338					2,509		93	608 ^(a)	76.3
Little Goose (CE)	39,387		28,237	28,237				11,122			28		71.7
Lower Granite (CE)	13,343		9,346	9,346				3,981			16		70.0
Lower Monumental (CE)	105,135		82,510	82,510				22,099			526		78.5
Irrigation assistance at 12 projects having no power generation	18,917				18,917		18,917						100.0
Total	3,440,842	1,809,224	489,755	2,298,979	346,108	209,251	555,359	262,835	293,728	1,152	4,445	24,344	76.9

BPA—Bonneville Power Administration
 CE—Corps of Engineers Project
 BR—Bureau of Reclamation Project

^(a)Non-reimbursable road costs

"Notes to the financial statements" are an integral part of this statement.

UNITED STATES OF AMERICA
COLUMBIA RIVER FEDERAL POWER SYSTEM
NOTES TO THE FINANCIAL STATEMENTS

Note 1. Basis of Financial Reporting

These financial statements are presented on the cost accounting basis which includes depreciation by the compound interest method as one of the elements of cost. The format of the financial statements is essentially the same as those presented for fiscal year 1965, except that a comparison of fiscal year 1965 and 1966 results is shown, and a Statement of Source and Application of Funds, (Exhibit 3) has been added.

The statements do not show financial results on a repayment basis either for the fiscal year or cumulatively. Repayment requirements are determined by separate analyses, based on a 50-year repayment period for each of the generating projects included in the system. The average composite service life upon which depreciation is based for the portion of these projects allocated to power is about 70 years. Hence, depreciation charges within the 50-year period are much less than repayment requirements for the same period. Wholesale power rates are based upon the 50-year repayment requirement. Accumulated Net Revenues on the cost accounting basis, therefore, are not a measure of the adequacy of wholesale power rates to complete repayment in fifty years. The Federal Power Commission approved Bonneville Power Administration's request for an average 3% increase in wholesale power rates in December 1965, based upon the 50-year repayment analysis.

Note 2. Composition of the Columbia River Federal Power System

The Columbia River Federal Power System (CRFPS) is the name applied to the Bonneville Power Administration (BPA) transmission system and the hydroelectric generating plants constructed and operated by the Corps of Engineers (Corps) and Bureau of Reclamation (Bureau) for which BPA is the power marketing agency. The CRFPS, however, is not an official government agency, nor is it an individual legal entity. BPA, the Corps, and the Bureau are separate agencies, separately managed and financed, with separate accounting systems. However, the transmission system and generating plants are operated as an integrated power system, and the financial statements are prepared under the name of the Columbia River Federal Power System to show the financial results of power operations on a system basis.

At June 30, 1966, the transmission system included 271 substations with a transformer capacity of 18,293,312 kilovolt-amperes, and 9,599 circuit miles of transmission lines.

At June 30, 1966, there were ten Corps projects and six Bureau projects in service for which BPA is the power marketing agent. Total installed generating capacity at all 22 power plants (one project includes three separate power plants, while four others include two power plants) was 6,678,150 kilowatts. The projects in service and under construction at June 30, 1966, are listed in Schedule A.

The Columbia River Federal Power System is required to provide from its power revenues repayment to the Federal Government for the costs of irrigation facilities that water users are unable to repay. At June 30, 1966, the contribution required to provide this assistance is \$346.1 million. (See Exhibit 2 and Schedule A.) Repayment of this obligation is scheduled to commence in 1997.

Note 3. Depreciation

Additional steps were taken in fiscal year 1966 to further the full implementation of adoption of the compound interest method of depreciation for all entities of the system. A principal feature of this method is that depreciation charges applicable to a project are lower in the early years of the project's life and higher in the later years. This method helps to produce a more level annual charge to operations when combined with interest expense than does the straight line method of depreciation, since interest expense is higher in the early years and lower in the later years.

BPA converted from the straight line method to the compound interest method, using an interest factor of 2½%, in fiscal year 1963, and adjusted its accounts retroactively to the start of operations.

The Bureau adopted the compound interest method in fiscal year 1965, using an interest factor of 3% (2½% for the Kennewick Division of the Yakima Project). The accounts were adjusted retroactively to the start of operations for two large projects—Columbia Basin and Hungry Horse Projects—in fiscal year 1965. The retroactive adjustment for the smaller projects—Yakima, Boise, Minidoka, and Palisades—was made in fiscal year 1966, including an adjustment for Southern Idaho transmission facilities transferred to BPA as of July 1, 1963. These adjustments for the smaller projects decreased Accumulated Depreciation and increased Accumulated Net Revenues \$1,236,000 for the period from inception through June 30, 1964. (See Note 10.)

Through June 30, 1965, BPA changed the Corps' straight line depreciation to compound interest depreciation using an interest factor of 2½%, retroactive to the start of operations for each project (retroactive to June 30, 1960, for Bonneville Dam, since that project used compound interest depreciation to that date). The change was made on an interim short-cut basis pending Corps consideration of conversion from the straight line method of depreciation to the compound interest method. Late in fiscal year 1966, the Corps approved conversion to the compound interest method of depreciation for each project. Short-cut methods were developed by the Office of the Chief of Engineers as an interim measure because time did not permit adoption in the official accounts now scheduled for fiscal year 1967. Memorandum records were used for the depreciation adjustment and were the basis for submittal of Corps project financial data to BPA for inclusion in the financial statements for fiscal year 1966. The accounts for Bonneville Dam were adjusted to the start of operations, which has the effect of replacing the former compound interest depreciation figures for the period from inception through June 30, 1960. (See Note 10.)

The problem of uniform service lives for the generating projects of the Bureau and the Corps has been under active consideration, and the Corps has established a schedule of revised service lives intended to be longer and more in line with the service lives adopted by the Bureau. All details had not been worked out at June 30, 1966, and the Corps plans to apply the new longer service lives in fiscal year 1967. The Walla Walla District of the Corps revised composite service lives of turbines and generators for the McNary and Ice Harbor Projects in fiscal year 1965, based on their reanalysis of service lives. This adjustment to the straight line depreciation expense recorded in the books of the Corps increased accumulated net revenues \$8,617,000 through June 30, 1965. They continued to use the longer lives in fiscal year 1966. The Portland and Seattle Districts continued to use service lives for turbines and generators in fiscal year 1966, which ranged from 35 to 41 years and the Bureau continued to use composite service lives for turbines and generators in fiscal year 1966 of 72.5 years for all of its projects.

Note 4. Interest

The interest rates applicable to the generating projects and to the annual increments of transmission investment are as follows:

<u>Generating Projects in Service at June 30, 1966</u>			
<u>Corps Projects</u>		<u>Bureau Projects</u>	
Albeni Falls	2½ %	Boise	3 %
Bonneville	2½	Columbia Basin	3
Chief Joseph	2½	Hungry Horse	3
Cougar	2½	Minidoka	3
Detroit - Big Cliff	2½	Palisades	3
Hills Creek	2½	Yakima - Roza Div.	3
Ice Harbor	2½	Yakima - Kennewick Div.	2½
Lookout Point - Dexter	2½		
McNary	2½		
The Dalles	2½		

Bonneville Power Administration

Investment at June 30, 1966

Included in investment in fiscal year 1963 and prior	2½ %
Included in investment in fiscal year 1964	27⁄8
Included in investment in fiscal year 1965	3
Included in investment in fiscal year 1966	3⅛

Generating Projects Under Construction at June 30, 1966

(All Corps Projects)

Dworshak	25⁄8 %	Libby	3⅛ %
Green Peter - Foster	2½	Little Goose	2½
John Day	2½	Lower Granite	2½
		Lower Monumental	2½

Interest rates shown above for Bureau projects other than the Kennewick Division of the Yakima Project were established by the Bureau pursuant to Section 9(c) of the Reclamation Project Act of 1939 (43 U.S.C. 485 h (c)). The rate for the Kennewick Division of the Yakima Project was established pursuant to Section 3 of the Act of June 12, 1948, (62 Stat. 382), which authorized construction of that division.

Interest rates applicable to the BPA transmission system and to Corps projects are not stipulated by law. Rates have been determined based on administrative policies in effect at the time the projects were constructed. The present policy for interest rates for the transmission system is based on Senate Document 97, 87th Congress, which contains an interest rate formula for planning water resource projects. Although Senate Document 97 does not specifically apply to interest rates for repayment purposes, BPA adopted the interest rate as certified by the Treasury Department pursuant to Senate Document 97 for application to new transmission investment starting in fiscal year 1964.

The Corps also adopted interest rates developed by the Treasury Department pursuant to Senate Document 97 for application to its new projects. However, on the Lower Snake River, where projects have been authorized as units of a navigation system, the same interest rate has been applied to all projects in the group regardless of when construction started. The 2½ % rate initially established for the Ice Harbor Project, therefore, also has been applied to the Little Goose, Lower Granite, and Lower Monumental Projects.

Interest is calculated for BPA and the Corps on a base which covers all elements of the net Federal investment in the commercial power program including plant investment, working capital, and operation and maintenance costs. However, the Bureau's interest base has been computed according to their interpretation of Federal reclamation law. Accordingly, the Bureau's financial data do not include interest (1) during the construction period for four projects, and one division of a fifth project; (2) on plant costs that were allocated as benefits to downstream generating plants for river regulation provided by the Columbia Basin Project; and (3) on other items such as investments in working capital. If the Bureau included interest at 2½ % on all elements of the net Federal investment in the Columbia Basin and Hungry Horse projects, accumulated net revenues through June 30, 1966, would be reduced about \$20,000,000. The effect for the other Bureau projects of the system would be minor by comparison. BPA and the Corps capitalize interest during the construction period, and have done so for all projects of the system. The Bureau's current policy is to capitalize interest during construction. However, in some cases prior to 1956, it was not specifically required by the legislation authorizing the project, and interest during construction was not included at the Boise, Columbia Basin, Hungry Horse, and Minidoka Projects, or the Kennewick Division of the Yakima Project. The amount of interest during construction, as computed for the Columbia Basin and Hungry Horse Projects was about \$12,700,000 as of June 30, 1966. Interest during construction excluded for the other Bureau projects is minor in comparison.

Note 5. Cost Allocations

Costs of facilities which serve only one purpose are assigned to that purpose. For projects which serve more than one purpose, (e.g., power, irrigation, navigation, and flood control), it is necessary to allocate the costs of joint-use facilities among the purposes served. The term "cost allocation" is used to describe this process and result.

Cost allocations of joint-use facilities are designated as firm or tentative. A tentative allocation is one which may be adjusted retroactively when it is made firm. A firm allocation may be changed in the future, if conditions warrant, but only prospectively. The following table shows the status of cost allocations for the generating projects at June 30, 1966:

<u>Project</u>	<u>Status of Cost Allocations</u>
Albeni Falls	Firm
Boise	Firm
Bonneville Dam	Firm
Chief Joseph	Tentative
Columbia Basin	Firm
Cougar	Tentative
Detroit - Big Cliff	Tentative
Hills Creek	Tentative
Hungry Horse	Firm
Ice Harbor	Firm a/
Lookout Point - Dexter	Tentative
McNary	Firm
Minidoka	Firm
Palisades	Tentative
The Dalles	Tentative
Yakima	Firm

a/ The firm allocation was approved by the Federal Power Commission on September 1, 1965, and it was adopted in the official accounts in fiscal year 1966. Joint plant costs assigned to power were increased about \$58,000, and joint operation and maintenance costs assigned to power were reduced about \$17,000 by retroactive adjustment.

Representatives of the entities of the Columbia River Federal Power System have taken additional steps in the past year, including some actions initiated after June 30, 1966, aimed at firming up the tentative cost allocations. The Corps of Engineers has affirmed the desirability of adopting firm cost allocations, and has stated an intention to coordinate its actions with BPA, the Federal Power Commission, and the Department of the Interior through an inter-agency group. BPA has recommended to the Department of the Interior's Office of Survey and Review that a request be made of the President's Water Resources Council to develop criteria for the required cost allocations as soon as possible.

Starting in fiscal year 1963, a revised tentative allocation of joint costs for The Dalles Project, which reduced the percent allocated to power from 92.72 per cent to 74.5 per cent, was reflected in memorandum accounts and used in annual financial statements. The Chief of Engineers authorized the use of the revised tentative allocation in the official accounts for fiscal year 1966, and the project official accounts now reflect this allocation.

The amount of joint plant costs shown as allocated to irrigation on Schedule A for the Cougar, Detroit-Big Cliff, Hills Creek, Lookout Point-Dexter, and the Green Peter-Foster Projects is subject to possible change. The allocation of \$18,981,000 to irrigation has been made pursuant to Section 8 of the Flood Control Act of 1944 (P.L. 534, 78th Congress) which permits utilization of Corps

projects for irrigation purposes. However, related irrigation projects have not been authorized, and determination of water users' ability to repay cannot be made until irrigation projects are authorized. According to an opinion from the Office of the Portland Regional Solicitor, the allocation to irrigation repayable by the water users is limited to the amount of the water users' repayment ability. Hence, the amount of joint plant costs allocated to irrigation may be revised. In addition, joint operation and maintenance costs allocated to irrigation, through June 30, 1966, in the amount of \$3,343,000 may be revised for the four projects in service.

Note 6. Costs Incurred by Other Agencies

BPA, the Bureau and the Corps do not currently include in their accounts the estimated costs of space rental and audit services furnished by other Federal agencies. BPA had included such costs in its accounts, and incorporated them in the financial statements through fiscal year 1962, but discontinued recording them starting in fiscal year 1963. Other power agencies of the Department of the Interior do not include these costs, and the decision to discontinue them for BPA was made to be consistent with the other agencies of the Department of the Interior, pending clarification of policy for accounting for these items.

A special analysis has been made of space occupied by BPA in fiscal year 1966 for the purpose of determining the approximate amount of imputed rents applicable to that year. The total is \$572,000, with \$244,000 applicable to operating expenses, and \$328,000 applicable to plant investment. Audit services furnished by the General Accounting Office are costed at approximately \$75,000 for fiscal year 1966, all applicable to operating expenses.

Note 7. Preliminary Survey and Investigation Costs

The Bureau's policy is to capitalize all pre-authorization general investigations costs which relate to a project in the form authorized by Congress. However, the policy of the Corps is to exclude all preliminary surveys and investigations costs which are incurred prior to project authorization. The Corps implemented this policy in fiscal year 1964 and deleted \$1,913,000 of such costs from project plant accounts. These costs were deleted upon instructions from the Office of the Chief of Engineers to permit consistency with Senate Document 97, 87th Congress, which defines project installation costs. The Corps interprets this document as limiting the inclusion of preliminary survey and investigation costs to those which occur after project authorization.

Note 8. Accounts Receivable

Procedures at BPA do not include provisions for doubtful accounts, and the balance as of June 30, 1966, includes \$434,000 due from an industrial customer under the terms of the power sales contract. The delinquency extends from October 1, 1962, through January 27, 1966, the date of cancellation of the contract. Prospects for full collection are doubtful, and the matter has been referred to the Department of Justice.

Note 9. Contingent Liabilities

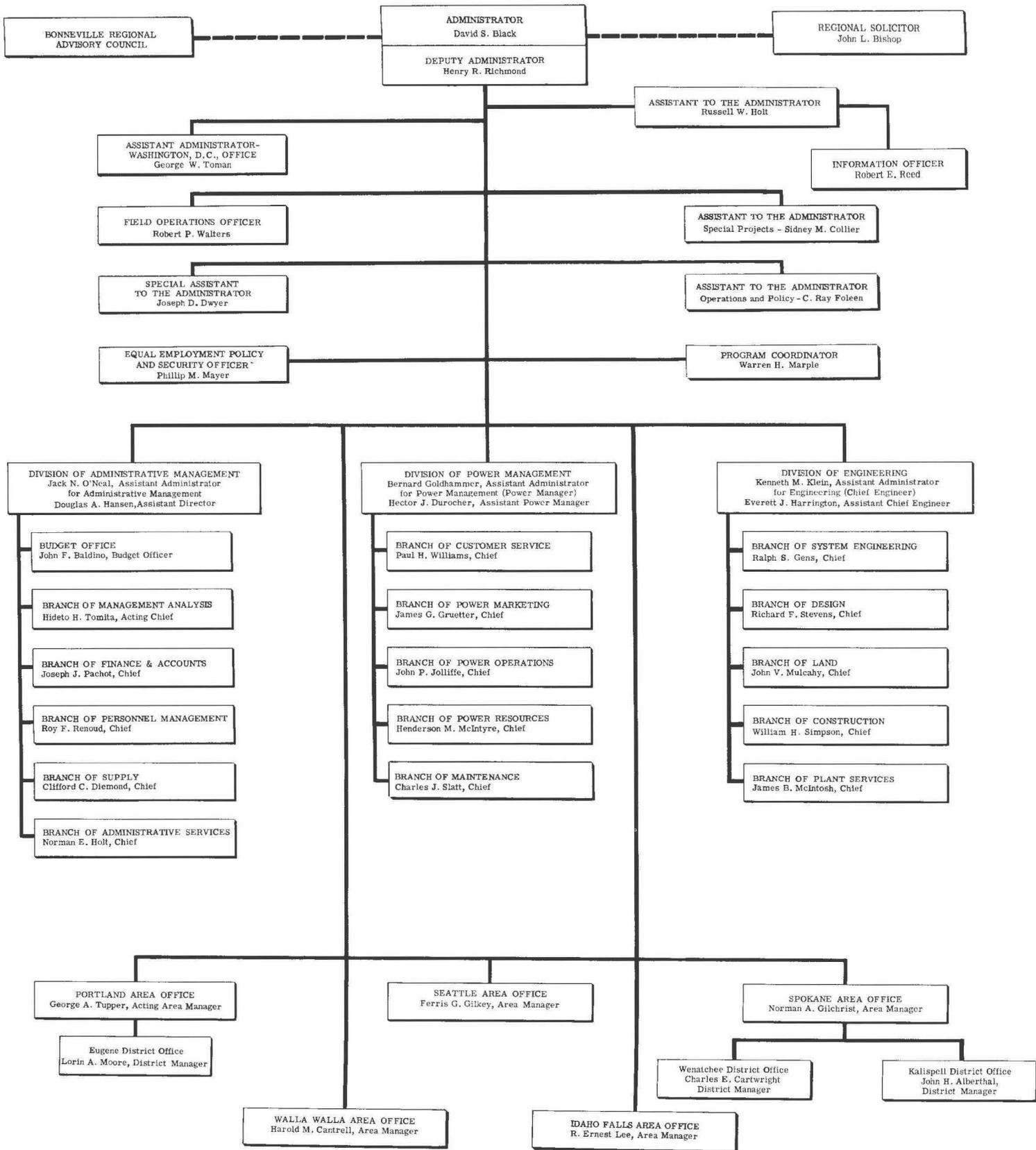
Contingent liabilities allocated to power total \$16,287,000 for the Columbia River Federal Power System, as of June 30, 1966, based on the total claims outstanding, and the percentages shown in Schedule A. Principal items are: \$804,000 representing claims against Bonneville Power Administration under the Federal Tort Claims Act and amounts under appeal by contractors; \$13,328,000 for Bonneville Dam, representing a long-standing claim by the Yakima Tribe of Indians; \$596,000 contractor's claim against the Cougar Project; \$198,000 claim by an individual against the McNary Project; \$638,000 contractors' claims and minor damage claims against the John Day Project; \$696,000 contractors' claims against the Dworshak Project; and a minor claim of \$27,000 against the Detroit-Big Cliff Project.

Note 10. Adjustments to Accumulated Net Revenues

The following table summarizes the adjustments which have caused the net increase in Accumulated Net Revenues of \$2,522,000 shown on Exhibits 1 and 2:

Thousands of Dollars

a. Restatement of depreciation from the straight line method to the compound interest method. (See Note 3)			
(1) Bureau Projects			
Retroactive adjustment on transmission plant transferred to BPA as of July 1, 1963	861		
Retroactive adjustment on generation plant at 4 small projects	<u>375</u>	1,236	
(2) Corps Projects			
Retroactive adjustment for Bonneville Dam Project. (Includes effect of replacing (1) Corps compound interest depreciation from inception to June 30, 1960, and (2) BPA short-cut calculations made for the period July 1, 1960 through June 30, 1965)	1,792		
Retroactive adjustment for 9 other Corps projects.	<u>(1,378)</u>	<u>414</u>	
			1,650
b. Retroactive adjustment reducing accumulated depreciation, interest expense and operation and maintenance expense of The Dalles Project resulting from (1) redistribution of plant costs to project features based upon final engineering analysis, and (2) correction of fiscal year 1963 memorandum account allocation (see Note 5) made using short-cut procedures.			917
c. Miscellaneous minor adjustments.			<u>(45)</u>
	Total		<u><u>2,522</u></u>



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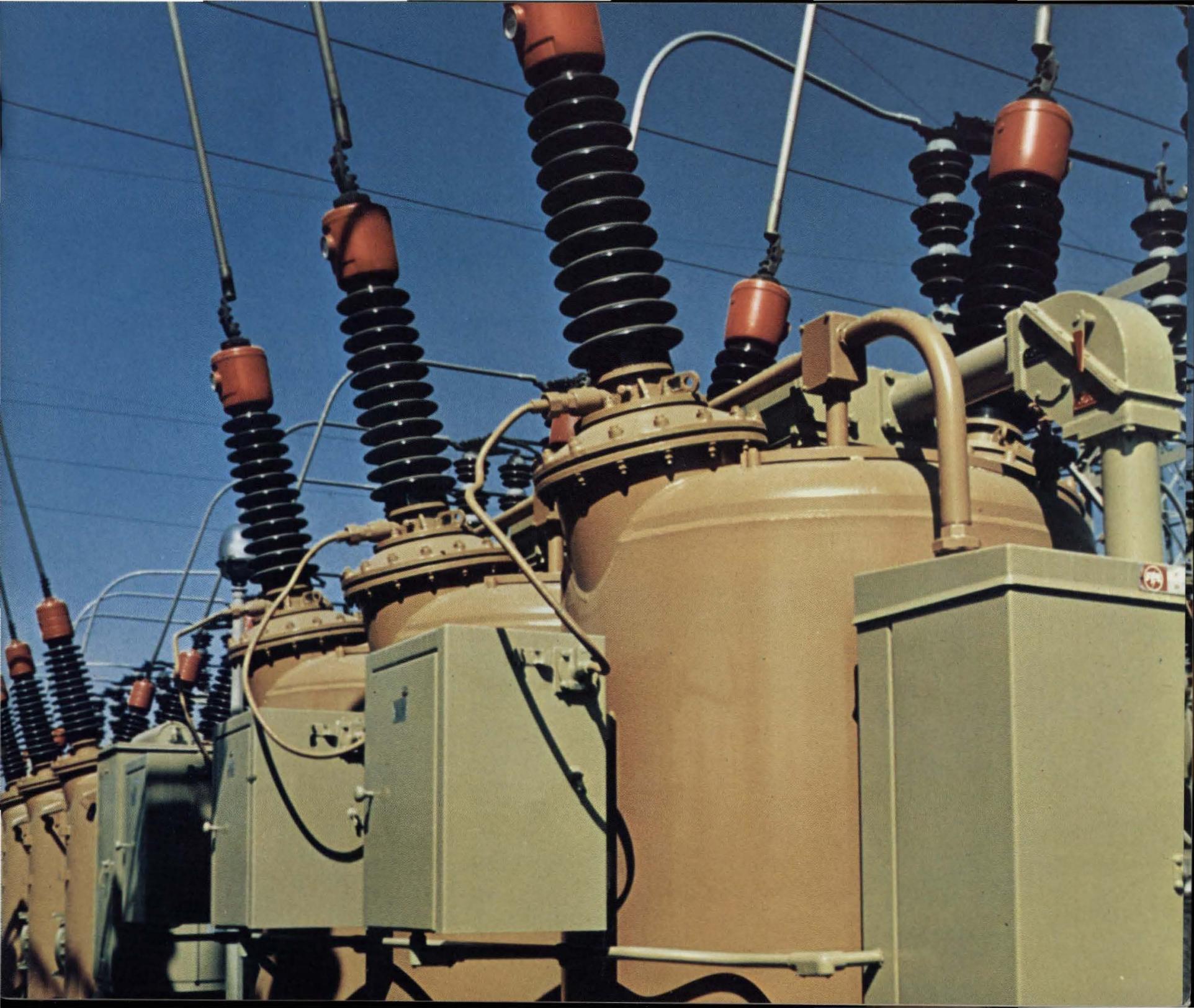
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