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Bonneville
POWER ADMINISTRATION

1986 Annual Report

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When BPA energized the line between Grand Coulee Dam, shown here, and Bonneville Dam in 1940, the "Federal Columbia River Power System" became a reality. It grew to 30 dams and more than 14,000 miles of high-voltage transmission line.

Fiscal Highlights

	FY 1986	FY 1985	Percentage Increase (Decrease)
	(MWH)		
Sales of electric energy	84,925,873	85,448,891	
Residential exchange energy	37,817,056	35,451,875	
	(Thousands of Dollars)		
Sales within the Northwest region	$1,399,484	$1,507,303	(7)%
Out of region sales	258,898	406,464	(36)%
Wheeling and other sales	129,287	167,082	(23)%
Residential exchange revenue	838,092	801,010	5 %
Total operating revenues	2,625,761	2,881,859	
Expenses	1,290,581	1,315,425	(2)%
Residential exchange expense	1,046,379	1,008,762	4 %
Total operating expenses	2,336,960	2,324,187	
Net operating revenues	288,801	557,672	
Net interest expense	353,717	334,224	6 %
Net Revenues (Expense)	$ (64,916)	$ 223,448	

	(Millions of Dollars)	
Cash payments to the U.S. Treasury (Does not include accrued interest on long term debt.)	$636	$689

BPA: A Profile

Congress enacted the Bonneville Project Act in 1937, creating the Bonneville Power Administration to market the power produced by Bonneville Dam on the Columbia River. The Congress has since designated BPA to wholesale the power produced at 29 additional Federal dams in the Pacific Northwest.

To accomplish its mission, BPA has built about 14,500 circuit miles of high voltage transmission lines and 385 substations. The dams and electrical system are known as the Federal Columbia River Power System.

This system serves a 300,000 square mile area with a population of 8 million persons. BPA's electrical system provides the main grid for the Pacific Northwest.

BPA wholesales power to some 150 customers in the Northwest. They include public and private utilities, rural cooperatives, large industries and several Federal agencies. BPA also sells or exchanges power with utilities in the Pacific Southwest over the Pacific Intertie and with utilities in British Columbia.

BPA uses revenues from the sale of power and transmission services to recover its own expenses and to repay the Federal investment in the power system — with interest. BPA has paid the U.S. Treasury more than $3 billion in interest and more than $1 billion on the principal. It has also provided funds for operation and maintenance expenses at the dams, for irrigation works and for fish and wildlife resources.

BPA will observe the 50th anniversary of its founding in 1987.

To the Secretary

Paul J. Raver
1939-1954

William A. Pearl
1954-1961

Honorable John S. Herrington
Secretary of Energy
Washington, D.C. 20585

Dear Mr. Secretary,

As this report goes to press, the Bonneville Power Administration is preparing to observe the 50th anniversary of its founding.

In the years since 1937, the dams and power facilities of the Federal Columbia River Power System have energized the economy of the Pacific Northwest. We are the beneficiaries of the tremendous foresight and determination of those who dared to harness and distribute the power of the mighty Columbia.

The contributions of the Federal agencies — Bonneville, the Corps of Engineers and the Bureau of Reclamation — are indeed worth celebrating. But without the strong and constant support of the four Northwest states, the development of the Columbia would not have been possible. Without the enlightened participation of Northwest utilities and industries, our pluralistic electricity system would never have succeeded.

James D. Ross
1937-1939

The celebration of our 50th year is truly a regional celebration.

Because Bonneville's 1986 annual report is issued early in 1987, we have given the document an anniversary theme, mainly through use of historic photos. The message of the report, however, is both old and new.

That message is change: economic change; social change; and institutional change. One of the most notable transitions of 1986 was the resignation of Peter T. Johnson as administrator.

When Peter arrived at Bonneville in 1981, he had little forwarning of the problems that awaited him as administrator. He saw a harsh economic winter descend on the Northwest power industry; fortunately for us, he proved to be a man for all seasons.

Under his strong and enlightened leadership, Bonneville and the Northwest utility industry emerged from a period of upheaval with renewed strength. Peter's contributions to Bonneville and to the citizens of the Pacific Northwest are immeasurable. For his public service, we owe him a great debt of gratitude.

Peter left the agency well equipped to deal with profound changes in the marketplace for electricity. The experience of 1986 tells us that the days of stable markets and predictable revenue are over. Like the flow of the Columbia River, revenue from power sales will swell and ebb with little warning. We must be flexible enough to adjust rapidly to shifting circumstances.

In 1986, Bonneville encountered severe tests in two important customer markets: aluminum smelters and California utilities. In both cases, we took strong and effective action to retain our share of the markets, but we could not avoid sharp reductions in revenue. Here's what happened.

Charles F. Luce
1961-1966

Three of our four largest revenue producers are California utilities. These utilities have the ability to burn gas and oil to power their own generators. But they buy power from the Federal Columbia River System because, historically, it has been less costly.

One quarter into the fiscal year, the prices of oil and gas plummeted. We reduced our price, met the competition, and kept Bonneville's power moving south on the Pacific Northwest-Pacific Southwest Intertie. So we were selling a great deal of electricity and realizing much less revenue.

Meanwhile, our aluminum customers were struggling to cope with low metal prices and over-capacity in their industry. Bonneville's sales were hurt when two smelters were closed and other companies reduced production.

The drop in income from these customers is a serious matter. In past years, they have accounted for as much as 40 percent of Bonneville's total revenue. In 1986, aluminum company and export sales amounted to about 20 percent of total revenue.

We tackled this uncertainty in the aluminum market by putting some flexibility into electricity pricing for

David S. Black
1966-1967

Henry R. Richmond
1967-1972

Donald Paul Hodel
1972-1977

Sterling Munro
1978-1981

Northwest smelters. In August 1986, we adopted a rate that rises and falls with the price of aluminum. This new rate has helped smelters stay in business here in the Northwest. Most of our other customers are supportive of the rate because they know that keeping aluminum production alive in the Northwest directly benefits their ratepayers.

We are confident that the variable rate is effective, and will prove beneficial to all of our ratepayers in the long run. All of our aluminum customers signed on for the variable rate. The rate already has proved effective in keeping potlines running in the Northwest. The two plants that were abandoned by their previous owners were later restarted under new ownership. Without the variable rate, the region could have lost their production permanently.

Peter T. Johnson
1981-1986

Problems in the aluminum and export markets cut deeply into Bonneville's sales, leaving revenue $256 million less than FY 1985. Fortunately, former Administrator Johnson had taken steps to hold down spending. Other factors, such as the general decline in interest rates, also helped restrict expenses. As a result, expenses exceeded revenues in fiscal 1986 by only $65 million.

Despite the pressures on revenue, we were able to make our annual payment to the U.S. Treasury in full. We sent the Treasury $636 million in 1986. Of this amount, $358 million went for interest, $191 million to retire part of the principal, and $84 million for operation and maintenance expenses at the Federal dams and $3 million for downstream benefits.

This was the third successive year that we have paid the Treasury more than $600 million. BPA has now paid the Treasury more than $3 billion in interest and approximately $1 billion to amortize a portion of the principal.

As our markets continued to sputter in the second half of FY 1986, we resolved to cut future costs even more in order to ensure repayment while keeping rates in check. I worked closely with Mr. Johnson in achieving a $613 million reduction in proposed budgets prior to his resignation. Since his departure we have announced further budget reductions in capital and operating costs totaling $148 million over three years.

I believe that even more savings are possible. We are scrutinizing areas where further reductions may be prudent.

I am confident that we can maintain BPA's controllable expenses at a level slightly above where they were in 1986. Even so, a rate increase in the neighborhood of 9 percent may be needed in October 1987. The rates we adopt then will remain in effect through FY 1989. This will be Bonneville's first substantial increase since 1983.

In the area of planning, we continue to enjoy a challenging and productive relationship with the Northwest Power Planning Council. The members understand and, by and large, support our efforts to reduce programs. Together we hammered out a mutually acceptable policy on the approval of new large resources to meet future power needs. In the areas of conservation and fish and wildlife, we are finding better ways to serve our region.

Mr. Secretary, we have much to celebrate. We enjoy a unique and low-cost source of energy — the Columbia River. Our engineers build and operate one of the largest, most reliable high-voltage transmission systems in the world. Our staff is strong, highly qualified, and dedicated to maintaining the fiscal integrity of the agency. And we enjoy the support of our customers.

Bonneville proudly enters its next 50 years a powerful economic asset to the Pacific Northwest and to the nation.

Sincerely,

James J. Jura

Administrator

Stretching the rate dollar

Dan Wright and BPA Administrator Paul Raver admire the agency's first symbol.

The Financial Year in Review

The Bonneville Power Administration paid the U.S. Treasury $636 million in fiscal 1986. It was the third consecutive year in which BPA has paid the Treasury more than $600 million.

BPA's payments include amortization of a portion of the investment in the Federal Columbia River Power System (FCRPS), interest on the principal, and operation and maintenance expenses at the Federal dams in the Pacific Northwest. The dams are operated by the Corps of Engineers and the Bureau of Reclamation.

This year Bonneville paid the Treasury $191 million on the principal, $358 million in interest, $84 million for operation and maintenance expenses at the Federal dams and $3 million for downstream benefits.

BPA was able to make its 1986 payment in full and on time even though the market for its electric power has deteriorated.

Fortunately, BPA expenses also were down. Expenses were lower because of a decline in U.S. interest rates, actions by BPA to reduce its expenses, and other factors.

The drop in expenses did not fully offset the drop in revenues. Expenses exceeded revenues by $65 million.

The shortfall came at a time when BPA was still feeling the effects of a 1985 decline in the world price of aluminum. Smelters in the Northwest, which use large amounts of electricity, have cut back their production, reducing BPA's sales revenue.

Midway through fiscal 1986, BPA revenues from other sectors of its market began to slip. Oil and natural gas prices declined, and instead of purchasing power from BPA, our customers in California began to use this lower cost oil and gas to generate their own electricity. BPA lowered its price for power to meet the competition. BPA retained a fair share of the market. But its income per kilowatt-hour sold was, of course, less.

BPA sells most of its power to three customer groups — (a) Northwest utilities; (b) industries, including aluminum, that BPA serves direct in the Northwest; and (c) Pacific Southwest utilities. The aluminum smelters and the Southwest utilities in years past have accounted for 40 percent of BPA's revenues.

BPA responded to the latest downturn in sales by reducing certain operating expenses 2% in FY 1986 from FY 1985.

BPA in June announced that it would spend $613 million less than it had planned in fiscal years 1987, 1988 and 1989. Later, BPA announced it would trim another $148 million from expenditures planned for 1987-1989, bringing the total reduction to $761 million.

BPA's controllable expenses for the 3 years will level off at about where they were in fiscal 1986 and then gradually increase at, roughly, the annual rate of inflation.

About 90 percent of BPA's expenses are related to debt or are otherwise fixed. In view of its financial situation, BPA has had to initiate some rather severe cuts in key programs to balance expenses and revenues. In addition to paring away the $761 million from budgeted expenditures, BPA has:

- Frozen the hiring of new employees, except for critical positions pending a review of employment and contracting levels;
- Substantially reduced capital spending funded by borrowing;
- Challenged the Washington Public Power Supply System to reduce its expenditures;
- Worked with the Corps of Engineers, the Bureau of Reclamation and the Northwest Power Planning Council to reduce expenses that BPA is obligated to pay; and
- Strengthened its effort to sell more power and boost revenues.

BPA has not had a significant increase in its priority firm rate since 1983, when it was raised 22 percent. The priority firm rate applies to power sold to public utilities and to utilities taking part in the residential exchange for resale to homes and small farms.

The 1983 increase was the last in a series of sharp increases that resulted from the construction expenses of three generating stations, Washington Nuclear Projects 1, 2,

Bonneville Dam construction site — December 20, 1934

Powering the Region's Economy

Plentiful electricity will always be one of our great resources. Lights of the Lewis and Clark Exposition 1905 (above) were a blazing demonstration of the glowing city lights of the future.

and 3. BPA has since sought to stabilize rates over the long term. When rates were adjusted in 1985, the increase amounted to less than 1 percent.

Despite the cuts BPA has made for the years 1987-1989, the agency has announced that it expects to raise its wholesale electric rates on October 1, 1987, when the current rates expire. An increase in rates will be necessary if BPA is to meet its repayment obligations to the Treasury.

BPA hopes to hold the rate increase to 13 percent or less. Inasmuch as BPA wholesales electricity, the increase at the retail level would be less for consumers served by a typical Northwest utility.

Turbulence in the Marketplace

In November 1985, BPA estimated that it would get an average price of at least 2.7 cents per kilowatt-hour for power sold to California in 1986. In January, BPA was right on the mark. Our power was going for 2.7 cents per kWh in California. Comparative amounts of power generated by oil and natural gas sold for 4.4 cents and 3.1 cents, respectively.

By June the price for BPA electricity in California had gone down to 1.0 cent per kWh. Equivalent prices for oil and natural gas had dropped to 2.3 cents and 1.8 cents per kWh. In October the comparable prices stood at 1.4 cents for a kWh sold by BPA, 2.0 cents for oil and 1.8 cents for natural gas.

As a result of the lower price for electricity, BPA revenues from power sold outside the region came in $148 million below the FY 85 level.

Nonfirm energy sales to utilities in the Northwest followed the trend down. Northwest operators of industrial boilers sometimes found BPA's nonfirm price unattractive and opted for oil or natural gas.

As the market became more and more unsettled, customers became less eager to enter into long-term agreements with BPA.

We are currently discussing long-term transactions with all California utilities having the ability to contract for such arrangements over the Intertie. Generally, BPA is offering to enter into power sales lasting as long as BPA's surplus is available, capacity sales for up to 20 years.

While no utilities have yet signed such contracts, good progress has been made. Discussions continue with Southern California Edison regarding a long-term arrangement. We have made proposals to seven other California utilities.

BPA has protected its revenue stream from the aluminum industry with a series of incentive rates. In August 1986 a new variable rate supplanted incentive rates. The variable rate rises and falls with the world market price of aluminum.

BPA held formal rate hearings and a number of public meetings while developing the variable rate. The rate is designed to reduce fluctuations in BPA's industrial load. BPA hopes the rate will improve its revenue picture.

The new rate is one of three courses of action BPA is pursuing to bolster industrial sales. In addition to the variable rate, BPA is working with the smelter owners to modernize equipment in the plants to make them more efficient users of electricity, and thus more competitive.

BPA has also established a long-term link between the firm power rate charged industries and the firm rates charged utilities. The industries believe this link will provide more stable industrial rates. Stable rates make it easier for the industries to plan for future production. This should benefit all ratepayers.

Managing the Power System

Getting on the Intertie

BPA's intertie access policy allocates access to the federally owned share of the Pacific Northwest-Pacific Southwest Intertie. BPA has been using the policy to control access to the intertie since September 7, 1984, when an interim, or "near-term" policy went into effect. A long-term policy is to supersede the interim policy.

The intertie consists of two 500,000-volt alternating current lines and one 1,000,000-volt direct current line. They carry power back and forth between the Northwest and southern California.

The long-term policy will reflect information and ideas gleaned from experience with the near-term policy. There is one big difference between the near-term policy and the long-term policy. The near-term policy dealt with existing resources only. The long-term policy also deals with how new sources of power will be accommodated.

BPA in October 1986 published a draft of the long-term policy for public review. If the policy works as planned, it will help to:

- Enhance BPA's ability to repay the Treasury;
- Maintain reasonable rates;
- Make intertie capacity available — with equity — to utilities and still meet BPA requirements for capacity;
- Give non-Federal users of the intertie the assurance they need to enter into long-term firm power or firm capacity transactions, and
- Support the quality of the environment consistent with the nation's policies.

The public review will examine many issues concerning the use of intertie facilities in both their present and future forms.

WNP 1 and 3

A day of decision may be drawing near for the Washington Public Power Supply System's two unfinished, mothballed nuclear plants, WNP 1 and 3. WNP 1 is about 65 percent complete, and WNP 3 about 75 percent.

The Supply System pays the cost of preserving WNP 1 from unspent proceeds of bonds that were sold to finance construction of the plant. BPA pays the preservation costs of WNP 3 from power sales.

The final draft of a study, which will analyze the various issues that surround the plants, is due out in March 1987. When the study is finished, the BPA Administrator will decide whether to recommend a change in the status of each of these projects. The management of the Supply System will decide whether to preserve each plant, complete it, or abandon it.

The Administrator's decision will affect the electric rates of almost every consumer in the Pacific Northwest. If he can reach a conclusion prior to April 1987, BPA will have time to modify its 1987 rate proposal.

The study of WNP 1 and 3 is part of BPA's 1987 resource strategy. In formulating the strategy BPA is following the guidelines of the Northwest Power Planning Council. BPA is attempting to match future loads with future sources of electricity so that the development of these resources will come about in an orderly and prudent manner.

BPA issued a draft of the 1987 resource strategy in December 1986. A report on WNP 1 and 3 is included in the draft. BPA will continue to consult the public as the strategy develops.

Substations and control centers are the vital connections between policy and the power system.

A Debt to the Past; An Investment in the Future

Working with the Power Planning Council

BPA and Northwest Power Planning Council staff members have worked together to develop programs contained in the 1986 Power Plan adopted by the Council in January 1986. BPA, as requested, has designed workplans to achieve 11 objectives of the Council's plan.

BPA has also held constructive discussions with members of the Northwest Power Planning Council and the Council's staff this past year that have clarified and resolved some issues. One of the most significant issues dealt with Section 6(c) of the 1980 act. Section 6(c) stipulates that BPA's major resource acquisitions are subject to public review.

The act defines a major resource as one that will have a capability greater than 50 average megawatts and is acquired for a period of more than 5 years.

The act, however, left room for interpretation by BPA and the Council on how to carry out their responsibilities. After some 6 months of discussion, BPA and the Council have agreed on their respective responsibilities under Section 6(c).

As the Council and BPA continue to work together, their cooperate efforts will bring positive results to the region.

Are the Salmon Coming Back?

Researchers began counting salmon and steelhead runs at Bonneville dam in 1938. Their count of steelhead passing the dam reached a new high in 1986 —366,000. It was the third year in a row that returning steelhead have broken their old records. The 1986 figure compares with 342,000 in 1985 and 314,000 in 1984.

The greatest number of spring chinook salmon since 1938 — 123,176 — returned in 1986, encouraging researchers. The spring chinook count totaled 91,000 in 1985 and 51,000 in 1984. It has averaged 64,629 for the past 7 years.

Commercial and sports catches are also up. Fishermen in 1986 brought the highest number of chinook and coho to the docks since the early 1980s.

BPA was attempting to enhance the fish runs before the 1980 Northwest Power Act was passed. But it wasn't until the act expanded BPA's responsibilities that BPA really focused on fish and began funding a number of programs to bring back more salmon.

BPA has since spent some $85 million on 253 fish and wildlife projects designed to repair damage caused by construction and operation of the federal dams. BPA spent $21 million in fiscal 1986.

BPA carries out the annual "fish flush" that moves the young fish to the sea each spring. It also funds projects that pinpoint the location of young fish as they move downstream and screens these fish for signs of disease or abnormal behavior.

BPA has completed 29 habitat and fish passage projects on tributaries of the Columbia.

BPA is one of several agencies involved in improving the runs on the Yakima River and its tributaries. The Yakima once supported a large fish run that until recently had all but died out. Workers have built fish ladders and installed screens at the entrances to tributaries and canals. The fish screens steer upstream and downstream migrants away from deadend channels.

Work on similar projects is under way in many parts of the Columbia River Basin. The projects are too numerous to list, but here are a few:

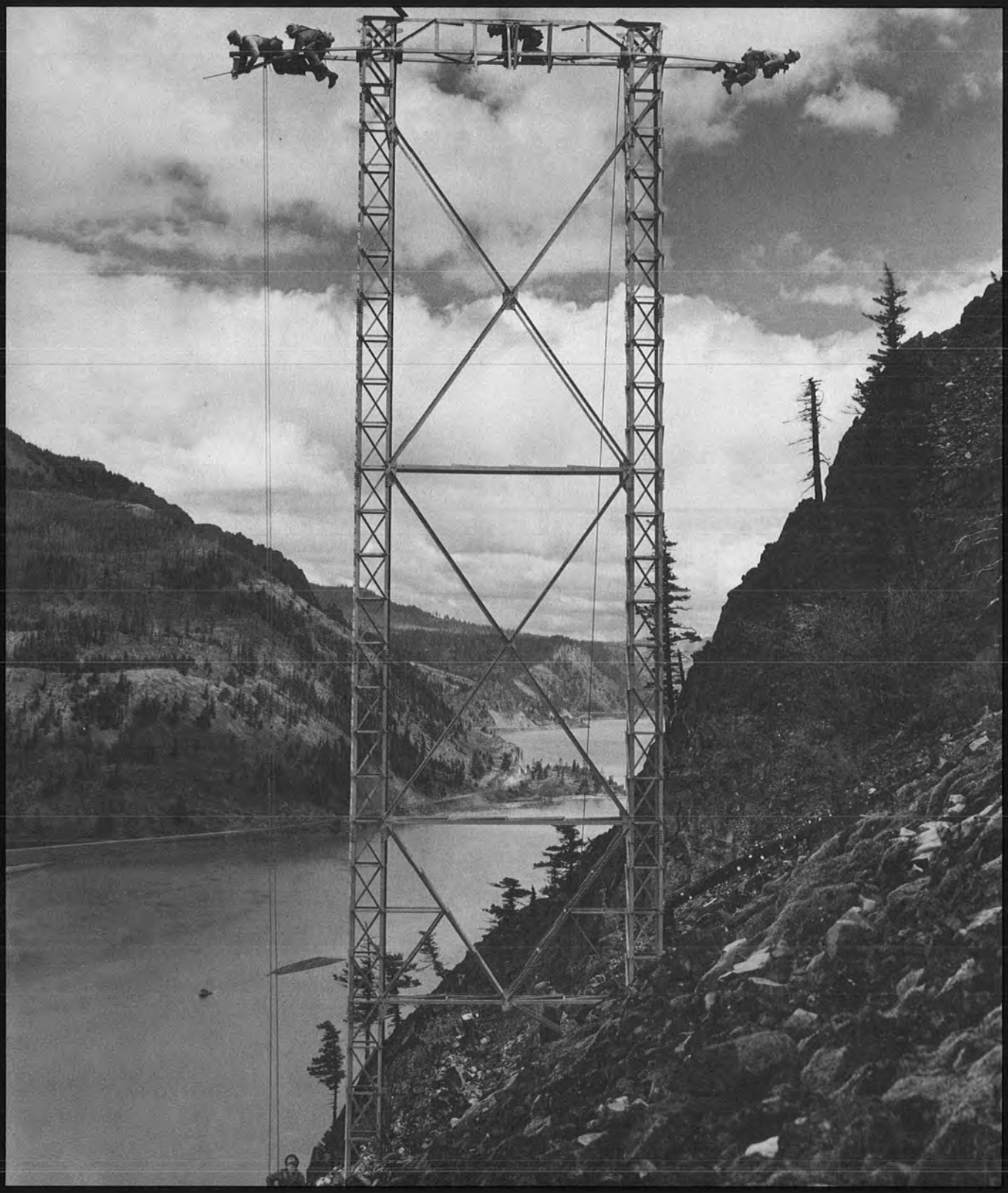
- Trout Creek in Oregon where 100 miles of stream beds are being revitalized for spawning fish.
- West Fork of Hood River in Oregon where a new ladder will permit the fish to reach 23 miles of promising habitat.
- The Umatilla River where the channel has been changed. Two spawning ponds have also helped. Salmon have returned for the third year in a row — after a 70-year absence.
- Idaho's Bear Valley Creek on the Middle Fork of the Salmon. Part of the streambed is being reconstructed to accommodate 1,000 pairs of returning salmon instead of the 100 that now return.

Fish runs are still well below the levels that existed before the dams were built. Historical estimates based on information from early white settlers put the original runs as high as 16 million fish. Today's runs amount to a small fraction of that total.

The Columbia River fishery was depleted over a span of 100 years. Dams were one cause of the decline. Overfishing, logging, irrigation and industrial development also figured in the decrease. We cannot recreate the rivers the early settlers found, nor can we repair the damage in a few years' time. But recent events have shown that people can cooperate with nature to improve the fish runs that exist now.

Man has learned to protect and restore the delicate balance of nature.

The Builders



O&M Efficiency Increases

BPA keeps a close watch on its operation and maintenance activity to improve the efficiency with which it is accomplished. About 25 percent of BPA's permanent work force takes part in this O&M work. The O&M staff works out of about 30 locations scattered throughout the Northwest.

The total workload has increased by about 15 percent over the past decade, although the total amount of equipment serviced is up by 34 percent. The workload is now being handled with the equivalent of 202 fewer full-time employees and a savings of about $18 million a year. The savings has been brought about by greater efficiency and improved technology. BPA continues to seek efficiencies.

Engineering and Construction

BPA's engineering and construction staff has taken a number of steps to reduce expenses and boost efficiency.

This work goes on constantly, but it intensified in 1986 because of the fiscal pressures placed on BPA. E&C expenditures have been cut by $110 million for the next three years. The staff has been reduced by 42 positions over the past 6 months.

We have reduced the general level of material and equipment on hand by 14.2 percent, or $3.1 million and transferred $6.2 million in surplus stock to other government agencies.

In addition, the E&C staff has been experimenting with contracts that reward construction contractors for savings and quality work. We estimate that one such contract for the Bell-Boundary line has saved BPA almost $1 million. We also marketed the timber along one right-of-way for a new transmission line — with significant savings to BPA. In the past, BPA has almost always given the timber to construction contractors with the expectation that this practice would result in lower bids.

The technique and equipment improve, but man must still scale high towers and manage risk. It comes with the job.

The Modern Way

Electrical Network Grows Stronger

A multi-million dollar construction project to boost the capacity of the Pacific Northwest-Pacific Southwest Intertie rolled into high gear this year.

The intertie consists of two 500,000-volt alternating current (a.c.) lines and one 1,000,000-volt direct current (d.c.) line. The lines move large amounts of power back and forth between the Northwest and Southwest.

The expansion of the two terminals at either end of the d.c. line entered the construction phase in 1986. BPA will expand the north terminal, and the City of Los Angeles' Department of Water and Power the south terminal.

The d.c. line now has a capacity of 2,000 megawatts. This will be raised to 3,100 megawatts. The increase represents enough power to serve a city the size of Seattle.

BPA has authorized a contractor, Brown Boveri Co., to start construction and to manufacture part of the electrical equipment needed under a $56 million turnkey contract. The Los Angeles department has awarded a similar contract to Brown Boveri for the southern terminal.

BPA has obligated a total of $89.5 million to the project, and Los Angeles $171 million. Los Angeles' costs are higher because it must raise the height of steel towers leading to its terminal and develop a site on the other side of a freeway for part of its terminal.

A Third A-C Line

A group of utilities in California and the Western Area Power Administration have joined together to sponsor another a.c. line for the Pacific Intertie. The line will extend from the California-Oregon border south through Central California. BPA, in concert with other Northwest utilities, is planning to add facilities that will connect with the line. Construction is to be finished in 1991.

When built, the line will increase the capacity of the intertie by 1,600 megawatts. The total capacity of the intertie would then be about 7,500 megawatts.

The new line would be 336 miles long. It would run from a new substation about 6 miles north of the Oregon-California border through the Western Area Power Administration service territory to the vicinity of Stockton.

The line will extend 330 miles through Western Area Power Administration's service area. WAPA is acting as lead agency for the project.

Taft-Bell Construction

Construction crews are building the 97-mile 500-kV Taft-Bell line. It crosses remote mountainous country lying between Spokane, Washington, and BPA's Taft Substation near St. Regis, Montana.

The line will cost about $36 million. It is the last link of a transmission project that integrates power from the coal fields of eastern Montana into BPA's grid and Montana's electrical system.

Despite its remote location and difficulty of access, the line is being built in record time. BPA has extended an incentive to two firms to build quickly and build well. The firms hold two of the three construction contracts for the line.

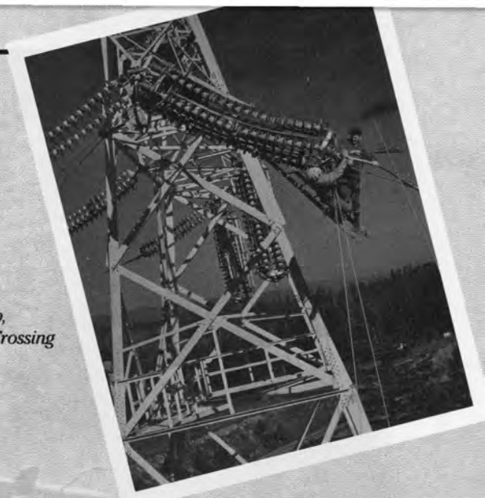
Construction of the line involves unknowns, such as soil conditions and the weather. Because of these conditions, BPA has in effect assumed part of the risk normally carried by contractors through a fixed price agreement. BPA negotiated a target cost with each contractor, agreeing to cover each contractor's actual costs and pay a limited profit. If the contractor finishes his section for a lower cost than the target cost, the contractor earns half the money saved. Furthermore, if the contractor meets or exceeds higher than ordinary standards set by BPA, the contractor receives a bonus of up to 7 percent of the contract cost.

By October 1986, less than a third of the time allotted for the contracts had passed. But each contractor had finished 90 percent of his work.

Both contractors used helicopters to ferry sections of steel towers from assembly yards to tower sites. Crews were sometimes able to erect 25 to 30 towers in a day.

BPA awarded a standard contract for the third section. This section crosses open, rolling land and involves few unknowns.

The line is part of a project that extends eastward to the Colstrip generating projects.



Dead-end hookup, Bradford Island Crossing

Helicopters lift tower parts

Round-the-clock work

Builders Activities

Men and women plan and see their plans fulfilled on Holladay Street.

Excited BPA employees dedicate the "new" 811 Building in 1939. In 1987, another new Bonneville building opens to house an agency with a much broader mandate.

Ponderosa-Pilot Butte

BPA has completely rebuilt a transmission line between Bend and Prineville, Oregon, to reinforce service to Bend, Redmond, Prineville and Lapine. BPA completed the project on time and $500,000 under budget.

Loads in the area have been growing at an annual rate or 7 to 9 percent.

BPA bought the line, which operated at 69 and 115-kV, from Pacific Power & Light Co. in 1981. BPA removed the old towers and conductors and replaced them with a 230-kV line.

A contractor, Brown Boveri, has installed a new 230-kV gas-insulated switchyard in a single building at Ponderosa Substation, 4 miles southeast of Prineville. BPA enclosed a 500-kV substation in a building on the Colstrip project, but this is a BPA first for 230 kV.

In rebuilding the line, BPA used the 1.3-inch trapezoidal conductor developed by its engineers. It was the second time BPA has used the conductor which is regarded as a major advance in transmission technology. It is expected to save ratepayers millions of dollars.

The trapezoidal strands of aluminum in the conductor cable fit closer together than circular strands. The close fit improves electrical performance. A trapezoidal conductor can carry 20 percent more power than a conventional conductor of the same diameter.

This means BPA can increase the capacity of a line by replacing conventional conductor with trapezoidal. Or it can move the same amount of power over a given distance using a smaller trapezoidal conductor and lighter towers. Either way, the overall savings are substantial.

Low Cost Substation Built

BPA this past fall also finished expanding Columbia Falls Substation on the scenic highway to Glacier National Park — on schedule and $400,000 under budget. The project cost less to build than earlier substations of its kind and is more attractive.

The station was made more compact. Crews applied a dark primer to towers, making them all but invisible against the nearby mountains. The towers will never need repainting.

System Control Project

Bonneville has begun a $20 million project to upgrade the computers that monitor and control its power system. When the project is finished, the Dittmer Control Center at Vancouver, Washington, and the Eastern Control Center near Moses Lake, Washington, will be able to back one another up.

Over the next several years, BPA will also replace outmoded parts of the microwave system.

New Approach Tried

BPA and the Snake River Power Association have used a new approach to construct a 161-kV line in Southern Idaho. BPA will build the line. But it will be financed by the Snake River Power Association, a group of BPA customers.

The line, which will cost $10 million to build, will run from Goshen to Drummond Substation, a distance of 72 miles. The project will improve service to Drummond, Targhee, Palisades and West Yellowstone.

An earnest attempt to involve the public was made in the early stages of the project. This effort included public meetings, workshops, conferences, and open houses, supplemented by newspaper ads and radio spots.

As a result, the acquisition of the right of way for the line led to less than half the usual number of condemnation proceedings.

Electrical System Grows

BPA placed 327 circuit miles of new transmission lines and 2 new substations into service in 1986. At the end of the fiscal year, BPA had 14,429 circuit miles of line and 385 substations.

It was operating 4,311 circuit miles at 500 kV, 709 miles at 345 kV, 1,450 miles at 287 kV, 4,053 miles at 230 kV and 94 miles at 138 kV; 264 miles of d.c. line operated at 1,000 kV. The balance of the system operated at 115 kV or lower voltages. The system had 63,566,105 kVA of transformer capacity.

Headquarters Building Nears Completion

Now officially named the Bonneville Power Administration Building, the new headquarters building is 90 percent complete. We expect the building to be finished by June 15, 1987. A contract for the interior wall construction and other finish work will be let soon by the General Services Administration. A new telephone system, which will serve the building and other Federal agencies in east Portland, is being installed.

The building's design and mechanical equipment will make it one of the most energy-efficient commercial buildings in the nation. The systems in the building will be fully automated.

BPA expects to complete the move into the building in August 1987. About 1,900 persons will occupy the building. Approximately 200 persons will continue to occupy leased space until the present headquarters building can be renovated.

The new building will bring BPA's staff back under one roof. That will mean greater efficiency.

The Quality of Life

Keeping the Environment Clean

BPA in 1986 finished a preliminary assessment of hazardous wastes that have been disposed of over a period of many years at the Ross Complex near Vancouver, Washington. The results of the assessment have been discussed with local officials and federal and state agencies. BPA must now determine what remedies, if any, are needed to safeguard the environment.

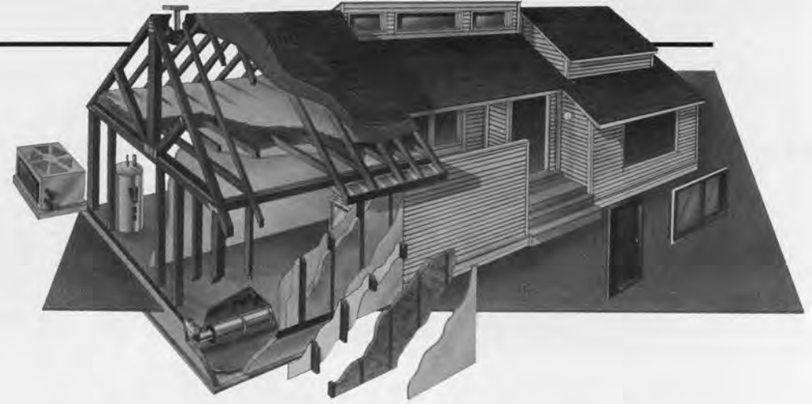
Meanwhile, the agency continues to test soils at various substations to ascertain the extent of PCB contamination. A few problem areas have been found. They are being corrected.

New Computer Saves BPA Money

Three years have passed since BPA began moving its files and programs to an IBM 3081 mainframe computer. The benefits have already offset the cost of the move.

BPA completed most of the move in 1986. New systems were developed for such applications as financial management, payroll and personnel, power system maintenance and materials management. Other systems which appeared to be working well were simply converted to the IBM.

Home builders are embracing the GOOD CENTS home standards as a strong sales advantage.



Conservation

The Northwest Power Act made conservation BPA's highest priority resource. But in 1986, when the agency's financial condition began to deteriorate, all program managers, including those for conservation, were asked to cut costs. As a result, proposed outlays for the conservation program were cut 33 percent for 1987, 37 percent for 1988 and 46 percent for 1989.

Residential Weatherization

The region's public utilities, the Washington State Department for Community Development, and BPA made a special effort in 1986 to weatherize the homes of low income families. Lower income families tend to live in older, draftier houses. They tend to be less informed on efficient heating, and they use more electricity per square foot of floor space than do higher income families.

In 1986, BPA and the utilities weatherized more than 25,000 electrically heated homes. Of these, one out of five was occupied by a low-income family. BPA provided about $47 million to make the 25,000 homes more efficient users of electricity.

The program has created hundreds of jobs in a region where the economy has been slack since the 1982-1983 recesssion, due largely to cutbacks in the forest products industry and lower prices for farm products.

Model Conservation Standards

About 1,000 single family homes, 400 apartments and condominiums, and 100 commercial buildings have been built to model conservation standards, due in large part to BPA technical assistance and support. These are the standards developed by the Northwest Power Planning Council. They call for special construction practices and result in structures that can be heated for much less than those built to conventional standards. Eleven jurisdictions, including the city of Tacoma, have incorporated these standards into their building codes. Ten of the jurisdictions are in Washington State.

Nearly 80 utilities that buy power from BPA are taking part in the program to promote the construction of Super GOOD CENTS homes. The homes are built to model conservation standards by individual contractors who receive incentive payments to offset part of their construction costs. BPA funds the program.

The program, which generates energy savings and delays the day when new power plants will have to be built, is catching on. Fifty-four percent of the Northwest's residents now say they would prefer to purchase a Super GOOD CENTS home. The number compares with 45 percent a year ago.

BPA continues to foster the construction of energy-efficient houses. It is rating the effectiveness of various conservation measures and developing a "package" of measures that would bring about an optimum return for each dollar invested.

Bonneville's "Super Good Cents" program is yielding a new generation of more efficient homes.

Super Good Cents

Power for Peace and Jobs

Manufactured Homes

During 1986, BPA selected designs for and financed the construction of 39 manufactured homes to determine how efficiently they use energy. The homes met the building code of the Housing and Urban Development Department. A manufactured home is one that is constructed in a plant and conveyed to a building site.

Thirty-seven of the homes are in Washington State; thirty-four are on the Tulalip Indian Reservation north of Everett, and three are at Neah Bay. All meet the Power Planning Council's model conservation standards.

BPA is monitoring the use of electricity in the homes. It will use this information to encourage the construction of energy efficient manufactured homes.

Helping Industries Save Energy

The owners of the 10 aluminum smelters in the Northwest have improved their plants and increased their efficiency over the years. But some of these plants date back to World War II and are among the least efficient aluminum smelters in the country.

The owners of the plants find it difficult to compete with foreign plants. They tend to operate their potlines only when the price of aluminum is favorable.

Electricity is a major cost of production. It accounts for about 30 percent of the cost of smelting aluminum.The consumption of electricity by the plants tends to vary widely, and this affects the efficiency of BPA's power system. In an attempt to stabilize its loads and protect its revenue stream, BPA will be offering incentives to the smelter owners to modernize their equipment and produce each pound of aluminum with less electricity. This effort has become known as the aluminum smelter conservation modernization program.

Other Industries

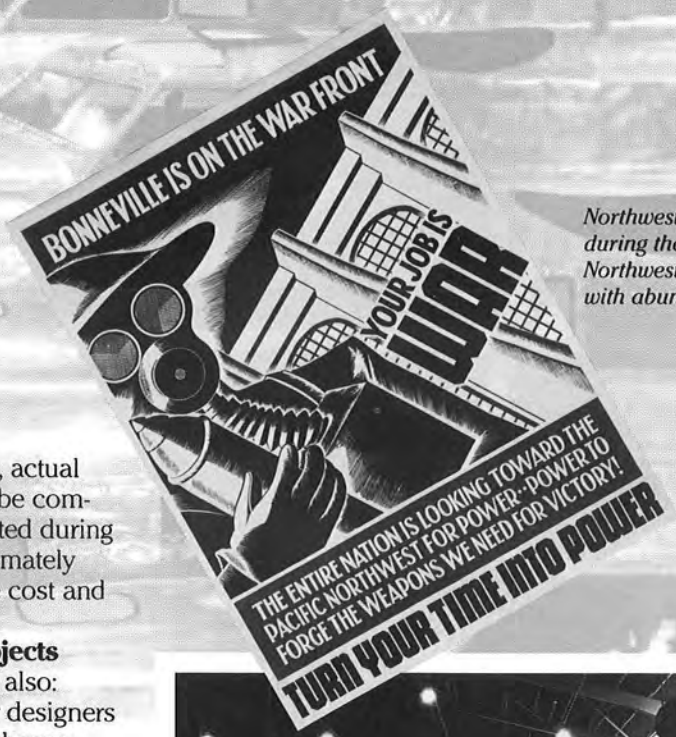
BPA in 1986 initiated seven projects to demonstrate how industries other than aluminum can save energy — and money — through the efficient use of electricity. BPA pays part of the cost of these projects. The plant operators pay the rest. The program has two goals: (1) to develop the capability to save energy, and (2) to acquire the actual energy saved.

A similar program is under way on a number of Northwest farms. For the eighth consecutive year, BPA and the farmers are working cooperatively to lower irrigation costs. The approach uses improved equipment and special information on the weather. A network of 11 weather stations supplies data that is used to help farmers water their crops with less energy for pumping.

Commercial Buildings

A BPA research project, known as Energy Edge, is investigating how to design commercial buildings that use less energy per square foot of floor space. Features are being designed into the buildings to make them 30 percent more efficient than earlier standards set up by the Northwest Power Planning Council. Sixteen buildings of varying types were selected for the program in 1986.

The science of aviation lept forward during WWII at the Boeing facilities in Seattle.



Northwest aluminum plants blossomed during the war years and stayed in the Northwest to produce metal and jobs with abundant, low-cost electricity.

As the project proceeds, actual costs and energy use will be compared to the values predicted during the design phase. This ultimately will result in more reliable cost and performance data.

Other Conservation Projects

BPA's conservation staff also:

- Sponsors workshops for designers and builders of homes and commercial buildings.
- Promotes the purchase of energy-efficient refrigerators and freezers through a regionwide campaign.
- Conducts pilot programs with utilities and private firms to conserve energy in existing commercial buildings.
- Provides energy conservation education, technical and financial assistance through state and local governments.
- Conducts a limited selection of research, development and demonstration projects in conservation technologies.
- Helps Northwest states conserve energy in their institutional buildings.

Proud to Serve the Region

Bonneville employees have always involved themselves in their communities. Today, both retirees and younger members of the Bonneville family contribute in many ways.

'Energizing the Community'

Three years ago a contingent of BPA employees, acting on impulse, raised more than $3,000 for the Portland Symphonic Choir. A year later the employees raised $11,000 to help street kids in Portland through a community drive known as the Greenhouse Project. This year a corps of volunteers, whose numbers are still growing, raised more than $10,000 in a campaign for Shared Outdoor Adventure Recreation. SOAR helps handicapped persons explore an unfamiliar world, the out-of-doors.

The original project has evolved into an annual BPA benefit which has become known as "Energizing the Community."

The volunteers coordinate the fund raising effort. They screen qualified organizations that need help and select one. Once the selection is made, the volunteers plan and coordinate a series of "fun" events to raise funds for that organization.

For example, an annual auction has been established where goods and services donated by BPA employees are sold to other employees. Donations to the auction have included boat trips; vacations; dinners; hand crafted items such as fishing poles, cookies, yard work; and much more. At BPA's annual picnic a dunk tank is set up. If an employee can hit the paddle with a baseball, he or she may dunk a favorite supervisor.

Their efforts in no way interfere with or detract from BPA's annual Combined Federal Campaign that benefits hundreds of local organizations, including the United Way.

Energizing the Community offers a way for BPA employees in Portland, Oregon, and Vancouver, Washington, to get personally involved in their community. The program is of genuine help.

BPA also benefits. The activities offset a public tendency to see BPA as an impersonal agency. BPA employees who do not normally work together become acquainted with one another, creating a stronger sense of community and cooperation.

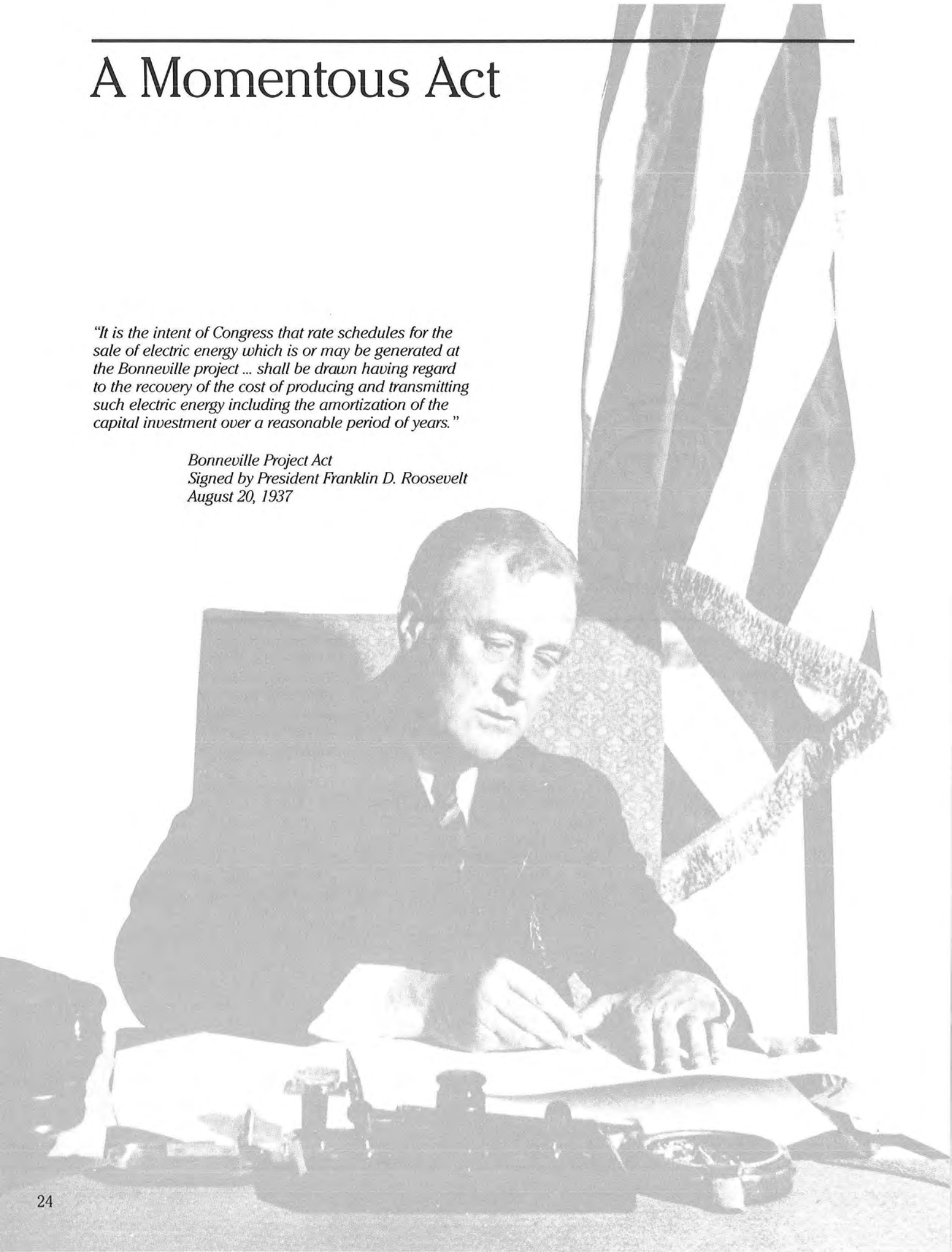
The auction raised $8,000 this year, and the dunk tank $340. A group of runners who collect pledges for the Hood-to-Coast relay run raised nearly $2,000.

Energizing the Community has the enthusiastic support of BPA's top management.

A Momentous Act

"It is the intent of Congress that rate schedules for the sale of electric energy which is or may be generated at the Bonneville project ... shall be drawn having regard to the recovery of the cost of producing and transmitting such electric energy including the amortization of the capital investment over a reasonable period of years."

Bonneville Project Act
Signed by President Franklin D. Roosevelt
August 20, 1937



Financials

Financial Section

Management's Discussion and Analysis of Financial Condition

Results of Operations

Market conditions were poor in fiscal year (FY) 1986, and as a result, expenses exceeded revenues. Nevertheless, this was the third consecutive year in which the U.S. Treasury (Treasury) was paid more than $600 million. Payments to the Treasury include interest and amortization of the Federal investment in the Federal Columbia River Power System (FCRPS) and operation and maintenance of Federal dams operated by the Corps of Engineers and Bureau of Reclamation.

Operating Revenues

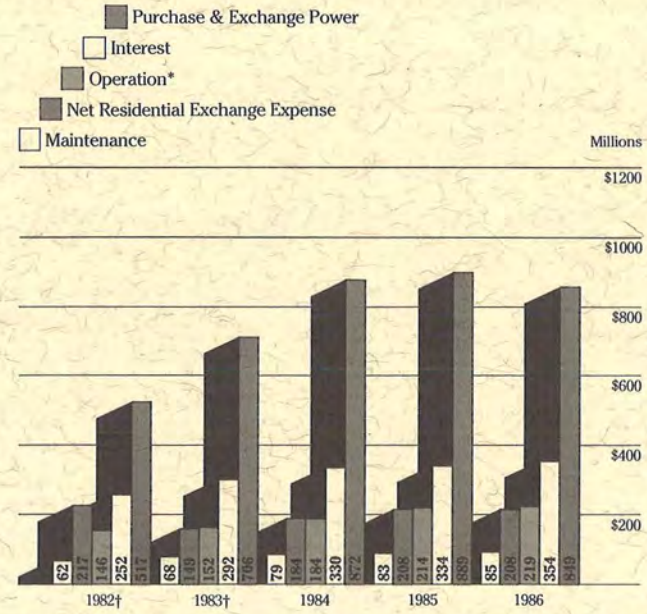
Total energy sales were at the planned level. However, the low price for aluminum ingot, as well as reduced oil and gas prices had a direct impact on the price BPA could charge for power and therefore reduced revenues. Operating revenues for FY 1986 decreased $256 million from FY 1985.

The Northwest aluminum industry has been depressed in recent years. FY 1986 was no exception. The drop in the world price of aluminum resulted in energy sales to this important customer class being 13% less than planned in the rate design. Even more dramatic, due to the incentive and variable rates, the revenues from this class were 24% lower than planned. However without the lower rates several of these customers would have shutdown additional potlines, further decreasing sales. Revenues from this class decreased $86 million when compared to FY 1985.

Out of region sales have played an increasingly important role in total revenues. FY 1986 out of region sales remained very strong. The amount of revenue from these sales is determined by their being either at surplus firm or nonfirm rates. Due to the competitive price of alternative oil and gas generation, and additional new generation in California, BPA sold most of this energy at the lower 85 modified nonfirm rate. As a result, actual revenues were significantly lower than planned. Revenues from this source decreased $148 million from their FY 1985 levels.

Revenue and Expense Trend

Expense Trend



†1982 and 1983 are not restated for change in accounting method

*Includes Conservation and Fish & Wildlife

Operating Expenses

Every effort was made to hold operating expenses to their FY 1985 levels. This resulted in FY 1986 total operating expenses increasing only $13 million from the prior year.

BPA's operation and maintenance expenses were reduced significantly from the rate design plans. These savings were achieved mainly in system operation and maintenance; resource planning and oversight; and power marketing.

Interest Expense

Net interest expense increased $19 million in FY 1986 because the Allowance for Funds Used During Construction (AFUDC) decreased from FY 1985. AFUDC was less as a result of lower construction work in progress.

Basis for Financial Reporting

BPA prepares financial statements for the FCRPS to report its financial condition as if it were a public utility.

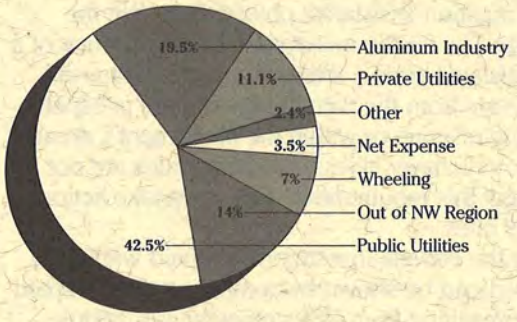
The financial statements are independently audited by the firm of Arthur Andersen & Co., independent public accountants, in accordance with generally accepted auditing standards.

Power rates are based on the FCRPS revenue requirement study. While the financial statements show historical results, the revenue requirement study shows projected costs to be recovered from rates. The revenue requirement study considers BPA's obligation to recover costs and sets a revenue level sufficient to meet those obligations. Costs include operation and maintenance; purchase and exchange power; interest and recovery of the FCRPS investment in power generating, conservation, and transmission facilities. The two sets of financial reports measure different things; historical results in the financial statements and projected obligations in the revenue requirement study.

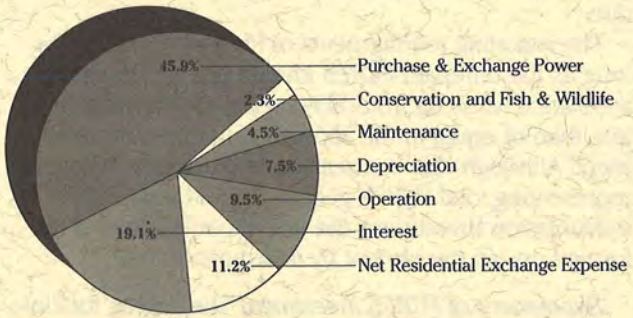
Revenue Requirement Study

The revenue requirement study, which includes demonstrated repayment of Federal investment, reflects revenues and costs from the 1985 Wholesale Power and Transmission Rate Proceedings. On June 28, 1985, the Federal Energy Regulatory Commission (Commission) approved the proposed rate increases on an interim basis.

1986 Sources of Revenue



1986 Disposition of Revenue



Repayment Demonstration BPA is required by PL 89-448 to demonstrate that the reimbursable costs of the FCRPS are scheduled to be returned to the U.S. Treasury from BPA net revenues within the period prescribed by law. BPA is required to make a similar demonstration for the costs of irrigation projects which are beyond the ability of the irrigation water users to repay. These requirements are met by conducting a revenue requirement study.

Since 1985 BPA has prepared separate repayment demonstrations for generation and transmission in accordance with an order issued by the Commission on January 27, 1984, 26 FERC 61,096.

Repayment Obligation BPA's rates must be designed to collect enough revenue to return the costs reimbursable from power revenues of each FCRPS investment and each irrigation assistance obligation within the time fixed by law for the investment. In the absence of a specific legislated period, the costs must be returned within 50 years from the date the investment is capable of producing revenue or within the investment's average service life, whichever is less. If existing rates are not likely to meet this requirement, BPA must take action to adjust its rates.

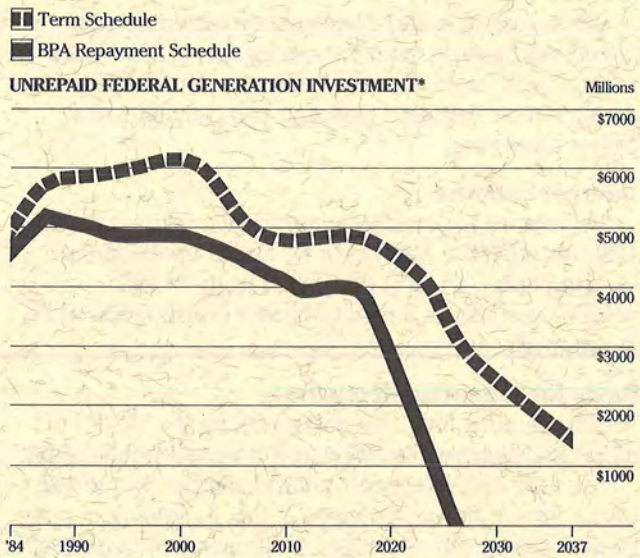
Whether the Federal investment is repaid within the time allowed can be shown by comparing the unrepaid investment resulting from BPA's repayment schedule with the allowable unrepaid investment resulting from a "term schedule" on a year-by-year basis. A term schedule represents a repayment schedule whereby each investment would be repaid in total in the year it was due.

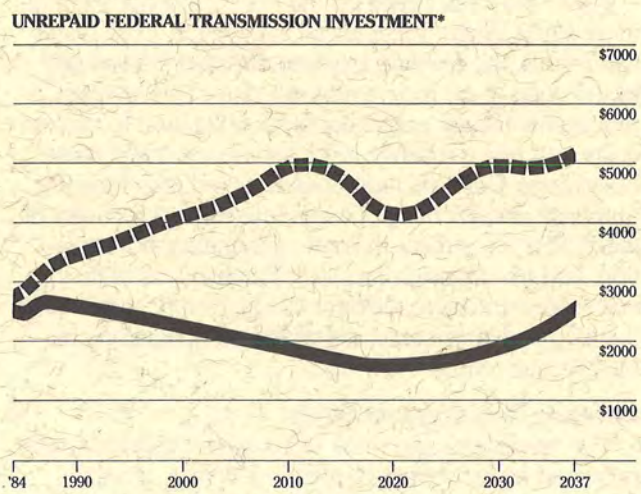
The reporting requirements of PL 89-448 are met as long as the unrepaid FCRPS investment and irrigation assistance resulting from BPA's repayment schedule is less than or equal to the allowable unrepaid investment. Although the comparison is illustrated by graphs representing total FCRPS generation and total FCRPS transmission investment, the actual comparison is performed on an investment by investment basis.

Repayment of FCRPS Investment The graphs for Unrepaid Federal Generation and Transmission investment illustrate that the unrepaid investment resulting from BPA's generation and transmission repayment schedules is always less than the allowable unrepaid investment. This shows that BPA's current rates are scheduled to recover all reimbursable costs of FCRPS investments on or before their due dates.

The *term schedule* lines in the graphs show how much of the investment can remain unpaid in accordance with the repayment period for the generation and transmission components of the FCRPS. The *BPA repayment schedule* lines show how much of the investment remains to be repaid according to BPA's repayment schedules. In each year, BPA's repayment schedule is ahead of the term schedule.

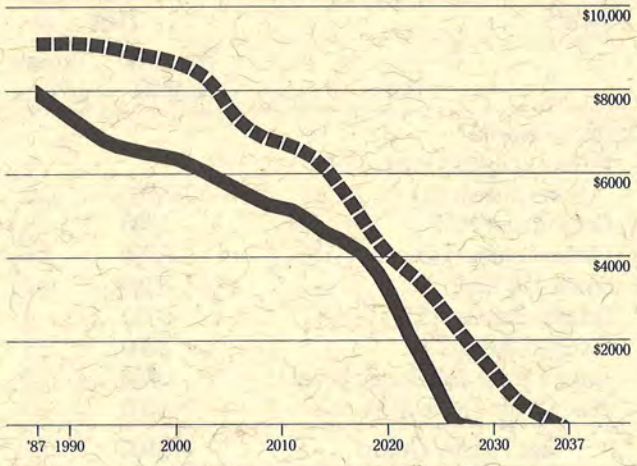
Repayment Period
Federal Columbia River Power System
Fiscal Year 1987
Ending September 30





*Includes future replacements

UNREPAID FEDERAL INVESTMENT†



†Includes generation and transmission investments through fiscal year 1987. Excludes future replacements.

This occurs because BPA plans repayment both to comply with investment due dates and to minimize costs over the 50 year repayment period. Costs are minimized by repaying highest interest bearing investments first, to the extent possible. This will result in some investments being repaid before their due dates, while assuring that all other investments will be repaid by their due dates.

The graphs include the costs of replacements necessary to maintain the existing FCRPS generation and transmission facilities.

The Unrepaid Federal Investment graph displays the total planned unrepaid FCRPS investment compared to allowable total unrepaid FCRPS investment omitting replacements. This shows that the FCRPS investment through FY 1987 is scheduled to be returned to the U.S. Treasury within the 50 year repayment period and ahead of due dates.

Repayment of Irrigation Assistance BPA plans to meet irrigation assistance obligations in the year they are due over the next 50 years. It is Federal policy that BPA will pay irrigation assistance on or before due dates until the entire irrigation assistance obligation has been met.

Because BPA has scheduled repayment of irrigation assistance obligations in the year they are due, the planned unrepaid irrigation assistance is exactly equal to the allowable unrepaid irrigation assistance.

Repayment Policy BPA's repayment policy is considered in determining its revenue requirements and rate levels. This policy, based on BPA's interpretation of laws and Department of Energy regulations, requires that FCRPS revenues be sufficient to:

1. Pay the cost of obtaining power through purchase and exchange agreements.
2. Pay the cost of operating and maintaining the power system.
3. Pay interest on and repay the outstanding revenue bonds sold to the Treasury to finance transmission system construction, conservation, and fish and wildlife.
4. Pay interest on the unrepaid investment in power facilities financed with appropriated funds (Federal hydroelectric projects are all financed with appropriated funds, as were BPA transmission facilities constructed before 1978).
5. Pay, with interest, any outstanding deferral.
6. Repay the power investment in each Federal hydroelectric project within 50 years after it goes into service (except for the Chandler Project, which has a legislated repayment period of 66 years).
7. Repay each increment of the investment in the BPA transmission system financed with appropriated funds within the average service life of the transmission facilities (45 years).
8. Repay the investment in each replacement at a Federal hydroelectric project within its service life.
9. Repay construction costs at Federal reclamation projects which are beyond the ability of the irrigation water users to pay, and which are assigned for payment from commercial power revenues, within the same period available to the water users for making payments. These periods range from 40 to 66 years with 60 years being applicable to most of the irrigation payment assistance.

Investments bearing the highest interest rate will be repaid first to the extent possible while still completing repayment of each increment of investment within its prescribed repayment period.

ELECTRIC ENERGY RECEIVED AND DELIVERED

TABLE 1	*1986*
	Thousands of MWH
Energy Received (a)	
Bureau of Reclamation	21,712
Corps of Engineers	59,715
WNP No.2	4,947
Hanford Steamplant (NRP)	2,598
Centralia Thermal Project	404
Trojan Nuclear Plant	2,066
Other Generation	1,218
Power Interchanged In	54,138
Total Received	146,798
Energy Delivered	
Sales (a and b)	81,914
Power Interchanged Out	61,327
Used by Administration	70
Total Delivered	143,311
Energy Transmission Losses	3,487
Total	146,798
Losses as Percent of Total Received	2.4%
Maximum demand on generation (kilowatts)	17,108

(a) Excludes residential exchange.
(b) Based on actual billings. Excludes accounting accruals.

GENERATION BY THE PRINCIPAL ELECTRIC UTILITY SYSTEMS OF THE PACIFIC NORTHWEST (a)

TABLE 2	*1986*	
	Thousands of MWH	Percent of Total
Publicly Owned:		
Federal Columbia River Power System (b)	93,200	51.0
Grant County PUD	3,300	1.8
Chelan County PUD	2,900	1.6
Seattle City Light	7,700	4.2
Douglas County PUD	750	.4
Tacoma City Light	2,800	1.5
Eugene Water and Electric Board	650	.4
Pend Oreille County PUD	500	.3
Total Publicly Owned	111,800	61.2
Privately Owned:		
Pacific Power and Light	17,350	9.5
Idaho Power Company	13,650	7.5
Montana Power Company	8,450	4.6
Portland General Electric	11,850	6.5
Washington Water Power Company	7,000	3.8
Puget Sound Power and Light	12,700	6.9
Total Privately Owned	71,000	38.8
Total Generation	182,800	100.0

(a) Generation shown is for members of the Northwest Power Pool plus Pend Orielle County PUD and the Washington Public Power Supply System. British Columbia Hydro and Power Authority, Sierra Pacific Power Co., Trans Alta Utilities, Utah Power & Light Co., and West Kootenay Power and Light, who are members of the Power Pool, are not included because their service areas are outside the Pacific Northwest.

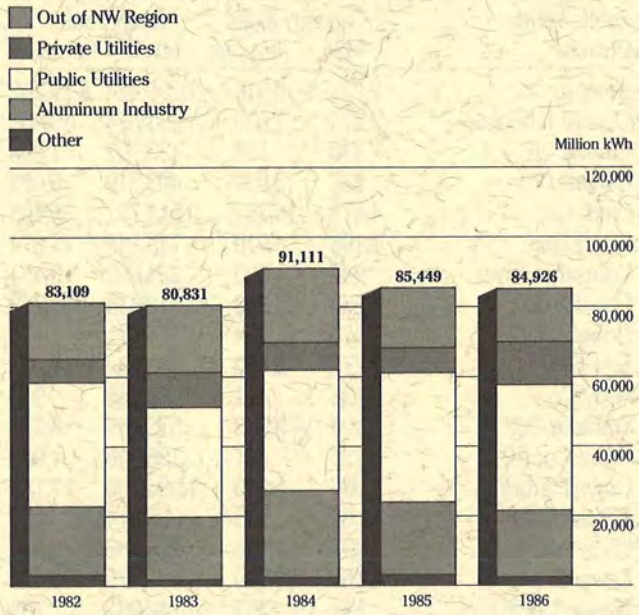
(b) Includes: Pacific Northwest generating facilities of the Bureau of Reclamation and Corps of Engineers; Washington Public Power Supply System's nuclear plant (WNP-2), Hanford steam plant (NPR), and Packwood hydro plant; the Okanogan PUD share of Wells; the municipality shares (Forest Grove, McMinnville, and Milton-Freewater) of Priest Rapids: the Snohomish PUD share of the Centralia steam plant and the Jackson hydro plant; the Federal share of the Trojan nuclear plant; the Pacific NW Generating Companies' share of Boardman; the PGE-Kinzua co-generation project; the Clark County PUD-Great Western Malting co-generation project; the Seattle City Light and Tacoma City Light shares of Southern Columbia Basin Irrigation District hydro generation; the Seattle City Light Rocky Brook Project; and the GPPL Mid-Fork co-generation project.

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 *1986*

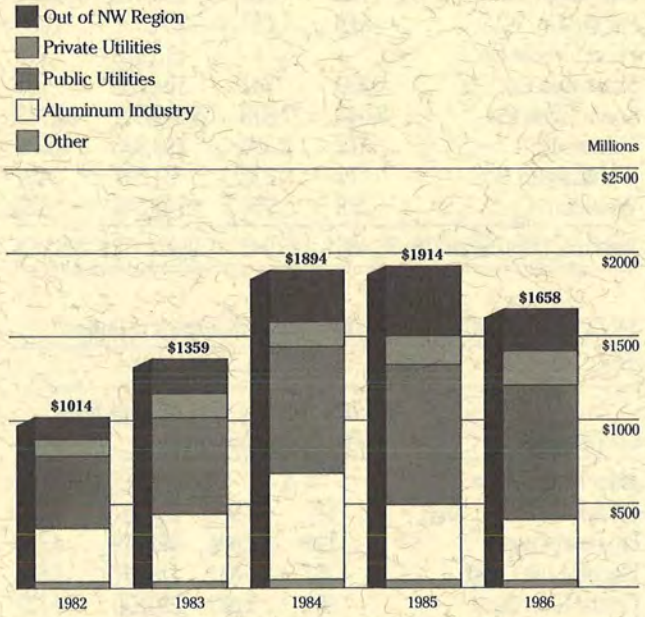
Northwest Region Municipalities	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Albion, ID	7	$ 26	3,226	$ 50
Ashland, OR	295	1,002	129,393	2,021
Bandon, OR	114	389	48,962	764
Blaine, WA	94	324	43,753	690
Bonners Ferry, ID	84	295	28,849	467
Burley, ID	215	730	103,906	1,630
Canby, OR	241	829	101,995	1,603
Cascade Locks, OR	61	210	26,416	416
Centralia, WA	324	1,108	121,902	1,935
Cheney, WA	214	739	99,911	1,572
Cons. Irrig. Dist., WA	8	23	1,665	26
Coulee Dam, WA	37	135	17,993	287
Declo, ID	8	25	3,397	53
Drain, OR	54	181	24,970	390
Eatonville, WA	36	128	16,601	261
Ellensburg, WA	311	1,051	153,990	2,418
Eugene, OR	2,764	9,282	1,623,961	25,465
Fircrest, WA	93	321	42,545	669
Forest Grove, OR	256	813	115,636	1,822
Heyburn, OR	138	464	70,046	1,100
Idaho Falls, ID	1,065	3,668	530,306	8,337
McCleary, WA	76	257	32,957	516
McMinnville, OR	663	2,192	316,907	4,982
Milton, WA	79	278	35,743	562
Milton-Freewater, OR	140	400	62,729	999
Minidoka, ID	2	7	979	15
Monmouth, OR	121	426	49,046	774
Port Angeles, WA	1,069	3,588	652,288	10,102
Richland, WA	1,192	4,069	553,901	8,688
Rupert, ID	161	560	74,433	1,169
Seattle, WA	1,053	3,608	1,727,837	25,577
Soda Springs, OR	12	33	5,559	82
Springfield, OR	1,337	4,554	688,028	10,767
Steilacoom, WA	96	329	40,040	633
Sumas, WA	18	62	8,587	135
Tacoma, WA	3,872	12,671	2,607,202	41,801
Vera Irrig. Dist., WA	330	1,142	150,512	2,371
WA Public Power Supply System, WA	359	1,169	80,942	1,233
Total Municipalities (38)	16,999	$ 57,088	10,397,113	$ 162,382

Kilowatt Hours Used by Customer Class*



*Excluding residential exchange

Electric Power Sales by Customer Class*



*Excluding residential exchange

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 *1986*

Public Utility Districts	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Benton, Co.	2,722	$ 8,916	1,299,424	$ 19,292
Central Lincoln	2,275	7,699	1,251,524	19,461
Chelan Co.	412	199	133,707	1,898
Callam Co.	932	3,030	403,319	6,022
Clark Co.	4,679	16,252	2,514,722	39,469
Clatskanie	1,198	4,010	713,544	11,074
Columbia River	445	1,503	221,092	3,451
Cowlitz Co.	4,668	15,048	3,316,816	50,708
Douglas Co.	410	184	19,771	171
Emerald	778	2,412	343,204	4,964
Ferry Co.	128	401	62,868	910
Franklin Co.	1,194	3,922	575,789	8,719
Grant Co. #2	1,159	671	156,366	1,001
Grays Harbor	2,037	6,989	1,096,290	17,181
Kittitas Co.	66	193	28,814	409
Klickitat Co.	495	1,556	228,808	3,313
Lewis Co.	1,166	3,849	661,975	10,025
Mason Co. #1	111	357	47,962	702
Mason Co. #3	895	3,082	397,678	6,234
Northern Wasco Co.	443	1,516	196,621	3,086
Okanogan Co.	192	685	258,872	4,014
Pacific Co. #2	519	1,781	234,992	3,688
Pend Oreille Co.	—	—	113,978	115
Skamania Co.	230	741	104,108	1,521
Snohomish Co.	8,048	27,618	4,063,801	62,143
Tillamook	672	2,300	293,985	4,606
Wahkiakum Co.	72	233	31,597	461
Whatcom Co.	239	796	149,545	2,320
Total Public Utility Districts (28)	36,185	$ 115,943	18,921,172	$ 286,958

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 *1986*

Cooperatives	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Alder Mutual Light	4	$ 15	2,055	$ 31
Benton Rural Elec. Assn.	617	1,909	283,537	4,157
Big Bend Coop.	746	2,084	363,319	4,112
Blachly-Lane Coop.	261	831	113,037	1,674
Central Elec. Coop.	661	2,083	290,630	4,137
Clearwater Power Co.	311	986	136,224	1,988
Columbia Basin Coop.	213	648	105,442	1,439
Columbia Power Coop.	54	168	24,874	332
Columbia Rural Elec. Assn.	369	1,023	180,070	2,019
Consumers Power	692	2,199	296,877	4,304
Coos-Curry Elec. Coop.	489	1,548	219,276	3,163
Douglas Elec. Coop.	267	847	115,636	1,676
East End Mutual Elec.	31	94	14,474	182
Elmhurst Mutual P&L	470	1,622	206,502	3,255
Fall River Elec. Coop.	288	848	127,216	1,639
Farmers Elec. Co.	10	33	4,040	64
Flathead Elec. Coop.	289	913	134,325	1,954
Glacier Elec. Coop.	312	1,006	166,800	2,469
Harney Elec. Coop.	271	764	138,163	1,562
Hood River Elec. Coop.	177	599	84,150	1,328
Idaho Co. L&P Coop.	66	212	31,316	458
Inland P&L	1,015	3,284	461,418	6,748
Kootenai Elec. Coop.	382	1,214	174,099	2,487
Lakeview L&P	481	1,638	234,085	3,677
Lane Elec. Coop.	495	1,613	212,005	3,168
Lincoln Elec. Coop. - MT	147	472	67,683	992
Lincoln Elec. Coop. - WA	218	597	103,981	1,394
Lost River Elec. Coop.	114	320	54,225	643
Lower Valley P&L	712	2,279	338,827	4,925
Midstate Elec. Coop.	437	1,372	201,001	2,831
Missoula Elec. Coop.	250	791	119,119	1,713
Nespelem Valley Elec. Coop.	83	267	37,244	541
Northern Lights	420	1,335	209,884	3,050
Ohop Mutual Light Co.	86	275	35,111	525
Okanogan County Coop.	59	192	28,594	423
Orcas P&L	257	814	112,463	1,640
Pacific NW Generating Co.	30	100	29,641	402
Parkland Light & Water	199	687	96,039	1,513
Peninsula Light Co.	759	2,620	328,278	5,174
Prairie Power Coop.	19	55	8,808	119
Raft River Elec. Coop.	275	778	140,013	1,573
Ravalli Elec. Coop.	167	534	76,693	1,102
Riverside Elec. Co.	30	98	12,708	191
Rural Elec. Co.	167	554	77,477	1,119
Salem Elec.	555	1,899	268,540	4,206
Salmon River Coop.	422	1,337	215,034	3,143
South Side Elec. Lines.	65	200	32,073	425
Surprise Valley Elec.	203	587	94,419	1,239
Tanner Elec.	64	203	26,514	388
Umatilla Elec. Coop.	1,056	3,096	607,101	7,397
Unity P&L	135	435	60,575	867
Vigilante Elec. Coop.	234	678	109,542	1,459
Wasco Elec. Coop.	234	678	102,854	1,489
Wells Rural	284	875	162,622	2,306
West Oregon Coop.	131	421	57,619	838
Total Cooperatives (55)	16,783	$ 52,730	7,934,252	$ 111,650

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 — *1986*

Federal Agencies	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
U.S. Department of Energy	921	$ 3,087	525,495	$ 8,202
U.S. Bureau of Mines	16	53	5,819	92
U.S. Air Force	69	230	34,606	540
U.S. Bureau of Reclamation	—	—	113,501	366
U.S. Bureau of Indian Affairs	425	1,439	180,379	2,751
U.S. Navy	630	2,111	326,253	5,051
Total Federal Agencies (6)	2,061	$ 6,920	1,186,053	$ 17,002

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 — *1986*

Privately Owned Utilities	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
California Pacific National Corp.	—	$ —	9,353	$ 124
Colockum Transmission Co.	444	204	27,596	197
Idaho Power Co.	—	—	885,991	6,954
Montana Power Co.	960	3,188	1,944,926	18,883
Pacific Power & Light Co.	12,894	43,839	2,972,684	26,583
Portland General Elec. Co.	8,665	27,587	1,103,266	19,778
Puget Sound P&L Co.	2,761	4,005	2,405,372	26,766
Utah Power & Light Co.	—	—	1,484,474	11,140
Washington Water Power	1,317	3,351	1,177,283	13,268
Total Privately Owned Utilities (9)	27,041	$ 82,174	12,010,945	$123,693

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 — *1986*

Aluminum Industry	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Alcoa	3,624	$ 19,674	2,534,219	$ 30,115
Columbia Falls Aluminum Co.	4,037	21,007	2,924,663	35,584
Commonwealth Aluminum Co.	2,200	11,468	1,536,125	18,563
Intalco Aluminum Co.	5,296	27,535	3,841,552	46,728
Kaiser Aluminum Co.	5,003	25,771	3,595,128	44,300
Martin Marietta Co.	52	255	8,737	107
Reynolds Metals Co.	6,011	30,337	4,100,242	49,817
Total Aluminum Industry (7)	26,223	$ 136,047	18,540,666	$ 225,214

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 — *1986*

Other Industries	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Carborundum Co.	2	$ 10	319	$ 5
Georgia Pacific Corp.	393	1,845	267,828	3,462
Gilmore Steel	3	13	1,577	37
Hanna Nickel Smelting	—	—	101,911	765
Oregon Metallurgical	83	410	51,505	647
Pacific Carbide	99	472	60,366	758
Pennwalt Corporation	786	3,810	561,040	7,297
Port Townsend Paper	168	835	104,286	1,317
Total Other Industries (8)	1,534	$ 7,395	1,148,832	$ 14,288
Total Sales NW Region (151)	126,826	$458,297	70,139,033	$941,187

SALES OF ELECTRIC ENERGY (Revenue in Thousands of Dollars)

TABLE 3 — *1986*

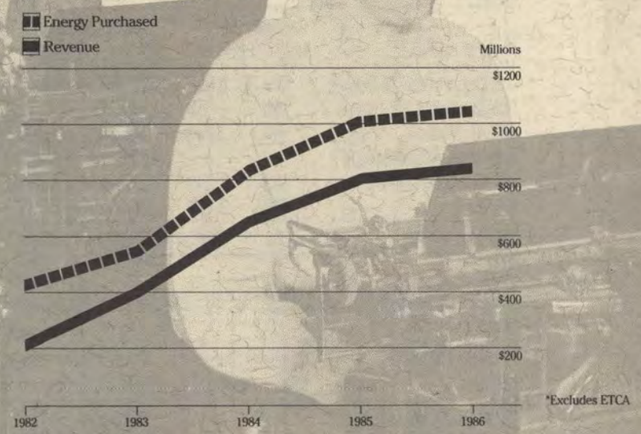
Outside Northwest Region	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Burbank, CA — Public	—	$ —	311,279	$ 4,958
Cominco, LTD., B.C. — Private	100	109	—	—
Glendale, CA — Public	—	—	337,555	5,282
Los Angeles, CA — Public	—	—	1,891,614	37,006
No. California Power Agency — Public	—	—	49,467	1,076
Pasadena, CA. — Public	—	—	237,214	3,753
Sacramento, CA — Public	—	—	182,307	3,341
Santa Clara, CA — Public	—	—	156,419	4,223
Pacific Gas & Elec. Co. — Private	3,000	7,590	4,471,969	75,303
San Diego Gas & Elec. — Private	—	—	397,992	5,651
Sierra Pacific Power Co. — Private	—	—	11,984	207
So. Cal. Edison Co. — Private	—	—	4,803,082	75,800
State of California — Public	—	—	532,487	9,750
WAPA-Mid Pacific Region — Federal	400	2,360	1,403,471	22,489
Total Outside NW Region (14)	3,500	$ 10,059	14,786,840	$248,839
Total Electric Sales Excluding Residential Exchange (165)	130,326	$468,356	84,925,873	$1,190,026

RESIDENTIAL EXCHANGE *(Revenue in Thousands of Dollars)*

TABLE 3 *1986*

	Capacity Sales MW	Capacity Sales Revenue	Energy Sales MWH	Energy Sales Revenue
Benton REA	488	$ 1,623	221,893	$ 3,144
Blachly-Lane	105	365	44,616	647
Central Elec. Coop.	525	1,795	231,147	3,118
Clark County PUD	3,497	12,349	1,643,976	25,999
Clearwater Power Co.	224	774	95,219	1,335
Consumers Power Co.	451	1,579	193,250	2,691
Coos-Curry Coop.	306	1,059	129,923	1,821
CP National	552	1,865	277,792	4,234
Douglas Elec. Coop.	211	728	96,504	1,377
Fall River Elec. Coop.	201	635	84,852	1,088
Idaho Power Co.	9,000	30,004	4,863,580	72,308
Lewis County PUD	618	2,198	280,555	4,191
Lincoln Elec. Coop. — WA	209	629	97,839	1,314
Lost River Elec. Coop.	99	297	51,311	507
Lower Valley Power & Light	380	1,312	161,154	2,242
Montana Light & Power	25	85	10,118	160
Montana Power	932	3,215	533,490	8,355
Pacific Power & Light	12,585	42,955	6,812,199	105,637
Portland General Electric	12,389	42,934	6,407,302	100,525
Puget Sound Power & Light	17,112	59,268	8,348,899	131,645
Raft River Coop.	220	621	116,530	1,319
Snohomish PUD	5,959	21,181	2,723,424	42,783
Soda Springs	12	31	6,064	91
Umatilla Elec. Coop.	156	637	108,446	1,298
Utah Power Co.	1,651	5,162	986,980	12,410
Washington Water Power	6,396	22,670	3,289,993	51,882
Total Residential Exchange (26)	74,303	$ 255,971	37,817,056	$ 582,121
Total	204,629	$ 724,327	122,742,929	$1,772,147

Residential Exchange*



*Excludes ETCA

The complexity of operating the Bonneville system has grown with the technology. Computers, innovative just a few years ago, are now everyday tools.

Auditors' Report

To the Administrator of
Bonneville Power Administration,
United States Department of Energy:

We have examined the balance sheets of the Federal Columbia River Power System (FCRPS) as of September 30, 1986 and 1985, and the related statements of revenues and expenses, changes in capitalization and source and use of funds for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As discussed in Note 7, pending and threatened litigation surrounding the Washington Public Power Supply System (the Supply System), including litigation relating to the Supply System's nuclear projects (WNP) Nos. 4 and 5 for which FCRPS has no obligation, may have a significant impact on FCRPS. The ultimate impact on FCRPS, if any, cannot be presently determined.

In our opinion, subject to the effect of any adjustments that might have been required had the outcome of the litigation mentioned in the preceding paragraph been known, the financial statements referred to above present fairly the financial position of FCRPS as of September 30, 1986 and 1985, and its revenues and expenses, changes in capitalization and source and use of funds for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Our examinations were made for the purpose of forming an opinion on the basic financial statements taken as a whole. The Schedule of Amount and Allocation of Plant Investment as of September 30, 1986 (Schedule A) is presented for purposes of additional analysis and is not a required part of the basic financial statements. The information in Schedule A has been subjected to the auditing procedures applied in our examination of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

Portland, Oregon,
December 15, 1986.

Arthur Andersen + Co.

Federal Columbia River Power System
Statements of Revenues and Expenses
For the Years Ended September 30, 1986 and 1985

	1986	1985
	(Thousands of Dollars)	
OPERATING REVENUES (Note 1):		
Sales of electric power —		
Sales within the Northwest region —		
Publicly owned utilities	$ 786,751	$ 824,196
Aluminum industry	361,261	447,588
Privately owned utilities	205,867	186,450
Federal agencies	23,922	25,000
Other industry	21,683	24,069
Out of region sales	258,898	406,464
	1,658,382	1,913,767
Wheeling and other sales	129,287	167,082
Total sales	1,787,669	2,080,849
Residential exchange revenue (Note 5)	838,092	801,010
Total operating revenues	2,625,761	2,881,859
OPERATING EXPENSES:		
Operation	176,677	176,333
Maintenance	84,669	83,095
Purchase and exchange power (Note 4)—		
Hanford	37,500	51,079
Trojan	54,116	51,816
WNP No. 1	199,046	206,272
WNP No. 2	375,937	357,843
WNP No. 3	176,102	206,239
Other	6,074	16,166
Fish and wildlife	15,368	15,511
Conservation	3,356	4,348
Amortization of conservation and fish and wildlife (Note 1)	23,614	17,724
Depreciation (Note 1)	138,122	128,999
	1,290,581	1,315,425
Residential exchange expense (Note 5)	1,046,379	1,008,762
Total operating expenses	2,336,960	2,324,187
Net operating revenues	288,801	557,672
INTEREST EXPENSE:		
Interest on Federal investment —		
On appropriated funds	209,955	208,779
On long-term debt	167,570	164,269
Allowance for funds used during construction	(23,808)	(38,824)
Net interest expense	353,717	334,224
NET REVENUES (EXPENSE)	$ (64,916)	$ 223,448

The accompanying notes are an integral part of these statements.

Federal Columbia River Power System
Balance Sheets
September 30, 1986 and 1985

ASSETS	1986	1985
	(Thousands of Dollars)	
UTILITY PLANT (Notes 1 and 3):		
Completed plant	$ 8,216,771	$ 7,782,095
Accumulated depreciation	(1,662,640)	(1,535,148)
	6,554,131	6,246,947
Construction work in progress	412,914	616,031
Net utility plant	6,967,045	6,862,978
CAPITALIZED CONTRACTS (Notes 1 and 4):		
Purchased power		
Hanford	27,585	30,840
Trojan	132,075	134,960
WNP No. 1	2,109,560	2,124,415
WNP No. 2	2,258,700	2,281,995
WNP No. 3	1,583,830	1,590,360
Other	40,415	39,070
Conservation	16,345	17,000
Total capitalized contracts	6,168,510	6,218,640
CONSERVATION, net of accumulated amortization ($60,910 in 1986 and $37,804 in 1985) (Notes 1 and 2)	472,007	397,495
FISH AND WILDLIFE, net of accumulated amortization ($646 in 1986 and $138 in 1985) (Note 1)	9,262	4,180
CURRENT ASSETS:		
Cash	123,019	153,793
Accounts receivable	11,597	12,603
Accrued unbilled revenues	95,758	89,690
Materials and supplies, at average cost	35,607	33,640
Prepaid expenses	34,842	45,737
Total current assets	300,823	335,463
OTHER ASSETS:		
Investment in Teton and Libby dams (Note 6)	7,269	30,591
Other	6,601	16,509
Total other assets	13,870	47,100
	$13,931,517	$13,865,856

CAPITALIZATION AND LIABILITIES	1986	1985
	(Thousands of Dollars)	
ACCUMULATED NET REVENUES (EXPENSES) (Note 3)	$ (373,473)	$ (308,557)
FEDERAL APPROPRIATIONS (Note 3)	6,482,754	6,439,843
LONG-TERM DEBT (Notes 2 and 3)	1,458,799	1,340,000
CAPITALIZED CONTRACT OBLIGATIONS, net of current portion (Notes 1 and 4)	6,110,244	6,166,075
COMMITMENTS AND CONTINGENCIES (Notes 6 and 7)		
CURRENT LIABILITIES:		
Current portion of capitalized contract obligations (Notes 1 and 4)	58,266	52,565
Accounts payable	175,427	148,686
Employees' accrued leave	11,094	10,938
Total current liabilities	244,787	212,189
DEFERRED CREDITS	8,406	16,306
	$13,931,517	$13,865,856

The accompanying notes are an integral part of these balance sheets.

Federal Columbia River Power System
Statements of Changes in Capitalization
For the Years Ended September 30, 1986 and 1985

	Accumulated Net Revenues (Expenses)	Federal Appropriations	Long-Term Debt	Capitalized Contract Obligations	Total Capitalization
	(Thousands of Dollars)				
BALANCE AT SEPTEMBER 30, 1984	$(532,005)	$6,364,004	$1,405,000	$6,243,980	$13,480,979
Congressional appropriations:					
Operations and maintenance	—	83,087	—	—	83,087
Construction	—	107,839	—	—	107,839
Increase in long-term debt	—	—	150,000	—	150,000
Repayment of long-term debt	—	—	(215,000)	—	(215,000)
Net decrease in capitalized contract obligations	—	—	—	(25,340)	(25,340)
Repayment of Congressional appropriations:					
Operations and maintenance	—	(83,087)	—	—	(83,087)
Construction	—	(32,000)	—	—	(32,000)
Net revenues (expense)	223,448	—	—	—	223,448
BALANCE AT SEPTEMBER 30, 1985	(308,557)	6,439,843	1,340,000	6,218,640	13,689,926
Congressional appropriations:					
Operations and maintenance	—	83,788	—	—	83,788
Construction	—	53,212	—	—	53,212
Increase in long-term debt	—	—	500,000	—	500,000
Repayment of long-term debt	—	—	(381,201)	—	(381,201)
Decrease in capitalized contract obligations	—	—	—	(50,130)	(50,130)
Repayment of Congressional appropriations:					
Operations and maintenance	—	(83,788)	—	—	(83,788)
Construction	—	(10,301)	—	—	(10,301)
Net revenues (expense)	(64,916)	—	—	—	(64,916)
BALANCE AT SEPTEMBER 30, 1986	$(373,473)	$6,482,754	$1,458,799	$6,168,510	$13,736,590

The accompanying notes are an integral part of these statements.

Federal Columbia River Power System
Statements of Source and Use of Funds
For the Years Ended September 30, 1986 and 1985

	1986	1985
	(Thousands of Dollars)	
SOURCE OF FUNDS:		
Operations —		
Net revenues (expense)	$(64,916)	$223,448
Charges not requiring funds:		
Depreciation	138,122	128,999
Amortization	23,614	17,724
Funds provided from operations	96,820	370,171
Congressional appropriations:		
Operation and maintenance	83,788	83,087
Construction	53,212	107,839
Increase in long-term debt	500,000	150,000
Issuance of capitalized contract obligations	—	17,000
Realization of capitalized contracts	50,130	42,340
Write off of investment in Libby re-regulating dam	19,568	—
Decrease (increase) in current assets —		
Cash	30,774	28,800
Receivables	(5,062)	33,975
Materials and supplies	(1,967)	3,809
Prepaid expenses	10,895	(17,389)
Increase (decrease) in current liabilities —		
Accounts payable	26,741	(1,297)
Employees' accrued leave	156	283
Other sources (uses), net	5,762	(7,957)
Total funds provided	$870,817	$810,661
USE OF FUNDS:		
Investment in utility plant, net	$242,189	$313,987
Additions to capitalized contracts	—	17,000
Additions to conservation	97,618	103,067
Additions to fish and wildlife	5,590	4,180
Repayment of Congressional appropriations:		
Operations and maintenance	83,788	83,087
Construction	10,301	32,000
Repayment of long-term debt	381,201	215,000
Payment of capitalized contract obligations	50,130	42,340
Total funds used	$870,817	$810,661

The accompanying notes are an integral part of these statements.

Federal Columbia River Power System
Notes to Financial Statements
September 30, 1986 and 1985

1. Summary of Accounting Policies:

General

The Federal Columbia River Power System (FCRPS) includes the accounts of the Bonneville Power Administration (BPA), which purchases, transmits, and markets power, and the accounts of the Pacific Northwest generating facilities of the Corps of Engineers (Corps) and the Bureau of Reclamation (Bureau) for which BPA is the power marketing agency. Each entity is separately managed and financed, but the facilities are operated as an integrated power system with the financial results combined under the FCRPS title. Costs of multipurpose Corps and Bureau projects are assigned to specific purposes through a cost allocation process. Only the portion of total project costs allocated to power is included in these statements.

FCRPS accounts are maintained in accordance with generally accepted accounting principles and the uniform system of accounts prescribed for electric utilities by the Federal Energy Regulatory Commission (Commission). FCRPS accounting policies also reflect specific legislation and executive directives issued by U.S. Government departments (BPA is a unit of the Department of Energy; the Bureau is part of the Department of Interior and the Corps is part of the Department of Defense). FCRPS properties and income are tax-exempt.

Regulatory Authority

FCRPS power rates must be confirmed and approved by the Commission.

Revenues

Operating revenues are recorded on the basis of service rendered.

Utility Plant

Utility plant is stated at original cost. Cost includes direct labor and materials, payments to contractors, indirect charges for engineering, supervision and similar overhead items, and an allowance for funds used during construction. The costs of additions, major replacements, and betterments are capitalized. Repairs and minor replacements are charged to operating expense. The cost of utility plant retired, together with removal costs and less salvage, is charged to accumulated depreciation when it is removed from service.

Allowance for Funds Used During Construction

The allowance for funds used during construction (AFUDC) constitutes interest on the funds used for utility plant under construction. AFUDC is capitalized as part of the cost of utility plant and results in a noncash reduction of interest expense.

AFUDC capitalization rates are stipulated for certain generating projects (2.5% to 11.375%) and approximate the cost of borrowings from the U.S. Treasury for other construction (12.3% in 1986 and 12.8% in 1985).

Depreciation

Depreciation of utility plant is computed on the straight-line method based on estimated service lives of the various classes of property, which average 45 years for transmission and 85 years for generation. Since power rates are established in contemplation of recovery of the cost of transmission facilities within their average service lives and within 50 years for generating facilities, the annual depreciation charges are not matched directly with the related revenue recovery period and will, in the case of generating facilities, continue beyond the period in which such costs will have been recovered through revenues.

Amortization

Amortization of conservation and fish and wildlife is computed on the straight-line method based on estimated service lives of the various classes of intangible assets, which is 20 years for conservation and 15 years for fish and wildlife.

Capitalized Contracts and Capitalized Contract Obligations

BPA has agreed to purchase all or part of the generating capability of several nuclear power plants and one hydro project. BPA has also agreed to fund debt service on Eugene Water and Electric Board (EWEB) bonds issued to finance conservation programs sponsored by BPA. The capitalized contracts will be amortized as such costs are scheduled to be recovered in rates.

Conservation

Certain costs for energy conservation are capitalized and amortized over 20 years, which is the planned revenue recovery period and the term of related borrowings from the U.S. Treasury.

Retirement Benefits

FCRPS employees belong to the U.S. Government's Civil Service Retirement Fund (the Fund). FCRPS and employees contribute equally to the Fund. Retirement benefits are payable by the U.S. Treasury and not by the FCRPS, and are redetermined from time to time by the Fund or the U.S. Government.

Net Revenues

Because BPA is a nonprofit U.S. Government power marketing agency, net revenues over time are committed to repayment of the U.S. Government investment in the FCRPS and the payment of certain irrigation costs as discussed in Note 6.

Reclassifications

Certain reclassifications of prior year amounts have been made to conform to 1986 financial statement presentation.

2. Long-Term Debt:

To finance its capital programs, BPA is authorized by the Federal Columbia River Transmission System Act to issue to the U.S. Treasury up to $3.75 billion of interest-bearing debt with terms and conditions comparable to debt issued by U.S. Government corporations. Of this amount, $1.25 billion of the $3.75 billion is reserved for conservation and renewable resource loans and grants. $440 million of this reserved amount and $1,019 million of other borrowings were outstanding at September 30, 1986 as shown below:

Issue Date	First Call Date	Maturity Date	Interest Rate	Construction Debt	Conservation Debt	Cumulative Debt
				(Thousands of Dollars)		
Sep 1985	none	1990	10.15%	$ —	$ 50,000	$ 50,000
Mar 1986	none	1991	7.80%	—	50,000	100,000
Mar 1986	none	1996	8.15%	100,000	—	200,000
Mar 1986	none	1996	8.15%	—	50,000	250,000
Sep 1983	1988	2003	12.20%	—	140,000	390,000
Sep 1984	1989	2004	13.05%	—	150,000	540,000
Sep 1978	1983	2013	8.95%	50,000	—	590,000
Jun 1979	1984	2014	9.45%	28,799	—	618,799
Dec 1981	1986	2016	14.40%	50,000	—	668,799
Apr 1982	1987	2017	14.40%	100,000	—	768,799
Jul 1982	1987	2017	14.15%	85,000	—	853,799
Nov 1982	1987	2017	10.85%	40,000	—	893,799
Jun 1983	1988	2018	11.70%	30,000	—	923,799
Sep 1983	1988	2018	12.25%	45,000	—	968,799
Nov 1983	1988	2018	12.30%	30,000	—	998,799
Sep 1984	1989	2019	13.05%	60,000	—	1,058,799
Jun 1985	1990	2030	11.25%	100,000	—	1,158,799
Jun 1986	1991	2031	8.95%	300,000	—	1,458,799
Total				$1,018,799	$440,000	$1,458,799

The weighted average interest rate was 11.1% and 12.3% on outstanding long-term debt as of September 30, 1986 and 1985, respectively. While all the construction and conservation bonds are term bonds, most have a call provision that allows them to be paid back beginning five years after the date of issuance.

3. Federal Appropriations:

Construction and replacement of Corps and Bureau generating facilities is financed by annual Congressional appropriations. Annual appropriations are also made for their operation and maintenance costs, although these are repaid by BPA to the U.S. Treasury by the end of each fiscal year. BPA construction and operations and maintenance costs were also financed by appropriations before the Federal Columbia River Transmission System Act was passed in 1974.

Interest rates on the appropriated funds range from 2.5% to 12.4% (the weighted average rate was 3.5% in 1986 and 3.2% in 1985). The rates have been set by law, administrative order pursuant to law, or administrative policies.

Federal appropriations and long-term debt in generating projects and the transmission system are to be repaid to the U.S. Treasury within 50 and 45 years, respectively, from the time each facility is placed in service. The cumulative amount of Federal appropriations and long-term debt repaid through September 30, 1986 exceeded the amount required to be repaid.

The following table shows the planned and required repayment of the remaining Federal appropriations ($6,482,754) and long-term debt ($1,458,799) as of September 30, 1986:

	Planned to be Repaid (a)	Required to be Repaid (a)
	(Thousands of Dollars)	
1987	$ 148,645	$ —
1988	157,304	—
1989	174,947	—
1990	183,822	—
1991	194,528	—
1992-1996	701,773	28,335
1997-2001	304,515	185,282
2002-2006	622,778	1,023,488
2007-2011	522,714	641,122
2012-2016	736,456	821,391
2017-2021	1,578,031	1,684,725
2022-2026	2,555,340	1,381,964
After 2026	60,700	2,175,246
	$7,941,553	$7,941,553

(a) Excludes planned payments on future replacements.

If, in any given year, there are not enough revenues to cover all cash needs, including interest, any deficiency becomes unpaid annual expense. Interest is accrued on unpaid annual expense until paid. This must be paid from subsequent years' revenues before any repayment of Federal appropriations and long-term debt can be made.

4. Purchase and Exchange Power:

BPA has acquired all or part of the generating capability of five nuclear power projects. The contracts to acquire the generating capability of the projects, referred to as "net billing agreements," require BPA to pay all or part of the annual project budgets, including debt service, whether or not the projects are completed. BPA has also acquired all of the output of the Idaho Falls Bulb Turbine project and has agreed to fund debt service on EWEB bonds issued to finance conservation programs sponsored by BPA. The projected payments under these agreements are shown below:

Project and Percent Capability Acquired	Project Status	Capacity in Megawatts		Estimated BPA Portion: Actual 1985	1986	Estimated Annual Project Costs 1987	1988	1989	1990	1991
				(Thousands of Dollars)						
Hanford Generating Project (72%)	Operational	430	Interest (a)	$ 2,043	$ (400)	$ —	$ (200)	$ (300)	$ (400)	$ (400)
			Principal	3,241	3,255	3,300	3,400	3,500	3,900	5,200
			Operations	45,795	34,645	55,700	50,900	53,800	63,500	66,700
				51,079	37,500	59,000	54,100	57,000	67,000	71,500
Trojan Nuclear Project (30%)	Operational	339	Interest	7,850	7,700	8,800	8,700	8,600	8,400	8,200
			Principal	2,755	2,885	3,000	3,200	3,300	3,500	3,700
			Operations	41,211	43,531	40,500	43,700	45,800	48,100	50,700
				51,816	54,116	52,300	55,600	57,700	60,000	62,600
WNP No. 1 (100%)	Preservation	1,250	Interest	195,219	184,191	194,300	193,500	191,300	189,300	187,500
			Principal	11,053	14,855	16,100	18,300	19,600	21,700	22,900
			Preservation (b)	—	—	—	—	—	—	—
				206,272	199,046	210,400	211,800	210,900	211,000	210,400
WNP No. 2 (100%)	Operational	1,100	Interest	184,708	172,400	198,600	196,800	194,900	192,800	190,500
			Principal	18,517	23,295	25,400	27,100	29,000	31,100	33,400
			Operations	154,618	180,242	157,200	174,100	173,200	180,400	196,800
				357,843	375,937	381,200	398,000	397,100	404,300	420,700
WNP No. 3 (70%) (c)	Preservation	868	Interest	170,328	127,372	152,500	153,300	152,400	151,500	150,600
			Principal	6,175	6,530	9,300	10,700	11,500	12,400	13,300
			Preservation (b)	29,736	42,200	31,000	30,400	18,700	20,700	26,800
				206,239	176,102	192,800	194,400	182,600	184,600	190,700
Idaho Falls Hydro (100%)	Operational	24	Interest	3,498	3,092	3,200	3,000	3,000	3,000	3,000
			Principal	310	10	200	300	300	300	300
			Operations	1,076	809	1,300	1,400	1,400	1,500	1,500
				4,884	3,911	4,700	4,700	4,700	4,800	4,800
EWEB Conservation	N/A	N/A	Interest	—	1,298	1,400	1,400	1,300	1,300	1,200
			Principal	—	655	700	700	800	800	900
				—	1,953	2,100	2,100	2,100	2,100	2,100
				$878,133	$848,565	$902,500	$920,700	$912,100	$933,800	$962,800

(a) Interest income on project funds is anticipated to exceed interest expense on project obligations.

(b) Estimated preservation costs during the delay period for WNP No. 1 are not shown separately because it is anticipated such costs will be funded by WNP No. 1 bond funds currently available. Estimated preservation costs for WNP No. 3 include the 30% IOU share assumed by BPA pursuant to the settlement agreements. See Note 7.

(c) Pursuant to the WNP No. 3 settlement agreement, BPA has an irrevocable offer to acquire the remaining 30% capability of the project. See Note 7.

BPA's commitment under the net billing agreements extends for the life of the projects. One of the projects, WNP No. 2, started operation in 1984. Construction of two other projects, WNP No. 1 and WNP No. 3, has been delayed indefinitely. A construction restart of WNP No. 1 and WNP No. 3 and the need for additional financing will depend on factors such as the forecasted power needs in the Pacific Northwest and the cost effectiveness of these projects compared to other resources.

5. Residential Energy Exchange:

As provided for in the Pacific Northwest Electric Power Planning and Conservation Act of 1980, Section 5(c), BPA entered into Residential Purchase and Sale Agreement contracts with several electric utilities. These contracts allow each utility to sell to BPA its qualified residential and irrigation load at the average system cost of the utility's resources. In exchange, BPA sells to the utilities electric power for their residential and irrigation loads at BPA's priority firm power rates. Purchases and sales of electric power by BPA during fiscal years 1986 and 1985 under these contracts were as follows:

	1986	1985
	(Thousands of Dollars)	
Residential exchange expense	$1,046,379	$1,008,762
Residential exchange revenue	838,092	801,010
Net residential exchange	$ 208,287	$ 207,752

Included in residential exchange is $1.4 million and $1.3 million for the years ended September 30, 1986 and 1985, respectively, of Exchange Transmission Credit Agreement expense.

6. Commitments and Contingencies:

Irrigation Assistance

Legislation requires that FCRPS net revenues will be used to pay the U.S. Treasury for costs allocated to irrigation of certain Pacific Northwest projects that are determined to be beyond the ability of the irrigation water users to repay. The first planned irrigation assistance payment from power revenues will be made in 1997, and cumulative payments will ultimately total $790 million. Although paid by power ratepayers, such costs are for the benefit of the water users and are not a regular operating cost of the power program. Accordingly, they are not reflected in the balance sheets.

Investment in Teton Dam and Libby Reregulating Dam

On June 5, 1976, Teton Dam was extensively damaged before it had been completed. The total investment in the project at September 30, 1986 (excluding interest totaling $2.2 million after June 1976 which has been charged to expense) was $79.3 million. The portion allocated to power was $7.3 million, and the portion allocated to irrigation but repayable from power revenues was $56.8 million.

The final decision about repayment obligations for Teton Dam depends on Congressional action. If repayment is not required, the investment will be paid by the U.S. Government. Should FCRPS be directed to pay, the costs will be recovered through rates. Until a decision is made, the investment allocated to power is included as a deferred charge in the balance sheet and costs of irrigation assistance are included in the total of irrigation assistance described above.

On September 8, 1978, the Corps was enjoined from constructing a reregulating dam at Libby, Montana because it lacked specific Congressional authority. Later appeals by the Corps to remove the injunction were denied. Investment in the reregulating dam was $19.6 million at September 30, 1985. On November 13, 1986 the Corps determined that these costs are non-reimbursable from commercial power revenues. Therefore, the investment in the reregulating dam and the related Federal appropriation have been removed from the financial statements as of September 30, 1986.

Residential Energy Exchange

Section 7(b)(3) of the Pacific Northwest Electric Power Planning and Conservation Act of 1980 provides that if there is an overall net revenue surplus or deficiency for the period ending June 30, 1985, a portion of it shall be repaid to or recovered from customers, over a reasonable period of time, on the basis of power sales during that period. The affected amount is the surplus or deficiency during the period caused by (1) a difference between projected and actual power deliveries to the direct service industrial customers and (2) recovering too little or too much of the net residential exchange.

The method of determining the overall surplus or deficiency for the period has not been completed or agreed to by those involved. In the opinion of BPA management, the amount will not have a material effect on the FCRPS financial statements.

Nuclear Insurance

BPA is a member of Nuclear Electric Insurance Limited (NEIL) which was established to provide insurance coverage for replacement power costs resulting from an accidental outage at a member's nuclear site and for excess property damage and decontamination liability. Under its property and decontamination coverage, BPA could be subject to a maximum assessment of $8.5 million in the event of a loss to any NEIL-insured nuclear plant, including WNP No. 2. In addition, the Nuclear Regulatory Commission's indemnity for public liability coverage under the Price-Anderson Act is supported by a mandatory industry-wide program. Under the program, owners of nuclear generating facilities could be assessed in the event of nuclear incidents. BPA could be subject to a retrospective assessment of $5 million in the event of an incident, limited to a maximum of $10 million in any calendar year.

7. Litigation:

Litigation Involving the Washington Public Power Supply System (the Supply System)

On January 22, 1982, the Supply System stopped construction of two nuclear projects: WNP No. 4 at Hanford and WNP No. 5 at Satsop. After the termination, the Supply System defaulted on $2.25 billion of outstanding WNP Nos. 4 and 5 bonds for which FCRPS has no obligation, and delayed construction of WNP Nos. 1 and 3. The above actions of the Supply System have led to a number of lawsuits which involve BPA. In the opinion of BPA General Counsel, BPA has valid defenses to the direct claims against BPA and the possibility of the plaintiffs prevailing against BPA is remote.

In addition to direct claims against BPA, there are lawsuits against the Supply System brought by the bondholders and the bond fund trustee, by utilities who loaned money to the Supply System to pay for mothballing and termination of WNP Nos. 4 and 5, and by contractors regarding claims for goods and services provided for WNP Nos. 4 and 5. Many of these litigants have asserted a right to execute on all the assets of the Supply System including WNP Nos. 1, 2 and 3 to satisfy judgments in their favor. The claims of the bondholders and the bond fund trustee are still in the discovery stage with trial expected in 1988. The Washington Supreme Court has ruled that the utilities who loaned money to the Supply System to pay for the mothballing and termination of WNP Nos. 4 and 5 were limited to satisfying their judgment from the funds of WNP Nos. 4 and 5. There are five claims by contractors of WNP Nos. 4 and 5 currently being litigated. Three of these claims have resulted in money damages against the Supply System; however, a Washington state court judge has ruled in one case that the judgment is only recoverable from WNP Nos. 4 and 5 funds. This issue will be addressed soon in the other two cases. BPA will vigorously oppose any attempt of these litigants to satisfy their claims from the assets of WNP Nos. 1, 2 and 3, but BPA General Counsel cannot predict the outcome of these claims until they are made.

WNP Nos. 1 and 4 and WNP Nos. 3 and 5 share certain common facilities. The participants of the terminated projects have demanded that the heretofore equitably shared costs be reallocated retroactively to WNP Nos. 1 and 3. If the plaintiffs are successful, this could result in these two projects assuming additional costs of $192 to $400 million. Because of the net billing agreements discussed in Note 4, which require BPA to pay the participants' portion of the annual project costs for WNP Nos. 1, 2, and 3 BPA might be required to fund judgments against the Supply System affecting the net-billed projects. BPA General Counsel cannot predict the outcome of this matter.

The construction delay of WNP No. 3 precipitated litigation by the Investor Owned Utilities (IOUs) who own a 30% share of the project. BPA and the IOUs have negotiated settlement agreements. The guiding principle of the agreements is to put the IOUs in a position similar to what they could have expected had WNP No. 3 not been mothballed. Thus, BPA is obligated to deliver an amount of power (expected to be 191 annual average MW) to the IOUs over the expected life of a nuclear power plant (30-32 years) at a formula price. In exchange for the power, the IOUs will make combustion turbines available for BPA's use and give BPA an irrevocable offer of their share of the project capability. In addition, BPA has agreed to assume all future costs associated with the preservation or completion of WNP No. 3. The settlement agreements have themselves generated a new round of litigation. In the opinion of BPA General Counsel, the likelihood that the challenges to the settlement agreements will prevent them from going into effect or that any such challenges will have any financial impact on BPA is remote.

Litigation Involving Rates

BPA is involved in litigation concerning various rate matters. In the opinion of BPA General Counsel, either the likelihood of success by the filing party is remote; the ultimate outcome will not have a material effect on the FCRPS financial statements; or any payments by BPA resulting from the litigation would be recovered through future rates.

Other Matters

Certain other claims, suits and complaints have been filed or are pending against entities of FCRPS. In the opinion of counsel and management for those entities, the actions are either without merit or involve amounts which are not material to the FCRPS financial statements.

Federal Columbia River Power System
Schedule of Amount and Allocation of Plant Investment
September 30, 1986

Schedule A

		Commercial Power			Irrigation			Nonreimbursable					
	Total	Completed Plant	Construction Work in Progress	Total Commercial Power	Returnable From Commercial Power Revenues	Returnable From Other Sources	Total Irrigation	Navigation	Flood Control	Fish and Wildlife	Recreation	Other	Percent of Total Returnable From Commercial Power Revenues
	(Thousands of Dollars)				(Thousands of Dollars)								
Bonneville Power Administration —													
Transmission facilities	$ 3,208,710	$ 2,969,559	$239,151	$3,208,710	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	100.0%
Bureau of Reclamation —													
Boise	80,359	7,365	2,895	10,260	17,795	35,569	53,364	—	16,735	—	—	—	34.9%
Columbia Basin	1,696,134	976,879	30,239	1,007,118	547,758	83,206	630,964	1,000	51,524	4,848	154	526	91.7%
Hungry Horse	101,874	77,047	136	77,183	—	—	—	—	24,691	—	—	—	75.8%
Minidoka-Palisades	218,763	14,231	38	14,269	10,333	126,384	136,717	—	60,973	1,211	5,593	—	11.2%
Yakima	150,732	6,167	16	6,183	10,883	120,139	131,022	—	929	12,360	238	—	11.3%
Total Bureau projects	2,247,862	1,081,689	33,324	1,115,013	586,769	365,298	952,067	1,000	154,852	18,419	5,985	526	75.7%
Corps of Engineers —													
Albeni Falls	34,520	32,638	225	32,863	—	—	—	141	181	—	1,335	—	95.2%
Bonneville	827,626	772,358	6,226	778,584	—	—	—	45,686	—	—	1,294	2,062	94.1%
Chief Joseph	529,155	520,819	153	520,972	752	—	752	—	—	—	2,408	5,023	98.6%
Cougar	61,396	18,691	548	19,239	—	3,077	3,077	547	38,325	—	—	208	31.3%
Detroit-Big Cliff	67,655	40,737	390	41,127	—	5,124	5,124	237	21,167	—	—	—	60.8%
Dworshak	359,834	301,960	576	302,536	—	—	—	9,520	34,395	—	13,383	—	84.1%
Green Peter-Foster	90,713	50,083	23	50,106	—	5,857	5,857	367	30,472	—	1,856	2,055	55.2%
Hills Creek	49,068	17,537	—	17,537	—	4,322	4,322	626	26,311	—	—	272	35.7%
Ice Harbor	215,719	152,960	13,654	166,614	—	—	—	46,263	—	—	2,842	—	77.2%
John Day	576,196	419,263	9,012	428,275	—	—	—	88,889	21,142	—	11,481	26,409	74.3%
Libby	627,718	412,381	58,385	470,766	—	—	—	—	98,105	3,048	5,594	50,205	75.0%
Little Goose	273,647	218,801	13,638	232,439	—	—	—	34,553	—	—	4,051	2,604	84.9%
Lookout Point-Dexter	98,666	46,937	85	47,022	—	1,388	1,388	741	48,900	—	521	94	47.7%
Lost Creek	150,226	26,996	6	27,002	—	2,019	2,019	—	53,403	24,501	29,434	13,867	18.0%
Lower Granite	429,371	342,866	13,638	356,504	—	—	—	52,384	—	—	12,641	7,842	83.0%
Lower Monumental	291,288	235,195	13,638	248,833	—	—	—	39,216	—	—	2,822	417	85.4%
McNary	351,414	274,626	5,503	280,129	—	—	—	68,171	—	—	3,114	—	79.7%
The Dalles	332,298	280,675	4,739	285,414	—	—	—	44,762	—	—	2,100	22	85.9%
Total Corps projects	5,366,510	4,165,523	140,439	4,305,962	752	21,787	22,539	432,103	372,401	27,549	94,876	111,080	80.3%
Irrigation assistance at 12 projects having no power generation	180,099	—	—	—	138,097	42,002	180,099	—	—	—	—	—	76.7%
Total plant investment	11,003,181	8,216,771	412,914	8,629,685	725,618	429,087	1,154,705	433,103	527,253	45,968	100,861	111,606	85.0%
Repayment obligation retained by Columbia Basin project	4,639	2,836(a)	—	2,836	1,803	—	1,803	—	—	—	—	—	100.0%
Other repayment obligation	9,577	—	30	30	9,547	—	9,547	—	—	—	—	—	100.0%
Investment in Teton project (b)	79,287	—	7,269	7,269	56,753	3,681	60,434	—	9,151	—	2,433	—	80.7%
Total	$ 11,096,684	$ 8,219,607	$420,213	$ 8,639,820	$793,721	$432,768	$1,226,489	$433,103	$536,404	$45,968	$103,294	$111,606	85.0%

(a) Amount represents joint facilities transferred to Bureau of Sports Fisheries and Wildlife. This is included in other assets in the accompanying balance sheets.
(b) The $7,269 commercial power portion of the Teton project is included in other assets in the accompanying balance sheets. Teton amounts exclude interest totaling approximately $2.2 million subsequent to June 1976 which has been charged to expense.

Federal Columbia River Power System
General Specifications of Projects
September 30, 1986

					Existing		Under-Construction		Authorized-Licensed		Potential		Project Totals	
Project	State	River	Initial Date In Service		Number of Units	Nameplate Rating-kW	Number of Units	Nameplate Rating-kW	Number of Units	Nameplate Rating-kW	Number of Units	Nameplate Rating-kW	Number of Units	Nameplate Rating-kW
Minidoka	Idaho	Snake	May	7, 1909	7	13,400	—	—	—	—	—	—	7	13,400
Boise River Div.	Idaho	Boise	May	1912	3	1,500	—	—	—	—	—	—	3	1,500
Black Canyon	Idaho	Payette	Dec	1925	2	8,000	—	—	—	—	—	—	2	8,000
Grand Coulee	Washington	Columbia	Sep	28, 1941	24	6,163,000	—	—	—	—	6	4,200,000	30	10,363,000
Anderson Rance	Idaho	S Fk Boise	Dec	15, 1950	2	40,000	—	—	—	—	1	13,500	3	53,500
Hungry Horse	Montana	S Fk Flathead	Oct	29, 1952	4	285,000	—	—	—	—	—	—	4	285,000
Chandler	Washington	Yakima	Feb	13, 1956	2	12,000	—	—	—	—	—	—	2	12,000
Palisades	Idaho	Snake	Feb	25, 1957	4	118,750	—	—	—	—	2	135,000	6	253,750
Roza	Washington	Yakima	Aug	31, 1958	1	12,950	—	—	—	—	—	—	1	12,950
Grand Coulee PG (a)	Washington	Columbia	Dec	30, 1974	6	300,000	—	—	—	—	—	—	6	300,000
Teton (b)	Idaho	Teton			—	—	—	—	3	30,000	—	—	3	30,000
Total Bureau of Reclamation					55	6,954,600	—	—	3	30,000	9	4,348,500	67	11,333,100
Bonneville	Ore-Wash	Columbia	Jun	6, 1938	18	1,076,600	—	—	—	—	—	—	18	1,076,600
Detroit	Oregon	North Santiam	Jul	1, 1953	2	100,000	—	—	—	—	—	—	2	100,000
McNary	Ore-Wash	Columbia	Nov	6, 1953	14	980,000	—	—	6	747,000 (c)	—	—	20	1,727,000
Big Cliff	Oregon	North Santiam	Jun	12, 1954	1	18,000	—	—	—	—	—	—	1	18,000
Lookout Point	Oregon	M Fk Willamette	Dec	16, 1954	3	120,000	—	—	—	—	—	—	3	120,000
Albeni Falls	Idaho	Pend Oreille	Mar	25, 1955	3	42,600	—	—	—	—	—	—	3	42,600
Dexter	Oregon	M Fk Willamette	May	9, 1955	1	15,000	—	—	—	—	—	—	1	15,000
Chief Joseph	Washington	Columbia	Aug	28, 1955	27	2,069,000	3	960,000	—	—	7	613,000	37	3,642,000
The Dalles	Ore-Wash	Columbia	May	13, 1957	22	1,807,000	—	—	—	—	—	—	22	1,807,000
Ice Harbor	Washington	Snake	Dec	18, 1961	6	602,880	—	—	—	—	—	—	6	602,880
Hills Creek	Oregon	M Fk Willamette	May	2, 1962	2	30,000	—	—	—	—	—	—	2	30,000
Cougar	Oregon	S Fk McKenzie	Feb	4, 1964	2	25,000	—	—	1	35,000	—	—	3	60,000
Green Peter	Oregon	Middle Santiam	Jun	9, 1967	2	80,000	—	—	—	—	—	—	2	80,000
John Day	Ore-Wash	Columbia	Jul	17, 1968	16	2,160,000	—	—	4	540,000	—	—	20	2,700,000
Foster	Oregon	South Santiam	Aug	22, 1968	2	20,000	—	—	—	—	—	—	2	20,000
Lower Monumental	Washington	Snake	May	28, 1969	6	810,000	—	—	—	—	—	—	6	810,000
Little Goose	Washington	Snake	May	19, 1970	6	810,000	—	—	—	—	—	—	6	810,000
Dworshak	Idaho	N Fk Clearwater	Sep	18, 1974	3	400,000	—	—	3	660,000	—	—	6	1,060,000
Lower Granite	Washington	Snake	Apr	15, 1975	6	810,000	—	—	—	—	—	—	6	810,000
Libby	Montana	Kootenai	Aug	29, 1975	5	525,000	—	—	—	—	—	—	5	525,000
Lost Creek	Oregon	Rogue	Dec	1, 1975	2	49,000	—	—	—	—	—	—	2	49,000
Strube	Oregon	S Fk McKenzie			—	—	—	—	1	4,500	—	—	1	4,500
Total Corps of Engineers					149	12,550,080	3	960,000	15	1,986,500	7	613,000	174	16,109,580
Total					204	19,504,680	3	960,000	18	2,016,500	16	4,961,500	241	27,442,680

(a) PG-Pump Generation
(b) Teton Dam ruptured June 5, 1976.
(c) McNary Second Powerhouse estimate includes 6 units of 124,500 kW each.

BPA Organizational Chart

ADMINISTRATOR
James J. Jura

DEPUTY ADMINISTRATOR
Robert E. Ratcliffe

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- DIV. OF FINANCIAL REQUIREMENTS
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DEPUTY CHIEF ENGINEER
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DEPUTY CHIEF ENGINEER
Charles F. Clark

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