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# The Western Hydro System



Western Governors' Association  
October 1985

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WGA is an independent, non-partisan organization of sixteen western states, one Pacific commonwealth, and two territories. Established in 1984, as a result of the merger between the Western Governors' Policy Office (WESTPO) and the Western Governors' Conference (WGC), its purpose is to strengthen the policymaking and management capacity of member states and their role in the federal system. It serves the interest of the governors across a range of functional concerns, including energy, agriculture, water, natural resources, international trade, fiscal policy, economic development, and related issues.



**THE WESTERN HYDRO SYSTEM**

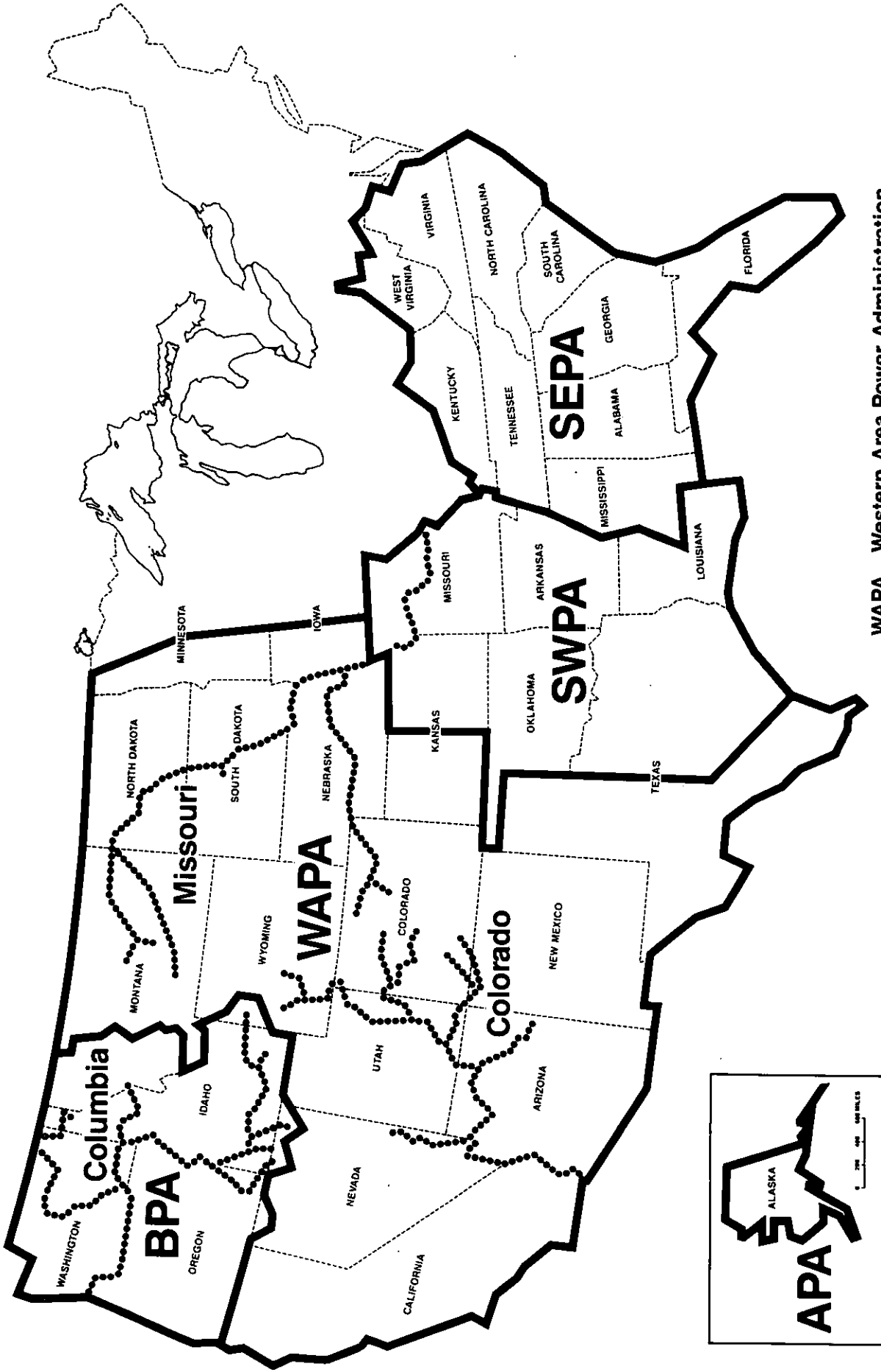
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Western Governors' Association

October, 1985

# Power Marketing Administrations



- WAPA Western Area Power Administration
- APA Alaska Power Administration
- BPA Bonneville Power Administration
- SEPA Southeastern Power Administration
- SWPA Southwestern Power Administration

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## EXECUTIVE SUMMARY

In 1982, the western governors initiated a water program to examine water development financing, Indian water rights, interstate groundwater management, and conservation. As part of an assessment of various sources of capital for water financing, the governors explored the prospects for continued use of revenues from the federal hydro system to finance water development. In the process, it became clear that many other interests were proposing to increase rates, change the distribution of hydropower, or divert the revenues outside the region.

In response, the governors established a WGA subcommittee assisted by a staff-level task force 1) to determine the likelihood of significant change occurring in the existing federal hydro system, and 2) to explore, if change was going to occur, what direction the West might want the changes to take. The governors have made no attempt to adopt a policy which supports change, nor to agree on whether to expand the use of hydro revenues to finance water development. This report is a summary of the factors which may become most relevant if change does take place.

After reviewing the mounting criticisms of the existing federal hydro system, the WGA hydro task force concluded that change is likely and that attempts to raise rates and divert revenues to serve new purposes are likely to continue, at least until the federal deficit burden moderates.

The comparatively low hydro rates invite charges that they are a subsidy from federal taxpayers to the West. A more careful look, however, makes it clear that, like all utility rates, public and private, western hydro rates are cost-based. They benefit from having facilities built before energy costs rose, inflation escalated, and interest rates went up. Their embedded costs are low for the same reasons as other facilities built during the same time period, including eastern hydro, private hydro, and coal-fired power plants.

There are two exceptions to cost-based rates:

- subsidies

All utilities are subsidized: publicly owned utilities through tax exempt bonds and avoidance of taxes and profits; and privately owned utilities through tax credits, accelerated depreciation, dividend reinvestment programs, and loss write-offs.

- charges above true costs

Only western hydro rates are set above true cost, in order to repay associated regional water development costs such as irrigation, salinity control, and fish and wildlife restoration.

Other concerns raised by critics of the West's hydro system include distribution of the power. From an interregional standpoint, the West considers hydro a regional resource providing local benefits, similar to regions with inland waterways, ports, adequate precipitation, or a moderate climate. Similarly, although hydro development is a result of federal investment, it is still a regional resource in the same way that military bases, interstate highways, or other federal public works investments which provide regional benefits are. It is no more appropriate to increase hydro rates to reduce the federal deficit than it would be to levy interstate highway tolls or other fees on federal public

works investments in order to earn a profit for the Treasury over and above cost repayment. Furthermore, except for municipal and industrial water supply, hydro together with its associated irrigation is the only federal investment in national water development to be repaid by local ratepayers; navigation, flood control, fish and wildlife protection, and other water development purposes have been paid for by the nation's taxpayers.

Criticisms are also raised concerning the concept of preference — that publicly owned utilities and rural coops have preference in the purchase of federally generated hydropower. The preference concept evolved over a number of years for reasons which were historically sound. It is embedded in approximately 50 federal statutes and is applied nationally.

In trying to answer the question, "If change is to come, what direction should it take?", the West recognized the wide variance in needs and circumstances between basins, between states within basins, and within states. Because of those differences, the states all support the principle that HYDRO DEVELOPMENT IS A REGIONAL RESOURCE WHOSE BENEFITS SHOULD RETURN TO THE BASIN OF ORIGIN UNDER BASIN CONTROL.

The West is demonstrating that it is the best steward of its resources. It is addressing past problems, it is taking the lead in moving towards least cost solutions for both water and power needs, and it is actively and effectively moving to protect the environment. The western view is that as states repay the hydro investment, they should be able to determine whether to maintain rates at current levels or to add to the base the cost of related water development needs. Such needs could include effecting least cost solutions, resolving Indian water rights disputes, providing environmental protection, completing critical projects, or rehabilitating aging systems.

The Columbia Basin, as a result of the Northwest Power Act of 1980 as well as earlier laws, has the most developed system of regional control. The Bonneville Power Administration is self-financed through a revolving fund, meaning it is independent of the congressional appropriation process (although Congress does approve its budget). The governor-appointed Northwest Power Planning Council is charged with developing the region's power plan, programs to restore the anadromous fisheries, and a process for public involvement.

Using the Northwest as a model, the WGA hydro task force considered possible mechanisms to use in the Colorado and Missouri Basins. The task force examined revolving funds and basin councils to conduct strategic planning and determine water development priorities financed by hydro revenues. It considered the effect of such changes on preference utilities, long term resource policies, and risk management.

The result of the WGA hydro program has been to suggest potentially useful ideas, rather than recommended courses of action. The program was initiated as a short term defensive strategy to fend off poorly conceived plans to divert hydro revenues outside the region. Initial research and analysis has been completed should the governors decide to work toward a larger state role in the management of hydro and water resources. This report is written in an effort to be prepared for a time when need and opportunity may coincide.

## Chapter 1

### HYDRO — THE WESTERN GOVERNORS' ASSOCIATION PROGRAM

#### Background

Throughout the history of human settlement in the North American interior, water has often been the critical resource, one whose scarcity has shaped economic, social, and governmental arrangements. Over the past 50 years, this centuries-long pattern has been changed dramatically by the engineering feats of industrial society. Water resource development projects, undertaken for multiple purposes, rerouted rivers, brought millions of arid acres under cultivation, and fed growing industrial and municipal demand.

Water resource development has been financed largely by the public sector, most of it from the federal government. Federal programs, many initiated during the Depression, have invested billions throughout the nation. The size, complexity, and economic risks of these basinwide programs put them beyond the fiscal capacity of any entity except the federal government — and even then, the spur of an unprecedented economic depression was needed to stimulate such a national effort.

With the evolution of the American economy, priorities have shifted. Since 1968 water resource development has commanded a declining share of the federal budget, and inflation-adjusted investment in water resource projects has been on a decreasing trendline. No major omnibus water-project legislation has been approved by Congress since 1970.

#### The Governors' Water Program

The economy and society of the contemporary West is intertwined with water resource development. Western water development is both one of the most essential, and most hallowed, aspects of western life. Hydroelectric development is an integral part of water development. In fact, hydro revenues pay for a substantial portion of water development costs.

Western water development is in transition. In addition to reduced federal financing, changing demands, court decisions, environmental concerns and a number of other forces are causing reexamination of all aspects of the western water system. States have a primary role in control and management of their water resources, and the western governors are committed to working together to assert leadership in the evolution which is taking place.

In 1982, the governors decided to be directly involved in addressing water issues on a regional basis. They initiated a program of policy analysis in the areas of water development financing, Indian water rights, interstate groundwater management, and conservation. Their initial findings are included in a report entitled "New Challenge, New Direction: the Water Policy Report of the Western Governors' Association."



The major features of the western water system are complete — it is highly unlikely that any further mainstem dams will be built in any of the three major river basins (the Colorado, the Columbia, and the Missouri). However, even though the major structures are in place, the West still has an unfinished agenda, an agenda which includes such needs as fulfilling Indian water rights, reducing salinity, providing environmental mitigation and enhancement, increasing efficiency of use, supplying water for new economic development, and fulfilling the level of benefits from water development which were agreed to as part of the comprehensive basin plans.

The Western Governors' Association examined six sources of capital which might be used to allow needed water investments to occur. The six included state taxes, user fees, private financing, hydro revenues, federal financing, and the alternative of increasing efficiency of use to avoid new development costs. In the process of considering hydro revenues as a continuing source of financing for water development, the governors recognized the fact that a number of interests were putting forth proposals to increase hydro rates, change the distribution of hydroelectricity, or divert the revenues outside the region.

### **The Governors' Hydro Program**

The governors established a ten member subcommittee to develop a common understanding of the facts, issues, and options with respect to management of the federally-built hydro system. The governors met five times between May 1984 and February 1985. During that period, they:

1. Directed the WGA staff to prepare a factual report describing the federal hydro system in the West.
2. Met with representatives of the hydropower preference utilities (publicly owned utilities and rural cooperatives which are entitled to preference, or the right of first refusal, in the purchase of federally generated hydropower);
3. Formed a staff-level three member task force, with one member representing each river basin, to review water development priorities for each basin, assess possible hydro-related legislation in Congress, and consider alternatives to include in a regional position on the western hydro system.

### **Activities of the Hydro Task Force**

Task force members, in consultation with other states in their basins, accomplished the following tasks:

1. Exchanged information on basin similarities, differences, and priority concerns. Specifically, the task force reviewed such water financing concerns as enhanced efficiency of use, federal obligations such as Indian water rights and treaty requirements, rehabilitation and dam safety, needs which will be difficult to finance without federal assistance, cost sharing, and possible federal financing assistance such as tax incentives and federal guarantees. Hydro concerns included inequities in the distribution of electrical power, insufficient state input and oversight, capital needs, use of hydro revenues, relicensing of dams, small hydro development, the Federal Energy Regulatory Commission (FERC) regulatory process, repayment problems, repayment of non-interest bearing components first, the status of fully

paid-out projects, and transmission interties. Other related concerns included environmental issues, water quality, water rights, energy and water conservation, and treaty issues.

2. Surveyed, with the assistance of WGA staff and Washington counsel, all relevant congressional committees on anticipated legislation; reviewed past history of hydro legislation and attempts to change the current system; and met with key interests including preference utility representatives, environmentalists, and staff of other regions' organizations which are interested in hydro issues.
3. Considered various options for using hydro revenues to finance water development, including two options suggested by the preference community.

Task force reports to the governors summarized areas of agreement and disagreement, analyzed in some detail options and strategies to consider, and suggested alternative courses for future action.

The western governors have made no attempt to adopt a policy suggesting changes in the existing federal hydro system. There is no consensus among governors on the expanded use of hydro revenues to finance water related needs because circumstances and needs vary widely within the West. The governors recognize, however, that the existing system will continue to undergo close reexamination over the next few years. This report analyzes factors which are sure to be relevant in any future WGA considerations.

## Chapter 2

### DESCRIPTION OF THE WESTERN FEDERAL HYDRO SYSTEM

#### History of Western Water and Hydro Development

In 1789, as one of its first acts, Congress passed a bill to construct a lighthouse on Cape Henry, Virginia. Federal public works expenditures since 1789 have continued to place development of the national water system as a high priority. Navigation was the first priority, to develop ports and open up transportation to inland areas of the United States.

In the 1850s and 60s, gold was discovered in the West and miners developed a system of prior appropriation of water to stake claims to water diverted from stream beds to process ore. The prior appropriation system (first in time, first in right) became the basis of western water law and of the major differences between the East and West in water management.

In 1902, Congress passed the Reclamation Act to supply irrigation to homesteaders and others fighting drought in the seventeen arid western states. The first Reclamation dam, Roosevelt Dam in Arizona, developed hydroelectricity in order to supply power for construction of the dam. Federal funding for the commercial development of hydropower didn't begin until twenty years later when the Corps of Engineers started operating the Wilson Dam powerplant on the Tennessee River in 1926. In most cases since then, hydroelectric generation was not the reason to build a dam, but rather a beneficial spinoff.

President Franklin Roosevelt implemented the concept of multi-purpose water projects on a large scale. New Deal programs, and others since then, used charges for hydroelectricity to repay the costs associated with power production as well as irrigation costs beyond the ability of farmers to repay. Except for municipal and industrial water supply which usually pays for itself, all other project purposes — flood control, navigation, recreation, fish and wildlife enhancement, and others — are paid for by the federal government. The Depression provided impetus for a massive dam-building program in order to provide jobs and supply electricity to rural areas not served by private utilities. The concept of power preference, that publicly owned utilities and rural coops should have first call on publicly generated power, was solidified during this period. World War II increased the need for ample power sources to produce aluminum and other critical war supplies. Such major projects as TVA, the Columbia River system, and the Pick-Sloan program on the Missouri were the result of the Depression and war years.

The benefits to the nation from these federal investments in terms of increased commerce, military preparedness, rural electrification, agricultural production, energy independence, recreation, navigation, and flood control have been enormous.

As more dams were built in the 1950s and 60s, the system of hydro repaying part of the project costs was retained and expanded. The revenues from hydro generation at mainstem dams were used to repay the costs of "participating projects" — associated facilities built for irrigation which did not generate their own hydroelectricity. With the Colorado River Basin Salinity Control Act of 1974, the Pacific Northwest Electric Power Planning and Conservation Act of 1980, and the Hoover Dam bill of 1984, the costs of

other purposes (salinity control, energy conservation measures, regional power planning, fisheries protection and enhancement, and up-front construction costs of the Central Arizona Project) were charged to hydro revenues.

The use of hydro revenues to repay costs associated with water development was seen as consistent with the intent of Congress. Water development was authorized to encourage economic development in the West which would in turn stimulate the nation's economy by providing raw resources and encouraging new markets for processed goods. The benefits of water projects were to be regional, principally to aid agriculture. Except in the Northwest where hydro has been a principal project purpose in many instances, hydropower has been an increasingly valuable by-product used to repay most or all of the obligation due to the U.S. Treasury for project construction.

### **The Physical System**

Nationwide, hydroelectricity provides 12 percent of the nation's electric generating capacity. In the West, hydro provides 45 percent of generating capacity, more than any other source of electricity. However, significant variations occur within the West, ranging from the Northwest (Washington, Oregon, Idaho, and western Montana) where hydro provides almost 70 percent of total electric supply to only 6 percent in Arizona and New Mexico.

The United States has almost 80,000 megawatts (mw) of installed hydroelectric capacity. Almost half of that is provided at federal facilities. Two-thirds of the federal hydro capacity, or about 27,000 megawatts, is located in the West in plants operated by the Bureau of Reclamation (51 plants), Corps of Engineers (26 plants), and International Boundary and Water Commission (3 plants).

In other words, roughly one-third of the nation's total hydroelectric capacity originates from western federal facilities. Over half of that capacity is located in Washington state. In addition to the 64 percent of western federal capacity in the Northwest, the Southwest has about 23 percent while the Missouri River Basin has 13 percent.

Besides the generating facilities in the dams, the federal government has constructed almost 30,000 miles of transmission lines, the costs of which are included in the hydro rate base. The lines are operated by the power marketing administrations (PMAs). Bonneville Power Administration (BPA or Bonneville) in the Northwest has 14,000 miles of line which transmit approximately 80 percent of the wholesale electricity within its boundaries. Western Area Power Administration (WAPA or Western) owns 16,000 miles of lines which comprise only 20 percent of the transmission lines in its area. Investor owned utilities (IOUs) transmit, or wheel, the bulk of the power to public and private retail utilities.

### **The Marketing Administrations**

The federal construction agencies, primarily the Bureau of Reclamation and the Corps of Engineers, operate the dams and powerplants and provide the electricity to the power marketing administrations for sale and transmission to users. The amount of electricity actually generated varies from year to year depending on such factors as the amount of flow in the rivers, water releases needed for flood control, demand for water supplies, instream flows needed for fisheries, and maintenance of navigation levels. The construction agencies are responsible for balancing the competing demands and coordinating management of the dams on each river system.

The power marketing administrations market wholesale power to public and private retail utilities within their region. The wholesale rates which the PMAs charge to their customers are reviewed by the Federal Energy Regulatory Commission (FERC). The rates, like all regulated utility rates, are based on historic costs and are designed to repay the costs of construction, operations, maintenance, repair, and other costs associated with generating and transmitting the power to utilities. In addition, western federally generated hydropower rates cover costs for irrigation, salinity control, and other special purposes.

Federally generated power must be offered first to municipal and other publicly owned utilities and rural electric coops. These preference utilities provide about 24 percent of the electricity in the West, with investor owned utilities providing 76 percent. That proportion can vary, however, from states such as Nebraska, which is totally served by publicly owned utilities, to Hawaii, which has no public utilities.

Although there are exceptions, in general, power sales contracts provide that federal power may be sold to private entities only after public utilities and cooperatives have been served. Bonneville also supplies power, much of it on a firm (guaranteed) basis, to direct service industrial customers. Direct service industries such as aluminum or chemical companies located near hydro facilities because they require large amounts of electricity, and they negotiated service contracts with the federal government rather than with individual utilities. Nationwide, direct service industries are served by BPA, TVA, and New York State's Niagara project.

The two western PMAs, Bonneville and Western, have significant differences. (A third western PMA, the Alaska Power Administration, is expected to be acquired by the state of Alaska). Bonneville is the only PMA that has basic utility responsibility — it must stand ready to provide sufficient energy to meet the load growth of its region. It is the sole supplier for many of its customers, using hydro, coal-fired, and nuclear power to meet demand. It provides 50 percent of the electricity in its region, transmits 80 percent, and is not dependent upon congressional appropriations.

BPA has several unique arrangements. Besides its direct sales contracts with industry, it has a residential exchange program in which BPA sells power at preference rates to investor owned utilities for their residential and agricultural customers and in exchange buys an equivalent amount of power back at the utilities' average cost of electricity. From 1981 to 1985, the direct service customers (mainly aluminum producers) paid for this subsidy through their rates.

BPA currently has a surplus of electricity and is selling power to utilities outside of the BPA region, largely in California. Only one-third of its power is purchased by preference utilities. At the present time, only 3 of the 8 IOUs in the Northwest are participating in the residential exchange program. Because of recent increases in BPA rates, the other 5 IOUs have power costs which are lower than or competitive with Bonneville's.

Bonneville is the largest PMA in terms of power sold and transmitted — over twice as large as WAPA, the second largest. Historically power rates were very low. Bonneville's rates were based on its hydro system, most of which had been built in the 1930s and 40s. In the 70s the growth in demand escalated and forecasts indicated the region would run short of power. Several thermal plants, coal and nuclear, were begun. The Northwest Power Act of 1980 was passed to authorize and require Bonneville to meet the region's future needs.

Construction of new powerplants in the 1970s was affected by inflation, high interest rates, stringent regulation, and high costs of fuel. As a result, rates escalated sharply for any utility with new construction, whether hydro, coal, or nuclear. On occasion, the rate increases stimulated enough conservation to mean that the new plant was unnecessary or premature. The 1982 recession, market-driven conservation, cost overruns on nuclear power plant construction, and inflation caused a cost-price squeeze for BPA. Repayment schedules had to be extended, and rates rose more than 600 percent in the period 1979-84. The situation is currently stabilizing.

Bonneville is unique in another aspect as well. The Pacific Northwest Electric Power Planning and Conservation Act (the Northwest Power Act) of 1980 established the Northwest Power Planning Council to conduct regional electrical energy planning and provide oversight for the Bonneville Power Administration. The Council is not a federal agency, nor is it part of BPA, although it is funded by Bonneville rates rather than by the federal treasury. The Council is a regional agency composed of eight members, two each from the Pacific Northwest states of Idaho, Montana, Oregon, and Washington. The members are appointed by the governors of these states and confirmed by their legislatures.

The enabling act gave the council three directives:

1. Develop and monitor implementation of a 20-year regional power plan. The plan gives priority to energy conservation and renewable resources and mandates the development of cost-effective resources.
2. Develop and monitor implementation of a program to "protect, mitigate, and enhance" fish and wildlife in the Columbia River Basin.
3. Provide for broad public participation in the development and implementation of both the power plan and the fish and wildlife program.

WAPA does not have utility responsibility, which means it has not had to acquire any thermal capacity and does not have to serve residential customers of private utilities. As a result, its average costs are much lower and its rates are about one-third of Bonneville's rates. WAPA provides supplemental power to preference utilities, supplying less than 10 percent of its customers' power and 20 percent of their transmission needs. Less than one tenth its power goes to private utilities, and none of it is marketed outside the region.

WAPA is the largest PMA geographically and the most complex legislatively in that its power is generated at plants governed by twelve different project authorization acts, including Pick-Sloan, the Colorado River acts, and California's Central Valley Project. Most of its projects, with the exception of the Central Valley Project, have remained on schedule in their repayment. WAPA operates in 15 central and western states, with management exercised by five regional offices.

There is nothing comparable to the Northwest Power Planning Council in the WAPA region, and WAPA is generally not required to encourage energy conservation, mitigate environmental damages from dams, or consider the broad range of issues associated with demand forecasting which the Northwest considers. However, the Hoover Dam bill of 1984 marked a change by requiring WAPA to encourage conservation of Hoover Dam power.

## **Financial Status**

### Rates

Current rates for priority firm wholesale power, the predominant form of power sold, are set at 22.2 mills/kwh for Bonneville power. Rates range from 6.5-10 mills for WAPA, with the exception of California's Central Valley Project where currently rates are similar to BPA rates. Both Bonneville's and WAPA's rates are based on cost. WAPA's rates benefit from a base of dams built in the 1930s, 40s, and 50s. Before 1979, Bonneville's rates also were based on low embedded cost hydro, but over the last six years have had to absorb costs from three of the Washington Public Power Supply System (WPPSS) nuclear plants, the residential exchange program, and fishery restoration.

### Repayment

Despite the fact that Bonneville's rates have increased 600 percent in the last five years, Bonneville has barely been able to cover expenses. Rates and expenses are now stabilizing, and this year, BPA will not only catch up on back interest, but will once again repay principal. WAPA, with its lower rates, has about 26 percent of its revenues available for debt repayment and is on schedule or ahead of schedule in repaying most of its projects.

Investments in hydroelectric generating facilities must be repaid with interest within 50 years, while transmission investments are repaid in 35 years. Interest rates range from 2.5 percent for some original construction to 16.5 percent for new construction and replacements. Because most of the original construction took place in periods of low interest, repayment schedules contain large low interest components. The PMAs are required to follow "sound business principles" and as a result, repay their more recent higher interest bearing obligations first. The practical effect is that a quick look would indicate that many hydro projects are repaying their costs at a very slow rate. Hoover Dam, for example, whose records show an unpaid balance of 35 percent, has reached the point where virtually all of the revenues reduce principal and will completely repay its original construction costs in 1987.

Bonneville has repaid less than \$1 billion of an \$8.4 billion original investment. Bonneville's repayment record reflects several factors: 1) drought, recession, and sharply escalating WPPSS costs played havoc with repayment schedules; 2) most of the money owed is for projects built in the higher-cost 1960s and 70s; and 3) interest rates on the BPA assets are accordingly much higher as are the interest components of repayment. Despite Bonneville's delayed repayment of principal, Bonneville has paid \$1.2 billion in operating and maintenance costs and \$3 billion in interest in total payments of almost \$5 billion to the U.S. Treasury.

## Chapter 3

### DESCRIPTION OF THE WESTERN RIVER BASINS

The varying concerns of the Colorado, Columbia, and Missouri basins reflect the geographic, economic, and institutional circumstances of each of these multi-state river systems. The purpose of the directive to the WGA task force to consider basin similarities and differences, especially as they relate to the use of hydro revenues for water development, was to develop common understanding within the region of each basin's concerns and priorities. The basins, while united by common concerns over their water and power systems, nonetheless differ between basins, within basins, and within states. Plans, management, and financing, to be most effective, will need to be tailored to the widely varying situations.

#### Colorado Basin

The Colorado River flows through an arid region which has experienced substantial population growth in the past and, although the growth is moderating somewhat, will almost certainly continue. The basin contains both the most developed and the most remote areas in the West. The river is fully appropriated. It is one of the most regulated, legislated, negotiated, and litigated rivers in the world. Future demands to meet water supply, treaty, in-stream flow, recreation, Indian water rights, hydro and other important needs will be impossible to fill completely.

With a history of congressional maneuvering, long court suits, and heated compact negotiations, demands on the Colorado Basin result from an expanding population, a drive to capture each state's full entitlement to the river, and growing concerns over protecting the environmental and recreational benefits of the river and its tributaries.

Basin states generally fall into three categories: those which are receiving their full entitlement of Colorado River water (California, Nevada, and New Mexico); those which are not receiving their entitlements, but have projects underway which are being financed largely through federal appropriations (Arizona and Utah); and states which are not receiving their entitlement and are unlikely to do so under the traditional federal process (Colorado and Wyoming). All of the states feel strongly that projects which allow them to store and benefit from their entitlement were intended to be built and repaid through hydro revenues. They believe that either those authorized projects or equivalent benefits should legitimately be repaid by the Colorado River hydro revenues.

Major existing or under construction components of the federal hydro development in the Colorado Basin include the Colorado River Storage Project (CRSP), the Hoover Dam complex in the lower basin, the Central Utah Project (CUP), and the Central Arizona Project (CAP). CAP and CUP have been receiving congressional appropriations. CAP is nearing completion, supported now in part by revenues from the Hoover Dam complex, which were reapportioned in 1984. CRSP was, as a result, the primary focus of the WGA task force discussion. CRSP water projects remaining to be built are estimated to cost about \$800 million; they are located primarily in Colorado. It appears increasingly unlikely, however, that federal funding will be available to complete the CRSP projects, despite strong support within the state.



Power from CRSP is marketed by the Western Area Power Administration (WAPA). Colorado has proposed a hydropower rate increase which would double the CRSP wholesale rate, to 20 mills/kwh. Impacts on retail rates would be much smaller, since CRSP power is used primarily for peaking and is blended with power from other sources. Colorado's proposal for a rate increase is to finance up-front costs of water development that was originally to have been undertaken with federal appropriations, then repaid with power revenues. The change in the structure of the rate base has not yet been endorsed by the other basin states or utility customers. It nonetheless is a serious proposal which, like the Hoover Dam bill of 1984, could resolve some of the concerns examined by the task force.

### **Columbia Basin**

The Columbia River is America's second largest river. With the largest federal hydropower system of the three basins, the Columbia also has achieved the greatest degree of regional control over federal hydropower finances.

Regionalization occurred in three legislative steps. A Pacific Northwest priority in purchase of federal hydro was declared in the Preference Act of 1964. Self or regional financing was authorized in the Federal Columbia River Transmission System Act of 1974. Since then, the customers served by the Bonneville Power Administration have paid for power operations at federal projects in the Northwest, as well as repayment of the Treasury obligations stemming from construction of the facilities. Finally, the Northwest Power Act of 1980 authorized regional resource investment, planning, and fish and wildlife mitigation to be financed in the rate base. Further expansion of costs included in the rate base may be economically unwise as rates are already at or above "market."

Because of the ample supply of low cost hydro, the Northwest's economy evolved based on the assumption that electric rates would be low. The average manufacturing worker, employed by energy-intensive industries, uses three times as much electricity as the national average. The Northwest's economy, which is heavily dependent on hydropower, has gone through a difficult period adjusting to the jump in power rates and the new priorities in the power system. Stability in the system is vitally important in the Northwest at the present time.

In parallel with the importance of the federal system, public power has been and continues to be influential in the Pacific Northwest. Publicly owned utilities are concerned about changes in preference, and their concerns are reinforced by the rate increases of the past five years. Moreover, there are factors in the Pacific Northwest that make the region's congressional delegation wary about reopening questions of hydro revenue allocation. Chief among these is the unresolved situation of the Washington Public Power Supply System (WPPSS). The threat that holders of defaulted WPPSS 4 and 5 nuclear project bonds might use such a legislative vehicle for pressing their demands upon the region is a real one.

Not only would federal hydro revenues be difficult to tap, there is no urgent demand for tapping them. There are no major water projects in the Northwest where local matching funds are the binding constraint. In both the second half of the Columbia Basin Project and the Yakima Enhancement, the Washington state legislature has indicated a willingness to raise funds with state bonds.

The Columbia Basin states, as a result, set highest priority on making common cause with other states to assure that the benefits of existing federal water investments continue to

be allocated fairly to those who are paying for them. Beyond that joint defense, the Northwest would like to be helpful to other western states but has fewer concerns about water resource development.

### **Missouri Basin**

The Missouri River is the longest of the three rivers, flowing from the Continental Divide through semi-arid prairie to the moist and fertile Midwest. The basin's climate is erratic at best, and alternating droughts and floods are its historic pattern. In the 1940s the Pick-Sloan program authorized five mainstem dams to provide flood control and navigation benefits for the downstream states, hydropower for all, and irrigation for the upstream states. With only small exceptions, the irrigation has never been built. The downstream states received their benefits, and the hydropower, which was intended at least partially to pump irrigation water, is marketed by WAPA for a variety of domestic and industrial purposes. The hydropower generally benefits those downstream areas which have experienced economic development as a result of controlling the river.

The upper basin states are largely rural, with agricultural economies. They are seeking means to both assist agriculture within their states and to diversify and strengthen their economic bases. They see the downstream navigation and flood control and the export of a large portion of the power generated within their borders (including the pumping power reserved specifically for their use in irrigation) as a continuing redistribution of their wealth to downstream states which have given up little or nothing in exchange for the new wealth they have received. The upper basin states, which have not received their water entitlements or the economic benefits of the river development, would like to use what they consider their fair share of the hydro revenues to finance water development which would benefit their economies. The kinds of development they seek are those which are almost impossible to finance through private markets — rural and small municipal water supply, irrigation, environmental protection, and recreation.

There is a feeling in the upper basin that federal hydro development should contribute to host states in the same way as other federal and private natural resource development. In the case of private mineral development, host states collect severance taxes. With federal minerals, royalties as well as taxes are paid to the host state. The original Pick-Sloan plan was a corollary of this theme: hydro revenues should be invested in the states where land and hydro resources are dedicated to hydro generation. Finding mechanisms to channel hydro revenues into water resource development under state control is, accordingly, of interest.

On the other hand, Missouri River Basin public power entities and the state of Nebraska, which is totally served by preference utilities, are concerned about any threat to preference or cost-based pricing. Nebraska in particular is worried because of its current dependence on as well as potential opportunity to expand its use of groundwater resources — something that hinges on low-cost pumping power.

## Chapter 4

### CHALLENGES TO THE EXISTING SYSTEM

Despite the fact that the federal investment in western hydro generates over \$4 billion per year in gross revenues, the prices charged for electric power from federal hydro projects have been below the rates charged by other utilities without access to hydro, in some cases considerably below. The lower rates have been pointed out by a variety of observers. Some see an inequity in low hydro rates: the hydro dams were built with federal dollars, but they do not benefit all citizens equally. Some see an economic flaw: consumers, benefiting from the low embedded cost of federal hydropower, will rely too heavily and liberally on electricity, forcing utilities to provide new generation — generation that will impose environmental as well as financial burdens. And some see in low hydro rates an opportunity to raise funds for an ailing treasury. Much of the discussion has centered on the Bonneville Power Administration, in terms of revenues the largest of the PMAs.

#### Proposals for Change

Criticisms of federal hydro pricing have been growing steadily. Critics have included environmentalists as well as fiscal conservatives anxious to decrease the domestic federal presence across the board. A common thread in their criticisms is the emphasis on economic efficiency, evaluated from a national perspective. Other critics include representatives of other regions, westerners not receiving federally generated power, and those simply looking for new sources of revenue. The Congressional Budget Office and Office of Management and Budget also have a long history of criticizing western water and hydro systems. In 1978 the congressional General Accounting Office (GAO) recommended increasing power rates from federal dams in the Pacific Northwest over a 20 year period, until the rates rose to a projected marginal cost level.

As noted earlier, BPA did fall behind in its repayments to the Treasury in the 1970s. Until 1964, BPA used an annual schedule of fixed repayments to the Treasury. Reluctant to raise rates, which had long been unchanged, Bonneville adopted in 1964 a repayment-study method for scheduling its Treasury contributions. The change means that each year, BPA estimates its revenue requirements for its cost of doing business; amortization of the federal investment is accorded lowest priority in the repayment study. As a consequence, Treasury repayments are used as a de facto contingency fund; when actual revenues do not meet expectations, it is the Treasury that bears the cost.

The contingent needs arose. In 1973-74 and 1977-78, the Pacific Northwest suffered two severe droughts, which drastically decreased streamflows in the Columbia River Basin. BPA revenues from sales of hydropower declined sharply. Beginning in 1979, the costs of three of the nuclear projects of the Washington Public Power Supply System (WPPSS) began to be included in the BPA rate base. Despite rapid rate increases, the mounting WPPSS bond repayments still elbowed out amortization of the federal investment.

Even though Bonneville acted in compliance with prevailing law and policy, its repayments over the past decade have not been impressive. As the White House Office of Management and Budget pointed out, over the past 10 years, the net repayment on BPA's present debt of \$8.6 billion has amounted to only \$42 million. With a payment of more than \$200 million in 1984, BPA has paid off all deferred interest, however, and

current rates are expected to retire more than \$170 million per year of the outstanding principal. In that sense, the shortfalls of the past decade are already being reversed with prevailing rates. Other PMAs, including WAPA, have not suffered these financial strains, but their treatment in public debate tends to follow that accorded BPA. The Pick-Sloan program is well ahead in its scheduled repayments.

### The OMB Plan

Since the beginning of the Reagan Administration, the idea of rearranging the public economy built during the New Deal has received more attention. Early in 1984 the President's Private Sector Survey on Cost Control — known as the Grace Commission — found billions of dollars of "inefficiency, waste and abuse in the federal government." One of the commission's 2,500 recommendations was to sell federally owned hydropower dams and the power marketing administrations, a move estimated to yield \$25 billion over a five-year period. GAO, however, in a 1985 assessment of Grace Commission recommendations, cautioned against such actions without careful evaluation of the ramifications.

Six months later California Congresswoman Barbara Boxer, a liberal Democrat, stunned representatives of public power during House floor debate on the Hoover Dam legislation. The original 50 year power contracts will expire in 1987 and were up for renewal. Boxer proposed an amendment to auction Hoover Dam power at "market" rates, with the extra income earmarked to reduce the federal deficit. The Boxer Amendment attracted the support of fiscal conservatives and environmentalists. Although the amendment failed, a switch of twenty votes would have been enough to pass it.

Fresh from the battle over the Boxer Amendment, PMA customers next faced President Reagan's budget proposal for FY 1986. The budget called for major changes in the financial structure of federal hydro. Often referred to as the "OMB Plan" because it originated in the Office of Management and Budget, the Reagan Administration approach contained three principal elements:

1. Repayment of the federal investment on power features on a fixed, straight-line basis, amortizing repayments over the service life of the facility or 50 years, whichever is less.
2. Raising the interest rates on all outstanding obligations to the current Treasury rate — a move that would cause most of the dollar impact.
3. Amortizing irrigation features and charging interest on the unpaid balance at current interest rates. Historically, interest on irrigation has been foregone, and principal has not been repaid until the power features are repaid.

The purpose of the OMB plan is to raise rates to the maximum level possible without attacking cost based pricing and to use the revenues to reduce the federal deficit. Estimates of the rate impacts of the OMB Plan range from an increase of 8 mills/kwh in the Upper Colorado Basin (an 81 percent increase) to 22 mills/kwh in the Pacific Northwest (a 96 percent increase).

Release of the Reagan budget in February 1985 led to a storm of protest. Senator Dan Evans of Washington, a leading opponent of the OMB Plan, pointed out that many of the planned savings from raising power rates would be absorbed by declines in taxes and

increases in social welfare transfer payments to the people displaced from power-intensive industries. Analyzing data for the Northwest, Evans argued that, instead of a gain to the Treasury of \$500 million in the first year of the OMB Plan, the net gain, taking into account transfer payments, would be a mere \$8 million.

The U.S. Department of Energy also acknowledged the probability of major economic consequences: large losses of market share by BPA and other PMAs; loss of a significant fraction of the aluminum producers served by BPA; efforts by utilities in the U.S. to obtain electric energy from Canadian suppliers; loss of 65,000 jobs in the Pacific Northwest, at a cost of \$1.3 billion in wages and \$321 million in federal tax receipts; substantial reductions in irrigated agriculture; and severe cutbacks in BPA-sponsored conservation activities.

Under pressure from Senate Appropriations Chairman Mark Hatfield, a Republican from the Pacific Northwest, and Senator Evans, a Washington Republican who had served as chairman of the Northwest Power Planning Council, the OMB Plan was shelved, victim of the Administration's need to find legislative support for a budget compatible with its policy agenda. An aftereffect of the OMB Plan, however, is discussion in the Washington and Oregon legislatures and by former BPA administrators to have the states buy BPA to remove it from future non-cost based federal rate increases.

It is noteworthy that Congress through its Congressional Budget Office (CBO) published a study of "Reducing the Deficit: Spending and Revenue Options" two weeks after the Administration budget was released. The CBO study included a proposal for the Bonneville Power Administration to adopt a fixed-repayment schedule. CBO also proposed changing the interest rates charged on the Bonneville obligation, a step that would raise power rates about 11 percent and yield federal deficit reductions of \$1-1.5 billion over the next five years. Against the backdrop of the OMB Plan, the CBO analysis sounds moderate, although it incorporates many of the same ideas that critics of the PMAs have argued for some time.

The WGA hydro task force concluded that the challenges are here to stay, at least until the federal deficit burden moderates. Despite the fact that rates in the BPA service area — the largest, most visible PMA — are at market in its area and are competitive with Canadian hydro, natural gas, and conservation, they will remain substantially below the national average. That fact will continue to offer a tempting target for a variety of would-be reformers. Upcoming legislative proposals on hydro and water contract renewals will continue to provide vehicles for attempted change. Accordingly, one should not take for granted that federal hydropower will continue to be priced at rates reflecting embedded costs of production.

### **Major Issues**

The rationales used to justify proposals to change the existing system generally revolve around a few key points. Some of the criticisms are valid; many are not. And few of the "solutions" are. The major criticism of western hydro is that it is a subsidy — projects built by the federal government to benefit local areas — and because of the subsidy, benefits should now return to the federal government.

### **Subsidy**

The federal government extended investment capital for a broad program of public works serving a wide variety of needs throughout the nation. The construction of most of the

national water system, which includes western hydro, was financed by U.S. taxpayers. Today parts of the West benefit from hydro rates which are lower than average national electric rates. But no unusual subsidy accounts for that. The West's hydro system was developed following practices which were more rigorous than those accorded other federal public works or other regulated utilities, public or private.

**ALL UTILITIES' RATES ARE COST-BASED.** They are based on the cost of production, including historic book costs, cost of delivery, and cost of service. Important cost components include:

- **Embedded costs**

Embedded costs include the cost of construction. Western federal hydro benefits from having low embedded costs. But rates based on western hydro will be roughly the same as rates based on private hydro constructed at the same time, eastern hydro constructed at the same time, or thermal plants constructed at the same time.

When the hydro facilities were built, they were not considered a good deal. Those who signed contracts had to pay more for the power, but did so because it was the only choice they had. Private, profit-making utilities were not interested in running long lines to electrify rural America.

In the 1970s fuel costs rose, inflation escalated, interest rates went up, and regulation increased. New plants, which were built in response to growing demand fed by lower power costs, caused rapid increases in rates. At that time hydro and other low embedded cost power facilities became a good deal, hydro more than most other power sources because it was free from escalation of fuel costs. Most new hydro construction, built today, would be just as expensive to a utility and its rate payers as coal, nuclear, or any other source of power.\*

- **Interest rates**

In the development of western hydro, long term power contracts were signed before construction began to ensure viability of the project and repayment of the investment. Interest rates were set at the prevailing rate of the day, rates which in fact were the prevailing rates until about 1958 when inflation started pushing interest rates up nationally. One hundred sixteen of the 130 federal hydropower projects were under construction or built by 1958.

Since 1958, interest rates have become an increasingly volatile high cost item. Neither the FERC nor any state public utility commission would allow rate increases based on using current interest rates for all outstanding debt, even low interest debt.

**ALL UTILITIES ARE SUBSIDIZED.** Publicly owned utilities, which receive preference for federally generated hydropower, can float tax-exempt bonds and do not have to pay

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\* The principal exception is energy conservation. Because of the historically low rates charged for federal hydro, consumers had little economic incentive to use power efficiently. Today, cost-effective conservation remains the last low-cost means of extending the benefits of low-cost power.

taxes nor make profits. However IOUs can take capital investment tax credits, defer taxes through accelerated depreciation, encourage stock sales through a dividend reinvestment program, and write-off losses. A number of rural generation and transmission utilities, which could qualify as non-profit, elect to be profit-making utilities because it is financially advantageous.

It has been national policy that natural monopolies providing essential services should be regulated and should keep costs low. Whether that is good public policy is a different question. Any change from that principle should be evenly applied to all such monopolies, not just federal hydro.

**ONLY WESTERN HYDRO PAYS ABOVE TRUE COSTS.** The only exception to cost-based pricing (other than subsidies available to all utilities) occurs in western hydro which repays not only its own power costs but the costs of irrigation, salinity control, fishery restoration, and regional power planning.

#### Distribution of benefits

There are at least two aspects of distribution which are debated, both concerned with the question, who should receive the benefits of the hydropower? One has interregional implications, the other intraregional. Critics of the PMAs point out that the low costs of federal hydro benefit only those who can purchase the power, even though the investment was made by the nation's taxpayers.

While that observation is correct, its meaning is subject to debate. Economic development is inevitably shaped by geography; physical capital, especially when it is in the form of natural resources, must be located somewhere, and its location is not readily affected by policy. All regions have natural advantages, whether they be climate, infrastructure, waterways, population, labor force, or market location. Similarly, throughout our history, every region of the country has benefited from federal investment to stimulate commerce and development, including such diverse expenditures as highways, airports, military bases, HUD grants, mass transit, or cultural centers. Traditionally, regional benefits have been enjoyed primarily by those near the geographic advantage or the the federal investments, whether it is the communities surrounding military bases, ports along the coast, or those who benefit from the interstate highway network. Localized benefits are inherent in the pattern of development. All regions utilize their advantages as regional resources for regional benefit.

Taxes are collected on the economic development which results from the geographic resource or federal investment. If extra charges to be returned to the Treasury are appropriate for hydro facilities, so are highway tolls, port charges, and similar increases. To be fair, such surcharges should be imposed across that component of the national economy based on prior federal investment.

The other criticism of distribution concerns preference: Why are some utilities' rate payers given a better deal than others?

Historically, preference derived from the basic tenet that public resources should be used for public purposes. Preference for public utilities and rural coops was judged to serve the public interest 1) by providing power directly to consumers without benefiting profit-making entities, 2) by allowing local user control over monopolistic entities, 3) by providing direct competition for private utilities, 4) by providing a "yardstick" to measure private utility performance, and 5) by reducing the dependence of public utilities and hard-to-serve consumers on private suppliers.

Debate over preference was a strong impetus for the passage of the Northwest Power Act. As the costs of providing power rose in the 1970s, the state of Oregon, whose utilities are predominantly investor owned, was initiating steps to change the distribution of BPA power because the state of Washington, with numerous publicly owned utilities, was receiving significantly more hydro. The Northwest was able to resolve the problem because the federal hydro resource is large enough to permit BPA to supply power to all residential and agricultural customers at preference rates.

Other areas of the country, especially New York and Utah, are also seeing IOUs contest the concept of preference. In the WAPA area, there is not enough hydropower to supply all residential demand. A study done by the Colorado River Energy Distributors' Association of the effects of distributing Utah's share of WAPA hydropower statewide showed that it would make virtually no difference in IOU rates because the percentage of hydro would be so small. Given the often significant per capita loss that would result from curtailing sales to publicly owned power companies who have made investments and plans based on access to hydro compared to the sometimes insignificant per capita gains from redistributing it, there has been reluctance to eliminate the public power preference.



## Chapter 5

### VIEW FROM THE WEST

The West views hydro development as a regional resource whose benefits should return to the basin of origin under basin control. Western states can provide the best stewardship of a geographically-based natural resource, are paying for the original investment plus operating and other expenses, and are in the best position to incorporate the product of the investment into the region's economic system in order to support the nation's well-being.

#### Guiding Principles in a Time of Transition

The 600 percent increase in the wholesale rates of the Bonneville Power Administration since 1979 illustrates the magnitude of the transition underway in each of the West's three major river basins. Throughout the nation, several trends of the 1970s cast a long shadow: 1) energy prices have increased sharply, changing economic relationships; 2) the federal government's capacity to finance domestic public investment has narrowed inexorably; and 3) any type of development must consider its externalities, especially environmental effects. These forces come together in water resource development.

Energy is a fundamental commodity of an industrial economy. For half a century, federal financing has been the primary engine of the public economy — and the national government has been preeminent in major water resource development since the Constitution was ratified. Major changes in the cost of energy or in the political feasibility of federal assistance thus reverberate throughout regional economies. Furthermore, mitigating environmental and other externalities add constraints of an entirely new type in terms of time, distance, and interrelationship considerations.

The changes caused by these reverberations are not yet fully apparent. In the Columbia Basin, where the rise in energy cost has had some time to work, basic industries have changed irreversibly. Aluminum production seems likely to diminish significantly over the next decade. Forest products, pulp and paper, and the chemical industry have likewise undergone permanent contraction. Irrigated agriculture may have reached its economic limits. The social landscape, especially in rural areas where these industries tend to locate, has suffered accordingly.

However the economic structure adapts to energy economics and federal policy, the states are and will continue to be on the front lines of that adjustment. State governments must cope with the effects — the social costs of economic change and the uncertainty that accompanies it. Economic development, a popular theme in state government, is acquiring a wider meaning: facilitating the emergence of new business should be part of a strategy that includes easing the human costs of business sectors in economic decline. That broad mandate presumes a state-federal partnership in which states play an important, assertive role.

In this light, the task force offered the following principles to guide western action on water resource development:

- Repayment of the federal investment is a senior obligation to be repaid on time and at the interest rates existing at the time of project authorization. Western ratepayers are repaying their obligations to the U.S. Treasury in accord with established law and policy. Where lapses have occurred because of unanticipated circumstances, they are being corrected, with those corrections fully supported by western ratepayers. However, changing interest rates and terms of repayment abruptly as proposed in the OMB plan would be counter-productive, precedent-setting, and unconscionable.
- Cost-based pricing is the universal and fair basis for setting utility rates.
- The federal government has a continuing obligation to assist states to achieve the level of benefit intended in negotiated and authorized comprehensive basin development plans. Comprehensive river basin development plans have been authorized by Congress for each river basin based on pacts reached within each basin. In each case, fulfillment of the plans is incomplete, with differential and unfair results remaining in each basin. The states want to be able to secure the benefits pledged to their states. In some cases that means constructing those authorized projects which are economical by today's standards. A number of states have indicated willingness to redesign projects, change project purposes, and seek least cost substitutes. Basin states can agree that each state should get the level of benefits — not necessarily the projects — envisioned when the river basin agreement was concluded. Projects currently under construction which are receiving federal appropriations should be completed.

The federal government has a continuing obligation to live up to its commitments. Thus far the Administration has proposed to stop funding water development, to change the tax laws such that states cannot fund it themselves, and to raise hydro rates and return revenues to the federal treasury rather than considering use of the revenues for further basin self-financing.

- Each of the three major river basins forms a logical planning unit for water resource development. The model developed in the Pacific Northwest for electric power planning provides a basis for further discussion. Two points are central: 1) the needs of each river basin are unique; and 2) the states of that basin are in a better position to plan to meet their needs than is the federal government.

### **Stewardship**

The West is demonstrating that it is becoming the best steward of its resources. Governors and other regional leaders in a position to effect change will continue to move in the direction of the most effective use of valuable resources to benefit the public. The West knows that it is in its own interest, as well as the national interest, to do so. Many of the proposed "reforms" will only interfere with important initiatives that are coming from within the region.

### **Past problems**

A number of problems which developed in the past are frequently cited by those seeking revisions. The problems are being addressed. Repayment delays are being corrected in

both Bonneville and the Central Valley Project. Interest rates on new construction are generally at current rates, although exceptions based on equitable treatment do occur. New contracts are starting to be written with more flexible provisions. Given the large number of both water and power contracts which will be up for renewal in the next 10 years, this is likely to be an area of escalating change. Federal agencies, with state support, can be expected to seek authority to index operations and maintenance charges to inflation or actual costs, raise interest rates to current levels, establish performance standards, or make other changes which will allow the government to recover true costs.

#### Least cost solutions

Although federal hydro has become a least cost solution in much of the area where it is available, it has only been in the last ten years or so that rising costs have made it in everyone's best interests to investigate least cost solutions for both power and water needs. In power production, the alternatives could include expanded interties, conservation, pooled investment in new plants, revised means for obtaining peaking power, cogeneration, and others. The Northwest Power Act recognized the importance of least cost solutions by designating conservation as a primary mandate for the Northwest Power Planning Council. That pattern is spreading industry-wide. WAPA recently joined with several utilities with surplus thermal power to form the Rocky Mountain Generation Cooperative, a mechanism for integrating hydro and thermal power to provide more efficient power supply.

In water, the western governors are initiating an in-depth program to examine what will be required to enhance efficiency of use. Individual states are moving rapidly to increase conservation, down-size projects, facilitate water transfers, and in general to strengthen effective water management.

#### Environment

Environmentalists have argued that development of water resources usually means degradation of the natural environment. Yet one of the unexpected results of the environmental movement in American politics has been the emergence of environmental quality as an investment objective in public works.

Once conceived of simply as "mitigation" for the lost habitats of sport fish and game, environmental aspects of public projects have mushroomed in many directions. The most ambitious environmental program in the West is the Columbia River Basin Fish and Wildlife Program required by the Northwest Power Act. Formulated in 1982 by the Northwest Power Planning Council in response to recommendations from Indian tribes and state and federal agencies that manage fish and wildlife in the Columbia Basin, the program is a 20-year, \$1 billion effort to protect and enhance the fish and wildlife values lost as a result of hydropower development. At the center of the program is an ambitious and unprecedented effort to restore the salmon and steelhead of the Columbia drainage, reduced to perhaps one-tenth of their aboriginal abundance by industrialization, agriculture, and urban growth.

The Columbia Basin program includes traditional fish and wildlife measures, such as a \$50 million effort to reopen and recolonize the once-prolific Yakima River Basin in Washington state, as well as a \$200 million expenditure to improve fish passage conditions through major capital construction projects at both federal and utility-owned dams. These programs are paid for largely by Bonneville ratepayers; approximately 1 percent of BPA's annual revenues are used for fish and wildlife purposes.

Perhaps the most novel element of the program, however, is the water budget devised by Dan Evans, now a U.S. Senator from Washington, while he served as chairman of the Northwest Power Planning Council. The water budget is a block of water reserved for enhancing the flows of the Columbia and Snake during the spring migration period. The water budget essentially restores a portion of the spring snowmelt which once sped migrating juvenile salmon to the sea. Controlled by representatives of the tribes and fisheries agencies, the water budget also changes the balance of interests that determine river operations. The Bonneville Power Administration estimates that revenues potentially sacrificed by the water budget's shifting of flows into the spring, instead of the more lucrative winter market, range from \$54 to \$74 million in 1985.

The Columbia Basin program sets a bold benchmark in environmental improvement: an effort that, measured by its economic scale, surely deserves to be called a serious attempt to accord fish and wildlife treatment comparable to that devoted to other purposes of the Columbia Valley water projects. The larger lesson is that the environmental commitment which has spawned major regulatory programs in the U.S. is also reflected in the changed profile of public investment. With some surprise, environmentalists find themselves occasionally in league with traditional supporters of water resource development, whose objectives can now incorporate significant environmental goals.

## Chapter 6

### POSSIBLE FUTURE DIRECTIONS

Committed to the idea that the basins can do the best job of managing their resources, the WGA hydro task force considered a wide range of possible means to allow them to do so. Two alternatives are discussed in greater depth below — revolving funds and basin councils.

The threat that revenues from federal hydro projects may be rechanneled and the western states' commitment to the idea that regional assets should be used for regional benefit have caused states to explore options which once would have been unthinkable and are still improbable. It is in that context that the task force discussed how the institutional mechanisms developed for the Pacific Northwest electric power system could be used as a model for water management in the Colorado or Missouri Basins. The notions discussed here are preliminary, but could be useful in future policy development.

#### **Revolving Funds**

The fund authorized by the Federal Columbia River Transmission System Act of 1974 sets a precedent for regional financing of federal water resource projects. Under this statute, the Bonneville Power Administration operates as a self-financing agency. It collects revenues from its customers to meet all the costs of the Federal Columbia River Power System, including repayment of all power obligations, a category that encompasses irrigation obligations beyond the irrigators' ability to pay. It frees BPA from dependence on congressional appropriations, although Congress still reviews the BPA budget.

Because of the precedent that exists for hydro revenues to help pay for the costs of related water development such as irrigation, salinity control, and fishery restoration, it may make sense to use hydro revenues to finance a revolving fund which would pay for certain water development costs. "Water development" would have to be carefully defined. While it could mean constructing effective water storage projects, it could also be as likely to include least cost solutions, maintaining instream flows, or rehabilitating existing facilities.

#### **Basin Councils**

A possible model for regional governance is the Northwest Power Planning Council described earlier. An interstate compact agency of the states of Idaho, Montana, Oregon, and Washington, the council is not a federal agency, and its members are appointed by the governors of its four member states.

Using the Northwest Power Planning Council as a template, the task force outlined a generic regional council which might be chartered in either the Colorado or Missouri basin:

- Congress would authorize the creation of the Basin Council (BC) by interstate compact. Its members would be appointed by the governors of states in the basin.\* The BC could have two primary tasks: one, to undertake strategic planning for the power and water system of each basin; and second, to distribute funds for water-related investments within the states of each basin from a regional revolving fund.
- The strategic planning duties of the BC would include (a) forecasting demand for water and hydropower; (2) examining the economic, social, and environmental ramifications of various options; and (3) conducting studies to assist states in developing alternatives to already-authorized-but-unlikely-to-be-built water projects. The alternatives should promise improved efficiency in the utilization of capital, water, and energy, while providing an equitable distribution of benefits.
- Water needs approved by the BC could be financed by the Council using revenue bonds or other mechanisms. A bond issue would first be reviewed by the administrator of the Western Area Power Administration, although his discretion to disapprove would be tightly circumscribed by statute. Once approved by the administrator, bond revenues would be paid to the Council, and the Council would, in turn, repay the bonds from the revolving fund financed through Western's power rates.\*\*
- Needs to be funded by the Council would be proposed by the member states of each basin. Subject to availability of funding (see below), priority could first be given to options that would allow each state to meet the level of benefit which was specified in the basin comprehensive river development plan or to any other priority order established by the Council. In an alternative, a revenue stream could be divided among the states for them to individually meet their most critical priorities.
- The level of funding available would be determined by a rate test, whose exact form would have to be determined but whose intent would be to establish a ceiling on possible rate increases. In concept, the rate test would guarantee that hydropower rates would (1) continue to be based upon the cost of power production, including a portion of basin water development; (2) provide timely or accelerated repayment of federal obligations; and (3) assure an economical and reliable power system.
- WAPA would be authorized to include repayment obligations for BC-financed development in its rate calculations, and it would be authorized to transfer funds to the BC to meet bond obligations. Western's repayments would constitute part of its annual budget, and would be reviewed by the appropriations committees of Congress, as they are now, but no additional appropriations action would be required by Congress before BC actions are undertaken.

In using the Northwest Power Planning Council as a model, the task force recognized differences between water and power as public investments. The economic benefits of

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\* The task force believes any issues of constitutionality raised with respect to the Northwest Power Act can be resolved in the enabling legislation for the BC in a fashion similar to that used in the Northwest act.

\*\* The Northwest Council does not control power revenues directly, but relies upon BPA for its budget.

cost-effective power investments are shared through the grid and rate structure, while the benefits of water projects tend to be localized. Moreover, some water projects which a state selects to be completed could be of marginal economic value but may be regarded as important social investments, whose benefits are not reflected in economic return. For both reasons Basin Council planning could not be articulated solely in objective economic terms, as has been done under the Northwest Power Act.

The ideas sketched out above begin to put the guiding principles into concrete form, but clearly the feasibility of a fleshed-out Basin Council proposal would need additional study and consultation.

### **Preference**

A central issue is how the revolving fund and Basin Council proposals would affect, or be perceived to affect, public preference and cost-based pricing for power generated at federal projects. As framed above, the key points of sensitivity would be the policy question of what is to be included in the costs allocated to power development and the economic question of how the rate test would work in practice. Economic projections would have to be accorded high priority, since there are significant uncertainties.

It would be important to estimate what rates could feasibly be charged for WAPA hydro. Most of this power is now used to meet peaking demand; the market value of that resource may be quite high. On the other hand, in all three river basins there is currently a surplus of power. This means that even current rates are too high to clear the market, given existing interregional transmission capacity.\* The revenue streams that could be tapped to support water resource development need to be studied with some care.

The task force believed that a substantial portion of the current revenue stream from WAPA projects could be needed, over time, to replace the loss of federal financing. Both rehabilitation and fulfilling Indian water rights, for example, are likely to have high capital demands. In percentage terms, the increases provided for in the rate test, although possibly significant, could be phased in over time and could coincide with full repayment of current obligations.

Despite the certain opposition from western preference utilities to any such proposal, it may be prudent for them to explore such options further, rather than rejecting them out of hand. The basic idea that revenues from federal investment should be used to benefit the local economy is compatible with the historic tradition of public power. Water

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\* Differences in the way regions use electric power provide opportunities to share the use of facilities through interregional transmission. The hydro resources of the West have quite different operating characteristics from other generating technologies, and are particularly suited to provide peaking power. These characteristics can be used to better advantage through interregional sharing of access to hydro. Interregional sales of power could also provide a means for earning revenues from outside the river basin or origin.

In addition, many electric utilities today are burdened by substantial surpluses of generating capacity; long-term interregional sales can provide economical power supply to other parts of the nation, while easing the finances of utilities carrying surpluses.

resource development has traditionally been viewed as a public investment to advance public purposes. If raising rates becomes unavoidable it would be far better to continue to improve the economic productivity of the basins, turning part of the revenue stream from ratepayers into investment capital which in turn expands utility markets. Retaining the benefits of regional projects may become the best available alternative both for the basin and for the public power movement.

### **Long-Term Resource Policy**

A significant promise of the Basin Council idea is that it would widen the agenda of water resource planning in the West. The strategic planning function could spark the kind of broad-scale public discussion that the Power Council's fish and wildlife program has ignited in the Northwest. Some elements of that broader agenda include:

- New water uses in the future will incline strongly toward municipal and industrial needs. How should this be financed and what role should metropolitan and state economic planning play in this evolution?
- Agricultural water use will continue to be important. That infrastructure will need renewing — to rehabilitate deteriorating dams or delivery systems. Moreover, a sound long-term development strategy must address long-range problems such as the mining of the Ogallala or other aquifers. What is a sensible approach to the uncertainties of agricultural economics? How should the intra-basin commitments upon which basin plans were premised be met? (The treatment of Indian treaty claims in the Northwest's fish and wildlife program may be instructive in this respect.)
- Tighter competition for federal resources is a reality. How can the Basin Council address needs over time for more efficient use of capital, water, and energy? What are acceptable least-cost solutions?
- Environmental/recreation concerns. Other basins do not have anadromous fisheries to restore, but recreational benefits of water are growing rapidly in economic importance. How can states balance instream and offstream uses? How can environmental regulation by federal fiat be made less adversarial?

### **Risk Management**

Long-run resource policy must engage the fact that water resources and economic conditions are both variable from year to year and uncertain over longer time periods. The regional planning approach developed in the Northwest suggests that a Basin Council may offer methods of dealing with these risks.

The Northwest Council\* has 1) explicitly recognized uncertainty in its forecasts of

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\* Using four scenarios ranging from low to high growth, the Council developed a flexible resource portfolio to meet any level of demand for electricity. The least costly resource, conservation, will be brought on first, followed by, in order of cost, new hydroelectric power and other renewable resources, cogeneration, and coal plants. A variety of flexible resources and options were built into the plan. Low risk



electrical demand; 2) shifted investment toward conservation and generating resources that make sense in a climate of uncertainty; 3) stimulated discussion and analysis of how utilities can deal with risk; and 4) designed and overseen the implementation of programs that increase the ability of the power system to deal with changes in demand in a cost-effective way. Risk management has become a necessity in utility planning because of the rapid changes in the economic environment of energy producers over the last decade. It is equally applicable to more effective water management.

The Basin Council idea could be further strengthened by the states agreeing to assume part or all of the risks inherent in financing the western hydro system. For example, repayment for BC bonds could be made subordinate to federal repayment, with shortfalls being met by the states with BC projects in them. That would assure that federal repayment would not be interrupted, absent a real disaster. At the same time, the fact that the power system would in most years support repayment of the BC bonds would mean that states would have additional economic room for maneuver, so long as bond repayment reserves were maintained.

A risk management approach has four strengths. First, it diversifies the dimensions along which benefits are considered, in some cases capturing the value inherent in otherwise marginal water investments. Second, it recognizes the reality of uncertainty in these public investments, at a point in American economic history where hard choices must be made about whose subsidies to cut off. Third, a rational basis for planning allows the decisionmaking body to identify hard choices in an even-handed way. Fourth, an interstate approach using risk management analyses makes sense from an ecological and geographic point of view.

Some of the advantages of a rational, analytic approach are surprising. Now, state officials often cannot concede their own doubts about a water project publicly. The Northwest Council has played a useful role in the region by facilitating the "discovery" of the economic uncertainties and other difficulties facing Northwest utilities.

It should be noted that the division of responsibilities between the Basin Council and the federal PMA can materially affect the analytic stance and independence of the council. In the Northwest, BPA does the ratemaking and establishes contracts with its customers; as a result, it has had the bulk of the conflict on its hands. The Power Council has had the luxury of staying away from many divisive questions of distribution. The consensual style of decisionmaking strengthens its ability to plan credibly. A regional body designating development with localized benefits may not enjoy similar insulation from political pressures.

As this point suggests, public involvement is another element of risk management, especially when the Basin Council must work in contentious issue areas. The public involvement mandate of the Northwest Power Act has broadened utility decisionmaking beyond the traditional fraternity. A surprising consequence has been that opponents of

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Footnote cont.

resources were identified as those with short lead times, small plant sizes, and low capital costs. Other options will provide that a resource be taken through the time consuming but relatively inexpensive initial stages of siting, licensing, and design to be placed in "ready" condition. The options then exist to accelerate, delay, or cancel a project, depending on need.

utility programs such as Indian tribes and environmentalists have become defenders of the Northwest Council.

In sum, the Basin Council idea carries two kinds of promise: as a governance mechanism able to implement the idea of regional control of water project finance, including least-cost solutions; and as an open public forum in which the uncertainties of resource economics can be addressed with an understanding of both their analytic complexities and their social implications.

### **A Concluding Word**

The task force's examination of whether federal hydro revenues could be used to assist in water resource development has led to potentially useful ideas rather than recommended courses of action. The transitions underway in the West and the nation do not dictate clear-cut solutions yet.

The theme that emerges is that governors, speaking for their state's interest, want to strengthen the role of states in decisionmaking and control over basin water and hydropower resources. They are determined to play a major role in any decisions which would revamp the system or strongly affect state citizens who are paying for the system. The question becomes: How can states get control of their destiny? A number of options hold promise:

- congressional approval for basin councils or other mechanisms which exercise delegated authority for river basin water and power management;
- establishing vehicles for risk assessment and strategic planning based on an open process;
- self-financing; and
- greater use of least cost options based on equity, long-term objectives, and fairness.

Leadership in dealing with the uncertainties and challenges which are confronting the West should come from the states rather than the federal government. A short term defensive need to fend off poorly conceived plans to obtain the benefit of hydro revenues led to the WGA hydro program. The governors may decide to proceed with an active program to pursue a larger state role in the management of hydro and water resources. This report is written in an effort to be prepared for a time when need and opportunity may coincide.



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