# NORTHWEST POWER AND CONSERVATION COUNCIL
# BRIEFING BOOK

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## Northwest Authors Comment on the Council

***Charged with bringing new order to Columbia River management, the Council has generally drawn praise for its efforts at promoting energy conservation but has had a more difficult time gaining consensus on saving salmon.***

-- William Dietrich, *Northwest Passage: The Great Columbia River,* 1995, page 290.

***The 1980 Northwest Power Act seem positively prescient in reducing the utility industry's role in the region's energy planning and in placing policy-making into the hands of the Power Planning Council. The Council would be appointed by the governors of the states of Oregon, Washington, Idaho and Montana. The law seemed as responsive to the needs of the public for its time as the construction of the hydropower system itself had seemed during the New Deal two generations before.***

-- Joseph Cone, *A Common Fate: Endangered Salmon and the People of the Pacific Northwest,* 1995, Page 30.

***[The Council, under the Northwest Power Act] gave priority to the runs above the Bonneville Dam. And for the first time, they tried to change the operation of the river rather than just mitigate the effects of management. Their plans regulated flows to help push the salmon downstream, and some dams were retrofitted with juvenile bypass systems to keep the smolts out of the turbines. But given the gravity of the [salmon] situation, the changes were modest; they failed to achieve their goals.***

-- Richard White, *The Organic Machine: The Remaking of the Columbia River,* 1995, Page 103.

***The Northwest Power Act, in theory, spelled out a revolution in western water management. It put longtime inmates of the engineered river -- Indian tribes and fish agencies -- in a position of power. To administer the revolution, the Power Act created a novel bureaucratic creature. Not quite a federal agency, not a state agency, the Northwest Power Planning Council was made up of two gubernatorial appointees from each of the four states in the Northwest. The Council had powers (rather vaguely defined powers, as it turned out) to change the behavior of the federal agencies that managed the hydrosystem.***

-- Blaine Harden, *A River Lost: The Life and Death of the Columbia,* 1996, Page 216.

***… the Northwest Power Act forged a link between regional energy development and fish and wildlife recovery. At a conceptual level, the Act aimed for a power system that would meet energy demands through measures that impose the least economic and environmental cost on the region, while taking pressure off Columbia River fish and wildlife. For the power system, moving ahead would require modified operation of the Columbia River dams and financing for measures to offset the dams' effects on fish and wildlife. For fish and wildlife interests, mitigation would require a healthy hydropower system capable of generating sufficient revenues to finance energy and fish and wildlife conservation measures. Perhaps neither fish nor power interests perceived the connection clearly, but it is apparent in hindsight: Under the terms of the Northwest Power Act, neither fish and wildlife conservation nor power development could proceed without the other.***

-- John Volkman, *A River in Common: The Columbia River, The Salmon Ecosystem and Water Policy, A Report to the Western Water Policy Commission,* 1997, Page IV-20 (68).

## Contents

## Background

### 1. Columbia River hydropower development

The development of the Columbia River hydropower system in the Pacific Northwest began in the 1930s under a program of regional cooperation to meet the needs of electric power production, land reclamation, flood control, navigation, recreation and other river uses.

From the beginning, the federal government has played a major role in the development of one of the largest multiple-use river systems in the world. The U.S. Army Corps of Engineers and the Bureau of Reclamation built 30 multi-purpose dams on the Columbia River and its tributaries. Investor-owned and publicly owned utilities also built a major system of dams and generating facilities. Congress directed the Bonneville Power Administration, in the Bonneville Project Act of 1937, to build and operate transmission lines to deliver the power from dams, and to market electricity from federal generating projects on the river at rates set only high enough to repay the federal investment over a reasonable period of time.

### 2. The 1964 Columbia River Treaty with Canada

As demand for power grew, the United States and Canadian governments recognized a need for development of water storage sites in the upper reaches of the Columbia River Basin. The governments of both nations negotiated a treaty in the early 1960s for the cooperative use of dams that would be built by both countries. Four dams were built under the treaty. Three are on the Columbia River or a tributary in Canada — Keenleyside, Duncan and Mica — and the fourth, Libby, is on a major Columbia tributary, the Kootenai River, in Montana. The Canadian dams were completed by 1973, and Libby was completed in 1975.

The Canadian dams provide flood control and water storage for the purpose of additional power generation at dams downstream in the United States. The power-generating capability of downstream dams increased by the following percentages as a result of the treaty storage: Grand Coulee, 13 percent; Chief Joseph, 14 percent; the five mid-Columbia public utility district dams, 18 percent; and dams farther downstream on the Columbia, 11 percent collectively. In return, Canada received two payments: one from the U.S. Treasury for flood control benefits and the other a cash lease payment for the first 30 years of the additional power generation. Known as the downstream benefits, the additional power is divided equally between Canada and the United States. Following the 30-year lease/sale by Canada to U.S. parties, in the late 1990s Canada's share of the downstream benefits were returned to Canada.

### 3. Transmission interties between the Northwest and Southwest

Also in the 1960s, Congress authorized construction of three major power lines linking the Columbia River hydropower dams with power markets in California and the rest of the Pacific Southwest. The interties benefit the Pacific Northwest in several ways. They allow the sale of hydropower from the Columbia when it is not needed here and would otherwise be lost in the form of water spilled over dams without generating electricity, and they permit this region to buy power from California when power is needed here during shortages and periods of heavy use. In the first instance, sales of surplus Northwest hydropower to California has saved the equivalent of some 200 million barrels of oil. In the second case, California utilities sold power to Pacific Northwest utilities in the drought years of 1973, 1977, 1979, 1992, 1993, 1994 and 2001.

To protect Northwest access to power, Congress authorized regional preference provisions in 1964. Bonneville must offer any surplus power to utilities in the Northwest before selling it to California. Sales to California can be called back if the power is needed in the Northwest. Sales of firm energy can be recalled with 60 days notice, sales of peaking capacity can be recalled in five years.

**4. The Hydro-Thermal Power Plan**

With the dams developed in Canada as well as the United States, the river system provided virtually all the electricity needed by the region until the early 1970s. But by that time, all dam sites on the mainstem of the Columbia that were economically feasible and environmentally acceptable were either developed or under development, and the region was looking for other ways to meet electric load growth. Bonneville and the region's utilities were predicting shortages of electricity unless thermal generating plants were brought on line in response to increasing demand.

The region's publicly owned utilities and investor-owned utilities turned mainly to coal-fired and nuclear plants to meet growth throughout the Pacific Northwest. Utilities believed the development of such plants was the most economic and environmentally acceptable option available at the time. Bonneville helped the utilities respond to these needs by participating in a Hydro-Thermal Power Plan for the continued development of electricity resources in the Pacific Northwest.

Under the plan, Bonneville agreed to acquire electricity by entering into “net billing" agreements with its utility customers. These agreements made it possible for the publicly owned utilities, which owned shares of power plants, to sell to Bonneville all or part of the generating capacity of thermal projects. Bonneville credited, and continues to credit, the wholesale power bills of these utilities in amounts sufficient to cover the costs of their shares in these plants. Bonneville then sells the output of these plants, melding the higher costs of this thermal power with the lower costs of hydropower, for the benefit of all customers. The plants were cooperative efforts of both publicly owned and investor-owned utilities, but Bonneville purchased only the shares of generating capacity owned by publicly owned utilities.

Under the Hydro-Thermal Power Plan (Phase I), Pacific Power & Light Company and other investor-owned utilities built the Centralia coal-fired plant with the co-ownership of several publicly owned utilities. Portland General Electric Company built the Trojan nuclear power plant, with 30 percent co-ownership by Eugene Water and Electric Board (EWEB) covered by a net-billing agreement. And the Washington Public Power Supply System (WPPSS), under net-billing agreements, completed one nuclear plant (WNP 2) and partially constructed two other nuclear plants (WNP 1 and 3) in Washington state. The Hanford N-reactor turbine generator, built by WPPSS, also came on line just prior to the formal initiation of the Hydro-Thermal Power Program, and before its closure in 1987 was considered a part of the overall effort. Bonneville became the agent for integrating these resources so the consumers of the region could benefit from the greatest efficiency and lowest costs from operation of the regional electric system. The thermal power plants, which run continuously, would meet the base, or constant, power needs. The hydroelectric dams would be operated to follow the fluctuation of energy needs throughout the day.

In spite of the efforts of utilities and Bonneville to continue developing the region's generating resources in a systematic way, the region continued to lose ground to rapidly growing demands for electricity. The Hydro-Thermal Power Program failed to meet the region's expectations for two basic reasons. A revision of regulations by the Internal Revenue Service denied tax exempt status to bonds sold by publicly owned utilities

to finance their plants if power from the facilities was sold to Bonneville, a Federal agency. And, Bonneville's financial ability to participate in net-billing agreements reached its limits far sooner than expected because of the climbing costs of new thermal plants.

In 1973, Bonneville and the region's utilities initiated Phase II of the Hydro-Thermal Power Program, in which the utilities would finance their own plants without net-billing participation by Bonneville. Thus, WPPSS nuclear units 4 and 5, now terminated, were not covered by net-billing contracts. Nonetheless, Bonneville expected to provide electric load management and power integration services and to supply peaking power and reserves from federal facilities in order to bring about the most efficient mix of resources possible. Bonneville's participation in this program was enjoined by a federal court in 1975. The court required that Bonneville complete an environmental impact statement on the impact of the Hydro-Thermal Power Program.

The environmental impact statement, which was not completed until 1980, found that fluctuation in the use of hydroelectric dams would have to be limited to protect shore structures along the river. Bonneville put the Hydro-Thermal Power Program on hold while the impact statement was being prepared, and during those five years a number of events occurred that led to the demise of plants 4 and 5. These included construction delays at all five of the WPPSS nuclear plants, cost increases for those plants as the result of overruns and mismanagement, decreasing regional demand for power, growing public interest in energy conservation as a low-cost alternative to the extraordinarily expensive nuclear plants, and court decisions that relieved the participating utilities of their obligation to pay for the plants. Bonneville continues to pay for the net-billed plants, even though construction was suspended on plants 1 and 3 in 1983 and never restarted.

**5. Public power preference**

The Bonneville Project Act of 1937 directed that the electric cooperatives and other publicly owned utilities of the region be given first call on available federal resources. They consequently came to be called “preference customers.” In 1964, Congress authorized the Pacific Northwest Consumer Power Preference Act, which directed that only surplus energy from the Columbia River system could be sold outside the Northwest. Firm power from the system was reserved for the Northwest, except under conditions specified in the Act. Until the 1970s, the legal preference of public customers was unchallenged, largely because there had been enough electricity for everyone. In 1973, when Bonneville's firm-power contracts with investor-owned utilities expired, Bonneville could not offer new ones if preference customers were to continue to have first call on federal resources. So the firm power contracts with the investor-owned utilities were not renewed.

However, Bonneville continues to sell some peaking power to the investor-owned utilities — power they need to get through periods of heavy use in the winter heating season. Bonneville also sells “non-firm” power to the investor-owned utilities and utilities outside the region when electricity surplus to the needs of the preference customers is available.

In 1976, Bonneville’s power demand and supply projections showed that federal power supplies were running short for preference customers, and that Bonneville would no longer be able to guarantee preference customers that their load growth could be met beyond 1983. Bonneville issued a notice of insufficiency to the utilities in June of 1976. The following month, 88 public utilities signed contracts with WPPSS to build nuclear plants 4and 5, as discussed earlier in this Briefing Book. The WPPSS nuclear construction program proved to be a debacle, but it also prompted changes in regional energy policy. Mismanagement and cost overruns at the five WPPSS plants were at the root of the financial problems, but the WPPSS debacle also was a failure of

electricity demand forecasting. The impetus for the nuclear construction effort lay in demand forecasts produced by the region's utilities, through the Pacific Northwest Utilities Conference Committee, and Bonneville, and the forecasts proved to be too high.

**6. Rate disparities**

With PNUCC and Bonneville warning of future power shortages, with the investor-owned utilities relying on their own hydro and thermal resources to meet the demand of their customers, and with the prices of federal hydropower remaining much lower than that of new thermal generation, a divisive struggle developed for access to the limited federal resources. Sixty percent of the residential and farm customers of the region were served by investor-owned utilities. These customers were paying, on average, twice as much for electricity as customers of publicly owned utilities receiving wholesale power from Bonneville. The City of Portland sued Bonneville, claiming a right to a share of hydropower resources for its citizens. The State of Oregon passed a law authorizing formation of a statewide public utility — the Domestic and Rural Power Authority — to seek service as a preference customer from Bonneville so that all residential customers of private utilities could receive the rate benefits of Federal resources. Elected officials of other states talked of forming their own statewide public utilities.

Stimulated by rate disparities, the public power movement also experienced a renaissance. A strong public power move to buy out investor-owned utility service areas by means of elections in accordance with State law was revived in Oregon. All votes to form new PUDs failed in the November 1980 elections, but one long inactive PUD, the Columbia Peoples Utility District west of Portland won voter approval for issuing bonds to buy out utility properties in Columbia County.

Meanwhile, planning for more resources to meet demand was hamstrung by uncertainty over the allocation of low-cost federal power among competing claimants, existing and new. For example, Bonneville's contracts with its direct service industries, which are large industrial firms that purchase power directly from Bonneville, were to expire in the 1980s. The power sold to these industries would have to be sold to public utilities under the preference clause. If they were to survive in the Northwest, these industries needed an assured source of electricity.

**7. Declining salmon runs**

Finally, by the late 1970s it became clear that our regional prosperity, which resulted in large measure from inexpensive hydropower from the federal dams, had extracted a price on fish and wildlife in the Columbia River Basin. Just a century earlier, for example, between 10 million and 16 million salmon returned to the Columbia each year. But by the late 1970s, there were only about 2.5 million salmon, and most of those returned to hatcheries. Environmental groups and other advocates for fish and wildlife considered filing petitions to protect dwindling fish populations under the federal Endangered Species Act.

These pressures on our regional electric power supply, which once seemed inexhaustible, caused Pacific Northwest residents to question the institutions governing the development, sale, and distribution of generating resources. Should new preference agencies be formed to replace private companies in given areas? How would the supply needs of new preference customers be met? Should private utilities undertake new generating projects in a hostile atmosphere of rapidly rising rates and the threatened shift to public power? How would large industrial customers in the region be served? How should the public, and their elected representatives,

participate in decisions that were critical to the region's economy and environment? Who ultimately would be responsible for planning and acquiring new resources to avoid impending electricity shortages? How would our region protect the fish and wildlife that had been damaged over the years by the construction and operation of hydropower dams?

The region continued to work for a cooperative solution that preserved local options while obtaining regional efficiencies of an integrated electric system. Several alternatives were explored, but no agreement was reached. To avoid a court battle over allocation issues, the region turned to Congress for a solution.

**8. Toward a Congressional solution**

Revisions to the Bonneville Project Act were considered as early as 1975. The legislation was prompted by Bonneville's Notice of Insufficiency in June 1976, coupled with the threat posed by Oregon's Domestic and Rural Power Authority. However, it was not until 1977 that Bonneville and its customers, through the Pacific Northwest Utilities Conference Committee (PNUCC), drafted legislation to solve the region's energy problems. Senator Jackson introduced the PNUCC bill in September of 1977, but neither that bill, nor a less complex successor drafted a year later, managed to progress very far by the time the 95th Congress adjourned in late 1978.

When the 96th Congress convened in 1979, a coalition of Bonneville customers was solidly behind a legislative solution to the Northwest's power crisis. Neither Bonneville nor its customers wanted an administrative allocation of limited power supplies, although Bonneville did propose an allocation scheme in October of 1979. Bonneville and its customers, however, maintained that such an allocation would be subjected to protracted litigation. They alleged that Congress could avoid the uncertainties accompanying administrative allocation by devising a legislative allocation scheme and equipping Bonneville with the authority to purchase power from non-federal sources on a long term basis. Supplying Bonneville with purchase authority was, they claimed, the key to implementing any legislative allocation scheme. Congress apparently agreed. The Senate passed the regional legislation on August 3, 1979; the House passed an amended bill on November 17, 1980, which the Senate agreed to two days later. On December 5, 1980, President Carter signed the Pacific Northwest Electric Power Planning and Conservation Act into law as Public Law 96-501.

**9. The Northwest Power Act of 1980**

After four years of deliberation, Congress devised methods for protecting the preference that existing federal law gives publicly owned utilities, while at the same time providing the benefits of federal hydropower to residential and small farm customers of private utilities. It should be noted that the Act passed largely because it seemed to benefit all the interest groups that lobbied for it.

The Act directs that Bonneville should continue its traditional role of transmitting and marketing power, but also carry out additional responsibilities. Under the Act, Bonneville must acquire all necessary energy resources to serve utilities who choose to apply to Bonneville for wholesale power supplies. The Act contains checks and balances to insure that all customers of Bonneville are treated equitably.

Bonneville remains accountable to the people of the Pacific Northwest for the actions it takes to meet the needs of residents and industry. By creating a regional planning council consisting of two members from

each of the four Northwest states to develop a regional plan, Congress provided a regional decision-making system. It emphasizes local control of resource development and power planning.

Here are some of the major provisions of the Act:

- The Northwest Power and Conservation Council (in 2003 the Council changed the name from the Northwest Power Planning Council) was formed with representation from each of the states. The Act directed the Council to draw up a plan for meeting the electrical needs of the region at the lowest possible cost. The plan must give highest priority to cost-effective conservation, treating it as a resource preferable to all other means of responding to demand for electricity. Renewable sources of energy must be given next highest priority in the region's power planning, to the extent that they are cost-effective ranking ahead of conventional thermal generating resources. Among thermal options, fuel-efficient methods of producing energy, such as cogeneration, must be given priority.

- Bonneville became responsible for meeting loads of customers and managing the regional electrical system to achieve the purposes of the Act relating to fish, system efficiency, and experimental projects. The plan adopted by the Council, which is amended periodically, is the basis for Bonneville's actions in meeting loads of its customers. Congress exercises budget review of all proposed Bonneville expenditures. If Bonneville decides to acquire resources not consistent with the Council's plan, specific Congressional approval is required prior to any commitment by Bonneville. Bonneville must give priority to cost-effective conservation and renewable resources in meeting the region's needs. Bonneville may also purchase the generating capabilities of new thermal projects, but only after determination that they are required in addition to all cost-effective conservation and renewables that can be achieved or developed in time. Such projects must also be found reliable and compatible with the regional electric system. Bonneville must spread the benefits and the costs of resources among all of its customers through its rates.

- The supply preference and resulting price advantage to co-ops and publicly owned utilities by Federal law was protected and enhanced. Bonneville was given the responsibility of meeting the full future requirements of preference customers — something Bonneville was not previously authorized to do.

- Residential and farm customers of investor-owned utilities received rate relief. The utilities sell to Bonneville, at the average cost of their power, an amount of electric energy equal to their residential and farm loads. Bonneville sells to them, in return, enough energy at Bonneville standard rates to cover these residential and farm loads. The rate advantages cannot enhance company profits, but must be passed on directly to the customers.

- Direct service industries received new 20-year contracts for power from Bonneville, but at a higher price than they paid under previous contracts. In effect, they pay the cost of rate relief to residential and small farm customers of investor-owned utilities during the first four years, and a substantial portion thereafter, which they agreed to do in exchange for assurances of long-term supplies.

- Bonneville sells electricity at a rate that reflects the melded cost of Federal hydropower and more expensive thermal resources, conservation, and renewable sources of energy. The Act contains

incentives, as well, to encourage conservation and renewables. Bonneville may credit utilities for their individual actions to implement conservation and renewables.

- The Council established a program to protect and enhance the fisheries resources of the Columbia River and to mitigate damage already done to anadromous fish. Funding for the program is to come from Bonneville rate revenue.

- All planning for electric resources and fish protection must involve the public. State and local control of land use and water rights is protected under the Act and the decision to allow construction of new resources is left with utilities and state siting authorities.

- The Council must provide a method for balancing environmental protection and the energy needs of the region. For each new energy resource, the provisions of the National Environmental Policy Act must be complied with.

- The Council is required to seek the recommendations of the region's tribal, state and federal fish and wildlife agencies. In addition, the Council's measures must be consistent with the legal rights of the region's tribes.

**10. Challenges for the future**

The electricity industry in the United States continues the significant restructuring that began in the mid-1990s. This restructuring is the product of many factors, including national policy to promote a competitive electricity generation market and state initiatives in California, New York, New England, Wisconsin and elsewhere to open retail electricity markets to competition. This transformation is moving the industry away from the regulated monopoly structure of the past 75 years. Today we are served by individual utilities, many of which control everything from the power plant to the delivery of power to our homes or businesses. In the future, we may have a choice among power suppliers that deliver their product over transmission and distribution systems that are operated independently as common carriers.

There is much to be gained in this transition, as electricity consumers can benefit from competition, but also much to lose from volatile wholesale power markets and illegal marketing activities, as the region learned during the Western energy crisis of 2000/2001. On the optimistic side, not too many years ago competition in the natural gas industry helped lower the cost of electricity produced by gas-fired generating plants. On the negative side, a pipeline linking the gas fields of northern Alberta with the American Midwest was completed several years ago, and this increased competition and contributed to higher gas prices in the Northwest. During the energy crisis of 2000/2001, natural gas prices tripled in a year, and then subsided as the electricity supply rebounded. Competition among manufacturers and developers of combustion turbines contributed to the availability of less expensive, more efficient power plants that can be built relatively quickly, and many new plants were added to the Northwest and West Coast power supply during the energy crisis, when stratospheric prices -- well over $200 per megawatt-hour -- meant that construction debt for the plants could be paid down quickly. Generally speaking, surplus generating capacity on the West Coast, combined with increasing competition among wholesale suppliers, reduces the price utilities must pay for power on the open market, as long as supplies are adequate. Broad competition in the electricity industry can result in lower prices and more choices about the sources, variety and quality of their electrical service, but competition also can lead to price escalations, as the region learned during the energy crisis.

Electricity markets can be benign as long as supply and demand remain somewhat aligned. But as the experience of 2000/2001 made abundantly clear, competitive markets can be volatile. In a competitive energy marketplace, prices can explode to unheard-of levels in a matter of months when demand increases and the supply decreases. Coupled with rapidly increasing costs for natural gas, the advantages of competition can turn quickly to disadvantages.

If nothing else, the absurdly high West Coast prices for wholesale electricity in late 2000 and the first five months of 2001 showed there are risks inherent in the transition to more competitive electricity services. Merely declaring that a market should become competitive will not necessarily achieve the full benefits of competition or ensure that they will be broadly shared -- particularly when the weather, power plant outages, regulatory rules and natural gas prices don't cooperate.

It is entirely possible to have deregulation without true competition. Similarly, the reliability of our power supply could be compromised if care is not taken to ensure that competitive pressures do not override the incentives for reliable operation. How competition is structured is important.

It is also important to recognize the limitations of competition. Competitive markets respond to consumer demands, but they do not necessarily accomplish other important public policy objectives. The Northwest has a long tradition of energy policies that support environmental protection, energy-efficiency, renewable resources, affordable services to rural and low-income consumers, and fish and wildlife restoration. These public policy objectives remain important and relevant. Given the enormous economic and environmental implications of energy, these public policy objectives need to be incorporated in the rules and structures of a competitive energy market, and not abandoned in the face of escalating demand and tight supplies of power.

In some respects, the transition to a competitive electricity industry is more complicated in the Northwest than elsewhere in the country because of the presence of the Bonneville Power Administration. Bonneville is a major factor in the region's power industry, supplying, on average, 40 percent of the power sold in the region and controlling more than 70 percent of the region's high-voltage transmission. Bonneville benefits from the fact that it markets most of the region's low-cost hydropower. It is hampered by the fact that it has comparatively high fixed costs, including the cost of past investments in nuclear power, and the majority of the costs for fish and wildlife recovery in the Columbia River Basin.

As a wholesale power supplier, Bonneville already is fully exposed to competition, and Bonneville struggles when market prices are above its own cost-based rates. The transition to a competitive electricity industry raises many issues for Bonneville and the region. For example, can Bonneville continue to meet its financial and environmental obligations in the face of intense competitive pressure? When market prices rise and some of Bonneville's debt obligations have been retired, how can the Northwest retain the economic benefits of its low-cost hydroelectric power when the rest of the country is paying market prices? And finally, what is the appropriate role of a federal agency in a competitive market? The question is not only whether Bonneville can compete in the near term, but also, should it be a competitor? Just six years ago, or so, Bonneville was struggling in a low-cost market. During the energy crisis of 2000 and 2001, when wholesale market prices shot up to 10 times the usual price, and higher at times, federal power was the envy of every utility facing marketplace sticker shock. The drought of 2001, which reduced Columbia River runoff to the second-lowest level in 73 years of record-keeping, reduced the region's hydropower capacity by 4,000

megawatts, and Bonneville, which must purchase about 3,000 megawatts in the market in order to meet its customers' demand, spent nearly $3 billion on power in a single year, 2001.

Largely because of Bonneville's experiences in 2001, a group of Bonneville customers proposed a fundamental change in Bonneville's power marketing role in the future, a proposal to limit Bonneville to selling only the output of the federal Columbia River Power System, essentially ending its role in the marketplace and making its customers responsible for meeting their own load growth beyond their guaranteed share of the federal system, which Bonneville would supply. The Council makes similar recommendations in its Fifth Northwest Power Plan, which is described elsewhere in this briefing book.

The federal power system in the Pacific Northwest has conferred significant benefits on the region for more than 60 years. The availability of inexpensive, cost-based electricity has supported strong economic growth and helped provide for other uses of the Columbia River, such as irrigation, flood control and navigation. The renewable and non-polluting hydropower system has helped maintain a high quality environment in the region.

But while the power system has produced significant benefits, these benefits came at a substantial cost to the fish and wildlife resources of the Columbia River Basin. Salmon and steelhead populations have been reduced to historic lows, and many runs are listed under the federal Endangered Species Act. Resident fish and wildlife populations have also been affected. Native Americans and fishery-dependent communities, businesses and recreationists have suffered substantial losses due in significant part to construction and operation of the power system. It is important that the region sustain its core industries, support conservation and renewable resources and restore salmon runs. As John Volkman comments in his book on Columbia River water policy, excerpted at the beginning of this document, fish and wildlife mitigation requires a healthy hydropower system capable of generating sufficient revenues to finance energy and fish and wildlife conservation measures -- neither fish and wildlife conservation nor power development can proceed without the other.

The Council's first power plan, adopted in 1983, was developed in the aftermath of the region's effort to construct five nuclear power plants, as discussed above. Although only one of the power plants was completed, the costs of these plants were the primary reasons for a 66 percent real increase in retail rates in the region in the early 1980s. As a result, demand for power plummeted and the high prices created economic hardship for many in the region.

In response, the Council's first plan brought innovations to electricity system planning. These included recognition of the price elasticity of demand in forecasting and methods for assessing and managing the risks associated with capital-intensive, long lead-time generation. It also furthered electricity policy innovations such as treating conservation, the more efficient use of electricity -- as a resource comparable to generation.

The Fifth Power Plan, which the Council approved in December 2004, has many parallels. It comes on the heels of the 2000-2001 energy crisis. This crisis resulted in extremely high wholesale power prices and the threat of blackouts that persisted for almost a year. The high wholesale prices eventually caused retail prices to increase by 25 to 50 percent. Many utilities entered into long-term contracts for power supply at high prices at the height of the crisis. As a consequence, although wholesale prices have returned to normal levels, by January 2005 retail rates had not returned to pre-crisis levels. Similarly, demand remains well below pre-crisis levels. Most of this is due to the fact that much of the electricity-intensive aluminum industry remains shut down. However, other industries and economic activities have also been affected.

The challenges we face as a region are similar to those we faced when the first power plan was published: to build on the lessons of the recent past and to provide leadership in planning and policy that will help assure the region an adequate, efficient, economic and reliable power supply in the years ahead.

## Fish and Wildlife Planning

### 1. The Columbia River Basin Fish and Wildlife Program

The Northwest Power Act requires the Council to prepare a program to protect, mitigate and enhance fish and wildlife, and related spawning grounds and habitat, of the Columbia River Basin that have been affected by hydroelectric development, and to review the program at least every five years.[1] The last review led to a revision of the fish and wildlife program in October 2000.

The 2000 Program marks a significant departure from past versions, which consisted primarily of a collection of measures directing specific activities. The 2000 Program establishes a basinwide vision for fish and wildlife -- the intended outcome of the program -- along with biological objectives and action strategies that are consistent with the vision. Ultimately, the program will be implemented through subbasin plans developed locally in the 62 tributary subbasins of the Columbia and amended into the program by the Council (subbasin plans are described and discussed in more detail in the Fish and Wildlife Planning section of this briefing book). Subbasin plans will be consistent with the basinwide vision and objectives in the program, and its underlying foundation of ecological science.

The 2000 Program addresses all of the "Four Hs" of impacts on fish and wildlife -- hydropower, habitat, hatcheries and harvest:

- It recommends that resources and energy be directed away from breaching the four federal dams on the lower Snake River, recognizing that the federal government has decided breaching will not occur in the next five years (coincidentally, that is the Council's statutory planning horizon for the fish and wildlife program). Instead, the program recommends actions to improve dam-passage survival that are biologically sound and economically feasible -- actions that benefit the range of species in the river and fit natural fish behavior patterns.

- It directs significant attention to rebuilding healthy, naturally producing fish and wildlife populations by protecting and restoring habitats and the biological systems within them.

- It requires that fish hatcheries funded through the program operate consistent with reforms recommended to Congress by the Council in 1999, reforms that would shift hatchery production away from a primary focus on providing fish for harvest to also providing fish to rebuild naturally spawning populations.

- It promotes increased fish harvest, consistent with sound biological management practices, recognizing that harvest provides significant cultural and economic benefits to the region.

In preparing the 2000 Fish and Wildlife Program, the Council solicited recommendations from the region's fish and wildlife agencies, Indian tribes, and others, as required by the Northwest Power Act. The

[1] The Act considers the power plan and the fish and wildlife program as a single plan, and so when one is reviewed the other must be, also. Before the Council's 2000 revision of the fish and wildlife program, the previous revision was completed in 1995; the last power plan revision was in 1998. Having revised the fish and wildlife program in 2000, in 2001 the Council began a review and revision of the 1998 Power Plan. The next power plan is scheduled for completion in mid-2003.

agencies and tribes responded, and the Council also received proposals from other interested parties. In all, the Council received more than 50 recommendations totaling more than 2,000 pages. After reviewing the recommendations, the Council prepared a draft and then conducted an extensive public comment period before finalizing the program, in December 2000.

The 2000 Program is the fifth revision since the Council adopted its first program in November 1982. Unlike past versions of the program, which were criticized by scientists for consisting primarily of a number of measures that called for specific actions without a clear, programwide foundation of scientific principles, the 2000 Program expresses goals and objectives for the entire basin based on a scientific foundation of ecological principles. In 2003 and 2004 the Council, working with watershed councils, state and federal agencies and Indian tribes, developed 59 plans for tributary subbasins of the Columbia River to guide future implementation of the program. The draft plans were submitted to the Council in May 2004 and reviewed by the public and by the Independent Scientific Review Panel during the summer. In the fall, the Council divided the plans into groups for adoption into the program or for further work before adoption. In December, the Council adopted 23 subbasin plans and released a second group of 26 plans for public comment. The Council planned to adopt those plans early in 2005 and then propose for adoption the third and final group of draft plans.

With the subbasin plans in place, the program will be organized in three levels: 1) a basinwide level that articulates objectives, principles and coordination elements that apply generally to all fish and wildlife projects, or to a class of projects, that are implemented throughout the basin; 2) an ecological province level that addresses the 11 unique ecological areas of the Columbia River Basin, each representing a particular type of terrain and corresponding biological community; and 3) a level that addresses the subbasins.

The Council believes this unique program structure, goal-oriented and science-based, will result in a more carefully focused, scientifically credible and publicly accountable program that will direct the region's substantial fish and wildlife investment to the places and species where it will do the most good.

The program's goals, objectives, scientific foundation and actions are structured in a "framework," an organizational concept for fish and wildlife mitigation and recovery efforts that the Council introduced in the 1994-95 version of the program. The 2000 Program, organized with the framework concept, is intended to bring together, as closely as possible, Endangered Species Act requirements, the broader requirements of the Northwest Power Act and the policies of the states and Indian tribes of the Columbia River Basin into a comprehensive program that has a solid scientific foundation. The program also states explicitly what the Council is trying to accomplish, links the program to a specific set of objectives, describes the strategies to be employed and establishes a scientific basis for the program. Thus, the program guides decision-making and provides a reference point for evaluating success.

The fundamental elements of the program are:

The ***vision***, which describes what the program is trying to accomplish with regard to fish and wildlife and other desired benefits from the river;

The ***biological objectives***, which describe the ecological conditions needed to achieve the vision; and

The implementation ***strategies, procedures and guidelines***, which guide or describe the actions leading to the desired ecological conditions.

In other words, the vision implies biological objectives that set the strategies. In turn, strategies address biological objectives and fulfill the vision. The scientific foundation links the components of the framework, explaining why the Council believes certain kinds of management actions will result in particular physical habitat or ecological conditions of the basin, or why the ecological conditions will affect fish and wildlife populations or communities.

In the 2000 revision, the Council adopted the following vision for the program:

*The vision for this program is a Columbia River ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the region. This ecosystem provides abundant opportunities for tribal trust and treaty right harvest and for non-tribal harvest and the conditions that allow for the recovery of the fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act. Wherever feasible, this program will be accomplished by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin. In those places where this is not feasible, other methods that are compatible with naturally reproducing fish and wildlife populations will be used. Where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem. Actions taken under this program must be cost-effective and consistent with an adequate, efficient, economical and reliable electrical power supply.*

## 2. Primary strategies in the 2000 Program

Here is a brief summary of the primary, basinwide strategies in the 2000 Program:

Habitat:

Identify the current condition and biological potential of the habitat, and then protect or restore it to the extent described in the biological objectives.

Artificial production:

Artificial production can be used, under the proper conditions, to (1) complement habitat improvements by supplementing native fish populations up to the sustainable carrying capacity of the habitat with fish that are as similar as possible, in genetics and behavior, to wild native fish, and (2) replace lost salmon and steelhead in blocked areas.

Harvest:

Assure that subbasin plans are consistent with harvest management practices and increase opportunities for harvest wherever feasible.

Hydrosystem passage and operations:

Provide conditions within the hydrosystem for adult and juvenile fish that most closely approximate the natural physical and biological conditions, provide adequate levels of survival to support fish population recovery based in subbasin plans, support expression of life history diversity, and assure that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects on resident fish while assuring an adequate, efficient, economical, and reliable power supply. The program

called for development of a mainstem coordination plan similar to the subbasin plans. The mainstem coordination plan is discussed in the next section of this briefing book.

Wildlife:

Complete the current mitigation program for construction and inundation losses and include wildlife mitigation for all operational losses as an integrated part of habitat protection and restoration.

Ocean conditions:

Identify the effects of ocean conditions on anadromous fish and use this information to evaluate and adjust inland actions.

Research, monitoring and evaluation:

(1) Identify and resolve key uncertainties for the program, (2) monitor, evaluate, and apply results, and (3) make information from this program readily available.

**3. Mainstem coordination plan**

In the Hydrosystem Strategies section of the 2000 Program, the Council established the following strategy: Establish and maintain a plan to assure coordination of mainstem operations and improvements. Because the mainstem plan would propose specific operating guidelines for the mainstem dams of the Federal Columbia River Power System, the Council decided to conduct a separate rulemaking to amend a mainstem plan into the program once it was amended with basinwide goals, objectives and strategies. This amendment rulemaking was completed in December 2000.

In March 2001, the Council wrote to the region's fish and wildlife agencies and Indian tribes requesting their recommendations for the mainstem coordination plan. These were received in June and posted on the Council's website. The Council invited public comments on the recommendations and then proceeded to prepare draft amendments for public review in late 2002. Public hearings were conducted on the draft mainstem amendments in late 2002 and early 2003, and the Council adopted the mainstem coordination program in April of that year.

The amendments adopted the biological objectives of the 2000 biological opinions on Operations of the Federal Columbia River Power System issued by NOAA Fisheries and the U.S. Fish and Wildlife Service. In addition, the Council proposed new strategies for dam operations that are consistent with measures in the biological opinions. The amendments are directed primarily at federal agencies with responsibilities for the Federal Columbia River Power System,[2] but the Council also recommended collaborative actions that would involve other entities including state fish and wildlife agencies, Indian tribes and non-federal dam operators.

Collectively, the federal agencies will accomplish many of the objectives and measures in the mainstem program, including water management, spill, juvenile fish transportation, adult fish passage, reservoir elevations and operations relating to resident fish and wildlife, water quality, mainstem habitat, and research.

Many of the provisions in the program call for tests of dam operations. The primary purposes for these tests are to: 1) determine the operation at each facility that provides the best benefits for fish populations over

[2] These are the Bonneville Power Administration, Bureau of Reclamation and the U.S. Army Corps of Engineers.

the long term; 2) better quantify the benefits of the operations so that choices can be made to assure that the same survival benefits are achieved through the lowest-cost operations (e.g., spill tests); and 3) demonstrate more clearly the benefits of some operations, such as flow augmentation.

Here are some of the major provisions and tests in the mainstem program:

Consistency with the 2000 biological opinions

One of the overarching objectives for the program is to recover ESA-listed anadromous and resident fish. Thus, a key biological objective of the program is to achieve the biological performance standards for listed species stated in the 2000 biological opinions. The program adopts the biological objective measures of the biological opinions as part of the fish and wildlife program for the near term. However, based on the results of future monitoring and evaluation, the Council may recommend different operations if they would achieve the same or greater benefits at a lower cost.

Certain assumptions and uncertainties in the biological opinions relating to spill, flow augmentation, reservoir drafting, predator control and harvest should be tested, and the Council called on NOAA Fisheries and the U.S. Fish and Wildlife Service to exercise flexibility within the biological opinions to implement the tests.

Bonneville, in coordination with the federal and state fish and wildlife agencies and Indian tribes, should define ESA harvest and recovery objectives for anadromous fish in the mainstem and tributaries.

General provisions relating to juvenile and adult fish passage

- Strategies should protect biological diversity by benefiting the broad range of species, not just ESA-listed species.
- Actions to improve fish passage should emphasize adult fish survival.
- The Corps should report to the Council annually on how decisions on passage improvements take into account the strategies in the Council's program.
- The Corps should apply "value engineering" to all projects exceeding $10 million.

Juvenile Fish Transportation

- The amendments incorporate juvenile fish transportation measures in the NOAA Fisheries 2000 Biological Opinion. Priorities for transportation studies are:
    - Evaluate whether the survival benefits of transport from McNary Dam are sufficiently greater than inriver passage to justify continuing to transport from that dam.
    - Conduct a transportation study that targets Snake River fall chinook.
    - More clearly determine what delayed survival effects, if any, occur due to transport.
    - Conduct annual evaluations of transportation effectiveness and report the results to the Council and the Independent Scientific Advisory Board.

Mainstem habitat

- The amendments adopt measures similar to those in the NOAA Fisheries 2000 Biological Opinion to 1) sample mainstem habitat, 2) develop habitat improvement plans in all mainstem river reaches, and 3)

initiate improvements in three specific reaches. The amendments emphasize that the measures should benefit all species that utilize the mainstem as habitat and not just ESA-listed species.

Spill

- When making spill decisions, priority should be given to: 1) minimizing impacts on returning adult fish, and 2) optimizing passage survival for fish that are important to the biological objectives of the Council's program and that cannot be transported, or effectively transported (for example, fish entering the Columbia River from tributaries above Bonneville Dam but below McNary Dam, Hanford Reach fall chinook and Snake River chinook).
- NOAA Fisheries and the Corps should consult with other federal and state agencies and tribes to determine an optimal passage strategy at each dam and for each passage route.
- Spill should be managed according to the most biologically effective level at each project. While spill is an effective passage method, the Council is concerned with the following aspects relating to spill:
    - Spilling to 120 percent gas supersaturation levels at some projects may increase mortality.
    - Spillway passage can also be the passage method most costly to the power system, especially in the summer.
    - The difference between spillway passage and other passage methods may be minimal, in some cases.
    - The maximum level of survival at each project may not be correlated with spill.
    - Spill may have negative effects on returning adults.
- The Council recommended the following studies:
    - Dam-specific estimates of smolt passage survival by species through spillways.
    - Additional research on the biological impact of extended exposure to high levels of gas supersaturation.
    - More research on the interaction among spill, dissolved gas levels, adult passage, and adult survival.
    - Tests to examine the benefits of summer spill on juvenile fall chinook.
    - Continued testing of removable spillway weirs (RSWs).

Juvenile Bypass Systems

- Continue testing and developing surface bypass systems, taking into account the widest range of biological diversity, and using an expedited approach to prototype development.
- Relocate bypass outfalls where there is predation or problems with injury or mortality.
- Modify turbines to improve juvenile survival.
- Conduct research on fish diseases at fish passage facilities.

Adult fish passage

- The Corps should improve the overall effectiveness of the adult fish passage program. This includes expediting schedules to design and install improvements to fish passage facilities.
- Where it is beneficial, cool water releases from reservoirs should continue to be used to facilitate adult fish migration.
- The Corps should treat adult fish migration as a priority and report annually to the Council on its progress to correct existing problems.
- PIT-tag detectors should be installed at projects that don't have them.
- Fish counting accuracy should be improved.
- Research should be conducted on fish diseases at passage facilities.

Mainstem water management strategies to benefit all fish and wildlife

- The general guidelines in the Council's mainstem program include:
    - Manage water through the hydrosystem to more closely approximate the natural hydrograph.
    - Allow for seasonal fluctuations in flow. Reduce large and rapid short-term fluctuations.
    - Increase the correspondence between water temperatures and naturally occurring temperatures throughout the basin. Use stored water to manage water temperatures below storage reservoirs.

- NOAA Fisheries and the U.S. Fish and Wildlife Service should identify potential conflicts and seek recommendations on how best to balance different needs prior to implementation of flow actions. The amendments also call on the federal agencies to report annually on flow augmentation, its benefits and the attributes that make it beneficial.

- The Council recognizes the continuing controversy over the flow-survival relationship, and will work with others in the region to:
    - Evaluate the validity of flow targets and flow augmentation actions in the NOAA Fisheries 2000 Biological Opinion.
    - Evaluate how often, and for what duration, river flows meet the spring and summer flow targets in the Biological Opinion.
    - Quantify the volume and shape of water that has been, and is being, provided as flow augmentation.
- The 2000 NOAA Fisheries and USFWS biological opinion operations may not be optimal when the needs of fish and wildlife other than listed species are taken into account. Based on the vision, biological objectives and overarching strategies in the fish and wildlife program, the Council adopted water management and other specific strategies to benefit all fish and wildlife affected by the hydrosystem, not just listed species. Where the strategies intended to benefit non-listed species appear

to conflict with the biological opinions, the Council does not mean that the federal operating agencies should act contrary to the biological opinions in order to implement strategies in the program. The Council intends instead that the federal operating agencies make every effort practicable to use the operational flexibility in the biological opinions to meet the biological opinion requirements *and* implement the strategies in the Council's mainstem program. The Council believes the agencies have sufficient operational flexibility in most cases to implement these additional strategies, which include the following provisions:

- Spring and summer operations at Libby and Hungry Horse dams:

    a. Continue to implement the VARQ flood control operations and implement Integrated Rule Curve operations as recommended by Montana Fish, Wildlife & Parks.

    b. With regard to operations to benefit Kootenai River white sturgeon, the Council recommends a refinement to operations in the U.S. Fish and Wildlife Service's biological opinion that specify a "tiered" strategy for flow augmentation from Libby Dam to simulate a natural spring freshet.

    c. Refill should be a high priority for spring operations so that the reservoirs have the maximum amount of water available during the summer.

    d. Implement an experiment to evaluate the following interim summer operation:

        - Summer drafting limits at Libby and Hungry Horse should be 10 feet from full pool by the end of September in all years except during droughts when the draft could be increased to 20 feet.
        - Draft each reservoir in stable or "flat" weekly average outflows from July through September. This will result in reduced drafting compared to the biological opinion.
        - Focus on 1) ascertaining the nature, extent of and reasons for a flow-survival relationship through the lower Columbia system; 2) determining whether flow augmentation from the upper Columbia storage projects has any effect on levels of survival, and 3) determining the benefits to resident fish.

- Spring, summer and fall operations at Grand Coulee Dam:

    a. Operate Grand Coulee Dam in the winter and spring (from January through June) consistent with biological opinion operations and ordinary hydrosystem operations. The amendments recommend minimum monthly elevation targets in Lake Roosevelt and minimum monthly mean water retention times with a goal of refilling by the end of June.

    b. Draft evenly from Lake Roosevelt to the target elevation by the end of August. As much as possible, manage the reservoir and dam discharges to minimize fluctuations and ramping rates and produce steady flows across each season and each day to minimize reservoir fluctuations and ramping rates. Attempt to draft no lower than 1,283 feet by the end of August.

    c. From September through December, attempt to maintain a minimum elevation of 1,283 feet to maximize water retention times and protect kokanee access and spawning. Federal operators, fish and wildlife managers, and others should consult with the Council to determine how to provide the biological benefits of a 1,283-elevation operation while meeting biological opinion requirements, including flows for chum salmon spawning below Bonneville Dam and also operating to protect flows for fall chinook habitat in the Hanford Reach.

d. Attempt to maximize water retention times from June to December of 40 to 60 days, or the maximum historically achievable for each month.

e. Two high priorities for Grand Coulee through the year should be to contribute to the establishment and protection of the necessary conditions for fall chinook salmon in the Hanford Reach, as noted above, and to refill Lake Roosevelt by the end of June. Summer and fall operations should be consistent with these priorities.

3. Spring and summer water management in the Snake River

   a. Spring and summer water management in the Snake River should be consistent with NOAA Fisheries' 2000 Biological Opinion, with the following additional observations:

      - If water is provided from the Hells Canyon projects or from storage reservoirs in the upper Snake River Basin, the releases must be consistent with state and federal law.
      - The Council encourages the Bonneville Power Administration, Idaho Power Company, and the Bureau of Reclamation to execute a water-shaping agreement to ensure that flows from Brownlee Reservoir will occur to assist juvenile and adult migration when most needed, at the call of the Technical Management Team (TMT).
      - Because flow targets often are unattainable, it is ineffective and uneconomical to strive to meet them regardless of the degree of biological benefit obtained.

4. Summer operations at Dworshak Dam:

   a. Operate Dworshak Dam consistent with the provisions of the NOAA Fisheries 2000 Biological Opinion as implemented through the Corps acting as a member of, and in coordination with, the Technical Management Team.

   b. The ISAB and the IEAB shall review the operation of Dworshak to assess the adverse impacts of those operations on resident fish and wildlife and adverse impacts on the economy of Clearwater County.

5. Hanford Reach/mainstem and estuary spawning, rearing, and resting habitat:

   a. The Council recommends managing flows to protect, improve, and expand spawning, rearing, and resting habitat in the mainstem and estuary. This means the Bureau of Reclamation, as the operator of Grand Coulee Dam, and the operators of the mid-Columbia dams, will have to take steps, separately and together, to further reduce flow fluctuations through the Reach that affect spawning and rearing.

## 4. A brief history of subbasin planning

In 1992 the Council created the Independent Scientific Group (ISG) to provide scientific advice. In 1993, the Council asked the ISG to review the fish and wildlife program. Subsequently, the ISG reported to the Council that the program lacked an explicit scientific basis. As a result, the ISG concluded, the program contained conflicting strategies that often were not based on a rigorous scientific rationale. The Council responded in its 1994 revision of the program by asking the ISG to develop an explicit conceptual foundation for the program and, after that, to conduct biennial reviews of the program.

The ISG issued its report, entitled "Return to the River: Restoration of Salmonid Fishes in the Columbia River Basin," in 1995. A revised version was issued in 2000. The conceptual foundation proposed by the ISG was based on the relationship between natural ecological functions and processes, including habitat diversity, complexity, and connectivity, and salmonid diversity and productivity. In the 2000 Program, the Council responded by establishing a framework of vision, objectives and strategies at different geographic scales (basinwide, ecological province, subbasin) tied together by a consistent scientific foundation. The Council also committed to conduct future rulemakings to add specific objectives and measures at the subbasin and province levels consistent with the basinwide goals and objectives and the scientific foundation.

Subbasin plans are at the heart of the program restructuring because the program is implemented primarily at the subbasin level. At this level, the more general guidance provided by the basinwide and province-level visions, principles, objectives, and strategies are refined in light of local scientific knowledge, policies, and priorities.

The Council intends that subbasin plans will guide Bonneville funding of fish and wildlife activities. Subbasin plans also should provide an opportunity for the integration and coordination of projects and programs funded by entities other than Bonneville, including Canadian entities in transboundary areas of the subbasins. As part of the fish and wildlife program, subbasin plans will provide the context for review -- by the Independent Scientific Review Panel, the Columbia Basin Fish and Wildlife Authority, and the Council -- of projects proposed for funding by Bonneville to implement the program.

Each subbasin plan consists of a subbasin assessment of historical and existing environmental conditions and species, a comprehensive inventory of existing projects and past accomplishments, and a 10-15 year management plan. Development of the subbasin plans, which was directed by local entities within each subbasin or group of adjacent subbasins, took nearly two years. Here is a summary of the work to develop subbasin plans that occurred after the Council approved the 2000 Program:

- In 2002 the Council broadly distributed a request for recommendations for amendments to the program in the form of subbasin plans. The Council worked with Bonneville to secure funding support for planning groups that would develop the plans (It was the first time that funding had been made available to the public to help develop proposed amendments to the fish and wildlife program). Bonneville provided $15.2 million. The Council administered contracts with the planning groups.

- On May 28, 2004, the deadline established by the Council, a total of 59 draft subbasin plans were submitted. The Council made those recommendations available for public review and comment, including review by a team of independent scientists. The Council also reviewed the draft plans.

- In late August, the Council staff considered the plans and public comment against a consistent set of standards derived from the Northwest Power Act and the 2000 Program, and made provisional recommendations for the treatment of each plan as a proposed fish and wildlife program amendment. The draft plans were divided into three groups for amendment into the program. The first group included plans that were adoptable immediately. The second group included plans that needed more work. The third group included plans that were not adoptable as submitted and needed substantial revision.

- In October, the Council released the first group of 29 draft plans for public comment, through November 22. The Council also released an issue paper seeking public comment on broader issues related to the process of subbasin planning, past and future.

- In December, the Council adopted 23 of the 29 plans, setting aside six for further review because of revisions that occurred during the public comment period. That same month, the Council released for public comment the six revised plans and also the second group, which included 23 draft plans that had been revised in light of reviews by the independent scientists and the Council. The Council planned to adopt those 29 plans in February 2005.

- Seven plans that needed more extensive revisions were placed on separate tracks for approval. The Council planned to adopt those plans into the program later in 2005.

**5. Project review and funding**

Measures implementing the program are funded by the Bonneville Power Administration through revenues collected from electricity ratepayers. Under the Northwest Power Act, the Council is responsible for recommending projects to Bonneville for funding to implement the program. Before making its recommendations, the Council considers reviews of the projects by the Independent Scientific Review Panel (ISRP), whose members are appointed by the Council. The members are nominated by the National Academy of Sciences. The ISRP review of projects is required by the Power Act.

Although Bonneville has fish and wildlife responsibilities under both the Endangered Species Act and the Northwest Power Act, in many cases, these responsibilities can be met in the same set of actions. Therefore, in recommending projects to Bonneville for funding under the program, the Council addresses both sets of responsibilities wherever feasible. Knowledge of the plans and activities of other regional participants is essential for the Council to be able to assure that the projects it recommends for funding are coordinated with, and do not duplicate, the actions of others.

The program budget averages $139 million per year. A memorandum of understanding among federal agencies that established Bonneville's annual funding commitment was signed in 1996 and expired in 2002 without being renewed. Discussions among Bonneville, the Council and other interested parties on a new long-term funding agreement were continuing in early 2005.

Until 2000, the Council and the ISRP annually reviewed all projects in the program -- there are more than 200 -- plus proposals for new projects. This proved to be burdensome, and so to provide for a more detailed review the Council initiated a three-year sequential provincial review process in 2000 that solicits project proposals by ecological province (there are 11 provinces in the Columbia River Basin) and provides three-year project funding recommendations to Bonneville. The initial round was completed in 2003 when the Council adopted recommendations for the Mainstem/Systemwide projects. The initiation of another round of province-based project selection has awaited the completion of subbasin plans (see next section) so that the adopted plans can be used as a basis for project selection. The Council adopted 23 subbasin plans in December 2004 and planned to adopt 29 more in February 2005. Work continued on revisions of seven other plans, and the Council planned to adopt them later in 2005.

As for the next project-selection process, the Council staff and the Regional Coordination Group (RCG), a committee of state, federal and tribal representatives that advised the Council during the subbasin planning process, were discussing options in late 2004 and early 2005. Two elements of particular interest in these discussions were 1) setting province-level objectives and 2) establishing funding allocations for each province. With agreement on these objectives and funding levels, a rolling review of project proposals at the province level -- that is, addressing groups of adjacent provinces and their subbasins in sequence over a period of several years -- appears to be an acceptable process for the future. Projects would be approved for several years' of funding to accommodate similar rolling reviews in the future. A key issue that remained under discussion in early 2005 was whether the rolling, province-level reviews would begin in Fiscal Year 2006 or 2007. The answer will depend on decisions the Council will make regarding the sequence of provinces and subbasins in the review, the schedule for completing the full cycle of the reviews and funding allocations for each province. Probably, these decisions will not be made in time to begin the rolling review in 2005 for implementation in Fiscal Year 2006, and so an interim or transition process would be used to determine project funding for that year. At the same time, projects would be solicited in 2006 for a uniform and consistent review and decision-making process that would lead to implementation of projects in Fiscal Year 2007, the first full year of the new rolling review.

**6. Coordinating program implementation with other entities**

Under the Northwest Power Act, the Council's fish and wildlife program is not intended to address all fish and wildlife problems in the basin from all sources. But the Council adopted the vision, objectives, strategies and scientific foundation with the belief that they will complement and help support other fish and wildlife recovery actions in the region.

The program recognizes that others besides the Council are developing plans and taking actions to address these issues. In particular, the four Northwest states and the Columbia Basin's 13 Indian tribes each have fish and wildlife initiatives under way. Many of these parties are working on subbasin and watershed planning initiatives, and are also addressing Endangered Species Act concerns.

Throughout the basin, the National Marine Fisheries Service and the U.S. Fish and Wildlife Service are administering the Endangered Species Act, which requires information gathering, planning, and mitigation actions. In addition, the Environmental Protection Agency, in cooperation with the states and tribes, is taking actions to achieve compliance with the Clean Water Act. The Council's fish and wildlife program does not attempt to pre-empt the legal authorities of any of these parties, but it does provide an opportunity for each to coordinate information gathering, planning, and implementation of recovery actions on a voluntary basis. That is, the Council's program is designed to link to, and accommodate, the needs of other programs in the basin that affect fish and wildlife. This includes meeting the needs of the Endangered Species Act by describing the kinds of ecological change needed to improve the survival and productivity of the diverse fish and wildlife populations in the basin.

## 7. Protected Areas

In August 1988, the Council amended the fish and wildlife program with criteria that designate some 44,000 miles of Northwest streams as “protected areas” because of their importance as critical fish and wildlife habitat. The protected-areas criteria were adopted into the 2000 Program without changes.

The protected-areas amendment was a major step in the Council’s efforts to protect and enhance fish and wildlife populations from the impacts of hydropower. By designating areas as protected against future hydroelectric development, the Council protects fish and wildlife habitat. Designation as a protected area does not prohibit hydropower development, but it serves as a signal and justification for proceeding with caution because of the potential impacts on intact, important fish and wildlife habitat. While the Council does not license hydroelectric projects, the Federal Energy Regulatory Commission, which grants licenses to nonfederal hydropower projects, and the Bonneville Power Administration, which can acquire and transmit electricity from FERC-licensed projects, are required to take the Council’s fish and wildlife program into account when making decisions.

The Council sees protected-areas designation as playing a positive role in the efficient development of environmentally benign hydropower. New hydropower development in the region's most critical fish and wildlife habitat is likely to generate divisive, time-consuming and costly controversy. By identifying this habitat as “protected,” the Council hopes to point developers to less sensitive areas, where the time and cost of development will be lower. Ratepayers should benefit from both more productive fish and wildlife investments and from reduced hydropower development costs.

The Council periodically designates new protected areas and removes the designation from other areas, based on analysis and public comment. The Council last amended the protected-areas rule in June 1992.

## Power Planning

### 1. The Northwest Conservation and Electric Power Plan

The Northwest Power Act directs the Council to prepare a plan to assure the Pacific Northwest Region an adequate, efficient, economical and reliable power supply. The Council adopted its first power plan in the mid-1980s and has revised it five times since then.

The current version of the plan, adopted by the Council in December 2004, is a much different document than the Fourth Northwest Power Plan, adopted by the Council in 1998. The Fourth Plan was, in essence, a blueprint for how the electricity industry of the Northwest should be restructured to accommodate increasing competition. The Fourth Plan followed on the 1996 Comprehensive Review of the Northwest Energy System, an effort convened by the four Northwest governors to develop recommendations for changes in the institutional structure of the region's electric utility industry "…to protect the region's natural resources and distribute equitably the costs and benefits of a more competitive marketplace, while at the same time assuring the region of an adequate, efficient, economical and reliable power system."

The Fifth Plan provides additional recommendations for dealing with the impacts of competition, particularly the dilemma of how to ensure an adequate supply of affordable electricity in a competitive marketplace where price competition among power suppliers discourages investments in new generating and conservation resources. The Fifth Plan responds to the problem of high prices and reduced supply of power that prompted the West Coast electricity crisis of 2000/2001. The plan recommends aggressive energy conservation and demand-reduction investments through about 2010 and, after that, investments in new generating resources in addition to projects currently under development, such as wind turbines.

The 2000/2001 crisis was the result of several adverse trends and events: uncertainty created by efforts to deregulate the power industry; a corresponding de-emphasis on planning; several years of under-investment in generation and conservation; a deeply flawed electricity market design in California; unethical and illegal actions by some of the participants in that market; and the second-worst water year in the Northwest's hydrological record. While the causes were different, the results of this crisis were much the same as the one preceding the first Council plan – skyrocketing retail rates that struck a major blow to the regional economy.

The key theme of the Fifth Plan is that the future is uncertain. Therefore, plans and policies must be developed that allow the region to manage uncertainty and the risks it entails. Many of the uncertainties the region now faces are familiar – uncertainty about demand for electricity, hydropower conditions, and forced outages of major power plants. Other uncertainties are new or have greater importance. The increased role of natural gas-fired generation and changes in the nature of the natural gas industry mean gas price uncertainty and volatility is a significant factor. Increasing concerns about global climate change pose new uncertainties for resource choices. The wholesale electric power market is still important, but it also is uncertain and volatile. In short, major changes have occurred, and are occurring, in the energy environment. The region's electricity supply no longer is provided solely by the Bonneville Power Administration and regulated public and investor-owned utilities. It is now provided by a mix of regulated and unregulated utilities and private businesses.

From a physical standpoint, as 2005 begins the region has a modest generation surplus under critical water conditions. That surplus is the result of reduced demand that has not yet returned to pre-crisis levels and

a significant amount of new generation, most of which was built by independent power producers (IPPs). But in terms of generation owned by or contracted to the region's utilities, the region is deficit. The IPP generation is available to the region but, unless purchased long-term, it will be sold at market prices and subject to market risk. The role the IPPs will play in the region's electricity future is unclear.

In addition, those making resource decisions may be a more varied group than in the past. If proposed changes to Bonneville's role in power supply go forward, many smaller public utilities may be making resource decisions in addition to Bonneville, the investor-owned utilities, and the larger publics. However, until those changes are in place, there is uncertainty regarding who will acquire new resources for many public utility customers.

The Fifth Plan describes a robust and flexible resource strategy that can perform well under the expanded and intensified range of future uncertainties. Second, the plan addresses key policy issues that affect the ability to assure an adequate, efficient, economical, and reliable power system. These include issues such as standards for resource adequacy; how the region plans, pays for, and operates transmission; the interaction of fish and wildlife and hydropower; and the future role of the Bonneville Power Administration in power supply. The plan assesses these issues and proposes to work with regional entities to resolve them.

The power plan comprises a resource development strategy to ensure the region's future power supply is characterized by least-cost and least-risk resources. The plan includes the following recommendations on issues that affect the power system.

Conservation

The plan recommends that the region increase and sustain its efforts to secure cost-effective conservation immediately. The Council's analysis shows that improved energy efficiency is a resource that is lower cost than new generating options and provides a hedge against market, fuel, and environmental risks. Although conservation may result in small rate increases in the short-term, it can reduce both cost and risk in the long-term. The targets are ambitious but doable: 700 average megawatts between 2005 and 2009; and 2,500 average megawatts over the 20-year planning period.

Conservation acquisition is discussed in more detail in a separate section below.

Demand Response

The plan recommends developing demand response programs--agreements between utilities and customers to reduce demand for power during periods of high prices and short supply. The Council recommends developing 500 megawatts of demand response between 2005 and 2009 and larger amounts thereafter. Demand response has proven helpful in stabilizing electricity prices and in preventing outages. The Council's analysis shows that although demand response probably will be used infrequently, it reduces both cost and risk compared to developing additional generation.

Wind

The plan incorporates almost 1,100 megawatts of wind generation capacity between 2005 and 2014 from state system benefits charge programs and current utility integrated resource plans. Beyond that, additional wind generation figures prominently in the next decade. However, the attractiveness of this wind is affected by a number of estimates made for the plan. These include: continuation of production tax credits for several years, possible future controls on greenhouse gas emissions, decreasing production costs, the ability to integrate wind, an intermittent resource, into the existing power system at reasonable costs, and the availability

of large areas for development with access to transmission at moderate costs. The plan calls for gathering more experience and information between 2004 and 2009 about wind resources and their performance and cost within the regional power system. To be most useful, these projects would be sited in geographically diverse wind resource areas. In addition, project developers and operators will need to be willing to share information about the projects. This can be done in ways that do not adversely affect their commercial interests.

Prepare for new power plants

The plan defines a schedule of "options" for generating resource development. By options we mean completed siting and permitting for the amounts and types of power generation identified in the plan. Optioning is a risk-management strategy. With siting and permitting completed, actual construction can be undertaken with a minimum of lead-time when the conditions warrant. Conversely, if the projects prove not to be needed, the sunk costs are relatively small.

The Council believes the region should secure options (sites and permits) to be able to begin constructing new wind generating resources as early as 2010, with up to 5,000 megawatts of capacity to be developed through the end of the 20-year planning period. Options for 425 megawatts of coal generation should be in place by January of 2012. In light of concerns about global climate change and recent industry developments, the Council recommends that Integrated Gasified Coal technology be used. Later in the 20-year planning period, some additional gas-fired generation may be needed. Needed transmission upgrades should be identified so all these resources can be built and brought on line quickly when required. If major transmission upgrades are needed, pre-construction planning, siting, and permitting will have to begin well before actual construction of the power plants.

Key Policy Issues

Along with the recommended resource development plan--the least risk, least cost development plan according to the Council's analysis--the power plan includes recommendations on key policy issues confronting the region. These include transmission operation and planning issues, the establishment of resource adequacy standards, improving the coordination between fish and wildlife and power planning and operations, and the future role of the Bonneville Power Administration in power supply.

With respect to Bonneville's role, the Council recommends that the agency sell the electricity from the existing Federal Columbia River Power System to eligible customers at cost. Customers that request more power than the existing system can provide should be required to pay the additional cost of acquiring that power. The Council recommends that Bonneville implement this change through new long-term contracts to be offered by 2007. The Council also believes that Bonneville must continue its commitment to support conservation, renewable energy, and fish and wildlife mitigation.

The Council's two main responsibilities, fish and wildlife mitigation and power planning, are closely linked. The Council's power plan and fish and wildlife program attempt to meet the requirements of both the power system and fish and wildlife recovery as effectively and efficiently as possible. For the region to achieve these objectives, it is important that planning for both power and fish and wildlife are coordinated. Outside of the Council, however, no clear process exists for integrated long-term planning. The Council proposes the establishment of a process to improve the coordination between fish and wildlife and power planning and decisionmaking.

An adequate power system has a high probability of being able to maintain service when the region experiences a poor water year, unexpected load growth, or the failure of new resources to be developed as planned. The power plan includes analysis that evaluates alternative regional adequacy standards and how they would interact with standards that are in place for the Western power system. The Council is committed to working with regional utilities and regulators to develop a standard that will assure an adequate power supply while being fair and equitable to all parties.

Adequate transmission is key to any of the new generating resources identified in the plan. The move toward deregulation and the opening up of wholesale electricity markets, along with changes in technology, altered the character of the traditional transmission system. Questions of how to effectively plan for, build, pay for, and manage the region's transmission system are becoming critically important. Efforts to establish an organization to assess the long-term requirements of the transmission system and a mechanism to encourage investments to meet those requirements have been pursued for several years with little success. The Council supports, and is an active participant in, the regional efforts to resolve these problems. But it believes the time for resolving these issues is growing dangerously short. If current efforts do not succeed in the near future, the Council is committed to seeking alternative means of resolving these transmission issues.

Recommended action items, 2004-2009

The power plan will be reviewed and revised at least every five years. The actions that the region takes between 2004 and 2009 will determine the success of this plan. The key actions identified in the plan are:

1. Develop resources now that can reduce cost and risk to the region
   - 700 average megawatts of conservation, 2005 - 2009
   - 500 megawatts of demand response, 2005 - 2009
   - Secure cost-effective cogeneration and renewable energy projects
   - Develop cost-effective generating resources when needed

2. Prepare to construct additional resources
   - Develop and maintain an inventory of ready-to-construct projects
   - Resolve uncertainties associated with large-scale wind development
   - Encourage use of state-of-the-art generating technology when siting and permitting projects
   - Plan for needed transmission
   - Improve utilization of available transmission capacity

3. Confirm the availability and cost of additional resources that promise cost and risk mitigation benefits
   - Oil sands cogeneration in northern Alberta, Canada
   - Integrated coal gasification
   - Carbon sequestration
   - Energy storage technologies
   - Demonstration of renewable and high efficiency generation with Northwest potential

4. Establish the policy framework to ensure the ability to develop needed resources
   - Carry out a process to establish adequacy targets for the Northwest and the rest of the Western system

- Work through the Grid West, Regional Representatives Group process to address emerging transmission issues within the next two years. If necessary, pursue alternative approaches to resolve issues
- Revise the role of the Bonneville Power Administration in power supply, consistent with the Council's May 2004 recommendations

5. Monitor key indicators that could signal changes in plans
   - Periodically report on the regional load-resource situation and indicate whether there is a need to accelerate or slow resource development activities
   - Monitor conservation development and be prepared to intensify efforts or develop alternative resources, if necessary
   - Monitor efforts to resolve uncertainties regarding the cost and availability of wind generation, and prepare to develop alternatives, if necessary
   - Monitor climate change science and policy for developments that would affect resource choices
   - Revise elements of the power plan as necessary

**2. Conservation acquisition**

Since the adoption of the Council's first power plan in 1983 the region has made significant progress in acquiring conservation. The Council's first power plan stated that the acquisition of cost-effective conservation should be used to reduce year 2002 loads by 5 to 17 percent depending upon the rate of economic growth experienced in the region. The plan called upon Bonneville and region's utilities to develop and implement a wide array of conservation programs. The plan also called upon the state and local governments to adopt more energy efficient building codes. It called upon the federal government to adopt national energy efficiency standards for appliances and to upgrade its existing efficiency standards for new manufactured homes.

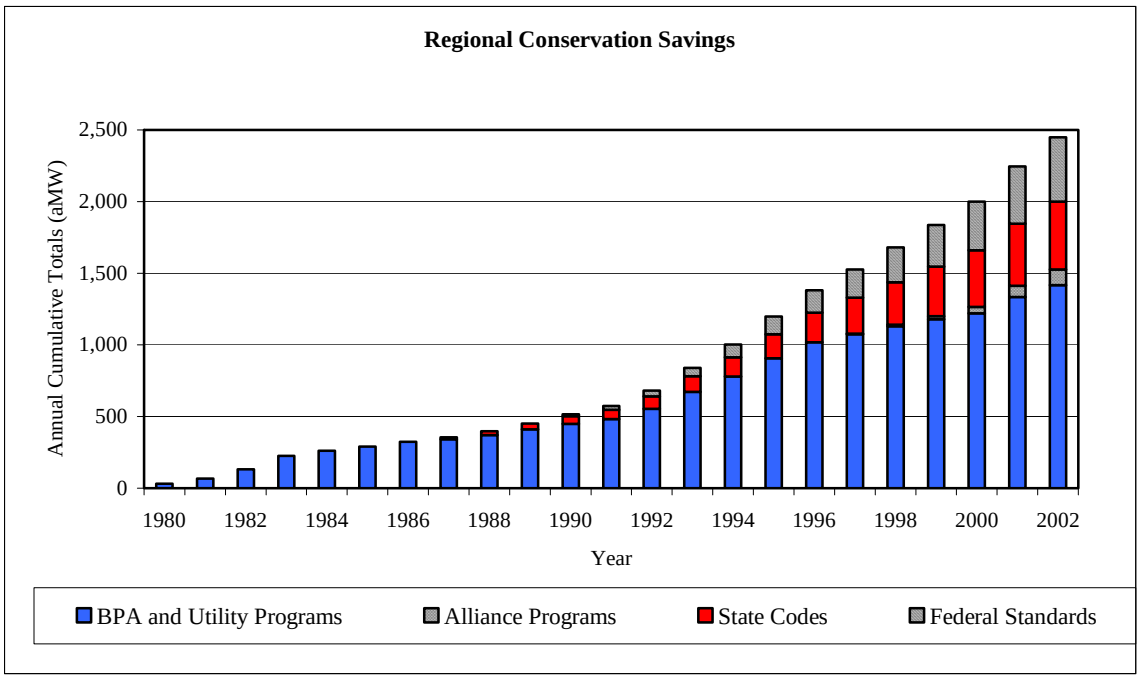
In response to the Council's first power plan, the Bonneville Power Administration and the region's utilities initiated conservation programs across all economic sectors. Between 1980 and 2002, these programs acquired over an estimated 1,425 average megawatts of electricity savings. Since its formation in 1996, Bonneville and the region's utilities have sponsored the market transformation initiatives of the Northwest Energy Efficiency Alliance (the Alliance is described in the following section of this briefing book).

Alliance programs have contributed another 110 average megawatts of savings, increasing the 1980-2002 regional total to 1,535 average megawatts. The average levelized cost of these savings to the region's power system was approximately 2.1 cents per kilowatt-hour (in year 2000 dollars), or approximately 60 percent of the expected cost of electricity from new generating resources. However, the region did not capture all the conservation identified in that first power plan. Nor has it captured all the cost-effective conservation identified in subsequent plans.

While progress toward adoption of more energy-efficient energy codes has proceeded at a slower pace, all of the Northwest states have now adopted energy codes that require new residential and commercial buildings and those buildings that undergo major renovations or remodeling to be constructed with significantly more efficiency measures. By 2002 buildings constructed to these codes were saving an estimated 475 average megawatts of electricity. The region will continue to accrue additional savings as future buildings are constructed in accordance with these codes.

At the federal level, new standards for residential water heaters and appliances such as refrigerators, freezers and clothes washers were first adopted in 1987. In 1992 Congress enacted federal standards for additional appliances, electric motors, certain commercial heating, ventilating, air conditioning equipment and lighting equipment. After much debate, in 1994 the Department of Housing and Urban Development (HUD) revised its federally pre-emptive energy efficiency standards for new manufactured homes for the first time in 20 years. Taken together these federal efficiency standards saved an estimated 450 average megawatts of electricity in 2002.

The following figure shows that cumulative conservation savings from Bonneville and utility programs, as well as state codes and federal standards from 1980 through 2002 total about 2,500 average megawatts. By 2002 the 2,500 average megawatts of conservation resources developed in the region were meeting between 10-12 percent of Northwest electric energy service needs. To place this in perspective, this is more electricity than was consumed in the entire state of Idaho during 2002.




Since 1995, when the Council developed its estimates of regional conservation potential for the Fourth Power Plan, utility conservation programs, including regional market transformation activities, and changes in federal and state codes and standards, have captured some of the cost-effective conservation potential identified in that plan.[3] Bonneville and utility programs acquired approximately 620 average megawatts of conservation resources between 1996 and 2002. In addition, the Northwest Energy Efficiency Alliance and its regional utility partners are increasing the market share of a wide array of higher-efficiency appliances, building practices, residential lighting and other measures. The Council estimates that by 2025 approximately 170 average megawatts of conservation will be captured by these existing market transformation efforts.

[3] Market transformation means efforts to improve the market viability and availability of specific conservation equipment or services so that they can achieve high levels of market penetration with little or no utility incentives. Because these markets typically cut across multiple utility service territories, market transformation efforts in the Northwest have been developed in conjunction with the region's utilities through the Northwest Energy Efficiency Alliance (NEEA).

The Northwest Energy Efficiency Alliance

Perhaps the most visible, broadest-ranging market-transformation effort in support of energy-efficient appliances and equipment is being undertaken by the Alliance. The Alliance, based in Portland, is a non-profit association of electric utilities, state governments, public interest groups and industry representatives committed to bringing affordable, energy-efficient products and services to the marketplace. The Council played a major role in founding the Alliance in 1996, and several Council staff members now sit on the Alliance board of directors. The Alliance executive director, Margaret Gardner, is a former Council employee. At any one time, the Alliance implements around 30 market transformation projects. The projects are quite diverse and cover many different market sectors: residential, commercial, industrial and agricultural. Some of the priority market segments the Alliance has identified include lighting, appliances, commercial buildings, industrial motors and motor systems.

There are different ways to achieve efficient use of electricity. The Alliance relies on a method called market transformation, which encourages the marketplace to adopt energy-efficient products and services as the norm. Alliance projects work to remove barriers that prevent a targeted product or service from being naturally accepted and offered by a market and educate consumers and businesses about why they should choose these higher efficiency products and services.

Because the Alliance is a regional organization, it can follow markets across utility service territories and state boundaries to achieve the biggest impact. Projects work within established market chains and focus on strategic leverage points to bring about lasting increases in the market share for higher efficiency products and services.

At any one time, the Alliance implements around 30 market transformation projects. The projects are quite diverse and cover many different market sectors: residential, commercial, industrial and agricultural. Some of the priority market segments the Alliance has identified include lighting, appliances, commercial buildings, industrial motors and motor systems.

For more information about the Alliance, its staff and the projects it funds, visit the website at www.nwalliance.org.

**3. Future role of the Bonneville Power Administration in power supply**

In Chapter 11 of the Fifth Northwest Power Plan, the Council makes recommendations regarding the future role of the Bonneville Power Administration. The following discussion is excerpted from that chapter.

Bonneville is the federal agency that sells the output of the Federal Columbia River Power System, which includes 31 federal dams and one non-federal nuclear plant (the Columbia Generating Station, operated by Energy Northwest on the Hanford Nuclear Reservation). On average, the federal system supplies approximately 45 percent of the region's power. This federal hydropower is priced at cost and is sold by Bonneville primarily to publicly owned electric utilities. While the federal government financed construction of the FCRPS dams, the remaining debt on the dams, and on the nuclear plant, which Bonneville underwrote, is repaid by Northwest electricity users. Interest rates on the federal debt are now equal to market rates.

Despite the fact that Bonneville has not deferred any payments to the U.S. Treasury since the early 1980s, it is continually attacked by organizations like the Northeast-Midwest Institute[4] and its congressional allies as being subsidized by the federal government. Critics advocate privatizing Bonneville or requiring Bonneville to sell its power at market prices to benefit U.S. taxpayers as opposed to selling at cost to Northwest consumers who are paying for the system and are paying to restore fish and wildlife affected by the dams. While these proposals have not yet gained sufficient political support to move ahead, fighting them has been a continuing battle for Bonneville, the region's utilities, governors, the Council and the congressional delegation. Moreover, each time Bonneville finds itself in financial difficulties with Treasury repayment at risk, the pressure for "reform," such as privatization, intensifies.

Over the last decade, the difference between the cost of Bonneville's power and market rates for wholesale power has frequently not been large. In fact, at some times it has been disadvantageous to Bonneville's customers. Nonetheless, the existing system of federal hydropower is likely to be a low-cost resource for many years to come. Preserving this benefit for the Northwest consumers who pay for it should be a high priority for the region. However, preserving the benefit in the face of recurring financial crises at Bonneville will be difficult.

Bonneville's financial vulnerability arises in part from its dependence on a highly variable hydroelectric base and the effects of a sometimes very volatile wholesale power market. Another source of vulnerability arises from the uncertainty created by the nature of the relationships between Bonneville and many of its customers and how Bonneville has historically chosen to implement its obligations. These vulnerabilities are exacerbated by Bonneville's high fixed costs for its debt on the Federal Columbia River Power System and the three nuclear plants that were undertaken with Bonneville backing by the Washington Public Power Supply System, now Energy Northwest.[5] At times, these vulnerabilities can cause Bonneville to incur high costs that must be passed on to customers and ultimately to the region's consumers. If those costs are not passed on to customers, Bonneville risks being unable to make Treasury payments. Rate increases cause economic hardship in the region; not making a Treasury payment risks a political backlash from outside the region that could cause the Northwest to lose the long-term benefits of power from the federal system.

As noted above, one source of Bonneville's financial vulnerability is the uncertainty created by the nature of its relationship with its different customer groups. For example, Bonneville has a legal obligation to sell power to publicly owned utilities at cost if asked. However, Bonneville's public customers do not have a legal obligation to buy from Bonneville until they have signed a contract. Bonneville does not have a legal obligation to sell to the direct-service industries, but there are powerful political and local economic pressures to do so. For investor-owned utilities, Bonneville has an obligation to provide benefits to existing residential and small farm customers but has struggled to find a means of doing so that is satisfactory to all parties. It also has a legal obligation to meet the load growth of investor-owned utilities if requested, although no such requests ever have been made.

How Bonneville has historically carried out its responsibility in power supply also has been a source of vulnerability. It has served the net requirements of its preference customers and DSIs at "melded" rates, meaning that Bonneville averaged its costs of the low-cost existing federal system with that of more expensive new resources required to meet loads beyond the capability of that system. This has had adverse effects, such

[4] E.g. see Rethinking Bonneville – Why BPA Must Be Reformed, Richard Munson, Northeast-Midwest Institute, 2001, http://www.nemw.org/rethinkingbonneville.pdf

[5] Of the three plants, only the Columbia Generating Station was completed. The other two were terminated before construction was complete. However, Bonneville still has responsibility for paying off the debt incurred during construction.

as making Bonneville's power appear inexpensive compared to the cost of the new resources needed to serve growing loads, creating a disincentive for utility investment in cost-effective conservation and local generating options.

These issues were the topic of several public and internal processes over the last decade, including the Comprehensive Review of the Northwest Energy System, carried out in 1996 in response to a request from the region's governors; the follow-on Bonneville Cost Review; the Joint Customer Proposal of 2002 and the subsequent Regional Dialogue and Council recommendations; an internal Bonneville review of the lessons learned from the 2001 electricity crisis; and, most recently, the Regional Dialogue discussions in the fall of 2003 and early 2004.[6]

The recommendations coming from these processes have several common elements:

- Bonneville should sell the federal power through long-term contracts (20 years) to reduce uncertainty and help protect the region from external efforts to appropriate the benefits of the FCRPS.
- A means should be found of satisfying Bonneville's obligation to provide benefits to the residential and small farm customers of the region's investor-owned utilities that is equitable and predictable.
- Bonneville's and the region's exposure to risks of the wholesale power market should be limited, and clarity regarding responsibility for meeting load growth should be improved by limiting Bonneville's role in serving loads beyond the capability of the existing FCRPS to those customers who are willing to pay the costs of the additional resources required.

The Council believes these issues should be resolved sooner than later. Most Bonneville customers' contracts do not expire until 2011. Nonetheless, there is relatively little time to resolve issues and implement solutions. Commitments to new resource development will have to be made in the latter part of this decade. Development of needed new resources could be delayed if uncertainty about Bonneville's future role persists.

Bonneville initiated a policy process during the summer and fall of 2004 to resolve issues related to the last five years under the current contracts. Many of the issues, however, relate to Bonneville's longer-term role. The Council has urged Bonneville to use this opportunity to establish a schedule for making decisions about its longer-term role that will permit it to offer new contracts by October of 2007. While the new contracts need not be effective until 2011, having new contracts in place by 2007 will provide Bonneville and its customers the certainty the need to undertake needed resource actions.

In May 2004, following a public comment period, the Council offered its recommendations to Bonneville. As noted at the start of this section, these recommendations are discussed in detail in Chapter 11 of the power plan. In short, the Council's recommendations would have Bonneville market the output of the existing federal Columbia River Power System to eligible customers at rates reflecting the embedded costs of the system. Service beyond the capability of the existing federal system would be provided in such a way that

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[6] *Comprehensive Review of the Northwest Energy System -- Final Report: Toward a Competitive Electric Power Industry for the 21st Century*, Comprehensive Review Document CR 96-26, December 1996. http://www.nwcouncil.org/library/1996/cr96-26.htm; *Cost Review of the Federal Columbia River Power System -- Management Committee Recommendations*, Document CR 98-2, March 10, 1998. http://www.nwcouncil.org/library/1998/cr98-2.htm; *Investor-Owned Utility/Preference Utility Proposal For The Future Role Of The Bonneville Power Administration*, October 29, 2002 draft; *What Led to the Current BPA Financial Crisis? A BPA Report to the Region,* also known as "The Lessons Learned" report, Bonneville Power Administration, April 2003; *Northwest Power Planning Council Recommendations on the Future Role of Bonneville in Power Supply*, Council Document 2002-19, December 17, 2002. http://www.nwcouncil.org/library/2002/2002-19.htm; *The Future Role of Bonneville in Power Supply*, Council Document 2003-18, October 2003, http://www.nwcouncil.org/library/2003/2003-18.htm

customers requesting that additional service would pay for it, and the cost would not be melded into the rates paid by other customers. The Council believes these changes should be implemented through long-term (20-year) contracts guided by a clear and durable statement of energy policy. Meanwhile, Bonneville should continue to pursue cost-effective energy conservation and renewable resources.

The Council believes these policy changes would not affect Bonneville's fish and wildlife mitigation obligations. Costs of that mitigation should be allocated to the existing power system, the Council recommended.

The Council also recommended that Bonneville provide a limited amount of power for a limited period for its direct-service customers, primarily Northwest aluminum smelters. This could involve Bonneville purchases of market power. To minimize the cost to other customers, Bonneville should sell power to the industries through contracts that allow the power to be interrupted in emergencies, the Council recommended.

## Legal Issues

### 1. What kind of legal creature is the Council?

The Northwest Power Act specifies that the Council is not a federal agency. The Council is also not a state agency in the usual meaning of the word, because it acts on behalf of more than one state. So what is it?

The Council is one of a small group of hybrid organizations known as interstate compact agencies. These multi-state organizations are created by an agreement among the participating states with the consent of Congress. The Council was authorized by Congress in December 1980, and came into being when each of the legislatures of the participating states passed a law agreeing to participate in the Council, subject to the conditions in the Northwest Power Act.

Interstate compact agencies are usually created to deal with issues or to manage resources that involve more than a single state. The Constitution gives most of the authority over matters between states to the federal government exclusively. In the Northwest Power Act, however, Congress gave back to the Northwest states some of this federal authority. In other words, although the Council is not a federal agency, it exercises certain powers granted to it by the federal government.

In particular, the Council has authority to adopt plans and programs that guide the actions of federal agencies. The Bonneville Power Administration is required to ensure that its actions are "consistent" with these plans and programs. Other federal agencies are required to take the Council's fish and wildlife program into account "at each relevant stage of decision-making processes to the fullest extent practicable." The Council also must make recommendations on Bonneville's annual expenditure of fish and wildlife funds, based on advice of an independent scientific panel. These are unique authorities. The Northwest Power Act is one of only a few instances in which Congress has granted states significant power over federal agencies.

<u>Federal laws applicable to the Council</u>

State agencies are governed by state law. Federal agencies are governed by federal law. For interstate compact agencies, there is no general body of governing law.

When Congress created the Council, it solved this problem by making a number of laws regulating federal agencies applicable to the Council. In Section 4(a)(4) of the Northwest Power Act, the open meetings law applicable to the Federal Energy Regulatory Commission, and federal laws applicable to Bonneville relating to contracts, conflicts of interest, financial disclosure, advisory committees, disclosure of information, judicial review, and "related matters" are made generally applicable to the Council.

However, Congress recognized that not all of these laws would fit the Council exactly and therefore gave the Council yet another unique authority, the power to adapt federal laws to fit its own circumstances. The Northwest Power Act says that the specified federal laws "shall apply to the Council to the extent appropriate." The legislative history of the Act explains that the Council is to determine when it is and is not "appropriate" to follow the federal law, and explains that the Council has discretion to depart from the requirements of federal law where it has good reason to do so.

For the most part, the applicable federal laws have proved to be workable, and the Council has followed them as written. However, various administrative details have been modified to fit the Council. For example, financial disclosure forms are filed with the Council's General Counsel, not with the U.S. Department of Energy. When the Council has departed from the federal laws, it has usually made written findings explaining why the law as written was inappropriate, and how the adaptation was more appropriate.

There are a few rules regarding financial disclosure and ethics laws that apply to the Council. First, Council members and staff are required to file financial disclosure forms, some parts of which are public records and some parts of which are confidential. Second, Council members and staff may not participate in particular Council matters that will have a direct and predictable effect on their own financial interests, including, among others, those of their spouses and dependent children. Participation will be permitted in the case of *de minimis* holdings and/or if the individual is granted a waiver. The Council has always observed a blanket prohibition on holding a financial interest in some firms, primarily energy companies and fish and wildlife concerns doing business in the western United States. Third, Council members and staff generally cannot accept anything of more than nominal financial value from people whose interests stand to be affected by Council actions. The Council's legal division has always advised that political activity is not disallowed, provided a member is not a candidate for partisan office and does not use the Council position for political purposes. In addition, the legal division seeks guidance from other federal laws and regulations as issues arise. The legal division is available for advice on any questions that may arise with Council members and staff.

State laws applicable to the Council

While federal laws govern most of what the Council does as a body, some state laws are still applicable to individual Council members and Council staff. In particular, Council members are officers of their respective states, and, if paid by their states, are state employees subject to the various state laws and regulations that apply to state officers and employees, including requirements governing how much time must be devoted to Council activities, state salary schedules, and the like. These state laws apply to Council members so long as they do not conflict with the federal laws that are made applicable under Section 4(a)(4).

The two Oregon Council member are Oregon state employees, and the eastern Washington Council member and the eastern Washington staff members of the Council are all employees of Eastern Washington University. All of the other Council members and staff are employees of the Council. The Council sets the salaries, benefits, employment conditions, and the retirement plans for the central office staff. In questions of labor laws and workers compensation, the Council follows the applicable laws of each state as applied to non-profit and governmental organizations.

In some instances, state and federal laws applicable to Council members may overlap or have conflicting requirements. Only rarely has such overlap resulted in a public debate. In 1988, for example, an Oregon member who was leaving the Council was offered employment with a public utility. Under the federal conflict of interest law, the member was allowed to take the job. Under Oregon conflict of interest law, the member was not allowed to take the job. The Council took the position that the federal law preempted state law on this point. A protective lawsuit was filed by the utility based on threats of prosecution by the Oregon Attorney General. However, nothing further came of the matter, and the suit eventually was withdrawn.

Liability and indemnification

As of 1988, the attorneys general of each Northwest state had confirmed in writing that Council members are considered state employees for liability purposes, and that each state was obligated to defend Council members and pay judgments rendered against them in the same manner as with other state employees. Thus, it is unlikely that any Council member would be subject to personal liability for an official action taken while a Council member.

The Council has also entered into an indemnification agreement with each of its members, promising to defend claims and pay judgments. The indemnification appears in Chapter 19 of the Council's bylaws.

For the first several years of its existence, the Council was able to obtain an insurance policy to cover such claims. However, as a result of the Washington Public Power Supply System (WPPSS) nuclear power plant bond default, the premiums for this type of insurance increased enormously, and the available policies contained exclusions removing coverage for decisions relating to nuclear plants and other power planning decisions. For these reasons, the Council chose to adopt an indemnification agreement rather than to continue to purchase this type of insurance.

The Council continues to maintain a normal commercial liability policy, which covers such matters as personal injuries on Council premises. This policy also covers Council members and staff while driving rental cars on Council business. It is therefore not necessary for Council members to purchase the optional additional insurance offered by rental car companies when renting cars on Council business.

**2. Procedures for Amending the Council's Power Plan and Fish and Wildlife Program**

In developing the power plan and the fish and wildlife program, the Northwest Power Act directs the Council to observe certain procedures unique to the Power Act, the informal rulemaking procedures of the federal Administrative Procedure Act (APA) and any other procedures the Council may adopt. The Council must hold public hearings in each of the member states before adopting the plan or program or substantial, non-technical amendments to either. The Council must review the plan at least every five years.

Power plan amendments

For purposes of power plan amendments, the federal APA requires public notice of proposed amendments or a description of the subjects and issues involved, and a statement of how the public may participate in the process. The public must be given an opportunity to submit written material.

Once the period for public comment has closed, people outside the Council may be foreclosed from communicating with the staff and Council members on the subject of the rulemaking. In some rulemakings the Council has allowed limited, additional public comment up to the time of decision, although the Council must have enough time to analyze all comments before taking final action.

An agency must give a concise general statement of the basis and purpose of the rules it adopts. The Council, following an approach approved by the courts, has satisfied this requirement by publishing a Response to Comments, which briefly summarizes the major comments received and explains how the Council has dealt with them.

Fish and wildlife program amendments

The fish and wildlife program is published separately from the power plan, although it is legally an element of the plan. But the Act sets out specific procedural requirements for developing and amending the fish and wildlife program that make it quite distinct from the power plan.

In amending the fish and wildlife program, the Act requires the Council to request from the region's fish and wildlife agencies and appropriate Indian tribes recommendations for measures for fish and wildlife affected by hydropower in the Columbia and its tributaries. Section 4(h)(2) of the Act provides that recommendations must be solicited prior to the development or review of the power plan, or any major revision to the plan. Others may also make such recommendations. Once the Council has received these recommendations, along with supporting documentation, it must make them available for comment. Typically, the Council also issues its own draft fish and wildlife amendments, which reflect the Council's attempt to fit the recommendations into a systemwide context, and invites public comment. The Council must act on the recommendations within one year. The Council may reject a recommendation only for certain reasons spelled out in Section 4(h)(7) of the Act. If the Council rejects a recommendation, it must give its reasons in writing.

The role of the fish and wildlife agencies and Indian tribes is particularly important. Not only must the Council solicit their recommendations for fish and wildlife measures, but if there are conflicting recommendations, the Council must consult with the tribes and agencies and give "due weight" to "their recommendations, expertise and legal rights and responsibilities" in resolving the inconsistency. In determining which recommendations to accept, moreover, the Council must determine whether a proposed measure would: (1) "complement the existing and future activities" of the agencies and tribes, and (2) be consistent with the tribes' legal rights. In 1994, the federal appeals court said, in dicta, that the Council must give a "high degree of deference" to the fish and wildlife agencies and tribes. The 1994 court opinion also said that the program must include sound biological objectives to structure the program and guide Council decisions.

Because the Fish and Wildlife Program must be based on recommendations submitted to the Council, and because the Council must make findings on any recommendations it rejects, program amendment processes are organized around the recommendations. Most of the comments the Council receives are directed to recommendations, and most of the Council's responses to comments are made in findings.

Petitions for rulemaking

The APA also requires administrative agencies to give interested persons the right to petition for the issuance, amendment or repeal of an administrative rule, such as changes in the power plan or fish and wildlife program. The Council has adopted a policy for how it will treat such petitions. A petition must set forth the substance or text of a proposed amendment or identify the provision to be repealed; explain the interest of the petitioner; and set forth the facts, reasons and new information that support the petitioner's request. The Council will conduct such study as it deems appropriate and within 120 days of receipt of the petition, grant or deny it. If an amendment process results from the petition process, the Council has committed to completing the process within seven months from the decision to begin the amendment process.

## 3. Council interpretations of the Northwest Power Act

Section 6(c)

In November 1986, the Northwest Power Planning Council (today called the Power and Conservation Council) and the Bonneville Power Administration each issued complementary policy statements on the implementation of Section 6(c) of the Northwest Power Act. Section 6(c) requires Bonneville to submit certain proposals related to major resources to a public review process to determine whether they are consistent with the Council's Northwest Power Plan. The Council then has the right to make its own determination regarding consistency. If either Bonneville or the Council finds a resource inconsistent with the power plan, the resource can be acquired only after congressional action. The Act identifies as "major" resources those over 50 megawatts with more than five years' duration.

The purpose of review under Section 6(c) is to ensure that a major resource is needed and is cost-effective before the Northwest invests a great deal of money in it. The process speaks directly to the balance of power between state and federal interests. The Northwest Power Act established Bonneville's authority to acquire resources, but it also gave the states, through the Council, the right to review those acquisitions before committing ratepayers to large expenditures.

In March 1993, the Council and Bonneville completed a five-year review of their respective 6(c) policies. The region had had little experience under Section 6(c) in the years since the adoption of the original policies, and therefore, little was changed. The revised policies were expanded, however, to cover all the Bonneville proposals made subject to review under the terms of the Act. In early 1998, in light of the restructuring occurring in the utility industry, the Council and Bonneville decided to postpone for five years further review of their 6(c) policies.

Section 5(d)

Bonneville was authorized under Section 5(d) of the Act to sign power sales contracts on special terms with existing direct service industrial customers (DSIs) for an amount of power that each customer was receiving under its earlier contract. The DSIs are customers that had industrial firm power contracts with Bonneville in 1975. The Act expressly precluded sales to new direct service industrial customers, but did permit Bonneville to sell additional power to existing DSIs, provided Bonneville and the Council made certain findings.

In late 1989, Bonneville tentatively agreed to sell additional power to an existing DSI customer without the review called for under Section 5(d), provided the customer could arrange an assignment of unused contract demand from another existing direct service customer. Bonneville took the position that Section 5(d) review was not required so long as the total amount of power it sold to the DSIs did not exceed the aggregate amount to which all the DSIs were entitled when the Act was passed. Public comment brought this proposed transaction to the Council's attention.

The Council has adopted an interpretation of Section 5(d) that requires review whenever a proposed sale to an individual DSI would result in that DSI receiving more power than it received under its initial entitlement. The Council's interpretation does not call for review if an existing DSI assigns its power sales contract to a successor in interest for use at the same location for purposes similar to those established under the original

contract. Except for transfers of the sort just described, an amendment or assignment of a contract that results in the delivery of additional power to an existing DSI is a sale subject to Section 5(d) review.

**4. Litigation history**

Seattle Master Builders Association, et al. v. Northwest Power Planning Council

On April 10, 1986, the United States Court of Appeals for the Ninth Circuit decided this challenge to the Council's model conservation standards (MCS) brought by several construction-related organizations. The petitioners had advanced two principal lines of argument. First, with respect to the Council's model conservation standards, petitioners challenged the cost effectiveness of the measures to make new residential buildings more energy efficient, and the methodologies used by the Council to determine cost effectiveness. Petitioners also argued that the Council should have prepared an environmental impact statement regarding promulgation of the standards.

Second, petitioners challenged the constitutionality of the Council, citing the appointments clause of the U.S. Constitution, which requires officers of the United States to be appointed by the executive branch of government. Council members are officers of an interstate compact agency appointed by the governors of the four Northwest states and not by the President.

The Bonneville Power Administration intervened in the case and ultimately argued that the Council's adoption of the MCS did not violate the constitution. Bonneville said that the Council's model conservation standards did not impose a legal obligation on anyone, and therefore adoption of the standards was not the sort of exercise of significant authority over a federal agency that might require Council members to be appointed by the executive branch.

In earlier communications, however, regarding what posture the Department of Justice should adopt, the Department of Energy had taken a more aggressive position. The Secretary of Energy, Don Hodel, wrote to Justice in early 1985 and urged that if the Council were, indeed, anything more than advisory, and if it could, in fact, significantly limit Bonneville's actions, it ought to be found unconstitutional and replaced by a federal council. John Dingell, the Chairman of the House Energy and Commerce Committee, one of the committees that drafted the Northwest Power Act, wrote a strong letter in opposition to Energy's request. Mr. Dingell fully supported the view that the Council was intended to be more than an advisory body, with functions that are more significant than the Secretary of Energy had contended. He also concluded that the Council was properly formed and was operating according to the expectations of Congress.

In a two-to-one decision, the Ninth Circuit ruled for the Council on all the issues. With respect to the model conservation standards, the court held that the Council had adopted a proper approach to determining the cost effectiveness of conservation measures; that the methodology the Council used for determining conservation value was within the Council's discretion; and that the Council was not obliged to prepare an environmental impact statement on the standards, pursuant to the laws of the states that are members of the interstate compact. On the constitutional question, the court noted that the functions of the Council and Bonneville "directly overlap," and held that the Council "violates neither the compact nor appointments clauses of the United States Constitution. The Act established an innovative system of cooperative federalism under which the states, within limits provided by the Act, can represent their shared interests in maintenance and development of a power supply in the Pacific Northwest and in related environmental concerns."

The Master Builders petitioned the Ninth Circuit for rehearing en banc (before a larger panel of judges in the circuit) on the ground that the panel overlooked material laws and facts. The United States also petitioned for rehearing or for rehearing en banc, arguing that the court decided constitutional questions not presented by the case. The Ninth Circuit denied both petitions. The Master Builders' subsequent petition for certiorari was denied by the Supreme Court of the United States.

Northwest Conservation Act Coalition, et al. v. Northwest Power Planning Council

The Coalition and the Natural Resources Defense Council filed a petition for review in the Ninth Circuit challenging the model conservation standards amended in 1986, in an effort to make the requirements of the amended standards more rigorous. In particular, petitioners alleged that the Council's standards for conservation in new commercial buildings ought to be more stringent; that a surcharge is necessary if the standards governing the energy efficiency of buildings that convert to electric space heat are to be effective; and that the Council's amended standards ought to contain standards for utility-financed incentives to conserve electricity in existing residences. Upon petitioners' request, the Council entered rulemaking to amend the standards in the respects summarized above. Petitioners then dismissed their suit in the Ninth Circuit.

Cascade Natural Gas Corp. v. Evans

In 1983, six regional natural gas companies brought suit challenging the Council's plan, arguing, among other things, that the Council had unfairly ignored natural gas as a conservation resource. The case was settled before trial and the Council agreed to modify the plan to make clear that the model conservation standards apply only to electrically heated homes. The Council also said that it would consider modifying the plan if significant fuel switching from natural gas to electricity were demonstrated. The terms of this settlement expired on April 27, 1988.

CASE, The Utility Reform Project and Michael Rose v. Northwest Power Planning Council

In May of 1986, CASE (Citizens for an Adequate Supply of Energy), The Utility Reform Project and Michael Rose filed suit in the Ninth Circuit, challenging certain portions of the 1986 model conservation standards (MCS). Petitioners also asked the Council to enter rulemaking to address the matters raised in the Ninth Circuit. In response to these two actions, the Council: 1) clarified that its then-current MCS rulemaking addressed model standards for new residential and commercial buildings at federal agency facilities; 2) committed to assess the conservation potential of existing buildings and other electricity uses at federal agency facilities as part of the next major plan revision; and 3) extended the period for comment and consultation on MCS for federal agency customers beyond the deadline for the then-current MCS rulemaking. The Council also agreed to defer action on the CASE petition to enter rulemaking to develop model conservation standards for the direct service industries, pending further analysis of increased interruptibility of the direct service industries, which the Council agreed to conduct before calling for Bonneville acquisition of new resources or before the next major revision of its power plan, whichever came first. As a result of these actions by the Council, the petitioners agreed to settle the case.

Northwest Resource Information Center, Inc., et al v. Northwest Power Planning Council; Confederated Tribes and Bands of the Yakima Indian Nation v. Northwest Power Planning Council (the "Phase Two" cases)

To act as quickly as possible to improve conditions for salmon and steelhead, which were then proposed for listing under the Endangered Species Act, beginning in August 1991 the Council began a multi-phase rulemaking on salmon and steelhead measures. In January 1992, the Council published its notice of final action on measures dealing with increased flows and drawdown of the lower Snake River. Three petitions were subsequently filed challenging the measures, one by the Northwest Resource Information Center, Trout Unlimited, the Oregon Natural Resources Council, Idaho Steelhead and Salmon Unlimited, and The Wilderness Society, represented by the Sierra Club Legal Defense Fund; a second petition was filed by the Yakama Tribe; and a third was filed by a group of aluminum companies and other industrial customers of the Bonneville Power Administration. After the petitions had been filed, 15 to 20 additional parties intervened, including Oregon Trout, the United States government, a number of utilities and the State of Idaho.

On September 9, 1994, the Court ruled that the Council had not adequately explained its reasons for rejecting amendment recommendations because the Council's findings on the recommendations were put in a separate document, rather than in the fish and wildlife program itself. The Court also held that the Council's findings in an early phase of the amendment process were voided by findings in a later phase. While the Court's holdings were limited to these procedural matters, the opinion offered extensive interpretations (called "dicta" because they are not strictly binding) of the Northwest Power Act. Some of the dicta told the Council that it should give a "high degree of deference" to the fish and wildlife agencies' and Indian tribes' recommendations and expertise, and that the Council's discretion to reject these recommendations is narrow. The Court remanded the Strategy for Salmon for the Council to develop new findings.

A.H. Canada v. Northwest Power Planning Council

In 1994, Mr. Alfred H. Canada, a retired power engineer, sued the Council in federal District Court. Mr. Canada sought to overturn the Council's denial of a petition for rulemaking he had earlier filed. The rulemaking would have considered replacing the plan's call for conservation with an equivalent amount of solar photovoltaics. The District Court dismissed, reaffirming the established rule that suits challenging final actions of the Council are to be brought in the Ninth Circuit Court of Appeals.

Nez Perce and other tribes v. Northwest Power Planning Council

In 1997, four Indian tribes challenged the Council's recommendations pursuant to Section 4(h)(10)(D) of the Northwest Power Act regarding the Bonneville Power Administration's fish and wildlife expenditures. The petitioners and the Council agreed to withdraw the case in 2000 and asked the Ninth Circuit Court of Appeals to dismiss it.

In January 2005, the Council is involved in two different pieces of litigation. In the first, the Council continues to participate as an amicus or "friend of the court" party in litigation filed in the U.S. District Court in Oregon by environmental and other groups to challenge the National Marine Fisheries Service's 2000 Biological Opinion on the operation of the Federal Columbia River Power System, alleging a violation of the Endangered Species Act. The Council is not an official party to the case (that is, as neither a plaintiff or defendant), and so there is no risk of a judgment against the Council in the litigation. Also, participation in the litigation presents no risk of financial exposure.

In the second, the Yakama Indian Nation filed a petition in the U.S. Ninth Circuit Court of Appeals seeking review of a recommendation the Council made to the Bonneville Power Administration concerning Bonneville funding of fish and wildlife activities for Fiscal Year 2003. The petition has been stayed (that is, put on hold with no further action pending) while we continue to discuss with the attorneys for the petitioner how to resolve the legal and policy issues raised by the petition without further litigation. If the parties decide to proceed with the litigation, the Council would contest the claim vigorously. If the petitioner were successful, the only remedy the court would or could impose would be to vacate the Council's decision and remand the matter to the Council for further consideration. No monetary claim has been or could be made against the Council, and no monetary damages could be awarded by the court.

## Administrative Issues

### 1. Finance and Administration

### Council funding

Expenses of the Council necessary for carrying out its functions and responsibilities under the Northwest Power Act are paid from funds received from the Bonneville Power Administration. Funds are advanced to the central office from Bonneville on a request basis. Each state, in turn, requests funds to be advanced from the central Council office to the state to cover the operating expenses of the state Council offices and personnel.

Costs associated with the operation of the Council's central office in Portland are paid from the central office budget. Expenses for each state Council office are paid from each state Council budget by the state agency which provides accounting/payroll services to each state Council office. In some instances, state expenses are paid directly from the central office accounting and payroll systems.

### Budgets

Background

The Council is required to develop annual (state and central office) budgets for transmittal to the Bonneville Power Administration and which are included in Bonneville's budget submittal to the Department of Energy, Office of Management and Budget, and Congress.

The Council's budget is limited to an amount equal to 0.02 mills multiplied by the kilowatt hours of firm power forecast to be sold by the Bonneville Administrator during the year to be funded. In most years, this limitation represents approximately $2 million. However, based on an annual showing by the Council that such limitation will not permit the Council to carry out its functions and responsibilities under the Act, the Administrator may raise such limit to any amount not in excess of 0.10 mills. In most years, this maximum limitation represents approximately $10 million.

The Council's annual budget process occurs between the months of March and June. Each state Council office develops its budget (usually on a biennial basis) which is approved through the state legislative process and then integrated with the Council's central office budget.

The Council's draft budget is distributed for a 30 to 60-day public review and comment period during which time consultations are held with interested parties regarding the Council's proposed funding requirements. Following final revision and adoption by the Council, the budget is transmitted to Bonneville.

In 1997 the Council agreed (with Bonneville) to plan to make budget cuts totaling approximately $5.4 million over four years -- fiscal years 1998 through 2001. At that time, it was anticipated that the Council's role would diminish in power planning and fish and wildlife program development. Much of the Council's budget cuts in 1997 were based on these predictions.

Instead, the Council's role and workload have increased substantially. Electricity industry restructuring is far from being fully implemented, and as a result the Council continues to be heavily involved in regional

power resource planning, hydrosystem operations analysis, energy system reliability/adequacy and conservation resource issues. In addition, the Council has increased accountability for fish and wildlife spending, implemented a new project selection process including site review at the province level by the Independent Scientific Review Panel, is guiding the development of subbasin plans throughout the region, and is amending its fish and wildlife program. In short, we have an enhanced role and new responsibilities in the region for fish and wildlife restoration.

Reconsidering the formula for funding the Council

While the Council has accepted an enhanced role and additional responsibilities in recent years, particularly for fish and wildlife recovery activities, the capability of the Council to carry out these additional responsibilities has been diminished seriously since the time the Power Act was enacted. The primary factor that undermines the stability of Council funding is Bonneville's forecast of firm power sales. Forecasted firm power sales are the basic element in the formula provided in the Act for calculating the Council's funding base.

The Act envisioned that Bonneville's firm power sales would increase as utilities were allowed to place additional loads on Bonneville. This has not been the case during the last 20 years, however, and prospects for increased power sales in the future are questionable. Indeed, the Joint Customer Proposal for Bonneville's future role in power sales would mostly limit Bonneville's power sales to the output of the Federal Columbia River Power System and reduce Bonneville's role in meeting the demand of its customers beyond the capability of the federal system. It should be noted that the Council generally supported this proposal, even though it would mean reduced firm power sales and a corresponding reduction in the Council's budget if the current budget formulation rules remain in effect. Currently, Bonneville markets the output of the Federal Columbia River Power System and augments that power supply with market purchases in order to meet its customers' load. The Act did not anticipate that electricity one day would be a wholesale commodity, or that its price would fluctuate wildly with supply and demand. Bonneville's firm power sales can fluctuate dramatically depending on the market volatility of wholesale electricity prices, as was made clear during the energy crisis of 2000/2001.

If Bonneville's firm power sales had increased as envisioned in the Act, then the Council's funding base would have had the flexibility to adjust to the inflationary cost impacts of doing business. Instead, the Council has had to absorb the increased costs associated with its additional responsibilities by reducing its capability to conduct independent planning and analysis activities. Bonneville, on the other hand, can cover inflationary cost impacts by adjusting its rates to meet its revenue requirements.

During each of the past two rate periods, the Council has been compelled to enter into budget limitation agreements with Bonneville in order to assure some degree of funding stability. These agreements, however, have not been sufficient to address nor restore the Council's planning capabilities to prior levels. The Council intends to engage Bonneville in mutually identifying and developing a more reasonable budget formula methodology prior to the beginning of the Fiscal Year 2007-2011 rate case.

Fiscal Year 2005/Fiscal Year 2006 budget strategy

The Council continues to be conscious of the need for healthy financial conditions for Bonneville even though conditions in the energy market now make it appear that Bonneville could be in a tenuous financial position because of ongoing electricity market volatility. The Council faces changes in its own role due to the restructuring in the electric utility industry and enhanced efforts to establish improved accountability in regional fish and wildlife recovery planning. In an effort to be responsive, the Council in Fiscal Year 2005 and Fiscal

Year 2006 will maintain similar budget constraints to those initiated in 1998. To accomplish this, the Council will:

- Maintain a somewhat reduced level of energy systems analysis capability by reallocating staff workloads and deferring projects to other entities where possible, and re-prioritizing resources for only the most essential studies and analyses.

- Continue efficiencies in operations and administration; in general, absorb approximately two percent projected inflation for Fiscal Year 2005 and for Fiscal Year 2006.

- Reallocate staffing where possible.

Budget requests, Fiscal Year 2006

Based on the major issues and levels of effort described above, the Council determined that the 0.02 mill per kilowatt-hour limitation on expenses will not permit the Council to carry out its functions and responsibilities under the Act, Section 4(c)(10)(A). Accordingly, in August 2004 the Council proposed a budget in the amount of $8,700,000 for Fiscal Year 2006. This is equal to 0.093 mills per kilowatt-hour for the estimate of forecasted firm power sales be included in the administrator's Fiscal Year 2006 budget submittal.

The Council also increased its previously submitted Fiscal Year 2005 budget request of $8,689,000 to $8,692,000. The Council's budget for Fiscal Year 2006 and Revised Fiscal Year 2005 were based on then-current (Fiscal Year 2004) expenditure levels plus adjustments for increased workload, certain program improvements, and cost-of living adjustment factors as provided by the U.S. Department of Energy (Bonneville) and the Oregon Economic and Revenue Forecast. A number of cost containment measures for personal services, travel, contracts, and services and supplies were incorporated in the budget.

**Audits**

The U.S. General Accounting Office (GAO) is the government entity authorized to audit the Council's fiscal and program operations. However, the Council, through an agreement with Bonneville, engages an independent accounting firm to conduct annual financial audits of the Council's operations. A copy of each audit is forwarded to the Portland office of the General Accounting Office and to other interested parties, as well as being included in the Council's Annual Report to Congress. In addition, state audit agencies audit each state Council office's fiscal operations in the course of their regular state agency audit schedules. In 1996, the GAO conducted an extensive audit of the Council's business policies and practices. That audit resulted in a very positive finding by the GAO.

**2. Council organization**

The Act provides that the Council shall determine its organization and prescribe its practices and procedures for carrying out its functions and responsibilities under the Act.

State offices

Council members organize and staff their state offices based on the level of support they determine necessary. This typically includes technical assistants and/or policy analysts in the areas of power planning, fish and wildlife, and public information and public involvement. Administrative support is also provided.

Council members may also use outside contractors or the technical services of state agencies to conduct special studies and analyses regarding issues stemming from the power plan and the fish and wildlife program as they impact their respective states.

Where state staff are employees of the state, state laws, rules and regulations are applicable. There are some exceptions where state support for Council members is administered (payroll, travel and office expenses) by the central office.

Central office

The central office provides overall support to the Council in the areas of power planning, fish and wildlife, public affairs, legal matters, and finance and administration.

Staffing levels for the central office are established by the Council in its budget. All personnel actions are authorized by the executive director after consultation/approval by the Council chairman. Staff compensation plans and benefit programs are established by the Council based on recommendations by outside consultants, and are subject to periodic reviews by the consultant with the Council.

Travel rules and expense reimbursement policies for central staff are set by the Council.

Contracts to assist the Council in carrying out its responsibilities are awarded on a competitive basis. Contracts over $25,000 require approval by the full Council.

The central office also provides computing and information systems support to the state offices augmented by occasional assistance from state agencies and local vendors.

**Council name change**

In January 2003, the Council officially changed its name to the Northwest Power and Conservation Council to emphasize the conservation aspect of its energy and fish and wildlife responsibilities.

In the Northwest Power Act, the legal name of the agency is “Pacific Northwest Electric Power Planning and Conservation Council.” While “conservation” in the Power Act specifically refers to energy conservation, the concept of conserving natural resources is embodied in the Council’s Columbia River Basin Fish and Wildlife Program in terms of enhancing, or conserving, fish and wildlife of the Basin that have been affected by hydropower dams.

## Glossary

### 1. Terms in the fish and wildlife program

**acclimation pond**
Concrete or earthen pond or a temporary structure used for rearing and imprinting juvenile fish in the water of a particular stream before their release into that stream.

**adaptive management**
A scientific policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as vehicles for learning. Projects arc designed and implemented as experiments so that even if they fail, they provide useful information for future actions. Monitoring and evaluation are emphasized so that the interaction of different elements of the system are better understood.

**adult equivalent population**
The number of fish that would have returned to the mouth of the Columbia River in the absence of any prior harvest.

**anadromous fish**
Fish that hatch in freshwater, migrate to the ocean, mature there and return to freshwater to spawn. For example, salmon or steelhead.

**biodiversity**
The variety of and variability in living organisms, with respect to genetics, life history, behavior and other fundamental characteristics.

**captive brood stock**
Fish raised and spawned in captivity.

**carrying capacity**
The number of individuals of one species that the resources of a habitat can support.

**Coordinated Information System**
Still under development, this system is designed to allow interested parties to access technical information about Columbia River salmon and steelhead.

**deflector screens/diversion screens**
Wire mesh screens placed at the point where water is diverted from a stream or river. The screens keep fish from entering the diversion channel or pipe.

**demography**
The study of characteristics of human populations, especially size, density, growth, distribution, migration and vital statistics, and the effect of these on social and economic conditions.

**drawdown**
The release of water from a reservoir for power generation, flood control, irrigation or other water management activity.

**economies of scale**
Reductions in the average cost of a product that result from increased production.

**ecosystem**
The biological community considered together with the land and water that make up its environment.

**embeddedness**
The degree to which dirt is mixed in with spawning gravel.

**escapement**
The number of salmon and steelhead that return to a specified point of measurement after all natural mortality and harvest have occurred. Spawning escapement consists of those fish that survive to spawn.

**evolutionary biology**
The study of the processes by which living organisms have acquired distinguishing characteristics.

**extinction**
The natural or human-induced process by which a species, subspecies or population ceases to exist.

**fish flows**
Artificially increased flows in the river system called for in the fish and wildlife program to quickly move the young fish down the river during their spring migration period. (See "water budget.")

**fish passage efficiency**
The percentage of the total number of fish that pass a dam without passing through the turbine units.

**flows**
The rate at which water passes a given point in a stream or river, usually expressed in cubic-feet per second (cfs).

**flow augmentation**
Increased flow from release of water from storage dams.

**gametes**
The sexual reproductive cells, eggs and sperm.

**gas supersaturation**
The overabundance of gases in turbulent water, such as at the base of a dam spillway. Can cause a fatal condition in fish similar to the bends.

**genetic conservation refuge**
Reserve area whose goal is to protect genetic diversity and natural evolutionary processes within and among natural populations, while allowing varying degrees of exploitation and modification.

**genetic diversity**
All of the genetic variation within a species. Genetic diversity includes both genetic differences among individuals in a breeding population and genetic differences among different breeding populations.

**genetic integrity**
The ability of a breeding population or group of breeding populations to remain adapted to its natural environment.

**genotype**
The complement of genes in an individual.

**glides**
Stream areas with velocities generally less than one cubic foot per second and with a smooth surface. Water depth generally is less than two feet.

**harvest controls**
Regulations established for commercial and sport fisheries to ensure that the correct proportion of the different stocks escape to spawn.

**impoundment**
A body of water formed behind a dam.

**imprinting**
The physiological and behavioral process by which migratory fish assimilate environmental cues to aid their return to their stream of origin as adults.

**mainstem**
The main channel of the river in a river basin, as opposed to the streams and smaller rivers that feed into it. In the fish and wildlife program, mainstem refers to the Columbia and Snake rivers.

**minimum operating pool**
The lowest water level of an impoundment at which navigation locks can still operate.

**mixed-stock fishery**
A harvest management technique by which different species, strains, races or stocks are harvested together.

**morphology**
A study of the form and structure of animals and plants.

**naturally spawning populations**
Populations of fish that have completed their entire life cycle in the natural environment and may be the progeny of wild, hatchery or mixed parentage.

**naturalization**
The process by which introduced fish successfully establish a naturally spawning population.

**outfall**
The mouth or outlet of a river, stream, lake, drain or sewer.

**PIT tags**
PIT tags are used for identifying individual salmon for monitoring and research purposes. This miniaturized tag consists of an integrated microchip that is programmed to include specific fish information. The tag is inserted into the body cavity of the fish and decoded at selected monitoring sites.

**plume**
The area of the Pacific Ocean that is influenced by discharge from the Columbia River, up to 500 miles beyond the mouth of the river.

**population**
A group of organisms belonging to the same species that occupy a well-defined locality and exhibit reproductive continuity from generation to generation.

**population vulnerability analysis**
A systematic process for estimating species, location and time-specific criteria for persistence of a population.

**redd**
A spawning nest made in the gravel bed of a river by salmon or steelhead.

**reproductive isolating mechanisms**
Mechanisms that retain genetic diversity among populations. The primary reproductive isolating mechanism for anadromous fish is accuracy of homing, which can be reduced by improper hatchery operations. Stock transfers also reduce reproductive isolation.

**resident fish**
Fish that spend their entire life cycle in freshwater. For program purposes, resident fish includes land-locked anadromous fish (e.g., white sturgeon, kokanee and coho), as well as traditionally defined resident fish species.

**riffle**
A shallow extending across the bed of a stream over which water flows swiftly so that the surface of the water is broken in waves.

**riparian habitat**
Habitat along the banks of streams, lakes or rivers.

**rule curves**
Graphic guides to the use of storage water. They are developed to define certain operating rights, entitlements, obligations and limitations for each reservoir.

**sinuosity**
The amount of bending, winding and curving in a stream or river.

**smolt**
A juvenile salmon or steelhead migrating to the ocean and undergoing physiological changes (smoltification) to adapt its body from a freshwater to a saltwater existence.

**spill**
Releasing water through the spillway rather than through the turbine units.

**spillway crest elevation**
The point at which the reservoir behind a dam is level with the top of the dam's spillway.

**stream morphology**
The study of the form and structure of streams.

**supplementation**
The release of hatchery fry and juvenile fish in the natural environment to quickly increase or establish naturally spawning fish populations.

**tailrace**
The canal or channel that carries water away from the dam.

**velocity**
The speed of water flowing in a watercourse, such as a river.

**velocity barrier**
A physical structure, such as a barrier dam or floating weir, built in the tailrace of a hydroelectric powerhouse, which blocks the tailrace from further adult salmon or steelhead migration to prevent physical injury or migration delay.

**water budget**
A means of increasing survival of downstream migrating juvenile fish by increasing Columbia and Snake river flows during the spring migration period. The water budget was developed by the Council, which oversees its use in conjunction with the fish and wildlife agencies and Indian tribes, the U.S. Army Corps of Engineers, the Bonneville Power Administration and the Bureau of Reclamation.

**watershed**
The area that drains into a stream or river.

**weak stock**
Listed in the Integrated System Plan's list of stocks of high or highest concern; listed in the American Fisheries Society report as at high or moderate risk of extinction; or stocks the National Marine Fisheries Service has listed. "Weak stock" is an evolving concept; the Council does not purport to establish a fixed definition. Nor does the Council imply that any particular change in management is required because of this definition.

**wild populations**
Fish that have maintained successful natural reproduction with little or no supplementation from hatcheries.

## 2. Terms in the power plan

**administrative costs**
Certain overhead costs related to conservation or generating resources, such as project management and accounting costs incurred by utility or contractor staff.

**alternating current (AC)**
An electric current in which the electrons flow in alternate directions. In North American electrical grids, this reversal of flow is governed at 60 cycles per second (Hertz). With some exceptions (see "direct current"), commercial electric generation, transmission and distribution systems operate on alternating current.

**anadromous fish**
Fish that hatch in freshwater, migrate to the ocean, mature there, and return to freshwater to spawn. For example, salmon or steelhead trout.

**available technology**
In the power plan, the term "available technology" refers to equipment or facilities for generating and conservation resources, including electrical appliances, that are currently available and are expected to be generally available in the marketplace during the 20-year planning period.

**average cost pricing**
A concept used in pricing electricity. The average cost price is derived by dividing the total cost of production by the total number of units sold in the same period to obtain an average unit cost. This unit cost is then directly applied as a price.

**average megawatt or average annual megawatt**
Equivalent to the energy produced by the continuous operation of one megawatt of capacity over a period of one year. (Equivalent to 8.76 gigawatt-hours, 8,760 megawatt-hours or 8,760,000 kilowatt-hours.)

**avoided cost**
An investment guideline, describing the value of conservation and generation resource investments in terms of the cost of more expensive resources that would otherwise have to be acquired.

**base loaded resources**
Base loaded electricity generating resources are those that generally are operated continually except for maintenance and unscheduled outages.

**billing credit**
Under the Northwest Power Act, a payment by Bonneville to a customer (in cash or offsets against billings) for actions taken by that customer to reduce Bonneville's obligations to acquire new resources.

**Bonneville Power Administration (Bonneville)**
A federal agency that markets the power produced by Federal Base System resources and resources acquired under the provisions of the Northwest Power Act of 1980. Bonneville sells power to public and private utilities, direct service industrial customers and various public agencies. The Northwest Power Act charges Bonneville with other duties, including pursuing conservation, acquiring sufficient resources to meet its contract obligations, funding certain fish and wildlife recovery efforts and implementing the Council's plan.

**Btu (British thermal unit)**
The amount of heat energy necessary to raise the temperature of one pound of water one degree Fahrenheit (3,413 Btus are equal to one kilowatt-hour).

**Buy-back program**
A conservation program that, in effect, purchases electrical energy in the form of conservation measures installed by a consumer. The consumer is paid a certain amount per kilowatt-hour of energy saved.

**callback**
A power sale contract provision that gives the seller the right to stop delivery of power to the buyer when it is needed to meet other specified obligations of the seller.

**capacity**
The maximum power that a machine or system can produce or carry under specified conditions. The capacity of generating equipment is generally expressed in kilowatts or megawatts. In terms of transmission lines, capacity refers to the maximum load a line is capable of carrying under specified conditions.

**climate zone**
As part of its model conservation standards, the Council has established climate zones for the region based on the number of heating degree days, as follows: Zone 1: 4,000 to 6,000 heating degree days (the mild maritime climate west of the Cascades and other temperate areas); Zone 2: 6,000 to 8,000 heating degree days (the somewhat harsher eastern parts of the region); and Zone 3: more than 8,000 heating degree days (western Montana and higher elevations throughout the region).

**coal gasification**
The process of converting coal to a synthetic gaseous fuel.

**cogeneration**
The sequential production of electricity and useful thermal energy. This is frequently accomplished by the recovery of reject heat from an electric generating plant for use in industrial processes, space or water heating applications. Conversely, cogeneration can be accomplished by using reject heat from industrial processes to power an electricity generator.

**combined-cycle power plant**
The combination of a gas turbine and a steam turbine in an electric generation plant. The waste heat from the gas turbine provides the heat energy for the steam turbine.

**combustion turbine**
A turbine engine generator, often fired by natural gas or fuel oil, used to generate electricity. The turbine generator is turned by combustion gases rather than heat-created steam.

**conductor**
Wire or cable for transferring electric power.

**conservation**
According to the Northwest Power Act, any reduction in electric power consumption as a result of increases in the efficiency of energy use, production or distribution.

**construction lead time**
The length of time between a decision to construct a resource and when the resource is expected to deliver power to the grid. Generally defined for purposes of this plan as the interval between detailed engineering and equipment order to completion of start-up testing.

**cost-effective**
According to the Northwest Power Act, a cost-effective measure or resource must be forecast to be reliable and available within the time it is needed, and to meet or reduce electrical power demand of consumers at an estimated incremental system cost no greater than that of the least-costly, similarly reliable and available alternative or combination of alternatives.

**cost of debt**
The amount paid to the holders of debt (bonds and other securities) for use of their money. Generally expressed as an annual percentage in the power plan.

**cost of equity**
Earnings expected by a shareholder on an investment in a company. Generally expressed as an annual percentage in this plan.

**critical period**
The sequence of low water conditions during which the regional hydropower system's least amount of energy can be generated (see "critical water") while drafting storage reservoirs from full to empty. Under the Pacific Northwest Coordination Agreement, critical period is based on the lowest multi-month streamflow observed

since 1928. Based on analysis of streamflows at The Dalles Dam, this is also the lowest streamflow since recordkeeping began in 1879.

**critical water**
The sequence of streamflows in the critical period under which the hydropower system will generate about 12,500 average megawatts. In an average year, the Northwest hydropower system will produce about 16,600 average megawatts.

**curtailment**
An externally imposed reduction of energy consumption due to a shortage of resources.

**debt**
Investment funds raised through the sale of securities having fixed rates of interest.

**debt/equity ratio**
The ratio of debt financing to equity financing used for capital investment.

**demand forecast**
An estimate of the level of energy that is likely to be needed at some time in the future. The Council's demand forecast contains a range of estimated consumption based on various assumptions about demographics and the state of the economy.

**direct application renewable resource**
Technologies that use renewable energy sources to perform a task without converting the energy into electricity. These sources and their functions may include wood for space heat, solar for space heat and drying, geothermal space and water heating, and wind machines used for mechanical drive (such as pumping).

**direct current (DC)**
An electrical current in which the electrons flow continuously in one direction. Direct current is used in specialized applications in commercial electric generation, transmission and distribution systems.

**direct service industry**
An industrial customer that buys power directly from the Bonneville Power Administration. Most direct service industries are aluminum smelting plants.

**discount rate**
The rate used in a formula to convert future costs or benefits to their present value.

**dispatch**
Operating control of an integrated electrical system involving operations such as control of the operation of high-voltage lines, substations or other equipment.

**distribution**
The transfer of electricity from the transmission network to the consumer. Distribution systems generally include the equipment to transfer power from the substation to the customer's meter.

**drawdown**
Release of water from a reservoir for purposes of power generation, flood control, irrigation or other water management activity.

**economic feasibility**
The Northwest Power Act requires all conservation measures to be "economically feasible" for consumers. The Act does not define this concept. In this plan, the Council considers a program or measure to be economically feasible if the measure or program results in the minimum life-cycle costs to the consumer, taking into account financial assistance made available pursuant to other provisions of the Act.

**end use**
A term referring to the final use of energy. In the aggregate, it is used the same as "energy demand." In a more detailed use, it often refers to the specific energy services (for example, space heating), or the type of energy-consuming equipment (for example, motors).

**energy** ~
That which does, or is capable of doing, work. Energy is measured in terms of the work it is capable of doing. Electrical energy is commonly measured in kilowatt-hours, or in average megawatts (8,760,000 kilowatt-hours).

**Energy Northwest**
The utility formerly known as the Washington Public Power Supply System (WPPSS) is a municipal corporation and joint operation agency in Washington comprising representatives of public utility districts and municipal utilities. Based on power purchase contracts of its members or other utilities, WPPSS has the power to acquire, construct and operate facilities for the generation or transmission of electric power.

**energy services**
The actual service energy is used to provide (for example, space heat, refrigeration, transportation).

**equity**
Investment funds raised through the sale of shares of company ownership.

**equivalent availability**
The ratio of the maximum amount of energy a generating unit can produce in a fixed period of time, after adjustment for expected maintenance and forced outage, to the maximum energy it could produce if it ran continuously over the fixed time period. This represents an upper limit for a long-run (annual or longer) capacity factor for a generating unit. For example, a unit with an equivalent availability of 70 percent and a capacity of 500 megawatts could be relied on to produce 350 average megawatts of energy over the long term, if required.

**externality**
Any costs or benefits of goods or services that are not accounted for in the price of the goods or services. Specifically, the term given to the effects of pollution and other environmental effects from power plants or conservation measures.

**Federal Base System**
The system includes the Federal Columbia River Power System hydroelectric projects, resources acquired by the Bonneville Power Administration under long-term contracts prior to the Northwest Power Act, and resources acquired to replace reductions in the capability of existing resources subsequent to the Act.

**Federal Energy Regulatory Commission (FERC)**
A federal agency that regulates interstate aspects of electric power and natural gas industries. It has jurisdiction over licensing of hydropower projects and setting rates for electricity sold between states. FERC was formerly the Federal Power Commission.

**firm capacity**
That portion of a customer's capacity requirements for which service is assured by the utility provider.

**firm energy**
That portion of a customer's energy load for which service is assured by the utility provider. That portion for which service is not assured is referred to as "interruptible."

**firm energy load carrying capability (FELCC)**
The amount of firm energy that can be produced from a hydropower system based on the system's lowest recorded sequence of streamflows and the maximum amount of reservoir storage currently available to the system.

**firm surplus**
Firm energy in excess of the firm load.

**fuel cycle**
The series of steps required to produce electricity from power plants. The fuel cycle includes mining or otherwise acquiring the raw fuel source, processing and cleaning the fuel, transporting, generating, waste management and plant decommissioning.

**generation**
The act or process of producing electricity from other forms of energy.

**geothermal**
Useful energy derived from the natural heat of the earth as manifested by hot rocks, hot water, hot brines or steam.

**head**
The vertical height of water in a reservoir above the turbine.

**heat engines**
Devices that convert thermal energy to mechanical energy. Examples include steam turbines, gas turbines internal combustion engines and Stirling engines.

**heat rate**
The amount of input (fuel) energy required by a power plant to produce one kilowatt-hour of electrical output. Expressed as Btu/kWh.

**heating degree days**
A measure of the amount of heat needed in a building over a fixed period of time, usually a year. Heating degree days per day are calculated by subtracting from a fixed temperature the average temperature over the day. Historically, the fixed temperature has been set at 65 degrees Fahrenheit, the outdoor temperature below which heat was typically needed. As an example, a day with an average temperature of 45 degrees Fahrenheit would have 20 heating degree days, assuming a base of 65 degrees Fahrenheit.

**hydroelectric power (hydropower)**
The generation of electricity using falling water to turn turbo-electric generators.

**independent power producer (IPP)**
An independent power producer is a power production facility that is not part of a regulated utility. Power production facilities that qualify under PURPA (see "qualifying facility") are considered independent power producers, together with other independent power production facilities, such as independently owned coal-fired generating plants.

**infiltration control**
Conservation measures, such as caulking. better windows and weatherstripping, which reduce the amount of cold air entering or warm air escaping from a building.

**insolation**
The rate of energy from the sun falling on the earth's surface, typically measured in watts per-square meter.

**integrated resource planning** See "least-cost planning."

**interruptible power**
Power that, by contract, can be interrupted in the event of a power deficiency.

**intertie**
A transmission line or system of lines permitting a flow of electricity between major power systems.

**investor-owned utility**
A utility that is organized under state law as a corporation to provide electric power service and earn a profit for its stockholders.

**ISAAC**
A computer model used by the Council to simulate system operation, decisions to option and build resources, and the associated costs of providing power across a large number of possible load forecasts. ISAAC accounts for the effects of uncertainty on the load forecast variations in hydropower availability for analyzing various resource strategies. The Council uses the model to help choose the best mix of resources and to establish the power plan Action Plan.

**kilowatt (kW)**
The electrical unit of power that equals 1,000 watts.

**kilowatt-hour (kWh)**
A basic unit of electrical energy that equals one kilowatt of power applied for one hour.

**lead time**
The length of time it takes to move a resource from concept to completion.

**least-cost planning**
Least-cost planning or, as it is often called, "integrated resource planning," is a name given to the power planning strategy and philosophy adopted by the Council. This strategy recognizes load uncertainty, embodies an emphasis on risk management, and reviews all available and reliable resources to meet current and future loads. The term "least-cost" refers to all costs, including capital, labor, fuel, maintenance, decommissioning, known environmental impacts and difficult-to-quantify ramifications of selecting one resource over another.

**levelized life-cycle cost**
The present value of a resource's cost (including capital, financing and operating costs) converted into a stream of equal annual payments. This stream of payments can be converted to a unit cost of energy by dividing them by the number of kilowatt-hours produced or saved by the resource in associated years. By levelizing costs, resources with different lifetimes and generating capabilities can be compared.

**life-cycle costs** See "levelized life-cycle cost."

**load**
The amount of electric power required at a given point on a system.

**load forecast**
An estimate of the level of energy that must be generated to meet a need. This differs from a demand forecast in that transmission and distribution losses from the generator to the customer are included.

**load path**
One future scenario for electric load growth, as opposed to a range that accommodates multiple forecasts of future load growth.

**lost-opportunity resources**
Resources that, because of physical or institutional characteristics, may lose their cost-effectiveness unless actions are taken to develop these resources or to hold them for future use.

**major resource**
According to the Northwest Power Act, a resource with a planned capability greater than 50 average megawatts and, if acquired by Bonneville, acquired for more than five years.

**manufactured home**
A structure, such as a mobile home, that is transportable in one or more sections, and that is built on a

permanent chassis and designed to be used as a dwelling, with or without a permanent foundation, when connected to the required utilities. These homes must comply with the Manufactured Home Construction and Safety Standards issued by the U.S. Department of Housing and Urban Development.

This does not include other categories of homes whose components are manufactured, such as modular, sectional, panelized and pre-cut homes. These homes must comply with state and local building codes.

**marginal cost**
The cost of producing the last unit of energy (the long-run incremental cost of production). In the plan, "regional marginal cost" means the long-run cost of additional consumption to the region due to additional resources being required. It does not include consideration of such additional costs to any specific utility due to its purchases from Bonneville at average cost.

**measure**
In the power plan, a measure refers to either an individual conservation measure or action or a combination of actions.

**megawatt (MW)**
The electrical unit of power that equals one million watts or one thousand kilowatts.

**mill**
A tenth of a cent. The cost of electricity is often given in mills per kilowatt-hour.

**model conservation standards**
Any energy-efficiency program or standard adopted by the Council, including, but not limited to: 1) new and existing structures; 2) utility. customer and governmental programs; and 3) other consumer actions for achieving conservation. The most well-known are the energy-efficient building standards developed by the Council for new electrically heated buildings.

**Monte Carlo simulation**
The mathematical simulation of uncertain events having known probability characteristics by random sampling from a known probability distribution function.

**municipal solid waste (MSW)**
Refuse offering the potential for energy recovery. Technically, residential, commercial and institutional discards. Also included in the definition of municipal solid waste for purposes of this plan are non-hazardous processable byproducts from manufacturing activities. Not included are combustible byproducts of the lumber, wood products, paper and allied products industries. These are considered separately as mill residue.

**net billed plants**
Refers to the 30 percent share of the Trojan Nuclear Plant, all of Washington Public Power Supply System's nuclear project 1 (WNP-1) and WNP-2, and 70 percent of WNP-3.

**net billing**
A financial arrangement that allowed Bonneville to underwrite the costs of electric generating projects. Utilities

that owned shares in thermal projects, and paid a share of their costs, assigned to Bonneville all or part of the generating capability of these resources. Bonneville, in turn, credited and continues to credit the wholesale power bills of these utilities to cover the costs of their shares in the thermal resources. Bonneville then sells the output of the thermal plants, averaging the higher costs of the thermal power with lower-cost hydropower.

**nominal dollars**
Dollars that include the effects of inflation. These are dollars that, at the time they are spent, have no adjustments made for the amount of inflation that has affected their value over time.

**non-firm energy**
Energy produced by the hydropower system that is available with water conditions better than critical and after reservoir refill is assured. It is available in varying amounts depending upon season and weather conditions.

**non-utility generator**
A generic term for non-utility power plant owners and operators. Non-utility generators include qualifying facilities, small power producers and independent power producers.

**option**
As used in the power plan, a project that has been sited, licensed and designed, but not yet constructed. Options are held in inventory until new resources are clearly needed.

**overnight cost**
Total of all direct and indirect project construction costs, including engineering, overhead costs, fees and contingency. Exclusive of costs attributable to interest and escalation incurred during construction.

**Pacific Northwest (the region)**
According to the Northwest Power Act, the area consisting of Oregon, Washington, Idaho and Montana west of the Continental Divide, and those portions of Nevada, Utah and Wyoming that are within the Columbia River Basin. It also includes any contiguous areas not more than 75 miles from the above areas that are part of the service area of a rural electric cooperative served by Bonneville on the effective date of the Act and whose distribution system serves both within and outside of the region.

**Pacific Northwest Coordination Agreement**
An agreement between federal and nonfederal owners of hydropower generation on the Columbia River system. It governs the seasonal release of stored water to obtain the maximum usable energy subject to other uses.

**Pacific Northwest Utilities Conference Committee (PNUCC)**
Formed by Pacific Northwest utilities to coordinate policy on regional power supply issues, PNUCC lacks contractual authority, but it does play a major role in regional power planning through its policy, steering, fish and wildlife, and lawyers committees, and the Technical Coordination Group. PNUCC publishes the Northwest Regional Forecast containing information on regional loads and resources.

**peak capacity**
The maximum capacity of a system to meet loads.

**peak demand**
The highest demand for power during a stated period of time.

**penetration rate**
One annual share of a potential market for conservation that is realized, as in "7 percent of the region's homes have been weatherized this year."

**photovoltaic**
Direct conversion of sunlight to electric energy through the effects of solar radiation on semi-conductor materials.

**post-operational capital replacement costs**
The cost of major equipment replacements occurring during the operating life of a project. In practice, these costs generally are capitalized (i.e., financed by debt or equity). For resource cost-effectiveness analyses, these costs are frequently treated as expenses.

**preference**
Priority access to federal power by public bodies and cooperatives.

**present value**
The worth of future returns or costs in terms of their current value. To obtain a present value, an interest rate is used to discount these future returns and costs.

**public utility commissions**
State agencies that regulate, among others, investor-owned utilities operating in the state with a protected monopoly to supply power in assigned service territories.

**Public Utility Regulatory Policies Act of 1978 (PURPA)**
Federal legislation that requires utilities to purchase electricity from qualified independent power producers at a price that reflects what the utilities would have to pay for the construction of new generating resources (see "avoided cost"). The Act was designed to encourage the development of small-scale cogeneration and renewable resources.

**qualifying facility (QF)**
Qualifying facility is a power production facility that qualifies for special treatment under a 1978 federal law—Public Utility Regulatory Policies Act (PURPA). PURPA requires a utility to buy the power produced by the qualifying facility at a price equal to that which the utility would otherwise pay if it were to build its own power plant or buy the power from another source. A qualifying facility must generate its power using cogeneration, biomass. waste, geothermal energy, or renewable resources, such as solar and wind, and, depending on the energy source and the time at which the facility is constructed, its size may be limited to 80 megawatts or smaller. PURPA prohibits utilities from owning majority interest in qualifying facilities.

**quantifiable environmental costs and benefits**
Environmental costs and benefits capable of being expressed in numeric terms (for example, in dollars, deaths, reductions in crop yields).

**quartile**
The direct service industries load is divided into four quartiles. The top quartile is the portion of that load most susceptible to interruption.

**R-value**
A measure of a material's resistance to heat flow. The higher the R-value, the higher the insulating value.

**real dollars**
Dollars that do not include the effects of inflation. They represent constant purchasing power.

**region**
See "Pacific Northwest."

**reliability**
The ability of the power system to provide customers uninterrupted electric service. Includes generation, transmission and distribution reliability. The plan deals only with generation reliability.

**renewable resource**
Under the Northwest Power Act, a resource that uses solar, wind, water (hydro), geothermal, biomass or similar sources of energy, and that either is used for electric power generation or for reducing the electric power requirements of a customer.

**reserve capacity**
Generating capacity available to meet unanticipated demands for power, or to generate power in the event of outages in normal generating capacity. This includes delays in operations of new scheduled generation. Forced outage reserves apply to those reserves intended to replace power lost by accident or breakdown of equipment. Load growth reserves are those reserves intended for use as a cushion to meet unanticipated load growth.

**resource**
Under the Northwest Power Act, electric power, including the actual or planned electric capability of generating facilities, or actual or planned load reduction resulting from direct application of a renewable resource by a consumer, or from a conservation measure.

**retrofit**
To modify an existing generating plant, structure or process. The modifications are done to improve energy efficiency, reduce environmental impacts or to otherwise improve the facility.

**sectors**
The economy is divided into four sectors for energy planning. These are the residential, commercial (e.g., retail stores, office and institutional buildings), industrial and irrigation sectors.

**simple payback**
The time required before savings from a particular investment offset costs. For example, an investment costing $100 and resulting in a savings of $25 each year would be said to have a simple payback of four years. Simple paybacks do not account for future cost escalation, nor other investment opportunities.

**siting agencies**
State agencies with the authority for issuing permits to locate generating plants of defined types and sizes to utilities at specific locations.

**siting and licensing**
The process of preparing a power plant and associated services, such as transmission lines, for construction and operation. Steps include locating a site, developing the design, conducting a feasibility study, preliminary engineering, meeting applicable regulatory requirements, and obtaining the necessary licenses and permits for construction of the facilities.

**space conditioning**
Controlling the conditions inside a building in order to maintain human comfort and other desired environmental conditions through heating, cooling. humidification, dehumidification and air quality modifications.

**sunk cost**
A cost already incurred and therefore not considered in making a current investment decision.

**supply curve**
A traditional economic tool used to depict the amount of a product available across a range of prices.

**surcharge**
Under the Northwest Power Act, an additional sum added to the usual wholesale power rate charged to a utility customer of Bonneville to recover costs incurred by Bonneville due to the failure of that customer (or of a state or local government served by that customer) to achieve conservation savings comparable to those achievable under the Council's model conservation standards. Surcharges can range from 10 to 50 percent of a customer's bill.

**System Analysis Model (SAM)**
A computer model used by the Council to determine resource cost-effectiveness. SAM performs a detailed simulation of the Northwest generating system to estimate the cost associated with a specific set of loads and resources. It incorporates uncertainty associated with hydropower, thermal availability, resource arrival and load fluctuation due to economic cycles.

**system cost**
According to the Northwest Power Act, all direct costs of a measure or resource over its effective life. It includes, if applicable, distribution and transmission costs, waste disposal costs, end-of-cycle costs, fuel costs (including projected increases) and quantifiable environmental measures. The Council is also required to take into account projected resource operations based on appropriate historical experience with similar measures or resources.

**thermal resource**
A facility that produces electricity by using a heat engine to power an electric generator. The heat may be supplied by burning coal, oil, natural gas, biomass or other fuel, by nuclear fission, or by solar or geothermal sources.

**tipping fee**
The fee assessed for disposal of waste. This fee is used when estimating the cost of producing electricity from municipal solid waste.

**transformer**
A device for transferring energy from one circuit to another in an alternating-current system. Its most frequent use in power systems is for changing voltage levels.

**transmission**
The act or process of long-distance transport of electric energy, generally accomplished by elevating the electric current to high voltages. In the Pacific Northwest, Bonneville operates a majority of the high-voltage, long-distance transmission lines.

**U-value**
The measure of a material's ability to conduct heat, numerically equal to 1 divided by the R-value of the material.

**water budget**
A means of increasing survival of downstream migrating juvenile fish by increasing flows during spring and early summer migrations. The water budget was proposed by the Council and is overseen by it in conjunction with the U.S. Army Corps of Engineers, the fishery agencies and Indian tribes, the Bonneville Power Administration and the Bureau of Reclamation

**watt**
The electrical unit of power or rate of energy transfer. One horsepower is equivalent to approximately 746 watts.

# Staff Directory (October 2004)

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Judi Hertz — Executive Assistant

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Sharon Ossmann — Business Manager
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