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February 12, 2008

## MEMORANDUM

**TO:** Council members

**FROM:** John Harrison, Information Officer

**SUBJECT:** Approve 2007 annual report to Congress

The required 90-day public comment period on the Draft 2007 Annual Report to Congress expired on January 28, 2008. We received two comments, one from Council Member Measure and the other from the Bonneville Power Administration. These comments are shown in revision marks in the attached document (Bonneville's comments are only on Page 17). Bonneville will provide a letter from Administrator Steve Wright. I had not received the letter by the deadline for this meeting packet, but I will forward it as soon as it arrives.

With your approval and any final edits, we will accept all changes in the draft document, prepare the final version, and send it to Congress and others who usually receive the report.

# Fiscal Year 2007 ANNUAL REPORT

To Congress and  
Citizens of the Pacific Northwest

October 1, 2006 - September 30, 2007



Document 2007-\_\_\_\_

**27th ANNUAL REPORT  
of the  
Northwest Power and Conservation Council**

**For the period October 1, 2006, through September 30, 2007**

*Submitted to the*

*Committee on Energy and Natural Resources  
United States Senate*

*Committee on Energy and Commerce  
United States House of Representatives*

*and*

*Committee on Natural Resources  
United States House of Representatives*

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*The Northwest Power and Conservation Council was established pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501) by the states of Idaho, Montana, Oregon, and Washington. The Act authorized the Council to serve as a comprehensive planning agency for energy policy and fish and wildlife policy in the Columbia River Basin, and to inform the public about energy and fish and wildlife issues and involve the public in decision-making.*

*This annual report has been developed pursuant to Section 4(h)(12)(A) of the [Northwest Power Act](#). The Council's bylaws, which include its organizational structure, practices, and procedures, are available to the public at the Council's website: [www.nwcouncil.org](http://www.nwcouncil.org), as Document [2003-19](#).*

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October 2007

In Fiscal Year 2007, the Northwest Power and Conservation Council completed the first [biennial assessment](#) of the 2004 Fifth Northwest Power Plan (hereafter the "Fifth Power Plan" or the "Plan"), completed a [collaborative report on integrating wind power](#) into the regional power supply, assessed the volume of [carbon dioxide](#) emitted by Northwest power plants and recommended ways to reduce resulting emissions, and developed new model conservation standards to improve the energy-use efficiency of new commercial buildings.

The Council also began work that will lead to an [amendment](#) of the Columbia River Basin Fish and Wildlife Program in 2008, recommended five projects to test [innovative techniques](#) for improving fish and wildlife survival, reconstituted the [oversight board](#) for the Fish Passage Center, and received reports from the Independent Scientific Advisory Board on the potential effects of [global climate change](#) and [human population growth](#) on fish and wildlife in the Columbia River Basin.

Through these activities and others, the Council continues to provide Northwest citizens an opportunity unique in the nation to participate in and influence decision-making regarding the region's electricity supply and Columbia River Basin fish and wildlife. Through implementation of its performance-based fish and wildlife program, and through the careful and collaborative development of regional energy policy, the Council continues to ensure that Northwest electricity ratepayers enjoy the benefits of the low-cost federal hydropower system while responsibly addressing the impacts of the system on fish and wildlife populations, which have economic and cultural importance to the region.

I am pleased to submit this report on the Council's major activities in Fiscal Year 2007.

Tom Karier  
Chair, 2007

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## The Northwest Power and Conservation Council

The Council, known until 2003 as the Northwest Power Planning Council, is an agency of the states of Idaho, Montana, Oregon, and Washington and was created as an interstate compact agency by the legislatures of the four states consistent with the Pacific Northwest Electric Power Planning and Conservation Act of 1980. The Council's first meeting was in April 1981.

The [Northwest Power Act](#) gives the Council three distinct responsibilities: 1) to assure the region an adequate, efficient, economical and reliable electric power supply; 2) 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 the development and operation of any hydroelectric project on the Columbia River and its tributaries; and 3) to inform and involve the *Pacific Northwest public* regarding these issues and involve *the public* in decision-making. This annual report is organized around the Council's three key responsibilities.

The Power Act created a special relationship between the Council and the federal agencies that operate and sell the electricity generated at dams in the Columbia River Basin. The Administrator of the Bonneville Power Administration, the federal power marketing agency that sells the output of the Federal Columbia River Power System (a system of 31 federal dams and one non-federal nuclear power plant) is required to make decisions in a manner consistent with the Council's Northwest Power Plan and its Columbia River Basin Fish and Wildlife Program. Other federal agencies with responsibilities for dams (the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and Federal Energy Regulatory Commission) are required to take the Council's power plan and fish and wildlife program into account at every relevant stage of decision-making to the fullest extent practicable.

To put it simply, the Council's legal responsibility is to determine how the Columbia basin hydrosystem has adversely affected fish and wildlife, to develop and oversee a program to address those effects through protection and mitigation recommendations that the federal agencies operating the system have legal responsibilities to implement or take into account; and to do all of this in a highly public manner.

Despite its relationship to federal agencies, the Council is not a federal agency. The Council is an interstate compact. The eight-member Council consists of two members from each state. Council members are appointed by governors. This report lists Council members in Fiscal Year 2007 on page 31. Council headquarters are in Portland.

# Power Planning

## *A. Biennial assessment of the Northwest Power plan*

The Northwest Power and Conservation Council adopted its [Fifth Northwest Power Plan](#) in December 2004. The plan broke new ground in its analysis of uncertainty and volatility and associated risks for future power costs.

A key conclusion of the plan was that the region should adopt a strategy of acquiring improved energy efficiency at an aggressive and sustained pace. The benefits of this strategy were both lower costs and lower risks. A second conclusion was that wind energy is potentially cost effective. But the Plan also recognized that wind, and other intermittent generating resources, pose challenges for integration into the Northwest power system. The plan called for a wind confirmation plan to be informed by the development of 500 megawatts of commercial scale wind generation between 2005 and 2009. Ultimately, the plan found that up to 5000 megawatts of wind could be developed over the 20 years of the plan, assuming that transmission and integration issues could be addressed.

The Plan found that the region had a surplus of generating capability and that the need for new generation from coal or natural gas likely would not occur until after 2012; after the five-year action plan period. The Council pledged to work with others in the region to accomplish three important policy changes. These included: 1) adopting resource adequacy standards; 2) changing the role of the Bonneville Power Administration; and 3) addressing problems in the operation and expansion of the regional transmission grid.

The regional economy, and in particular energy-intensive industry, has been slow to recover from the 2000-2001 energy crisis that formed the backdrop for the Fifth Power Plan. Energy markets globally, nationally, and locally continue to experience high and volatile prices. These prices, combined with prominent attention to climate change, provide the impetus for aggressive conservation activity, new federal energy policies, and increasing attention to renewable resource requirements at the state and utility level.

High energy prices and concerns about potential climate-change policy have also led to aggressive development of wind power in the Pacific Northwest in the two years since the Council adopted the Fifth Power Plan. New generation capacity and slow demand growth have increased the electrical supply surplus in the region, which further delays the need for new generating capability.

The Council monitors and assesses the assumptions and forecasts underlying the plan and tracks implementation progress. This includes providing a [biennial monitoring report](#) to document the status of the power plan and its implementation. In December 2006 the Council issued the first report.

The power plan goals can be accomplished in many ways. Some activities can be pursued directly by the Council, Bonneville, and regional utilities. Others are more effectively accomplished through legislative action, building-code changes, appliance efficiency standards, or actions to transform product markets.

### 1. Demand Forecast

Actual electricity sales in the Northwest have not recovered from the 2000-2001 energy crisis to the extent assumed in the plan's medium forecast. In particular, the energy-intensive industrial sector continues to lag behind the forecast. In total, actual demand in 2005 was about

1,000 average megawatts below the medium case, falling between the medium-low and medium forecasts. A preliminary estimate of 2006 sales shows continued recovery and a move toward the medium case forecast.

## 2. Fuel Prices

The fuel price forecast in the Fifth Power Plan dates to the summer of 2004. At that time the higher natural gas prices experienced in 2000 through early 2004 were widely considered to be a cyclical event, partly related to the West Coast electricity crisis of 2000 and 2001. Oil prices had increased in 2003 and 2004 but remained around \$30 a barrel in the first half of 2004. Coal prices had shown little response to the increases in natural gas and oil prices by the middle of 2004.

At the time the Council's forecast was done, most forecasts of energy prices showed an expected decline in prices from those of the recent past. The futures market also showed declining natural gas prices through 2008 and early 2009. The Council's forecasts that showed declines in most fuel prices from the early 2000s levels were in line with most other forecasts at the time.

Although oil and natural gas prices were forecast to decline in the early years of the medium forecast, they remained far above the low prices experienced during the 1990s. Expressed in 2006 dollars, oil prices during the 1990s averaged just under \$23 compared to \$31 forecast for 2011 and beyond. Similarly, natural gas prices were forecast to average \$4.50 per million Btu after 2011 compared to the 1990s average of \$2.50. Coal prices were forecast to remain flat in 2006 dollars, ending a historical decline in real coal prices over the previous two decades.

In focusing on the medium price forecasts above, it is important to remember that the Council's Power Plan depends on a wide range of fuel price trends, as well as a high level of expected volatility in prices. These uncertainties and volatilities are embedded in the risks addressed by the Fifth Power Plan.

## 3. Electricity Prices

Forecasted electricity prices in the plan were very close to actual prices through September 2006. Actual prices contain significantly more volatility than the forecast, however. This reflects the pattern that was observed in natural gas prices as a result of hurricanes Katrina and Rita in the summer of 2005. In addition, the effect of a good snow pack and an early runoff resulted in low electric prices in the spring of 2006. Such electricity price volatility was modeled in developing the Power Plan. A change in natural gas prices would affect the electricity price trend forecast, especially in the near term. In the long term, sensitivity studies done for the Fifth Plan showed that higher natural gas prices would have little effect on long-term electricity prices due to compensating changes in fuel choice and plant dispatch.

## 4. Resource Costs

### a. Wind:

The pace of wind power development has far exceeded the recommendations of the Fifth Power Plan. Several factors, including high and volatile natural gas prices, the production tax credit, and risks of climate change policy drive this development. With the rapid pace of wind development has come significant escalation in the costs of developing wind power projects. In addition to the robust demand for wind turbines, other factors have contributed to the substantial



increase in the cost of wind projects. Two of these are a weakening dollar and cyclically high commodity prices. This increase in wind costs is expected to be a cyclical phenomenon. We still expect long-term declines in wind costs due to improved technology and materials. However, recently enacted state renewable portfolio standards could prolong the higher costs by keeping demand for wind generation development high.

b. Gas-Fired Technologies:

An assessment of recent experience regarding capital costs and efficiency of gas-fired generating technologies shows that the assumptions used in the Fifth Power Plan remain representative. The remaining factor in the total cost of power from these plants is fuel prices. Recent work on capacity adequacy standards has shown that summer generating capacity issues may become more prominent for the region. In addition, rapidly growing wind generation creates a need for resources that can be cost effective for firming intermittent generation. Some natural gas-fired generation technologies may be more cost effective in this context. Further analysis of these issues will be needed in the next power plan.

c. Coal:

The assessment of coal-based generation technologies identified some changes that should be investigated further. Super-critical coal generation technology appears to be advancing more quickly than gasified combined cycle (IGCC) technology. In the Fifth Power Plan, super-critical technology was used as information to shape future cost and efficiency of traditional coal plants. The assessment found that the availability of all types of coal plants should be raised from the mid-80 percent range to 90 percent. Reaching 90 percent availability for an IGCC plant would require installing a spare gasifier, which would increase the capital cost of the plant. For most coal-based technologies, the assessment found that efficiency experience is slightly lower than the assumptions in the Power Plan. Only super-critical coal technology seemed to be performing a bit more efficiently than assumed in the Power Plan. For the next power plan, the Council will consider evaluating a CO<sub>2</sub> sequestration-ready IGCC plant, consider the availability of petroleum coke as a fuel source for gasification, and investigate emerging technologies for carbon capture from conventional pulverized coal plants.

d. Other generating technologies:

The Council considered a number of other generating technologies, which for various reasons were not included in the recommended portfolio of resources in the plan. These include nuclear, geothermal, biomass, hydropower, ocean and tidal current, oil and petroleum coke, solar, and wave energy. Some new information is available on geothermal and hydroelectric potential and cost, and this should be explored before the next plan revision. Nuclear generation is getting increasing attention and will benefit from incentives provided in the 2005 Energy Policy Act. It is also being considered in a couple of regional utilities' IRPs. Commercial feasibility still appears to be very late in the Council's planning horizon, but the development of advanced designs needs to be monitored. Other technologies are early in their development and do not require updating until the next plan is developed.

## 5. Load - Resource Balance

The power plan estimated that the region was about 1,500 average megawatts surplus in 2005, which was a dramatic change from a 4,000-average-megawatt deficit in 2000. This change was accomplished through a combination of large demand reductions and the addition of

new generating resources. The plan forecast that the surplus would remain about 1,500 average megawatts in 2007. However, due to slow demand recovery and significant new wind generation, the Council estimated the surplus at 2,400 average megawatts in 2007. Based on the fact that non-DSI (Direct Service Industry) loads are below the medium forecast, as noted above, the actual surplus may be somewhat larger. This increased surplus would delay the need for new electricity generation capability beyond the time estimated in the plan.

## ***B. Pacific Northwest Demand Response Project***

The [Pacific Northwest Demand Response Project](#) (PNDRP) was formed after discussions with the region's utility commissioners and representatives of the Bonneville Power Administration and public utilities. The objective of the project is to encourage the development of demand response in the region.

The project is being facilitated by the Regulatory Assistance Project (RAP), assisted by Lawrence Berkeley Laboratory (LBL), and funded by the U.S. Department of Energy. RAP and LBL have worked with similar regional efforts in New England, the Mid-Atlantic states, and the Midwest.

The plan for PNDRP is to focus on three areas that the commissions identified as important to future development of demand response: 1) a method for evaluating cost effectiveness of demand response; 2) pricing structures that provide appropriate incentives for electricity users to adjust their usage at times when the power system is stressed; and 3) incorporating potential savings to transmission and distribution systems resulting from demand response, in utilities' integrated resource plans. At the first meeting of the PNDRP in May 2007, members agreed to form the work group to address cost effectiveness first, leaving the pricing and transmission and distribution groups to be formed once the cost effectiveness work group is organized and work is underway.

The cost-effectiveness work group met for the first time in July. The crucial issue in evaluating cost effectiveness of demand response is estimating avoided costs. A draft proposal for a cost-effectiveness methodology is being formulated by a consultant to the PNDRP. The cost-effectiveness work group planned to finish its work by January 2008.

## ***C. Wind integration action plan***

In August 2006, the Council and the Bonneville Power Administration formed the Wind Integration Policy Steering Committee in conjunction with electric utilities in the Northwest, wind power developers, state energy regulatory commissions, and other participants. The committee met periodically in the fall and winter of 2006/2007 and in February issued a [Wind Integration Action Plan](#) as guidance for utilities and state regulatory commissions.

The issue of wind power integration is critical because of the difficulty of accurately forecasting wind project output. Forecasting errors, plus unpredictable minute-to-minute variation in wind project output, create the need to provide additional generating capacity resources to manage this variation.

The Council anticipates that renewable resources, particularly wind power, will play a major role in meeting the region's future demand for electricity. The Council's Fifth Northwest Power Plan calls for meeting future demand for power with a mixture of energy conservation and new power plants, with a large emphasis on wind power. The plan calls for achieving 700

average megawatts of new energy conservation between 2005 and 2009, and up to 6,000 megawatts of new wind power over the 20-year planning period.

Currently, several factors are driving the growth of wind power. The federal production tax credit for the resource has been extended, some states have adopted or are considering renewable energy portfolio standards, and utilities increasingly are recognizing the fuel-price and environmental-risk-mitigation benefits of wind power. Additionally, it is a desirable resource because its fuel is free, it does not pollute, and, particularly with the federal tax credit, its cost is competitive with other new resources.

Here are the policy findings and conclusions in the Wind Integration Action Plan:

- 1) There are no fundamental technical barriers to operating 6,000 megawatts of wind in the Pacific Northwest.

There is a range of estimated costs associated with integrating wind into the Northwest power system. When wind energy is added to a utility system, its natural variability and uncertainty is combined with the natural variability and uncertainty of loads. As a result, there is an increase in the need for system flexibility required to maintain utility system balance and reliability. The cost of wind integration starts low, particularly when integrating with a hydropower system that has substantial flexibility, and then rises as increasing amounts of wind are added. Locating wind resource in geographically diverse areas can help reduce costs. Ultimately, costs plateau at the cost of integrating wind with natural gas power plants.

The preliminary cost estimates for integrating 6,000 megawatts of wind power are based upon existing levels of system flexibility. Load growth and other competing uses for that flexibility, and possible further constraints on system operations, will diminish the supply and increase the cost of wind integration services.

With increasing amounts of wind, there will likely be times when large, unexpected changes in wind output (so-called “ramping events”) coincide with periods of limited hydropower flexibility. Initial analyses indicate that these will be low-probability events, but if other sources of flexibility are not available at the same time, system operators will need to limit wind output for brief periods in order to maintain reliability. The Federal Energy Regulatory Commission now requires wind plant operators to help protect system reliability. Northwest utilities and wind developers are collaborating to implement the requirement in a mutually-satisfactory and cost-effective manner.

- 2) Wind energy is providing value to Northwest electricity consumers, but the Northwest will still need other resources to meet peak loads.

The fundamental value of wind to a utility’s portfolio is its ability to provide energy to displace fossil fuel consumption, limit exposure to uncertain and volatile fuel prices, and hedge against greenhouse gas control costs. Because wind is primarily an energy resource with relatively little contribution to meeting system peak requirements, other resources with greater capacity value will have to be built in the Northwest in order to meet growing peak loads.

- 3) In the short term there is available transmission capacity to integrate additional wind resources – but this is not expected to last for long.

New transmission will be needed to support growing loads and resource additions. New transmission also can help open up new areas for wind development, helping to diversify wind

production. This diversity helps smooth variability and therefore lowers the cost of wind integration. Because of the limited contribution of wind to meeting system peak requirements, traditional models for transmission development and marketing should be altered to achieve greater economic efficiency. A more economical and efficient approach for a resource such as wind is to provide a mix of firm, non-firm, and conditional firm transmission that achieves a balance between the cost of transmission capacity and the value of delivered wind energy. Cooperation among transmission planners, regulators, utilities, and the wind development community is essential to create a workable model for planning, financing, and marketing transmission for wind energy.

- 4) The major portion of wind integration costs are due to the need for additional flexibility resources to balance loads and resources in real time in order to accommodate wind variability.

Control area operators must have sufficient flexible generating capacity or load management options available to accommodate load and wind variability to ensure that reliable service will be maintained. There should also be provisions for equitable recovery of the associated costs.

- 5) There are steps we can take to increase integration capability and to lower integration costs.

The cost of wind integration services can be reduced through generally four types of actions: 1) developing more cooperation between regional utilities to spread the variability of wind more broadly; 2) developing markets that will reward entities that choose to market their surplus flexibility; 3) making more low-cost flexibility such as that provided by hydroelectric resources available; and 4) development and application of new flexibility technologies. Achieving these goals will require coordinated actions similar to those required to establish the Pacific Northwest Coordination Agreement of the Columbia River Treaty. Fortunately, the region has a long history of forging cooperative agreements designed to increase the size of the pie for all regional consumers that can provide a model for what will be needed over the next several years to address wind integration issues.

#### ***D. Resource Adequacy Forum products***

In the Fifth Northwest Power Plan, the Council recognized the importance of developing an electricity resource adequacy framework and a standard for the region. To achieve these goals, the Council and the Bonneville Power Administration initiated the [Pacific Northwest Resource Adequacy Forum](#) and asked it to develop a standard for the region.

The Forum developed a voluntary regional energy metric and target in 2006. In 2007, the Forum completed work on an adequacy warning implementation plan and a pilot regional capacity standard.

The pilot capacity standard will be used to assess the adequacy of the power supply to provide electricity over peak load hours throughout the year. Like the energy standard, the capacity standard includes a metric and a target. The capacity metric is defined as the surplus sustained peaking capability (in units of percent). The winter and summer targets are 25 percent and 19 percent, respectively. The targets are made up of three components: an operating

reserve, a reserve to cover adverse temperature, and a planning adjustment reserve. The planning adjustment reserve is linked to a loss-of-load probability (LOLP) assessment. The targets are designed to yield a 5-percent LOLP (the current Council standard) when they are met. Council Document [2006-22](#) has more information about the implementation plan.

### ***E. Carbon dioxide ‘footprint’ of the Northwest power system***

Increasing public concern over the impact of CO<sub>2</sub> production from the electric power system on global climate, and heightened prospects of mandatory controls on the production of CO<sub>2</sub>, led the Council in the summer of 2006 to request a [forecast of the CO<sub>2</sub>](#) produced from alternative future electricity resource portfolios. Four scenarios were identified: the recommended resource portfolio of the Fifth Power Plan, which was the base case for the analysis; a low-conservation scenario in which the conservation targets of the Fifth Power Plan are not achieved; a high-renewables scenario based on state renewable energy portfolio standards; and a scenario based on the resource acquisition recommendations of utilities’ integrated resource plans. Two additional sets of studies were subsequently requested: 1) the CO<sub>2</sub> effects of removing the federal dams on the lower Snake River; and 2) the CO<sub>2</sub> effects of summer spill at the lower Snake River and lower Columbia River dams. The analysis does not address CO<sub>2</sub> production from other sources such as transportation or industrial processes.

The purpose of analyzing alternative scenarios was to quantify the sensitivity of results to plausible changes in the power system and to some related policies that have received public attention. No new Council position on any of these policies was intended, nor should any be inferred.

The actual CO<sub>2</sub> production of the Northwest power system in 1990 is estimated to have been about 44 million tons. By 2005, production of CO<sub>2</sub> from the regional power system rose to an estimated 67 million tons. However, 2005, unlike 1990, was a poor water year, requiring more than normal operation of CO<sub>2</sub>-producing fossil power generation. Under normal water conditions, the CO<sub>2</sub> production in 2005 would have been about 59 million tons, which is a 34-percent increase over the 1990 level. For perspective, the annual CO<sub>2</sub> output of a typical 400-megawatt coal-fired power plant is about 3 million tons, and the CO<sub>2</sub> output of a typical 400-megawatt gas-fired combined-cycle power plant is about 1.2 million tons.

Factors contributing to the increase from 1990 to 2005 include economic growth, the addition of fossil-fueled generating units, lost hydropower production capability, and retirement of the Trojan nuclear plant. The year 1990 is used for comparison because 1990 has been adopted as a baseline for emissions by many climate-change policy proposals, including Washington Governor Gregoire’s climate-change executive order and Oregon HB 3543.

Due to the large share of hydroelectric generation in the Pacific Northwest, CO<sub>2</sub> production here is much less than that of other regions when compared to electricity produced. For example, under normal water conditions, in 2005 the Pacific Northwest would have produced about 540 pounds of CO<sub>2</sub> for each megawatt-hour of electricity generated, compared to 990 pounds for the entire Western interconnected power system (the Western Electricity Coordinating Council area, basically west of the Continental Divide, including much of Alberta). However, because the Northwest has essentially the same set of future resource options available as other areas of WECC, it will be more difficult for the Northwest to maintain or reduce its CO<sub>2</sub> emission rate. In the base case of this study, which assumes implementation of the Council’s Fifth Power Plan, the WECC CO<sub>2</sub> emission rate declined about 1 percent to about 980 pounds per megawatt-hour by 2024, whereas the Northwest rate rose 2 percent to 550 pounds.

The future growth rate of annual regional CO<sub>2</sub> production would be even higher if the conservation, wind, and other resource development called for in the Council's Fifth Power Plan were not accomplished. With implementation of the Council's plan in the base case, the annual CO<sub>2</sub> production of the regional power system in 2024 under normal conditions would be about 71 million tons, a 20 percent increase over normal 2005 levels.

The scenarios analyzed by the Council include some that would increase CO<sub>2</sub> production and some that would decrease it. These scenarios were selected to develop a "scale-of-effects" sensitivity analysis that includes alternative resource development scenarios and hypothetical changes to the hydroelectric system. The hydroelectric sensitivity analyses addressed two hypothetical river condition alternatives: no summer spill and breaching the four lower Snake River dams. These two scenarios are controversial, but that has no relevance in the analysis.

An important finding of the analysis is that achieving the renewable portfolio standard goals and eliminating all summer spill would reduce the region's projected growth in power system CO<sub>2</sub> production by only 60 percent, even if counting the resulting net CO<sub>2</sub> reduction for the entire WECC. Failure to achieve the conservation targets in the Fifth Power Plan, or removing the lower Snake River dams and replacing the power in a manner consistent with the Fifth Power Plan could more than offset the potential savings from the scenarios that reduce CO<sub>2</sub> production.

The effects of these scenarios, positive or negative, on CO<sub>2</sub> production are the equivalent of only one or two coal-fired plants, whereas the forecast regional CO<sub>2</sub> production for 2024 in the Fifth Power Plan case exceeds 1990 levels by an amount equivalent to nine typical coal-fired plants.

These results illustrate the difficulty of actually reducing CO<sub>2</sub> production with policies that affect only new sources of electricity generation. CO<sub>2</sub> production from electricity generation is dominated by existing coal-fired generating plants. To stabilize CO<sub>2</sub> production at 2005 levels or to reduce CO<sub>2</sub> production to 1990 levels would require substituting low CO<sub>2</sub>-producing resources or additional conservation for some of these existing coal-fired power plants. In addition, the scenario analysis shows that policy choices that are made for purposes other than CO<sub>2</sub> reduction (in this case, fish and wildlife policy) can also have significant effects on CO<sub>2</sub> production — enough to negate the CO<sub>2</sub> reduction intended in policies such as renewable portfolio standards. Such unintended effects often go unexamined in important policy debates that focus narrowly on only one objective.

## ***F. Regional Dialogue on the Future Role of the Bonneville Power Administration in Power Supply***

In July 2007 Bonneville issued its [Long-Term Regional Dialogue Policy and Record of Decision](#) for its future role in regional power supply. The policy includes selling power through 20-year contracts, tiered rates, and other changes from existing policy. Subsequently, Bonneville began the Regional Dialogue Policy Implementation process that is intended to culminate in new contracts by the end of Fiscal Year 2008. The process, which involves Bonneville customers, is addressing issues such as the tiered rates methodology, product development, net requirements, and the so-called high-water-mark determinations, among others.

During the public comment period before Bonneville issued the Record of Decision, the Council commented on the Regional Dialogue proposal. The Council commented that the envisioned policy change would preserve the benefits of the Federal Columbia River Power System (FCRPS) by selling low-cost electricity from the existing system under long-term

contracts to eligible customers. The Council supported the concept embodied in the Regional Dialogue proposal that customers requesting more power than Bonneville could provide from the existing federal system should pay the additional cost of providing that service. The Council believes this would accomplish three key goals:

- It would establish a long-term regional commitment to preserve the benefits of the FCRPS and its historically low costs;
- It would establish regional responsibilities for meeting future load growth beyond the power capacity of the existing FCRPS; and
- It would provide correct incentives to achieve future regional growth at the “lowest cost possible,” as defined in the Northwest Power Act.

The Council commented that the draft policy was consistent with many of the Council’s more specific Regional Dialogue goals as stated in the Fifth Power Plan. These goals include:

- Preserve and enhance the benefits of the FCRPS for the Northwest;
- Not increase and, preferably, reduce the risk to the U.S. Treasury and taxpayers;
- Achieve an equitable sharing of the benefits of the federal power system;
- Develop and maintain widespread support for the federal system and reduce conflicts within the region;
- Align the costs and benefits of access to federal power;
- Maintain and improve the adequacy and reliability of the Northwest power system;
- Make clear who will be responsible for meeting load growth and on what terms;
- Provide clear signals regarding the value of new energy resources;
- Lessen Bonneville’s exposure to market risk;
- Lessen Bonneville’s impact on the market;
- Satisfy Bonneville’s responsibilities for conservation and renewable resource development;
- Satisfy Bonneville’s responsibilities with respect to fish and wildlife; and
- Accomplish all these goals efficiently and at as low as possible a cost to the region’s consumers.

## ***G. Energy Conservation***

### **1. Model conservation standards for commercial buildings**

In 2007 the Council adopted new conservation standards for new commercial buildings. The Northwest Power Act requires the Council to adopt model conservation standards (MCS) as part of each power plan. In [Appendix F](#) of the Fifth Power Plan, the Council set out the model standard for new commercial buildings. That standard is described conceptually as the better of ASHRAE 90.1-2001 or the most efficient provisions of existing commercial building energy standards promulgated by the states of Idaho, Montana, Oregon, and Washington.

The underlying rationale of the MCS is that each of the existing codes used in the region contains some leading-edge elements and some that could be improved. A consolidation of the best elements of ASHRAE and each jurisdiction’s code yields a model standard better than any of the existing codes. Further, because the codes from which provisions would be drawn already are adopted, they meet one of the Power Act requirements for MCS: that the model standard be economically feasible for consumers.

The Fifth Power Plan also states that the Council would assist in determining which specific provisions of existing codes make up the non-residential MCS. The new specifications for new commercial buildings will help ongoing local code adoption processes.

## 2. Tracking conservation achievements

In 2007 there was a resurgent interest in the Council's approach to integrated resource planning in general, and its methodology for incorporating conservation in its Northwest power plans in particular. There were several reasons. For the region's public utilities, Bonneville's pending proposal to serve the load growth of its preference customers at "market-based" rates rather than embedded costs encourages them to consider their resource choices more systematically. In Washington State, the enactment of HB1010 and the passage of Initiative 937 (I-937) created additional impetus for the state's larger utilities, public and investor-owned. HB1010 requires utilities to prepare resource plans to demonstrate that they have adequate resources to meet their load-serving obligations. I-937 requires utilities to develop all conservation that is cost-effective, reliable, and feasible using methodologies consistent with those used by the Council. Because I-937 specifically references the Council's methodology there is heightened interest in understanding how the Council assesses achievable conservation potential.

In response to this interest, in 2007 the Council conducted an [assessment](#) of whether its current planning assumptions regarding "achievable" savings are supported by evidence. In its planning, the Council assumes that the upper limit of conservation (this is called "penetration") that can reasonably be acquired by all mechanisms available. These mechanisms include more than utility programs alone. The mechanisms include incentive payments from utility and system benefit charge programs, improved state and local building codes, federal and state appliance standards, market transformation programs, marketing efforts, voluntary programs, electricity pricing mechanisms and other tools. The Council's assumptions estimate achievable penetration rates without respect to what fraction will be acquired by utility programs versus other mechanisms such as market transformation, codes, standards, or electricity price effects.

Over the 20-year planning horizon the long-term cumulative upper limit of market penetration in the region is 85 percent of the economically (i.e., cost-effective) and technically achievable potential for non-lost opportunity measures and about 65 percent for lost-opportunity measures over a 20 year period. In addition to long-term penetration limits, the Council sets annual near-term limits on how much conservation can reasonably be developed. These annual limits are a more critical assumption for regional planning and implementation than the long-term penetration limits.

The annual limit for non-lost-opportunity measures is 120 average megawatts per year. The annual limit for lost-opportunity measures gradually increase from 15 percent to 85 percent of annually available and cost-effective lost-opportunity measures over the first twelve years of plan implementation. These annual limits have the effect of reducing the near-term achievable potential significantly. For example, in the first 10 years of plan implementation, the resultant cumulative limit of achievable potential is 62 percent of the 20-year economically and technically available potential for non-lost opportunities and 21 percent for lost-opportunity resources. In aggregate, across both non-lost opportunity and lost-opportunity resources, the Council's power plan limits achievable potential to about 44 percent of the 20-year technical and economic potential over the first ten years.

There is ample historic evidence to support retaining these near-term and long-term planning assumptions, as both are supported by actual experience during the last 20 years. There



are many examples of better than 85 percent penetration for lost-opportunity measures. For example, before the end of 1992 — not quite 10 years after the Council issued its first power plan — Washington and Oregon, the two most populous states in the region, already had met the energy-savings goals in the plan set forth for new residential and commercial construction. By 2002 all four Northwest states had met the goals of the plan for conservation in new residential construction and also exceeded the goals for conservation in new commercial buildings by at least 10 percent.

Examples of historic penetration rates for non-lost-opportunity measures are more difficult to analyze on a retrospective basis by measure because of data limitations and a lack of sustained efforts for many measures. The Hood River, Oregon, Weatherization Project in the 1980s demonstrated over 85 percent penetration in just two years with a 100 percent incentive and a large marketing effort. Recent data shows over 32 percent penetration in just six years for residential compact fluorescent lighting. Further, there are two episodes of high region-wide acquisition rates in the early 1990s and 2000s that demonstrate the capability to acquire over 100 average megawatts per year through utility programs alone.

## **Fish and wildlife planning**

### ***A. Columbia River Basin Fish and Wildlife Program***

#### **1. Project funding for Fiscal Years 2007-2009**

In October 2006, the Council [recommended](#) projects totaling about \$450 million in funding to implement its Columbia River Basin Fish and Wildlife Program in fiscal years 2007-2009.

Consistent with requirements of the Power Act of 1980, the projects are intended to protect, mitigate, and enhance fish and wildlife that have been affected by hydropower dams in the Columbia River Basin. The projects include spawning and rearing habitat improvements for fish, habitat acquisitions for wildlife, fish production, and scientific research. The program budget is \$143 million per year for the three-year Bonneville Power Administration electricity rate period.

The Council forwarded its recommendations to Bonneville and posted a complete list of the recommended projects on the Council's website.

In August 2006, each of the projects recommended by the Council was [reviewed](#) by the Congressionally mandated Independent Scientific Review Panel (ISRP), which determines whether the projects are based on sound science, are consistent with the fish and wildlife program, and will benefit fish and wildlife.

[Bonneville reviewed](#) the Council's recommendations and, in February 2007 announced that it would fund most, but not all, of the projects. While the Council recommended 285 projects for funding in the 2007-2009 period, Bonneville chose to fund 260. Of those, 212 are ongoing projects and 46 are new. Bonneville also chose to fund 41 other projects not recommended by the Council, including 10 projects that were part of a 2007 agreement between Bonneville and Columbia River Basin Indian tribes. The money to pay for the projects in the agreement comes from an additional \$3 million Bonneville set aside for the program.

Bonneville changed the funding for some projects from the Council recommendations and did not fund 25 projects that were recommended by the Council. Bonneville identified two primary reasons for not funding those projects. First, Bonneville did not want to take on new research, monitoring and evaluation projects that it felt were not clearly tied to mitigating the impacts of the Federal Columbia River Power System. Second, Bonneville chose not to fund several projects that were, in Bonneville's opinion, the responsibility of others and not Bonneville.

The Council responded with a [letter](#) in April questioning Bonneville's funding decisions and asking for a more detailed explanation. For example, Bonneville decided to fund some projects that did not receive a complete review by the ISRP, and the Council asked that these projects be reviewed by the panel before being funded. This and other issues were addressed by Bonneville and the Council on a project-by-project basis.

#### **2. Funding for [innovative projects](#)**

In September, the Council recommended five projects to Bonneville for funding during Fiscal years 2007-2009 that are intended to demonstrate innovative techniques for improving fish and wildlife habitat and survival. The Council selected the projects from among 59 proposals. The budget for the five projects totals \$2.4 million.

The solicitation for innovative projects responded to a recommendation from the Independent Scientific Review Panel (ISRP) that the Council and Bonneville fund a small number of projects intended to improve knowledge, encourage creative thinking, and test new methods and technologies designed to directly benefit fish and wildlife.

The ISRP reviewed all of the project proposals and reported to the Council. The Council subsequently recommended five projects to Bonneville for funding to fit within the available budget. Bonneville set aside \$2 million for innovative projects within the \$458 million, three-year funding cycle for the program; the additional \$400,000 will come from money that was not spent during the previous funding cycle and was carried over to the 2007-2009 period.

Briefly, the five projects focus on 1) improving fish habitat by neutralizing contaminated sediments, 2) testing a non-lethal means of deterring sea lions from attacking adult salmon and steelhead; 3) Restoring eelgrass in the Columbia River estuary, where eelgrass provides important resting and feeding habitat for juvenile salmon and steelhead; 4) enhancing summer instream flows and reducing water temperatures in salmon-spawning habitat where erosion is a problem, such as agricultural production areas; and 5) testing an instream device that boosts river flows to guide fish through reservoirs.

Information on the innovative projects is posted on the Council's website under "Fish and Wildlife" and then "FY 2007-09 Innovative Review."

### 3. [Program amendment process](#) in Fiscal Year 2008

The Northwest Power Act requires the Council to call for recommendations to amend the Columbia River Basin Fish and Wildlife Program at least every five years, prior to the five-year review of the Council's Northwest Power Plan. In November 2007, the Council issued a formal call for recommendations to amend the program, which last was amended in 2004 and 2005 when 57 subbasin plans were incorporated. Consistent with program-amendment requirements in the Power Act, the letter comprised a written request to the region's Indian tribes and state and federal fish and wildlife agencies for recommendations for:

- "... measures which can be expected to be implemented by the [Bonneville] Administrator, using authorities under this Act and other laws, and other Federal agencies to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, affected by the development and operation of any hydroelectric project on the Columbia River;
- "... establishing objectives for the development and operation of such projects on the Columbia River and its tributaries in a manner designed to protect, mitigate, and enhance fish and wildlife; and
- "... fish and wildlife management coordination and research and development (including funding) which, among other things, will assist protection, mitigation, and enhancement of anadromous fish at, and between, the region's hydroelectric dams."

In the 2000 Fish and Wildlife Program amendment process, the Council reorganized the program around a comprehensive framework of scientific and policy principles, the first step in what became a complete revision of the then 20-year old program. The fundamental elements of the revised program framework were a *vision*, describing what the program is trying to accomplish, *biological objectives*, describing the changes in environmental conditions and fish and wildlife population characteristics needed to achieve the vision; and implementation *strategies*. The 2000 program framework also organized the work of the program

geographically, at four different levels: *basinwide*, 11 ecological *provinces*, the Columbia and Snake *mainstem* (cutting across the provinces), and the *subbasins* of the Columbia system consisting of the tributaries, estuary, and distinct mainstem reaches. The program framework amendments in 2000 set the stage for subsequent phases of the program-revision process. In the 2003 Mainstem Amendments, the Council adopted specific objectives and measures for the river's mainstem, consistent with the program's basinwide vision, objectives, strategies, and underlying scientific foundation. The Council then amended the subbasin plans into the program.

While the Council encouraged amendment recommendations in all areas of the program, the call for recommendations specifically identified the following areas for special focus:

- Program framework and basinwide vision, scientific principles and substantive Strategies.
- Certain basinwide strategies, including the basinwide strategies regarding monitoring and evaluation; research; data management; wildlife; program implementation, management, and coordination; and project review.
- Performance metrics and reporting. The program has not previously focused on performance metrics and reporting requirements, but the Council requested parties to focus attention on the following questions: Should the Program goals only focus on performance metrics within the responsibility of the power system? What form would these goals and biological performance measures take for anadromous fish, resident fish and wildlife? Should the program focus more on trying to improve quantitative measurements of anadromous fish survival at and through the mainstem Snake and Columbia River hydropower projects or improved productivity in upstream habitat? How should the associated reporting requirements be addressed?
- Province and basinwide biological objectives. The Council also requested that parties focus attention on confirming or revising the biological objectives of the program at the basinwide level and on adding interim or long term biological objectives at the province level that would be meaningful for evaluating and reporting program process.
- Mainstem objectives and measures. The mainstem portions of the program are open for recommended amendments. In the past, the Council deferred that portion of the program to a separate amendment process. The mainstem objectives and measures will be integrated with the other parts of the program during the current amendment process. The Council asked that parties consider whether the overarching approach to the mainstem portion of the program that the Council followed in the 2003 Mainstem Amendments remains valid. In those amendments, the incorporated measures in the federal biological opinions on hydropower operations, which focus on ESA-listed populations, and also a set of measures intended to benefit all fish and wildlife in the Columbia and Snake river mainstems.
- Subbasin Plans. While the Council encouraged parties submitting recommendations to use the subbasin plans to help shape their recommendations, the Council also stated a preference that subbasin plans not be amended in the current process. Instead, the Council encouraged parties to recommend a general process and schedule for how subbasin plans will be updated in a future process.
- Possible Implementation Recommendations. The Council recognized that recent events provide an incentive for parties to submit recommendations for measures that represent specific implementation action plans for the near term and up to ten years in the future.

These events include the implications of the January and May 2007 decisions of the U.S. Ninth Circuit Court of Appeals in *Northwest Environmental Defense Center v. Bonneville Power Administration* and *Golden Northwest Aluminum v. Bonneville Power Administration* and the fact that the revised FCRPS Biological Opinion includes a 10-year plan of actions related to the portion of the program addressing Endangered Species Act listed salmon and steelhead. So the Council asked that recommendations of this nature be sure to explain how they are consistent with the fish and wildlife program, among other issues.

## ***B. Science reports and science/policy conference***

### **1. Impacts of climate change on fish and wildlife**

The Independent Scientific Advisory Board, 11 experts in fish and wildlife science who advise the Council and NOAA Fisheries, reported in June 2007 on the potential impacts of climate change on fish and wildlife in the Columbia River basin.

According to the report, warming of the global climate is unequivocal. Evidence includes increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level. Eleven of the last 12 years (1995 -2006) rank among the 12 warmest years in the instrumental record of global surface temperature (since 1850). The linear warming trend over the last 50 years (0.13 +/- 0.03°C per decade) is nearly twice that for the last 100 years. The total global average temperature increase from 1850 – 1899 to 2001 – 2005 is 0.76 +/- 0.19°C.

Climate records show that the Pacific Northwest has warmed about 1.0 °C since 1900, or about 50 percent more than the global average warming over the same period. The warming rate for the Pacific Northwest over the next century is projected to be in the range of 0.1-0.6° C/decade. Projected precipitation changes for the region are relatively modest and unlikely to be distinguishable from natural variability until late in the 21st century. Most models project long-term increases in winter precipitation and decreases in summer precipitation. The changes in temperature and precipitation will alter the snow pack, stream flow, and water quality in the Columbia Basin. These changes include:

- Warmer temperatures will result in more precipitation falling as rain rather than snow
- Snow pack will diminish, and stream flow timing will be altered
- Peak river flows likely will increase
- Water temperatures will continue to rise

These changes will have a variety of impacts on aquatic and terrestrial habitats in the Columbia Basin. The report says the Council has an important role to play as a regional body with responsibilities for electricity planning and fish and wildlife mitigation. The efficient production, distribution, and consumption of power, especially power generated without the release of greenhouse gases, can contribute to global efforts to reduce human impacts on the greenhouse effect and thus reduce human-caused global change over the long term, according to the report. Incorporating climate change into future fish and wildlife recovery plans can help to ensure that all reasonable measures are taken to buffer the natural ecosystems of the Columbia Basin from the changes in temperature and hydrology expected over the coming decades. The

educational mandate of the Council provides a mechanism for encouraging the residents of the basin to become engaged in the coordinated effort that will be required to ensure that the progress that has been made in restoring fish and wildlife populations continues into the future, despite a changing climate, the scientists wrote.

The report is posted on the Council's website under "Reports and Papers," and then "Independent Science Libraries"

## 2. [Impacts of human population increases on fish and wildlife](#)

The impact of human settlement in the Columbia River Basin is rarely incorporated into fish and wildlife planning. In 2007, the Independent Scientific Advisory Board reported to the Council on these impacts and recommended mitigating strategies.

The Council's fish and wildlife program implicitly assumes a level base case of human development, as do most fish and wildlife planning processes, including biological opinions for the Federal Columbia River Power System. Demographic issues are only infrequently addressed in the Council's subbasin plans through acknowledgement that population growth is a factor limiting quality habitat.

According to the ISAB report, several dimensions of human development are changing in ways that make it an important consideration in fish and wildlife planning. Regional population is increasing, settling the landscape in new patterns and converting land to new economic uses. These trends have unevenly distributed impacts throughout the basin with direct implications for fish and wildlife conservation, mitigation, and recovery.

Population growth increases demand for land, water, and hydroelectricity which in turn generates greater pressure on fish and wildlife, and population is growing in the Columbia River Basin. Regional population growth is projected to continue at least through 2030, although the rate of population growth is expected to stabilize or decline. Some rural areas are experiencing rapid population growth, especially those with recreational and scenic amenities.

Population density has changed significantly in each of the four major Columbia River Basin states in the past several decades. The highest densities are west of the Cascade Mountains along the I-5 corridor, a pattern that persisted from 1970-2000. In this same period population density increased in and around the major urban areas in the basin (Portland–Vancouver, Spokane, and Boise). Even more significant to fish and wildlife have been the increases in population densities in central Oregon (Bend–Redmond area) and central Washington (Yakima–Kennewick-Pasco-Richland area)

Among the ISAB's recommendations for dealing with population growth in fish and wildlife planning are:

- Address population growth in planning and prioritization of subbasin projects.
- Require subbasin plan updates to address population and settlement patterns.
- Promote planning processes that include landowner involvement, spatial modeling, alternative development scenarios, and evaluation and monitoring.
- Assess the range of new market-based protection mechanisms for cost-effectiveness and permanency of protections for fish and wildlife.
- Establish permanently protected refugia "strongholds" to minimize interactions between salmon and human activities.
- Protect areas that will restore headwater sources of cool water in warm streams.
- Promote efforts to reduce the loss of rangeland, farmland, and forests.
- Provide incentives to private landowners to protect fish and wildlife habitat.

- Provide incentives for water conservation.
- Promote and study aquifer storage and groundwater recharge.
- Encourage land-use regulations to prevent development in riparian and high risk upland areas.
- Encourage measures that conserve electricity and discourage overuse.

The report is posted on the Council’s website under “Reports and Papers,” and then “Independent Science Libraries.”

## 7. [Science Policy Exchange](#)

About 100 scientists and fish and wildlife policy-makers gathered at Portland State University in September 2007 to share information about the current state of science in preparation for amending the Council’s fish and wildlife program.

The Science/Policy Exchange, hosted by the Council, focused on the current state of scientific knowledge about salmon and steelhead in some of the thorniest fish and wildlife policy issues of the day: the efficacy of freshwater habitat restoration; survival of salmon and steelhead past the hydroelectric dams on the Columbia and Snake rivers; survival of salmon and steelhead in the Columbia River estuary; and survival in the Pacific Ocean. As noted elsewhere in this report, the Council will begin a year-long revision of its Columbia River Basin Fish and Wildlife Program in November. The Council revises the program every five years.

The Science/Policy Exchange included presentations by 18 scientists from state, federal, and Canadian fish and wildlife agencies, Indian tribes, and the Council. Abstracts of the presentations and a review of the Exchange are posted on the Council’s website under “Fish and Wildlife” (see “News and Top Issues” on that page)

### ***C. Salmon and steelhead***

#### 1. Predation by marine mammals and birds

Predation on juvenile and adult salmon and steelhead continues to be a problem in the Columbia River, and while the Council does not have management authority for the predator species, the Council continues to monitor the efforts of other agencies to address the problem. The Council also funded an innovative project within the fish and wildlife program, as noted elsewhere in this report, to test the effectiveness of a non-lethal deterrent system for marine mammals.

The primary predators of juvenile salmon and steelhead are northern pikeminnow, Caspian terns, and double-crested cormorants.

The Northern Pikeminnow Management Plan (NPMP) is funded by the Bonneville Power Administration through the Council’s fish and wildlife program. A sport reward fishery is the primary method used by the NPMP for catching these fish. Bonneville administers this program through a contract with the Pacific States Marine Fisheries Commission with subcontracts to the Oregon and Washington fish and wildlife departments. The Council recommended continuing NPMP funding for Fiscal Years 2007-2009. Bonneville has also committed to funding this program with the general increase in reward structure for the sport-reward fishery that has been implemented over the past several years. Fishery managers are also continuing to study and monitor other potential predator fish species, especially smallmouth bass.

Caspian terns also are targeted in a management plan. In November, 2006 the U.S. Fish and Wildlife Service issued its record of decision on the EIS in which they identified the current

course of action, which calls for reducing the East Sand Island tern population and redistributing the birds at six locations in Oregon and California. In late 2007, the U.S. Army Corps of Engineers was seeking authorization and funding to implement these re-location activities. The implementation process will require the identification and securing of several offsite mitigation areas not identified in the EIS process.

Double-crested cormorants are a fish-eating species that have pioneered breeding colonies into the Columbia River estuary. Since 1989, when less than 100 pairs were present on East Sand Island, the breeding population of this species has increased there to 12,500 pairs in 2004, the largest colony in North America. Estimated juvenile salmonid consumption by this species in 2004 was 6.4 million fish (range 2.5 – 10.3 million), a 25-percent increase over the 2003 estimate of 5.2 million smolts. Their predation level, coupled with that for Caspian terns, generated an estimated loss of 10 million juvenile salmonids in the estuary for 2004. Steelhead, coho, sub-yearling and yearling Chinook comprised the salmonids in their diet in 2004; sub-yearling Chinook represented the largest proportion of salmonids.

Management efforts directed toward double-crested cormorants nesting in the Columbia River estuary could achieve additional gains, perhaps comparable or even greater than those associated with the proposed Caspian tern management plan. Further research efforts are necessary to lead to a required EIS, which would be developed in conjunction with the U.S. Fish and Wildlife Service, that would address potential population and habitat management actions. Research into cormorant predation on juvenile salmonids, an evaluation of management needs, and an in-depth analysis of the regional double-crested cormorant population would support completion of the environmental review requirements for determination of future management actions, if warranted. In 2007, however, there are no regional management strategies or interagency agreements in place to implement double-crested cormorant management. These will need to be in place before baseline research and EIS can be started.

Management efforts also aim to reduce predation by California sea lions on adult salmon and steelhead as they migrate upriver in the spring and early summer. This predation has been increasing steadily since 1972 when the Marine Mammal Protection Act became law. Studies conducted by the Corps of Engineers below Bonneville Dam from 2002-2007 estimate the amount of fish eaten by sea lions has been increasing every year, from 0.3 percent of the annual spring Chinook salmon run in 2002 to about 4 percent in 2007. Studies also indicate the sea lions are arriving earlier and staying longer at Bonneville Dam, with approximately 80 to 100 individuals being present in recent years. Moreover, the sea lions' efficiency in catching salmon and lamprey has been increasing, and the animals have become bolder — several have entered the fish ladders at the dam. The Corps installed grating in front of the ladders to allow fish passage and deter sea lions, which were not entirely effective, and also continues to haze sea lions when fish are migrating.

Meanwhile, the states of Idaho, Oregon, and Washington are pursuing federal authorization under Section 120 of the Marine Mammal Protection Act to lethally remove individual problem animals if necessary to protect ESA-listed fish. The states' Section 120 application is subject to a federal review process that could be completed by the spring of 2008, when the sea lions will return, or could take up to several years. Congressmen Brian Baird (D-Washington) and Doc Hastings (R-Washington), introduced legislation in 2007 to amend the Marine Mammal Protection Act by expediting the process to address aggressive sea lion behavior on threatened and endangered salmon and steelhead in the Columbia River and its tributaries. The Council sent a letter to members of the House Subcommittee on Fisheries, Wildlife, and Oceans in support of the proposed legislation. However, the bill did not move forward in 2007.



## 2. [Fish Passage Center Oversight Board](#)

In April 2007, the Council voted to reconstitute the Oversight Board of the Fish Passage Center (FPC). The Council's action ensures that all members of the board have a scientific or technical background in disciplines related to the functions of the FPC, other than the Council's appointee who serves as chair.

According to the fish and wildlife program, the primary purpose of the center is to provide technical assistance and information to fish and wildlife agencies and tribes in particular, and the public in general, on matters related to juvenile and adult salmon and steelhead passage through the mainstem hydrosystem. This information relates to the implementation of the water management measures in the Council's program. In performing this function, the program directs the center to:

- Plan and implement the annual smolt monitoring program;
- Gather, organize, analyze, house, and make widely available monitoring and research information related to juvenile and adult passage, and to the implementation of the water management and passage measures that are part of the Council's program;
- Provide technical information necessary to assist the agencies and tribes in formulating in-season flow and spill requests that implement the water management measures in the program, while also assisting the agencies and tribes in making sure that operating criteria for storage reservoirs are satisfied; and
- In general, provide the technical assistance necessary to coordinate recommendations for storage reservoir and river operations that, to the extent possible, avoid potential conflicts between anadromous and resident fish.

The Council appointed Bruce Measure, a Montana member, to serve as the Council's representative and as Chair.

The board includes:

- One member representing the upper-Columbia River Basin tribes
- One member representing the upper-Snake River tribes
- One member representing the lower-Columbia River Basin tribes
- Two members representing the state fish and wildlife agencies, with one coming from the upper-Columbia Basin states of Idaho and Montana and the other from the lower-Columbia Basin states of Oregon and Washington; and
- Two members from the region's scientific community, one of whom represents NOAA Fisheries.

## Public affairs and public information

One of the Council's primary tasks is to fulfill the directive of the Northwest Power Act to inform and involve Northwest citizens regarding regional energy and fish and wildlife issues and the Council's activities. To involve the public, the Council meets monthly at different locations around the Columbia River Basin. All meetings are open to the public, and there is an opportunity for public comment on each agenda item. The Council also conducts periodic public hearings on major Council initiatives. The Public Affairs Division arranges consultations and public hearings separate from the regular Council meetings to discuss and explain key issues and also gathers public comments at these meetings and through mail, e-mail and telephone contacts.

To inform the public, the Council produces a quarterly newsletter, a monthly electronic newsletter, and special informational materials, media briefings, and news releases. The Council also regularly updates its website and uses other approaches to inform the public about fish, wildlife and energy issues, such as through videos.

In 2007, the Council's Public Affairs Division produced four issues of the [Council Quarterly](#) newsletter, 12 issues of the [Spotlight](#) newsletter, an [annual report to Congress](#) and an [annual report to the Northwest governors](#) on expenditures of the Bonneville Power Administration to implement the Council's fish and wildlife program. The division also completed work on the Council's briefing book on [Columbia River Basin tribes](#) and produced the [Wind Integration Action Plan Report](#). There were several special projects in 2007, including a celebration of the [25<sup>th</sup> anniversary of the Northwest Power Act](#), an event that was attended by more than 200 people; participation in two conferences of science teachers, one national and the other in Oregon; production of an interactive, Internet-based [hydropower simulation game](#) in conjunction with the Oregon Museum of Science and Industry; and publication of the [Columbia River History Project](#), which is an almanac-style history of the river, on the Council's website.

### A. *Canadian relations*

In recognition of the fact that the Columbia River and several of its major tributaries begin in Canada and flow across the international border, and consistent with direction in the Northwest Power Act to treat the entire Columbia River as a system for planning purposes, the Council maintains regular contact with planning entities in British Columbia. The [Columbia Basin Trust](#), a Crown corporation of the province, is the Council's closest counterpart agency in the Canadian portion of the Columbia River Basin.

Since 1996, a year after the Trust was created, Council members and staff have met at least annually with the Trust and, in 2000, the two agencies formalized a relationship and designated the vice chairs as official liaisons. The Trust and Council exchange visits annually to discuss Columbia River issues of mutual interest. Currently we are working on developing an international, Internet-based portal of information on fish, wildlife, water, and power issues in the Columbia River Basin. In 2007, several Council members attended a two-day symposium on Columbia River water and power issues hosted by the Trust in Cranbrook, B.C.

# Administration

## A. Council budget

### 1. Overview

Over the past nine years, the Council has worked with the Bonneville Power Administration to adopt budget agreements resulting in approximately \$6.2 million of savings between Fiscal Year 1998 and Fiscal Year 2007. Actions taken to accomplish these savings included reductions in force, elimination of vacant FTEs, reducing travel costs, slashing contract funding, cutting administrative costs and curtailing lower-priority activities.

In the current Bonneville Power Administration rate period (Fiscal Year 2007 - Fiscal Year 2008), the Council again made a commitment to exercise fiscal restraint in developing its budget. The Council agreed to submit budgets that project a 3-percent increase, on average, over the three-year rate case period. In order to achieve this goal, we are freezing the number of FTEs in the Council budget while continuing to undertake additional work and responsibilities in the region, particularly in fish and wildlife recovery efforts.

The Council's Fiscal Year 2008 revised budget of \$9,276,000 is \$191,000 (2.1 percent) higher than the 2007 budget of \$9,085,000. This represents increased costs for updating power division analytical models and inflationary increases in the cost of personal services and benefits. The proposed Fiscal Year 2009 budget of \$9,467,000 is \$191,000 (2.1 percent) higher than the revised Fiscal Year 2008 budget. This increase reflects the anticipated increase in personal services and benefits costs.

The Council adopted the budget at July 2007 and submitted it to Bonneville.

### 2. Council funding background

The Northwest Power Act, as passed by Congress in 1980, establishes a funding mechanism to enable the Council to carry out its functions and responsibilities. The Bonneville Power Administration provides this funding through ratepayer revenues. The Act establishes a formula to determine a funding limitation threshold and authorizes the Council to determine its organization and prescribe practices and procedures to carry out its functions and responsibilities under the Act.

The Act further provides that the funding limitation applicable to annual Council budgets will be calculated on a basis of .02 mill multiplied by the kilowatt hours of firm power forecast to be sold by the Bonneville administrator during the year to be funded. The limitation may be increased to .10 mills, provided the Council makes an annual showing that such limitation will not permit the Council to carry out its functions and responsibilities under the Act.

The basis of the funding methodology (firm power forecast to be sold) embraces authorities set forth in other sections of the Act that describe the Congressional expectation that Bonneville will serve all anticipated load growth for the region in the future. As such, the Act authorizes Bonneville to supply all of the incremental electricity needed in the future for the region, if so desired by its customers and others.

### 3. Funding methodology is no longer workable

In 2007, 27 years after Congress passed the Power Act, it is clear that the law, while visionary with respect to future power supplies and mitigation of hydropower impacts on Columbia River Basin fish and wildlife, did not foresee, and could not have foreseen, changes

that have occurred in the electric utility industry and with regard to fish and wildlife recovery in the Northwest. These changes affected Bonneville's firm-power sales — and therefore calculation of the Council's budget — and also resulted in increased responsibilities for the Council. The changes include:

- Bonneville load growth projections have not materialized as anticipated. Regional energy sales have increased by approximately 4,800 average megawatts since 1980. Of this increase, Bonneville's firm sales might have increased by nearly 2,800 average megawatts had Bonneville met the region's incremental load growth as envisioned by Congress in the Act.
- Because conservation is a resource under the Act, it could be argued that the conservation that has been achieved by Bonneville and its customers should be considered in Bonneville's firm power sales (880 average megawatts).
- In addition to cost-effective conservation, changes in dam operations to improve fish passage have diminished power generation capability by approximately 935 average megawatts of potential firm sales.
- It cannot be determined from the legislative history of the Act whether Congress intended the .10 mill funding limitation to be in constant dollars. If this were the case, inflation would have to be added each year to get the nominal funding limitation. The limitation in nominal dollars for 2005 would be about .20 mills, thereby providing an offset to the firm sales anomalies that have occurred over time.
- Approximately 60 percent of the Council's budget now supports planning and implementation of the Council's fish and wildlife program, compared to about 15 percent in 1982. Much of the Council's added fish and wildlife workload stems from the 1996 amendment to the Act that emphasized independent science review and the application of cost-effectiveness principles when recommending fish and wildlife projects for funding. Basing the Council's funding methodology only on the forecast sales of firm power ignores the new responsibilities related to fish and wildlife recovery that the Council must now budget.

The realities described above illustrate why it has been necessary for the Council to absorb nearly 75 percent in inflation costs from 1982 to 2004. The Council also has attempted to manage and accommodate growing workloads under its fish and wildlife responsibilities during this same period. These constraints, along with an outdated funding formula, have made it increasingly difficult for the Council to carry out its full responsibilities under the Act.

In 2006, the Council was able to realize some relief through Bonneville's Final Interpretation that Residential Exchange Program (REP)<sup>1</sup> firm load should be included the firm power forecast used to calculate the Council's budget cap. This interpretation is consistent with the Council's historic practice of including the REP load in the firm sales forecast.

#### 4. Annual baseline budgets

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<sup>1</sup> Residential Exchange Program: In the Northwest Power Act, Congress intended that all residential and small-farm customers of electric utilities in the Northwest whose average system costs are higher than those of the Bonneville Power Administration also enjoy the financial benefits of the Federal Columbia River Power System. These benefits were capped by a provision providing rate protection to BPA's preference customers. The Act allows a utility to sell an amount of power equal to its residential-customer load to Bonneville at the utility's average cost and then purchase an equivalent amount of power from Bonneville. The cost benefits of this power exchange must be passed through directly to residential and small-farm customers.

Since 1997, the Council has responded to the circumstances that have flawed the funding methodology of the Act by negotiating annual budget ceilings with Bonneville that cover specific Bonneville rate periods. These negotiated agreements incorporate various budgetary constraints such as:

- Current-level service budgets from the preceding budget period.
- Restrictive cost-of-living adjustments for personal services expenditures.
- Cost-cutting actions to cushion the impact of inflation.
- Program improvements individually cost-justified.

By applying these budgeting principles on an annual basis, the Council has been able to successfully confine budget growth to less than 3 percent per year over the last nine years (1998-2007).

## **More Information**

For additional information about the Northwest Power and Conservation Council's activities, budget, meetings, comment deadlines, policies or bylaws, call 1-800-452-5161 or visit our website at [www.nwcouncil.org](http://www.nwcouncil.org). Copies of Council publications are available at the website or by calling the Council. All Council publications are free.

## **Comments of the Bonneville Power Administration**

The final version of the report will include comments from Bonneville.

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