Public Power Council
825 NE Multnomah, Suite 1225
Portland, OR 97232
503.595.9770
Fax 503.239.5959

Statement of

R. Scott Corwin
Executive Director, Public Power Council

Hearing on the Role of Hydropower

Committee on Natural Resources Subcommittee on Water and Power
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Greetings Chairwoman Napolitano, Ranking Member McMorris Rodgers, and Members of the Sub-Committee. I thank you for the opportunity to testify today on this important topic.

The Public Power Council (PPC) is a trade association representing the consumer-owned utilities of the Pacific Northwest with statutory rights to purchase power from the Federal Columbia River Power System. Member utilities have service territories in portions of seven western states and serve over 41% of the electricity consumers in the region. We are committed not only to preserving the value of the Columbia River system in terms of its clean and reliable electricity for consumers, but also to furthering the trust responsibilities and stewardship goals we all share within the region.

Hydropower and Energy Policy

We appreciate your initiative in raising the issue before us. Hydropower has played, and will continue to play, an incredibly important role in our nation's energy policy. As I will describe, hydropower is a renewable resource with numerous beneficial aspects including its lack of emission of gases and its status as being uniquely well-suited to facilitating other renewable resources. The irony is that many current policy proposals disadvantage hydropower or would penalize regions like the Northwest where we already have made enormous investments not only in hydropower and other renewable generation, but also in energy conservation. In fact, since we started keeping track with the Northwest Power Act in 1980, the Northwest has achieved 3,700 average megawatts of energy-efficiency, enough electricity to serve the entire state of Idaho and portions of Montana.

Despite these good efforts, increasing demand for electricity in the Northwest will continue to outpace the addition of new conservation or other renewable resources. Therefore, it is very possible that constraints on hydropower could have the effect of pushing the region more quickly toward higher-cost, higher-emitting sources of generation. The economic impacts of this direction are of great concern in light of the possibility of new policies regarding carbon emissions.

The Role of Hydropower in the West

Hydropower is the original renewable source of power beginning with the waterwheel used to grind corn in ancient times. In many areas of the country, hydropower is a major driver of economic vitality. In the Northwest, it has been nothing less than the lifeblood of the region throughout modern history. The dams lend not only a clean, continuing supply of power, they are critical to transportation, irrigation, flood control, and recreation as well. Barging on the Columbia River moves 40 million tons of goods each year and keeps hundreds of thousands of trucks and their associated emissions off of the road. According to the Pacific Northwest Waterways Association, the Columbia and Snake River Basin is the number one transportation gateway nationally for wheat, barley and several other commodities.

To an area that was still largely without electricity in the early 20th century, the dams brought light and then hope of economic vitalization coming out of the great depression. Construction on the larger projects, such as Bonneville and Grand Coulee Dam began in 1933. But, long before that hydropower was beginning to make its mark in the Northwest, including the first "long distance" transmission of electricity 14 miles from Willamette Falls to the streetlights of Portland in 1889.

In the Federal Columbia River Power System (FCRPS) there are now 31 dams ranging from a three megawatt diversion dam in Boise, Idaho, to the 6795 megawatt Grand Coulee Dam in Washington (See Appendix 1). Total peak capacity of the resources marketed by the Bonneville Power Administration (BPA) totals 13,934 megawatts, and almost 90% of that is hydropower. In the entire Northwest region, there is about 41,500 megawatts of capacity with close to 60% of it in hydropower.

The Benefits of Hydropower as a Renewable Resource

Even though hydropower may fluctuate year to year, month to month, or week to week, it is stable and flexible within short periods of time. It has very important positive characteristics in addition to deriving its source of energy from continuously **renewable** water: (1) It is **efficient** in its conversion of energy; (2) It is **clean** in that it does not have waste heat or external emissions; (3) It is **reliable** since it makes use of basic and time-tested technology; (4) It is **domestic** to the United States; (5) It is generally **low-cost**; and, (6) it is **flexible** in that it can adjust quickly to changes in demand.

Ratepayers of the Northwest receive the benefit of this resource and they pay for all of the costs of this system. Electricity ratepayers pay for all of the operations, maintenance, and capital of the system. And, they are cognizant of the great benefit hydropower lends from an

environmental perspective. In fact, polling conducted last year on behalf of Northwest RiverPartners (www.nwriverpartners.org) showed that 86% of respondents view hydro as a renewable resource similar to wind or solar. And, hydro far out-ranked other sources when respondents were asked which of the various sources of energy within the region is the most practical to rely upon.

In the context of the current search for new non-emitting energy sources, the reliability and flexibility of hydropower make it particularly well-suited to integrating other renewable sources of energy, such as wind, that are much more intermittent. The system operated by BPA currently is integrating a total of over 1400 megawatts of wind generation. This 1400 megawatts is expected to double in the next few years, and could double again after that to approach 6000 megawatts according to current projections. Because of the variable nature of wind production, pairing it with hydropower is an effective method of creating a more reliable power supply.

Hydropower and Emissions

Because of the 31 dams and the nuclear plant in Washington that is also part of the federal system, customers of BPA have some of the cleanest power anywhere from an emissions perspective. With hydropower as 80.7% of the firm energy used by most customers of BPA, and nuclear adding another 12%, the portfolios of many of our member utilities are over 92% emissions free.

On the next page are two charts demonstrating a key aspect of hydropower with respect to emissions—it has none. I would like to commend those on the Northwest Power and Conservation Council (NWPCC) for taking on the task of studying the impacts of this dynamic last year. The NWPCC is an unbiased interstate compact created by the Northwest Power Act in 1980 to advise the region on power, conservation, and fish and wildlife issues. They found that, while the Northwest has much smaller CO2 output than other regions, its CO2 production from electricity will grow 20% over the next 20 years to over 70 million tons annually, even if we meet fairly aggressive targets for conservation and new renewable generation. This is because most of the resources realistically available for the current planning horizon are coal and natural gas fired generation. Figure A on the next page shows how CO2 emissions are inversely proportional to hydropower production in the Northwest: the better the water year, the lower the emissions.

In addition, the NWPCC found that breaching the four lower snake dams, as some have proposed for salmon, would significantly exacerbate the issue by adding 4.6 million tons of CO2 annually within the Northwest, and 5.2 million tons annually across the entire West-wide system (See Figure B, next page). Also, in light of success with other passage methods, we have questioned the efficacy and efficiency of some of the extremely expensive spill operations on the federal system where water that could produce power is flushed downstream in an attempt to pass juvenile fish over the spillways. The choices and opportunity costs are even more poignant when one recognizes, as the NWPCC showed, that current spills send five million tons of CO2 into the air as replacement power is generated for what would otherwise be electricity from hydropower. The entire report can be viewed online at http://www.nwcouncil.org/library/2007/2007-15.htm

Figure A. Historical CO2 and Energy Production of Northwest Power System
Source: Northwest Power and Conservation Council Doc 2007-15

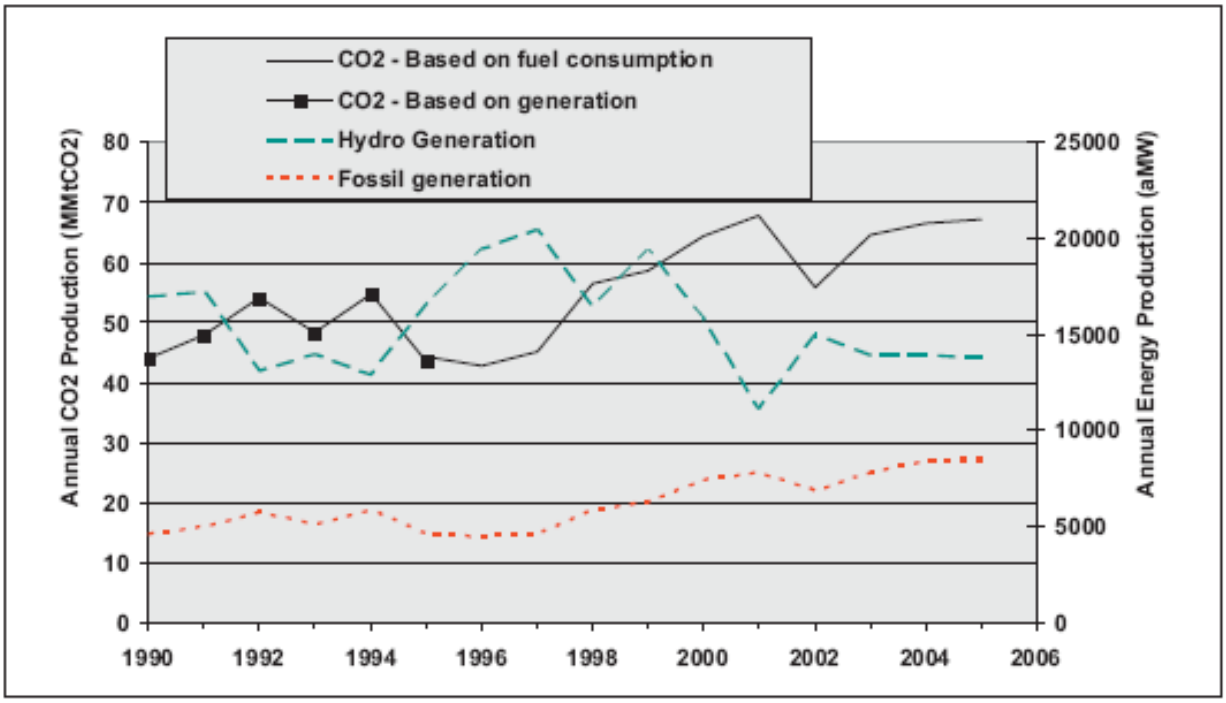
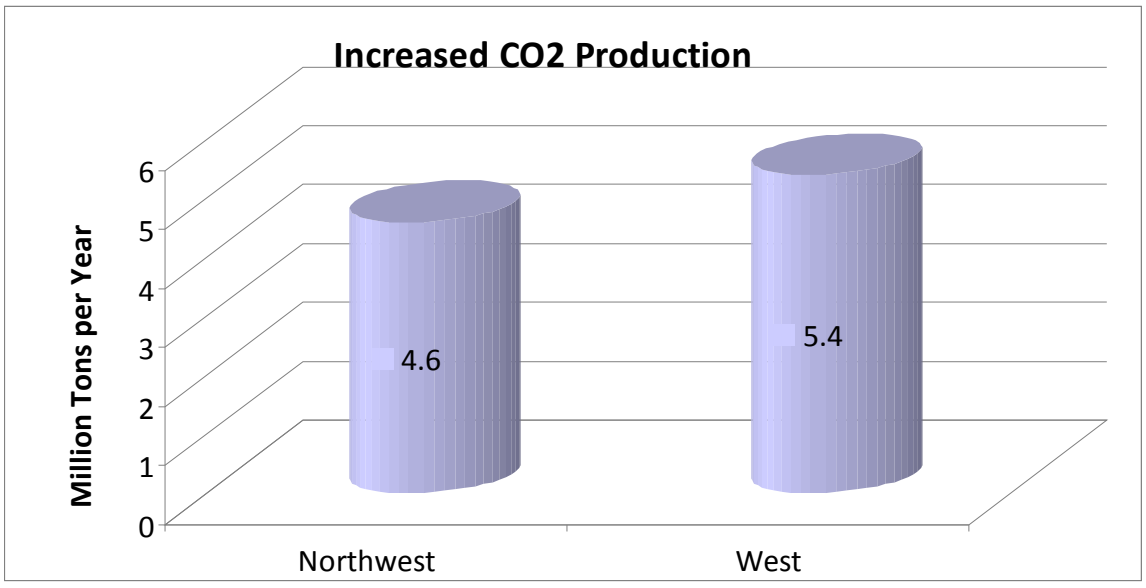


Figure B. Estimate of CO2 Impacts if Four Lower Snake River Dams Removed
Source: Northwest Power and Conservation Council Doc 2007-15



Hydropower in the Future

Last summer the Electric Power Research Institute estimated that the potential increase in hydropower generation nationally could be 23,000 MW by 2025, and as much as four times that remains undeveloped. In the Northwest, we will be looking for opportunities wherever possible. Some of those efforts may involve projects on a very small scale such as irrigation drops. Some are needed enhancements at the larger projects.

Part of the challenge is maintaining the system we have. Over the next two decades, total annual operations and maintenance costs to ratepayers for the FCRPS hydro program are expected to increase from just under $250 million annually, to over $350 million per year. Adding annual capital costs doubles this amount. Grand Coulee was mentioned earlier in this hearing. Operations and maintenance at that single project cost over $60 million per year. Because hydropower projects experience these costs regardless of how much output they provide, we have a serious interest in ensuring that their operations are not constrained for non-power reasons unless absolutely necessary.

Challenges for Hydropower

A challenge for hydropower in the near future comes from the increasing demand for electricity combined with the natural and regulatory limitations on generation. In other words, there is a limit to the available capacity of the system, and therefore a limit to the demands that can be placed on the system regardless of whether those demands are for fish and wildlife, integrating wind or other intermittent resources, or following customers' loads placed on the system. Work is underway in the region to better identify the available capacity on an hour by hour basis throughout the year.

So far, I have focused mostly on the positive aspects of hydropower because they are numerous. But, in the Northwest, we are also very aware of its impacts to the environment because we have made enormous commitments of time and money to address these issues.

Treaties with tribal governments and statutes such as the Northwest Power Act and the Endangered Species Act play major roles in how we manage the hydropower system for salmon and steelhead in the Northwest. In fact, the federal agencies overseeing the FCRPS just signed memoranda of agreement with several tribes and states in the Northwest assuring over $900 million in funding for projects in order to address fish and wildlife needs over the next 10 years. At the same time, these agencies released a new biological opinion under the Endangered Species Act that represents an enormous collaborative scientific effort. This biological opinion came with another set of costs and operational constraints on the system.

Operational constraints on federal Columbia River hydropower, such as spilling water over the dams or adjusting the timing of flows in the river, have reduced the average generation of the system by about 1000 average megawatts of energy, or about 13%, since 1995. According to BPA, the fish and wildlife cost category will account for about 30 percent of the rates charged to

customers for the upcoming rate period, or about $800 million per year. The ratepayer cost for fish and wildlife mitigation, just in the federal hydropower system, totaled $9.3 billion from 1978-2007.

At the same time, fish passage through the projects has been good and is improving all the time. Adult passage using ladders has been excellent for many years. And, new technology is seeing juvenile fish passage downstream at very high rates. In fact, the new biological opinion sets a very high, but achievable, targets for juvenile passage at each dam of 96% in the spring and 93% in the summer.

It is useful to remember that hydropower is only one of many factors impacting species. Historically, the impacts of over-fishing, poor hatchery practices, habitat degradation, and naturally occurring ocean conditions have been major contributors to the status of salmon and steelhead stocks. Any approach to salmon recovery that will be successful long-term must take into account all aspects of the salmon lifecycle including impacts from hydro, hatcheries, harvest, and habitat.

Conclusion

In light of its significant benefits to customers and to the environment as a clean, renewable, and flexible form of generation, hydropower should be preserved, encouraged, and enhanced where possible. Over the last 70 years of major hydropower production in the Pacific Northwest, citizens of our region and neighboring regions have benefited from this resource and its clean energy, low impact transportation, irrigation, flood control, and recreation.

At a critical time in our nation's history with respect to energy policy, hydropower is positioned to take a lead role if our state and federal policies allow it to do so. As a safe, reliable, and low-cost resource that has the means to enable other renewable generation, this proven technology is too valuable to ignore in light of the challenges facing us in the days and years to come. Again, thank you for your leadership in holding this oversight hearing today.

Appendix 1 -- FEDERAL COLUMBIA RIVER POWER