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Hearing on
**PROTECTING FEDERAL HYDROPOWER INVESTMENTS
IN THE WEST: A STAKEHOLDER'S PERSPECTIVE**

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Introduction

Good afternoon, Chairman McClintock, Ranking Member Napolitano, and Members of the Subcommittee, and greetings to our Northwest Representatives on the Natural Resources Committee, Chairman Hastings, Representative DeFazio, Representative Labrador, and Representative Bishop. My name is Scott Corwin. I am the Executive Director of the Public Power Council. I thank you for the opportunity to testify today on this important topic, along with fellow Northwest panelists, Roman Gillen and Tom Karier.

The Public Power Council (PPC) is a trade association representing the consumer-owned electric utilities of the Pacific Northwest with statutory first rights (known as "preference") to purchase power that is generated by the Federal Columbia River Power System and marketed by the Bonneville Power Administration (BPA). These preference rights were granted to publicly and cooperatively-owned utilities because they have a mandate to pass the benefits through to the citizens of the Northwest, the consumers who are their owners. Our member utilities have service territories in portions of seven western states and serve over 41% of the electricity consumers in the region. Several leaders of the rural electric cooperatives from our region are in the room today.

These utilities, being both some of the largest and the smallest in the Northwest, are committed to preserving the value of the Columbia River system for clean, renewable hydropower and for the system's multiple other uses. Because the utility members of PPC are owned by and answer directly to their customers, they are very sensitive to the rates they pay for wholesale power and transmission of electricity.

Today, I will talk about: (1) the value of these large ratepayer investments in federal hydropower in the West; (2) some of the regulatory constraints on the hydropower system, and the fish and wildlife mitigation effort; (3) new challenges to the system, including integration of variable resources such as wind power; and (4) some ideas about how to protect the investment now and in the future. For more on these issues, I welcome you to visit our website at www.ppcpdx.org or the website of Northwest RiverPartners at www.nwriverpartners.org for issues regarding salmon recovery.

The Investment in Federal Hydropower

The Federal Columbia River Power System (FCRPS) is, by any measure, an incredible achievement in engineering, foresight, and political leadership that benefitted from the region's geographical and historical uniqueness. With respect to investments in the federal hydropower system, publicly and cooperatively owned utilities and their customers are the stakeholders who pay the costs, and have the most invested in seeing the system maintained to successfully meet all of its statutory obligations. Under long-term contracts, these utilities, commonly referred to as "preference customers" pay the costs attributed to power production in the FCRPS (power costs are about 80% of the total). Flood control, navigation, recreation, and irrigation are other important uses of the river system. On issues such as fish and wildlife mitigation, and specifically salmon recovery, the preference customers of BPA are committed to success as regional citizens who care for the resource and pay for this effort through their power rates.

Hydropower has played, and will continue to play, an incredibly important role in our nation's energy policy. Nowhere is this more evident than in the Northwest. This is the original renewable source of power, and has been nothing less than the lifeblood of the Northwest region throughout modern history. And, even with this history of relatively low-cost power, the Northwest has made enormous strides as well in achievement of energy-efficiency.

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. 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 economic hope coming out of the Great Depression. Upon the foundations of the Reclamation Act in 1902 and the Flood Control Act in 1917, investment in the system took a leap with the Bonneville Project Act in 1937. Construction on the larger projects, such as Bonneville and Grand Coulee Dam, began in 1933. The oldest dam in the FCRPS is Minidoka, which began operating on the Snake River in 1909.

In the Federal Columbia River Power System there are now 31 dams run by the Bureau of Reclamation and the Army Corps of Engineers, ranging from a three megawatt diversion

dam in Boise, Idaho, to the 6795 megawatt (MW) Grand Coulee Dam in Washington. Total installed hydropower capacity in the federal system is over 22,000 MW. This system is coordinated with Canada's portion of the river system, and it should be noted that an important decision is approaching regarding whether it is in our interests to continue the current treaty with Canada.

Part of the "protection of investment" challenge is to maintain the system we have. Over the next few years, total annual operations and maintenance costs to ratepayers for the FCRPS hydro program are expected to increase from about \$280 million annually, to almost \$350 million per year, not including capital. Fish and wildlife mitigation costs are about \$800 million per year, about one-third of the total power revenue requirement in BPA rates.

Of particular note in value and importance to the region are the four lower Snake Dams, completed in the 1970s. They provide about 1,100 average megawatts of renewable, emission-free energy which is approximately the amount of energy necessary to power the city of Seattle. Replacing that power could cost \$300-\$500 million annually, and is likely to be from thermal sources (a notable consideration for West Coast states looking at aggressive carbon reduction goals). A study by the Northwest Power and Conservation Council shows that removal of these dams would increase green house gasses by 4.4 million tons/yr in the Northwest and 5.2 million tons/yr west-wide, nearly the equivalent of two typical 400 MW coal-fired power plants. This would occur because the baseline scenario, without dam removal, already assumes that the region will pursue all cost-effective energy conservation and meet state renewable portfolio standards.

In addition, these lower Snake River dams provide other key economic benefits such as irrigation and transportation. Over 10 million tons of commercial cargo travels this stretch of river to Lewiston, Idaho.

Finally, in contrast to some accounts, removal of the lower Snake Dams would not provide much if any benefit to fish listed under the Endangered Species Act (ESA). Current juvenile fish passage survival rates are at or above 95% at all four dams according to NOAA fisheries. In any case, these dams only affect 4 out of 13 Endangered Species Act listed salmon and steelhead stocks in the Columbia River Basin. And, these four dams inundated only 10% of the historic fall chinook spawning habitat in the Snake River; spring chinook, sockeye and steelhead were even less affected.

So, removal of these dams would not significantly improve access to historic spawning areas, is not needed for fish passage, and would make no sense from an energy portfolio perspective.

Regulatory Constraints on Federal Hydropower

In the Northwest, we are ever cognizant of the impact of the federal hydropower system on the environment. An enormous portion of the investment in the system has been committed in order to address those concerns. This investment has been not only in financial form, but also in the form of time dedicated by thousands of individuals from state and local agencies, tribal agencies, federal agencies, and the private citizenry.

For electricity ratepayers this investment is not only reflected in the current \$800 million of annual expenditures mentioned earlier, but in the cumulative impact of over \$13 billion in costs over the past three decades for fish and wildlife efforts funded through BPA power rates. Most of these costs arise from implementation of the Endangered Species Act (ESA) and the Pacific Northwest Power Planning and Conservation Act. However, from a preference customer viewpoint, it appears that electricity ratepayers are asked to fund endeavors far beyond the actual impacts of the hydropower system because BPA has been the easiest funding source to tap. It is appropriate to remember that salmon have lifecycles covering thousands of miles in which mortality occurs well before and after their travel through the ratepayer-funded hydropower system.

The 2010 supplemental biological opinion currently before the U.S. District Court is an evolution of at least 18 years of work by dozens of state, tribal and federal agencies, and is a regionally created, scientifically sound path to success. We are hopeful that the comprehensive approach and broad support for this latest biological opinion will lead to court approval and full implementation.

Several different biological opinions under the ESA have guided regional efforts since the first listings of salmonids in the early 1990s. Eventually, these documents recognized what the science showed: hydropower operations alone would not recover the species. Many other factors contributed to the salmon's decline including over harvest, hatchery practices, degraded habitat and ocean conditions.

Now, the massive effort seems to be paying off: 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 very high, but achievable, targets for juvenile passage at each dam of 96% in the spring and 93% in the summer. Last year saw 648,000 fall chinook return, and strong projections for 2011 could show record numbers for chinook, coho, and sockeye in the Columbia and Snake rivers.

The investments put forth by ratepayers spread to many areas of the federal hydropower system, including:

- Improvements to the fish passage structures at the eight federal dams on the Snake and Columbia Rivers;
- Screens in front of the turbines to keep juvenile fish from entering the turbines;
- New design of the turbine blades and housing to minimize injury to fish;
- Juvenile bypass systems to collect juvenile fish and route them around the dams;
- New “fish slides”, or spillway weirs, that pass fish safely over the dams;
- Flow deflectors at spill bays to improve water quality during spill; and,
- Many improvements to fish and wildlife habitat and hatcheries.

As we look to protect these investments in fish mitigation, predation is a significant factor on salmon and steelhead mortality and needs more attention as part of a comprehensive plan. A classic “conflict of laws” problem between the ESA, the Migratory Bird Treaty Act, and the Marine Mammal Protection Act has left bird predators consuming between 4% and 21% of the

juvenile salmonids migrating down river each year, and sea lions consuming an estimated 4% or more of the *adult* spring chinook population passing the Bonneville Dam each year. They also consume large numbers of sturgeon and lamprey. This figure does not include salmon and steelhead taken by sea lions from the estuary up to Bonneville Dam.

Despite these non-hydro impacts, juvenile in-river survival today is nearly twice as high as it was in the mid-to-late 1970's. Adult survival through the dams and reservoirs is similar to that observed in natural rivers. Again, hydropower is only one of many factors impacting species. 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.

But, it is the mandated constraints on federal hydropower operations that have been most striking in both in their cost and their operational impact on the system. Operational constraints on the FCRPS, 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 1100 average megawatts of energy, or about 13%, since 1995. Over the past five years, the average annual replacement cost of that energy is \$460 million, borne by the customers.

Water is spilled over the federal dams in the lower Snake and main-stem Columbia River to purportedly improve survival of juvenile fish passing these dams. The current spill program starts in early April each year and concludes at the end of August. The program is balanced with optimizing safe juvenile fish passage using fish transportation programs which often provide the highest fish survival benefit, especially in low water years.

The 2010 biological opinion allows the potential for modification of the spill program and other river and dam operations to optimize fish survival for both adult and juvenile fish. Research indicates that at times, transporting by barge is the safest route of passage for juvenile fish, especially late in the summer and during low water years. The current court injunction mandates specific spill schedules and dam operations which do not provide the flexibility to improve operations of the federal hydrosystem to maximize fish passage survival.

The spill and flow regimes causing a decrease in federal hydropower generation, and the extra associated costs, have occurred at the same time that load growth and other demands for that power have increased in the region. As noted in the Northwest Power and Conservation Council's Sixth Power Plan, this will push the region to add more thermal, carbon-emitting generation as gas-fired generation is the most likely available source to meet base-load power needs.

New Challenges for the Hydropower Investment: Intermittent Resources

As noted above, a challenge for hydropower in the near future comes from the combination of increasing demand for electricity at the same time that this resource has experienced increased regulatory limitations on generation.

The reliability and flexibility of hydropower generation make the FCRPS particularly well-suited to integrating other renewable sources of energy, such as wind, that are much more intermittent. But, there is a limit to the available capacity and flexibility of the system, and therefore a limit to the demands that can be placed on the system regardless of whether those demands are created by fish and wildlife, wind and other intermittent resource integration, or simply following the swings in customers' loads placed on the system.

PPC members support efforts to responsibly add cost-effective renewable resources to the region's electric generation resource mix. But, effectively integrating intermittent renewable resources poses a number of challenges that must be properly addressed to ensure effective operations, system reliability and cost allocation.

Further complicating this dynamic is the dramatic *pace* of wind development in the Northwest even as the region scurries to catch up to the technological and operational challenges posed by wind power's unique characteristics. As recently as 2005, the system operated by BPA integrated only 250 MW of wind generation. That amount doubled in 2006, then doubled again in 2007. Today, there is over 3500 MW of wind being integrated into the BPA transmission and power system. This represents a 1400 percent increase in just six years.

BPA and the region should be acknowledged for this massive effort to integrate such a large volume of renewable energy so quickly. And, preference customers have been directly involved with the development and purchase of some of those projects. But, wind generation in the Northwest is mostly localized in one portion of the region. This creates a dynamic where variability of total output can range very suddenly from almost full regional capacity to almost none.

Forecasts showing that wind capacity might double again in the next few years raise numerous concerns and questions about the operational impacts to the system: Can an increasingly congested transmission system handle this influx? Can a constrained hydro system be relied on to provide reserves to balance the variability? As those reserves are provided, or as additional sources of capacity and new transmission are added, who will fund these initiatives, and will proper principles of cost causation be followed? There is a fundamental rate-making principle that there should not be costs shifted to those who do not cause the cost or who do not benefit from the expenditure.

Over-generation: Too Much of a Good Thing? As we look at this year's estimate of high water run-off in the Columbia River system, which is currently 119 percent of average, it raises the specter of another serious challenge that occurs when the region experiences an oversupply of generation during surging spring runoff, as it did in June 2010. Water moving through the Columbia and Snake Rivers must pass through generators in order to avoid excessive spill that can harm endangered and threatened fish and violate Clean Water Act requirements that prevent over-saturation of gas in the water column. The challenge is further exacerbated when it occurs during periods of low electrical demand, since there must be a load to use the electricity that is generated at the dams in order to keep the system in balance.

In these instances water must run through generators instead of spilled in order to ensure the hydropower operations necessary to meet fish protection requirements (avoiding high gas saturation). The extra power is sold at low prices, or even given for free, to utilities that reduce generation from their own projects and use federal power instead to make their deliveries (this is known as “environmental redispatch”). Thermal generation projects have historically taken advantage of these sales to displace their own generation with lower-cost hydropower. During the high water oversupply event in June 2010, thermal generation was largely shut down or reduced by purchases of energy from BPA.

However, because of differing economic incentives, such as the need to generate electricity in order to receive renewable energy credits (RECs) or tax credits, wind generators in the region did not similarly shutdown during the high water event last June. This resulted in the threat of harmful levels of spill in order for the system to avoid the extreme consequences of over-generating.

BPA has developed a Record of Decision to describe how they will handle this type of event entering the spring run-off season this year. PPC believes the policy is a solid approach that meets the obligations of the federal system, reflects prudent business practice, helps protect the investment in the system, and meets legal requirements designed to protect fish.

In line with BPA’s proposed policy, PPC believes: (1) BPA should use all other reasonable means to dispose of excess federal generation during a high water event *before* providing federal hydropower at no cost to displace renewable generators within the BPA Balancing Authority; (2) BPA should adhere to clear and transparent steps it will take to reduce spill during high runoff conditions with specific triggers for environmental redispatch; (3) BPA should *not* pay an entity to take federal hydropower in order to replace a lost taxpayer subsidy or renewable energy credit. Also; and, (4) BPA, its customers, and the other stakeholders should seek other policy changes to provide compensation for the revenues associated with federal and state renewable energy rules. For instance, hydropower delivered under environmental redispatch conditions should be classified as “renewable” to meet the REC or tax credit requirements so that wind generators still receive the associated revenues they expect.

Conclusion: Protecting the Investment

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 75 years of major federal 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.

The first and best step to protecting this investment is to stabilize the regulatory burden upon it. The 2010 supplemental biological opinion for operation of the FCRPS for

salmonids is the result of massive work to create science-based consensus among states, tribes, and federal agencies. It should be approved and allowed to work.

While the biological opinion and associated memoranda of agreement represent ominous costs to preference customers, we also see the need to get the plan approved in order to create some regulatory stability. This is an opportunity to move forward as a region and build on the success we've seen so far in salmon mitigation. Meanwhile, better approaches to predation, better policies around harvest and hatchery practices, and more efficient use of water through the system are areas customers will watch closely.

Another way to protect the investment in all areas of the FCRPS is to work hard to make sure future investments are sensible and are the best possible use of limited ratepayer dollars. Our goal is to have significant input at the front end of the BPA, Army Corps of Engineers, and Bureau of Reclamation budget processes for the Federal Columbia River Power System. As customers, we do not want merely to be arguing in rate cases over the allocation of costs already incurred. Currently, an evolution of the budget process for BPA called the Integrated Business Review is further refining how and when customers get information. But, an enhanced customer role in key spending decisions still is needed, especially as additional wildlife funding commitments are considered. We look forward to working closely as well with the Northwest Power and Conservation Council in that pursuit.

One other way to protect the investment is to protect the investors from unintended consequences. BPA should conduct a new assessment of the impact of the influx of wind generation, and of potential impacts in light of forecasts for future development. The Northwest Wind Integration Forum, with an array of regional stakeholders, is one venue where this could take place. Preference customers are looking to BPA to adhere to the principles of cost causation as it incurs direct and indirect costs from this challenge. But, we are ready to work collectively towards long-term solutions.

And, one final way to protect those expected to make investments in the federal hydropower system is to oppose any proposals to hijack the value of that investment by raising the rates of Power Marketing Administrations in the name of federal deficit reduction. Preference customers pay for the costs of operations and maintenance of the system, and they pay the principle plus interest of any Treasury debt annually (the payment to Treasury last year was \$864 million). Proposals to raise the rates of Power Marketing Administrations for deficit reduction are a misguided attempt to create a new regional tax to fund the federal government.

At a critical time in our nation's history with respect to energy policy, the federal hydropower system will play a lead role as a key domestic source of adequate, efficient, reliable, and renewable energy. Our large investment in the system certainly is worth protecting. Thank you for holding this hearing, and for the opportunity to speak with you today. I look forward to addressing any questions you may have.