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Hearing On

Investment in Small Hydropower: Prospects of Expanding  
Low-Impact and Affordable Hydropower Generation in the West

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Good morning, Madame Chairwoman. My name is Sonya Baskerville and I am the Manager for National Relations for the Bonneville Power Administration (Bonneville). Bonneville is a Federal power marketing administration based in Portland, Oregon. I am pleased to appear today to describe how Bonneville works with its partner Federal agencies - the United States Army Corps of Engineers and the Bureau of Reclamation - to operate, maintain, and modernize the Federal Columbia River Power System (FCRPS) to provide low-cost, non-carbon emitting hydroelectric power for the Pacific Northwest. The three agencies accomplish this through an innovative management model financed by the electric ratepayers of the region.

Bonneville markets the electric power generated by 29 Federal dams in the Columbia and Snake River watersheds and two more dams in the Rogue River watershed of southern Oregon. These dams are managed and operated by the Corps and Reclamation. Collectively, our three agencies manage these dams as the FCRPS, and we manage the system for important multiple purposes including fish and wildlife, irrigation, flood control, navigation, as well as power generation.

### **An Aging System**

This power system is nearing half a century in age on average. Grand Coulee Dam and Bonneville Dam were built before World War II. The other big workhorses of the power system – the eight big projects on the Columbia River and the Lower Snake – were completed by the 1960s. The dams are complex systems. Imagine maintaining turbines, generators, transformers, water control and electrical equipment that were originally manufactured before the development of the Interstate Highway System. In addition, the realities of competitive power generation markets have had a profound effect on the FCRPS. A combination of age, competition, and environmental concerns, including the listing of salmon and steelhead populations under the Endangered Species Act, has increased the pressure on the FCRPS to improve performance and operate as efficiently as possible.

### **Modern Management Practices**

To accomplish the needed schedule of system maintenance and upgrades, Bonneville began work in the 1990s with Reclamation and the Corps to implement direct funding agreements and a new asset management plan. Until then, Reclamation and the Corps sought annual appropriations from Congress for power system maintenance and capital improvement projects, even though those costs were repaid in full by Bonneville from its power revenues.

The three agencies worked with the Office of Management and Budget and the Congress to establish direct funding agreements, whereby Bonneville could provide funding to the Corps and Reclamation from its annual revenues and Treasury borrowing authority. The Energy Policy Act of 1992 confirmed the authority for direct funding. Subsequently, four direct funding agreements covering capital and expense funding for the Corps and Reclamation were completed by 1997. Total direct funding capital investment provided,

under this mandatory spending authority, to the Corps and Reclamation through this fiscal year has been just over \$1.1 billion.

Since the completion of these agreements, the three agencies have collaborated in the management and operating responsibilities associated with the FCRPS hydro facilities to maximize the value of these assets for the region. In 1999, the agencies developed an Asset Management Strategy with the goal of maximizing the value of the FCRPS. Objectives of the strategy were to make investments to restore the reliability of the system to industry standards or better, and to enhance power production through efficiency gains. The strategy is now updated bi-annually to support hydro program business planning and Bonneville's rate setting process.

The agencies' operations are guided by an integrated business management model, which guides decision-making, informs FCRPS budget and spending decisions, and is used to evaluate performance. This process loop integrates planning and resource management with performance assessments and continuous improvement efforts.

Reclamation and the Corps have collaborated with Bonneville to review the Asset Management Strategy with Bonneville's customers. These reviews occur in workshops held for customers and other interested parties before Bonneville begins its formal ratemaking process. These workshops are quite detailed in the examination of planned spending and there is an expectation for supporting analysis and justification. Bonneville believes the Asset Management Strategy has won respect and confidence from its customers.

### **Opportunities for Adding New Hydro Resources**

As I've explained, the integrated business management model provides a foundation for Bonneville, the Corps, and Reclamation to identify opportunities for efficiency improvements and incremental additions of generating capacity demonstrated where cost-effective. This additional generating capacity becomes a part of the FCRPS capacity and is marketed by Bonneville to its customers. I'd like to list just a few examples.

At Reclamation's Grand Coulee Dam, the condition of 18 turbines in the Left and Right Powerhouses was at risk of failure and required significant maintenance. These turbines needed to be refurbished to restore reliability and extend their operating life. While the condition of the runner component of the turbines was adequate and did not need to be replaced for reliability reasons, Bonneville and Reclamation considered whether replacing those runners for efficiency gains made economic sense. Runners are the large rotating wheels that contain the blades of the turbines in a hydroelectric dam. Bonneville and Reclamation determined that replacing the aged runners could provide increases in turbine efficiency of about 5 percent, resulting in additional power generation. Bonneville is funding the replacement of the runners which will yield an additional 41 average megawatts of generation at a cost of \$94 million. The project will be completed in 2011.

At the Chief Joseph Dam, just below Grand Coulee Dam on the Columbia, the Corps has begun a similar replacement of 16 turbine runners using direct funding from Bonneville. The project began in 2004 and is anticipated to be completed in 2017 at an expected cost of \$164 million. In return, we expect the project to yield an efficiency increase of 6 percent, resulting in over 52 average megawatts of additional generation.

We've found similar opportunities at even smaller projects. An example is Reclamation's Boise Diversion Dam in Idaho. Three generating units at the project were decommissioned in the 1980s. Beginning in 2001, Reclamation replaced those decommissioned units with state-of-the-art generators at a cost of \$8.6 million to increase the generating capacity of the original plant to 3 megawatts. Bonneville has directly funded these and similar projects at a total of \$218 million, achieving about 100 average megawatts of additional hydro generation.

## **Conclusion**

### **Collaboration, Financing Tools, and Sound Management Yield Opportunity**

The achievements I have just described represent numerous other opportunities the three agencies have been able to undertake to find efficiencies and yield new electric generation in the FCRPS. Bonneville believes the foundation for this capability begins with the strong collaborative relationship it enjoys with Reclamation and the Corps. Finally, our Asset Management Strategy has proved a sound tool for planning the continued maintenance and modernization of the FCRPS to provide clean, reliable energy for years to come.

This concludes my testimony, Madame Chairwoman. I would be happy to respond to questions from the Subcommittee.