



Fact Sheet

May 2012

Working together to address Northwest oversupply of power

BPA's actions in 2012 to minimize use of the Oversupply Management Protocol

The Bonneville Power Administration is actively pursuing new tools and strategies to manage the occasional seasonal oversupply of electricity that comes with large concentrations of renewable generation. BPA has integrated about 1,000 megawatts of wind capacity into its transmission system in the last year, which is among the fastest rates in the country. This brings the total wind integrated into BPA's balancing authority to more than 4,300 megawatts. At times the wind energy generated in the BPA system can amount to nearly 70 percent of the total electricity demand in the BPA system. Large amounts of wind generation combined with large amounts of hydropower produced by springtime high river conditions can generate electricity in excess of total demand. Extra water can be spilled without generating electricity but too much spill exceeds

water quality standards and can harm fish and other aquatic species. Oversupply conditions occur most frequently during hours of low electricity use such as very early in the morning.

On March 6, 2012, BPA proposed to the Federal Energy Regulatory Commission an Oversupply Management Protocol (OMP) to be implemented as a last resort, allowing generators to be turned off. BPA would compensate the affected generation for lost revenues, including renewable energy credits and production tax credits, subject to verification by an independent evaluator. BPA will initiate a new rate case in which it will propose dividing compensation costs roughly equally between users of BPA's federal base system and generators eligible for compensation from BPA. The OMP is intended to protect system reliability and endangered salmon and other aquatic species and create a set of rules that is fair to all parties. The OMP will remain in place for one year while BPA and regional stakeholders work toward a longer-term solution that supports the growth of renewable energy in the region.



Some spill helps juvenile fish migrate downriver, but too much elevates dissolved gas levels.

Oversupply Management Actions in 2012

BPA is working hard to minimize the use of the Oversupply Management Protocol this spring. In addition to marketing efforts aimed at managing oversupply, the following tools have been most helpful to date:





Columbia Generating Station has temporarily reduced output to ease oversupply conditions.

■ **Capacity Recallable Energy**

BPA's newest and possibly most innovative tool to help manage seasonal generation oversupply events is the Capacity Recallable Energy product. It allows BPA to increase generation in the Federal Columbia River Power System while still maintaining the required system reserves by holding those reserves on a separate, but interconnected, transmission system. Reserves maintain the critical balance between electricity supply and demand. While this generates minimal revenue, it helps BPA control dissolved gas without asking a thermal or renewable energy source to reduce or cut its output.

■ **Mid-Columbia Spill Exchange agreement.**

A spill exchange, or swap, is an agreement between BPA and another hydropower generator—in this case the Mid-Columbia Public Utility Districts—that is able to spill water at its dams without operational concerns. BPA sends that generator energy to replace what would have been generated by the water that is spilled. This helps manage spill at Grand Coulee and Chief Joseph dams when they may be near water quality limits and moves it to nonfederal dams that still have room to spill before reaching water quality limits.

■ **Rescheduling non-essential outages**

BPA has rescheduled non-essential maintenance and construction on transmission lines and federal

generators so that both are available to generate and carry large amounts of electricity to local and distant markets, from Canada to California. If an oversupply of generation is the issue, it may seem counterintuitive to maximize the availability of hydropower generators, but these generators help reduce the level of total dissolved gas in the water.

■ **Columbia Generating Station reduced output to 85 percent**

Energy Northwest, operator of Columbia Generating Station, the region's only nuclear plant, has agreed to reduce the plant output to 85 percent of full capacity when needed. This is a level that still maintains plant reliability. BPA appreciates these efforts to assist with oversupply management as this type of operation places additional requirements on equipment and personnel.

■ **Reduce balancing reserves for wind**

BPA reduces balancing reserves when the wind plants are able to generate close to their forecast and when reserve reductions can help control total dissolved gas in accordance with water quality standards. This action allows wind projects to generate, but they must stay closer to their forecast. Decreasing balancing reserves allows for more hydro generation because water that would otherwise be held behind the dams or spilled to balance ups and downs in wind energy instead goes through turbines. Running water through turbines creates less total dissolved gas than spilling water.

■ **Maximizing the amount of irrigation pump load**

BPA positions Banks Lake to make use of additional hydropower. Banks Lake stores irrigation water that is pumped from the reservoir behind Grand Coulee Dam. BPA operates the large, electrically operated pumps during low demand periods, which uses federal hydropower, reducing oversupply. Unfortunately during high run-off periods, such as this spring, the elevation of Lake Roosevelt behind Grand Coulee Dam often remains at a low level that does not allow the use of all of the Banks Lake pumps.



Irrigation pumping could use available energy in low-demand hours at night.

■ **Coordinated spill at the Willamette Basin dams**

BPA is working closely with the U.S. Army Corps of Engineers to shift load from Willamette dams to those on the Columbia by diverting water to spillways at Willamette Basin dams when doing so would not violate operational constraints such as water quality standards below those projects.

When the sum of these actions are insufficient to manage an oversupply of generation while maintaining water quality standards, BPA will require excess generation to be turned off, replacing it with free federal hydropower and compensating the affected energy producer under terms to be proposed in a new rate case.

Demonstration Projects: tools that may help BPA manage oversupply beyond 2012

BPA recently signed a one-season demonstration agreement with United Electric Cooperative to evaluate the ability of the Southwest Irrigation District (SWID) to increase pumping during times of low energy use. SWID pumps water from the Snake River through three pipelines to injection wells or irrigation canals. Increasing pumping in this way has several potential benefits including refilling the aquifer more quickly, which benefits irrigators, and helping the region to address spring oversupply events by finding a home for extra generation.

The demonstration project is designed as a proof-of-concept to assess the technical feasibility, programmatic challenges and potential commercial feasibility of future demand response projects involving irrigation pumping loads. It is not designed as a direct solution for any generation oversupply events during 2012. It is a one-season test of the ability of the SWID system to increase pumping during light load hours (LLH).