

Bond sale benefits ratepayers

Energy Northwest and BPA took the first step in an effort that could save ratepayers as much as \$1.8 billion in gross interest savings and restore up to \$1.2 billion of BPA's U.S. Treasury borrowing authority through 2044.

Energy Northwest sold BPA-supported bonds on Aug. 5 to refinance approximately \$321 million of outstanding regional cooperation debt previously issued by Energy Northwest and associated with two never-completed nuclear projects. This is the first of several potential bond sales that could lead to the refinancing of Energy Northwest nuclear assets and yield the savings mentioned above.

"This agreement offers unique opportunities for savings," said Nancy Mitman, BPA acting chief financial officer. "The net effect of refinancing through regional cooperation bonds is that both the weighted average interest rate and maturity of BPA's overall debt portfolio will be reduced over the life of the proposal, thereby lowering interest costs by hundreds of millions of dollars and increasing U.S. Treasury borrowing capacity for making much-needed investments in our infrastructure."

Regional cooperation debt refers to existing debt associated with the Columbia Generating Station in Richland, Wash., and the two unfinished nuclear projects. It serves as a regional financial resource, providing remarkable debt management opportunities to lower costs of power for the benefit of the Pacific Northwest.

Similar efforts in the past helped BPA preserve and restore approximately \$2 billion in Treasury borrowing authority and saved approximately \$500 million in interest under BPA's Debt Optimization Program.

The bond proceeds will be used to pay off Energy Northwest debt that is due to mature in 2014. The new bonds will be paid before BPA's existing regional power sales agreements end in 2028. The bond sale also allows Energy Northwest to extend regional cooperation debt that was due in 2014 into the period between 2025 and 2028, which more closely matches the expected useful lives of the Energy Northwest facilities.

The bond sale means that amounts recovered in BPA's rates to pay Energy Northwest principal will instead

be available to pay off like amounts of more expensive federal debt. The new Energy Northwest regional cooperation bonds have a true interest cost of 3.17 percent. The resulting availability of additional amounts in the BPA fund will assist in the prepayment of BPA federal debt with interest rates of 7.15 to 7.19 percent. The present value of the interest savings to the region will be \$135 million. The savings also will help BPA hold down rates in fiscal years 2016 and 2017.

Overhauling the world's largest turbines

Even the eighth wonder of the world needs rejuvenation sometime. Trouble is, no spa will accept a 3,000-ton turbine.

That's why one of the three largest hydroelectric units in the world sits in pieces on the concrete floor inside the largest dam in the nation, like a giant jigsaw puzzle that can only be solved with a 2,000-ton crane.

The mammoth water wheel, called G-24, rarely rested in a productive 33-year work life at Grand Coulee Dam in north-eastern Washington, apart from pauses for an annual tune-up and a one-time rebuild of its electrical generator.

"It's been a real workhorse. We're usually running them pretty hard, and they have experienced a lot of wear and tear over the years," says Brian Clark, the Bureau of Reclamation's project manager on the overhaul of six mega-turbines in Grand Coulee's Third Power Plant.

Made of steel, it measures 33 feet across and 18½ feet tall. How massive are its components? It takes nuts and bolts that weigh over 900 pounds apiece to fasten them together.

The single turbine not only produces more power than an entire coal or gas plant — about 805 megawatts — its energy is carbon-free. G-24 and its five powerful siblings in Grand Coulee's Third Power Plant represent a critical asset in the operation of the 31-dam Federal Columbia River Power System.

BPA ratepayers across four Northwest states fund the refurbishments to the FCRPS power plants through their electricity rates. The work at Grand Coulee is performed by Reclamation, which owns the dam, and its contractors, with safety as the highest priority.





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With 33 hydroelectric turbines spinning within a 45-story-tall dam that drains a reservoir 150 miles long, Grand Coulee produces more clean, low-cost energy than any power plant in the United States: 6,809 megawatts. At the same time, it provides voltage stabilization and balancing reserves that help keep the Northwest's transmission system reliable.

However, like much of the other key infrastructure in the nation, the Columbia Basin's federal hydro plants have arrived at the era of renewal. The majority of the system ranges in age from 40 to 77 years old. Although it continues to serve the region dependably, its declining condition has been exposed in recent years by more frequent and costly breakdowns.

Although G-24 is Grand Coulee's youngest unit, its 33-year track record as a heavy lifter and corresponding state of health made it the first of the six turbines in the Third Power Plant to be pulled out of service last year to undergo a hard-earned, two-year course of refurbishment. The base cost to renew the six turbines is estimated at \$275 million, a figure that could grow if the last three turbines are upgraded to generate more efficiently.

The six turbines will be removed one by one for refurbishment over the next decade. In the case of the current project, G-24's steel turbine had retained its underlying structural integrity and the FCRPS owners and operators did not need to spring for a replacement. But decades of mechanical force, water pressure and river silt exacted punishment on its surfaces, seals and moving parts.

With an emphasis on safety, months of metal testing, sandblasting, cutting, welding, recoating and other labor-intensive efforts will restore G-24's cracked, pitted

and leaky surfaces, as well as its work-weary components, to like-new condition and top efficiency by 2015.

Despite their colossal scale, G-24's moving parts intermesh with exquisite precision. During the overhaul project, workers are machining components that weigh tons, yet must operate within clearances measured in thousandths of an inch. The reliability and longevity of the unit depend on it.

Simple fix opens long-blocked fishway

After years of looking at the boarded-up fishway at Skaha Lake Dam in British Columbia and collectively shaking their heads, staff from the Colville Tribes and Okanagan Nation Alliance cut 105 four-by-four posts and set them into built-in slots in the fishway. They created five step pools, each about two to four feet deep, each about an 8 to 12 inch leap above the last.

Then they removed the existing stop log. Water flowed into the fishway, and salmon that were once limited to rearing in the north basin of Canada's Lake Osoyoos now had access to Skaha Lake. Okanagan sockeye rearing habitat more than doubled. Cost of the project: around \$2,500.

"Frustration removed," says Colville fish biologist Chris Fisher.

Both Skaha Lake and Okanagan Lake are prized for their native kokanee, which grow to 10 pounds and supply a lively recreational and commercial fishery. Fish managers were worried about sockeye getting into the lakes and competing with kokanee and native trout for food and habitat, and potentially spreading disease. They also wanted to keep non-native warm-water species from getting into the upper reaches of the Okanagan River. So, soon after the dams were built, they closed off passage into both of those lakes.

But as the Colville Tribes watched sockeye runs in the U.S. dwindle in the 1990s, they wondered if the limited rearing area in Canadian lakes was part of the problem. The mid-Columbia public utility districts of Douglas, Chelan and Grant counties had mitigation responsibilities for the sockeye that migrated past their dams. They began to form alliances with the Okanagan First Nations and the Canadian governmental entities, including the Department of Fish and Oceans. A 12-year plan started to take shape.

In 2000, they approached BPA with a request to fund a risk assessment of their proposal to open up access to Skaha and Okanagan lakes. BPA agreed to fund an \$800,000 three-year study. The study found that there was negligible disease risk to native stocks from providing passage over McIntyre and Okanagan Falls into Skaha Lake. Follow-up studies found there was plenty of food

in the lake to support a sockeye population without jeopardizing kokanee populations.

The studies were timely, thorough and scientific, and the findings reassured those that were worried about opening up Skaha Lake. The partners took it stepwise, ensuring buy-in and assessing results at each stage. In the fall of 2009, the fish managers approved modifications at McIntyre Dam to provide passage, with \$1.4 million in mitigation funds from Grant County PUD. Then in 2014, they agreed to activate the fish ladder at Skaha Lake.

Later this summer, the tribes will put in gravel ramps immediately downriver of the dam where the returning sockeye can spawn. A viewing platform at the dam will attract visitors to see the bright red fish return.

“In a matter of time, you will see the sockeye population take off,” says BPA tribal liaison and Colville Tribe member Joe Peone.

It appears that it’s already taken off. The 2014 sockeye return to Bonneville Dam is the largest on record (since 1938). Some of those fish are headed for the Snake River, where a BPA-funded hatchery program has brought the sockeye back from the brink of extinction. They’re also helped by fish passage improvements on the federal hydropower dams that have improved juvenile fish survival to the best seen since pre-dam days.

And in the Okanogan in recent years, Fisher says, the river is teeming red with returning sockeye in late summer and early fall. “You have to see it to believe it,” he says. “It’s phenomenal these fish are so resilient.”

Super-efficient manufactured home showcased

Puget Sound Energy, Habitat for Humanity Seattle-King County and BPA recently hosted a tour of a new, high-performance manufactured home in Bothell, just north of Seattle. The prototype home incorporates some of the latest energy-saving features and technologies, including a ductless heat pump, heat pump water heater, efficient lighting, triple-glazed windows, foam sheathing on exterior walls and added insulation.

“Manufactured homes built to this new high-performance spec have durability and performance features that could change opinions about factory-built homes and be an integral part of our super-efficient 21st century utility system,” says Christopher Dymond, senior product manager with Northwest Energy Efficiency Alliance, an alliance of more than 140 Northwest utilities and energy efficiency organizations.

While the prototype may represent the manufactured home of the future, the Norahun family is simply excited to call it home.

“We can’t wait to see our new home for the first time and learn more about its unique features,” says Tesfaye Norahun. “We’re so happy that we’ll finally have a home to call our own, but also that it won’t cost us a lot of money to run and maintain.”

The Norahuns are purchasing the home through Habitat for Humanity Seattle-King County’s affordable home ownership program.

“We are excited to be a part of this project, as it fits very closely with our commitment to being a responsible, sustainable and affordable home builder,” says Kirk Utzinger, Habitat Seattle-King County CEO.

BPA, NEEA, Northwest electric utilities and other partners are collaborating with nine Northwest-based manufactured home builders to demonstrate the benefits of a higher standard for newly constructed manufactured homes and assist each manufacturer in their design. A manufactured home built to an advanced high-performance specification can save up to 50 percent on heating and cooling costs when compared to typical manufactured homes.

“Beyond more affordable electric bills for the homeowner, the goal is to establish a new minimum building standard for manufactured homes,” says Bob Stolarski, director of Customer Energy Management, Puget Sound Energy. “Which means buyers will get a higher quality, more comfortable and more energy efficient home.”

There are about a half a million manufactured homes in the Northwest and more than 200,000 in Washington. A more energy-efficient option could help PSE, BPA and other Northwest electric utilities meet future energy conservation goals. Estimates suggest that an uptake of high-performance manufactured homes in the thousands could translate to long-term energy savings of 20 average megawatts — enough electricity to power nearly 15,000 Northwest homes for an entire year.

The entry of new, super-efficient models could also reinvigorate a relatively stale manufactured home market.

The Bothell home is one of four completed prototypes. Three others have been cited in Toledo, Wash. (Lewis County Public Utility District), Pullman, Wash. (Avista Corp.) and Otis, Ore. (PacifiCorp). And another four homes are expected to be cited throughout the region in the next few months.

The project is part of the U.S. Department of Energy’s “Building America Partnership for Improved Residential Construction” program. Other partners include: Community Frameworks, Ecotope, Environmental Protection Agency’s Energy Star New Homes Program, Manufactured Housing Association and Washington State University.

AGENCY PROJECTS

Northwest Energy Market Assessment [Regionwide]

BPA is participating in the Northwest Power Pool's Market Assessment and Coordination Committee (MC). The MC, a collaboration of 19 public and investor-owned utilities from across the NWPP footprint, is considering the design for a within-hour energy market, called a security constrained economic dispatch. BPA is holding a public process to consider its participation in the SCED design proposal being developed by the MC. BPA's next public meeting on the SCED design will be Sept. 29. www.bpa.gov/goto/MarketAssessment

BP-16 Rate Case Workshops [Regionwide]

BPA is holding a series of workshops through August in preparation for the BP-16 rate proceeding to set power, transmission and ancillary services rates for fiscal years 2016–2017. www.bpa.gov/goto/BP16

POWER

Rate Period High Water Mark public process [Regionwide]

BPA is seeking comments through Sept. 4 on the establishment of Rate Period High Water Marks that will be used to set power rates for fiscal years 2016 and 2017. The RHWM is the amount of energy a customer is eligible to purchase at BPA's lowest-cost Tier 1 rates in the upcoming rate period. www.bpa.gov/goto/RHWM

TRANSMISSION

Pacific Direct Current Intertie Upgrade Project [Lake, Jefferson, Crook, Deschutes and Wasco counties, Ore.]

BPA released the final environmental assessment and finding of no significant impact on Aug. 15. The project includes proposed upgrades on the DC transmission line from the Celilo Substation in The Dalles, Ore., south to the Nevada-Oregon border. www.bpa.gov/goto/PDCIUpgrade

Spar Canyon-Round Valley Access Road Improvement Project [Custer County, Idaho]

BPA is proposing improvements to the access road system for its Spar Canyon-Round Valley transmission line on Bureau of Land Management land in Custer County, Idaho. Access roads are critical for continued safe and reliable operation and maintenance of the transmission system. Improvements would involve constructing four to six miles of new road, reinforcing road crossings at drainages with rock, and acquiring access rights from BLM for new road use. BPA and BLM will prepare an environmental assessment and are seeking scoping comments through Sept. 2. www.bpa.gov/goto/SparCanyon

ENVIRONMENT, FISH AND WILDLIFE

Merry Canyon and Trinity acclimation sites [Chelan and Okanogan counties, Wash.]

BPA is accepting comments through Sept. 2 on its proposal to fund two acclimation ponds for coho salmon as part of the Mid-Columbia Coho Restoration Program, which is implemented by the Confederated Tribes and Bands of the Yakama Nation. www.bpa.gov/goto/MidColumbiaCohoRestoration

Southern Idaho Wildlife Settlement

BPA and the state of Idaho are seeking public comment through Sept. 15 on a proposed settlement to protect and conserve wildlife habitat in southern Idaho. Under the agreement, BPA will provide funding to Idaho to implement its Southern Idaho Wildlife Mitigation program that permanently protects wildlife habitat in southern Idaho. BPA is also providing stewardship funding that allows Idaho to administer its program, maintain existing protected areas and protect and restore new properties for quality wildlife habitat. In return, Idaho will acknowledge that BPA has met its wildlife mitigation obligations. BPA and Idaho will consider feedback and decide whether to sign a final agreement this fall. Read the draft agreement at www.bpa.gov/news/pubs/moa/20140814-moa-SIWM-MOA08142014-PK.pdf.

CLOSE OF COMMENT

Submit comments to www.bpa.gov/comment.

Sept. 2 – Spar Canyon-Round Valley Access Road Improvement Project

Sept. 2 – Merry Canyon and Trinity acclimation sites for coho

Sept. 4 – Rate Period High Water Marks

Sept. 15 – Southern Idaho Wildlife Settlement

CALENDAR OF EVENTS

SCED design overview and recommendation

- **Sept. 29**, 1 to 5 p.m., BPA Rates Hearing Room
1201 Lloyd Blvd., Suite 200, Portland, Ore.

To view BPA's public involvement calendar, go to www.bpa.gov/goto/calendar. For Americans with Disabilities Act accommodations, call toll free 800-622-4519.

FOR MORE INFORMATION

Information on other projects under environmental review is available at www.bpa.gov/goto/NEPA.

For information about the National Environmental Policy Act in general, go to www.bpa.gov/goto/environmentalplanning.

The Journal is a monthly publication of the Bonneville Power Administration. If you have questions or comments, or you want to be added to the mailing list for any project, call toll free 800-622-4519.

To order copies of documents, call: 800-622-4520 or 503-230-7334. Written comments may be sent to: BPA, P.O. Box 14428, Portland, OR 97293-4428. Email address: comment@bpa.gov. BPA home page: www.bpa.gov. For details on BPA environmental reviews listed above, including site maps and documents issued to date, see www.efw.bpa.gov/environmental_services/nepadocs.aspx. Process Abbreviations: EA-Environmental Assessment, EIS-Environmental Impact Statement, ESA-Endangered Species Act, FONSI-Finding of No Significant Impact, NOI-Notice of Intent, ROD-Record of Decision.

