



# Journal

November 2013

## BPA makes Treasury payment

BPA recently made its 30th consecutive annual payment to the U.S. Treasury: a total of \$692 million for fiscal year 2013, which ended Sept. 30.

“We are proud of our record of sound financial management,” said Elliot Mainzer, acting BPA administrator. “This latest payment reaffirms BPA’s commitment to fully repay the U.S. taxpayers on time and in full for their investment in the Federal Columbia River Power System and reflects our strong commitment to our financial obligations and enduring prudent approach to fiscal management.”

Including this year, BPA’s cumulative payments to the U.S. Treasury during these 30 consecutive years amount to over \$23.8 billion.

This year’s payment includes: \$224 million in principal; \$367 million in interest; \$59 million in irrigation assistance payments; and \$42 million in other payments. Included in the \$42 million of other payments is a \$36 million payment to ensure that ratepayers, not taxpayers, fund post-retirement benefit programs for FCRPS employees. Of the \$692 million total payment, \$131 million is paid by applying Treasury credits for non-power-related fish mitigation efforts and for interest earnings.

The principal payment is less than in the past because BPA was scheduled to repay a higher amount of nonfederal debt this year. This year BPA repaid \$513 million of nonfederal debt principal, of which \$500 million was related to Energy Northwest projects. Energy Northwest develops, owns and operates a diverse mix of electricity generating resources, including the Northwest’s only nuclear facility, the Columbia Generating Station in Richland, Wash.

In addition to the U.S. Treasury payment, BPA paid operations and maintenance expenses for the U.S. Army Corps of Engineers, Bureau of Reclamation and U.S. Fish and Wildlife service projects directly funded by BPA. This direct funding amounted to \$345 million in fiscal year 2013.



*BPA designed custom transmission towers across the Columbia River from Grand Coulee’s Third Power Plant.*

## Team surmounts obstacles on Grand Coulee project

Scorching 105-degree heat. Finger-numbing 20-degree cold. A grass fire that raged a stone’s throw away, forcing the evacuation of part of the town. Workers rappelling like mountaineers down the face of the nation’s largest dam.

Nobody said the \$33 million Grand Coulee Line Replacement Project would be easy. Among the unusual demands and conditions BPA, its contractors and partners at the Bureau of Reclamation encountered on the road to completing the project in May:

- One-of-a-kind design and construction challenges around the historic, contoured face of the second-largest concrete structure in the world.
- A devilish web of minimum electrical clearances to observe in mapping and building a zigzag of 18 bundles of triple 500-kilovolt conductor attaching the Third Power Plant to the dam, then spanning the river to six new transmission towers.
- Three towns, three counties and tribes to consult about the impacts of the project.



- Electrical outages requiring two years of negotiation to mesh schedules with a dozen unrelated construction projects taking place simultaneously at the dam.
- Twenty-seven miles of oil-filled underground copper cable to be depressurized, drained and extracted from tunnels deep within the dam.

How do you master a job of such complexity and come out the other side months ahead of schedule and \$3 million under budget, with strong relationships and mutual respect intact? Three succinct words, a professional mantra, from BPA project manager Mark Korsness: “It’s the Team.” (And he always capitalizes the “T”.)

Although the line replacement plan formally began five years ago, in a larger sense, it was forged in fire three decades ago. In 1981, when the subterranean power cables were just a few years old, a fire broke out in one of the two tunnels. Entombed in the dam, which is owned and operated by the Bureau of Reclamation, the inferno burned for 10 hours before it could be extinguished.

That fire, believed to have been caused by an electrical fault, knocked 2,400 megawatts of power off the grid. It took more than a year to erect temporary overhead transmission lines spanning the river and two more years to replace the cables in the dam.

But it could have been even worse: The fire’s intensity jeopardized the remaining set of transmission cables in the other tunnel. Had the fire reached them, it would have cost the region the full output of the third powerhouse — 4,215 megawatts. For comparison, that amount is nearly four times the power produced by the Northwest’s only nuclear plant, the Columbia Generating Station in Richland, Wash.

In light of that daunting history, there was a sense of urgency as the cables approached the end of their useful life. The Bureau of Reclamation, which owns and operates the dam, estimated that another tunnel fire could impair Grand Coulee’s ability to pass water for flood control and cost more than \$200 million a year in lost generation.

In 2008, Reclamation asked BPA to design and construct the six sets of new 500-kilovolt transmission lines. An overhead design was chosen for the replacement of the cables inside the dam, making multiple line failures less likely, ensuring the safe and reliable transmission of power for the region.

But the preferred new configuration posed a host of its own challenges that required ongoing collaboration and great flexibility by BPA, Reclamation and contractors. Perhaps the most difficult aspect of the project for the BPA team was the intricate overhead transmission design.

“Geography-wise, it was a nightmare,” says construction inspector Len Schulmeister, who spent several 100-degree

days hanging in a basket suspended off the lip of the dam to affirm the strength of each custom-made anchor as it was set into the concrete face.

Then the lines had to swoop across the Columbia River and go uphill to three 350-foot-tall custom-designed towers, three standard towers and a spreading yard, before reaching a substation and the BPA regional grid.

To prevent dangerous arcing, or uncontrolled discharge of current in unwelcome directions, high-voltage lines must maintain exact spacing and tension. They can’t be too close to each other, the ground, water or structures. The design had to take into account myriad angles and interrelationships among the 54 conductors and 10 overhead ground wires, as well as the effects of conditions such as wind, ice and heat. Conductor-to-ground clearances, phase-to-phase clearances, circuit-to-circuit clearances....

“My Dad went gray at a young age, and now I’m going gray too,” says project engineer Lance Lewis, 32. The Tuskegee University-trained mechanical engineer was only a year out of BPA’s student program in 2009 when he was thrown into the role of leading the transmission design teams and later ordering all the construction materials for the overhead phase of the project.

“Most people never get a chance in their career to build a 500 kV line — and Lance designed six of them,” says Korsness. “Go big or go home.”

Lewis credits the project’s success to relying on the expert support of the team, including BPA senior construction manager Shantini Ratnathicam, substation engineer James Kelly, transmission designer Len Custer, tower designers Juan Nuño and Dave Hesse, lead inspector Dan Holzer and BPA’s project partners. “I was learning as I was doing,” Lewis says. “It was quite the experience.

“We had a well-put together team — it almost turned into a family type thing. I don’t think I’ll ever see anything as complicated as that again in my career. I matured greatly, and I’m proud to say I was part of it.”

## Reports highlight benefits of habitat, dam improvements

Every year BPA funds hundreds of habitat improvement projects throughout the Columbia River Basin and estuary, as well as improvements at federal dams, to help offset the impacts of the dams on salmon and steelhead. So how are they working, and are the improvements translating into stronger fish populations?

A series of reports by BPA and partner agencies summarize research that is providing answers to these key questions. One of the reports focuses on the benefits of habitat improvements in the tributaries of the Columbia River

system, one summarizes initial results of habitat improvements in the river's estuary and the third examines benefits of improvements at the dams.

They report findings in all three areas, including:

- Annual estimates indicate that juvenile steelhead and yearling chinook salmon are migrating down the Snake and Columbia rivers to the ocean faster and more safely following improvements at federal dams.
- Steelhead abundance and survival increased in a tributary of the John Day River after habitat improvements that involved assisting beavers in constructing dams that slowed the flow of water, raised the water table and boosted wetland vegetation.
- An estimated 11,000 to 13,000 sub-yearling chinook salmon using reopened wetland and channel habitat in the estuary were larger, in better condition and feeding more intensively than fish in comparable areas.

In short, research is demonstrating that habitat improvements benefit fish on a large and small scale, and is helping to identify the habitat characteristics — from gravel size to water velocity — most important to fish. The results will help BPA and its partners better focus funding on improvements that are most likely to produce the greatest benefits for protected fish populations.

“Our habitat programs incorporate research to ensure that projects are delivering expected benefits and to help us design even more effective projects in the future,” says Rosy Mazaika, habitat program lead in BPA’s Environment, Fish and Wildlife program.

In the hydroelectric system, analyses show that fewer juvenile fish encounter turbines at the dams during their downstream migration and upwards of 80 percent of spring migrating fish and 70 percent of summer migrating fish pass the dams through other routes. Fish also pass the dams faster, averaging 11.2 days from Lower Granite to McNary dams from 2005 to 2010 compared to 21.3 days from 1998 to 2004. Analyses credit the improvements to the combined benefits of flow, spill and installation of surface passage systems at most dams on the Lower Snake and Columbia rivers. Faster passage reduces exposure to predators and speeds arrival in the estuary, where juvenile fish feed and gain strength before entering the ocean.

Improvements at the dams are a central component of the Biological Opinion issued by NOAA Fisheries to protect fish affected by the Federal Columbia River Power System. The BiOp also calls for BPA, the U.S. Army Corps of Engineers and the Bureau of Reclamation to undertake habitat improvements in the tributaries and estuary to further benefit fish listed under the Endangered Species Act.

The improvements included in the BiOp represent one of the most extensive habitat improvement programs in the country, if not the world. The accompanying research, monitoring and evaluation seek to document and measure the benefits of the habitat improvements with a degree of detail and precision rarely attempted before.

The reports are available at [www.salmonrecovery.gov](http://www.salmonrecovery.gov).

## Classroom presentations on science, engineering offered

With schools settling into the rhythm of a new year, BPA offers ready resources for teachers looking to spark interest in their classrooms. BPA provides free presentations on energy, engineering and science to K-12 classes throughout the Northwest as part of its commitment to supporting energy literacy and education among the region’s young people.

“These are our future ratepayers and our future workforce,” explains acting Administrator Elliot Mainzer. “It is crucial that they are able to make informed decisions about our energy system, and that they are encouraged to pursue their interests in science and engineering so that they are poised to meet the energy challenges of the future.”

BPA’s classroom presentation includes a 10-minute introduction on the Northwest’s energy system, followed by a 50-minute, hands-on activity that demonstrates the scientific/engineering method. This engages kids’ critical-thinking and problem-solving skills, which is crucial for the engineers, scientists and energy researchers of tomorrow.

“With the advent of new science standards for schools and increased emphasis on science, technology, engineering and mathematics education, teachers have been interested in the opportunity to have a real engineer or scientist visit their class,” said Christy Adams, education coordinator for BPA. “We are so fortunate to have a team of diverse and talented engineers and professionals here who love to talk to kids. Many times we hear that these presentations can literally change the trajectory of a student’s life.”

Teachers can choose among four hands-on activities, such as “How to Build a Motor,” “How to Build a Turbine,” “The Great Marble Drop” and “How to Build a Tower.” Presentations are separated into three grade- and age-appropriate categories: K-3rd grade; 4th-8th grade; and high school/college. They can be customized to meet teacher needs.

For more information, visit [www.bpa.gov/goto/Education](http://www.bpa.gov/goto/Education). To schedule a classroom presentation, contact education coordinator Christy Adams at [cfadams@bpa.gov](mailto:cfadams@bpa.gov).

## Watch us work

### **SUPERMAN, MARTINI TOWERS BOOST HIGH-VOLTAGE LINES**

Innovative tower designs on the Sandy River in Troutdale, Ore., will prevent two high-voltage transmission towers from being washed away. Find out how the unique towers were built and everything that must be considered in the process.

**TO WATCH** this and other videos, go to our **YouTube** channel at [www.youtube.com/BonnevillePower](http://www.youtube.com/BonnevillePower).

## Public Involvement [updates & Notices]

### AGENCY PROJECTS

#### **Quarterly Business Review [Regionwide]**

BPA will hold its Quarterly Business Review on Nov. 5. This meeting will focus on BPA's finances with a review of current fiscal year and fourth-quarter financial results compared to financial forecasts, such as the start-of-year budget and rate case. Other current agency topics and operational excellence initiatives will also be covered during the meeting. For information, go to [www.bpa.gov/goto/QBR](http://www.bpa.gov/goto/QBR). **SEE CALENDAR**

#### **Columbia River Treaty 2014/2024 Review [Regionwide]**

The U.S. Entity hosted five public round-table meetings around the region to solicit comments on its Draft Regional Recommendation concerning the future of the Columbia River Treaty with Canada. The public comment period closed Oct. 25, with more than 500 comments received. The Entity, working with the Sovereign Review Team, will evaluate all comments submitted and post a comment summary on its Treaty website in early November. The Entity is seeking broad regional support — from sovereigns, regional stakeholders and the public — before the recommendation is finalized and presented to the U.S. Department of State in December. To see the Draft Regional Recommendation, go to [www.crt2014-2024review.gov](http://www.crt2014-2024review.gov). For more information, email U.S. Entity staff at [treatyreview@bpa.gov](mailto:treatyreview@bpa.gov), or call BPA at 800-622-4519 or the U.S. Army Corps of Engineers at 503-808-4510.

#### **OS-14 Rate Case [Regionwide]**

In the OS-14 rate case, BPA will propose rates to recover the costs incurred under the Oversupply Management Protocol. The draft ROD will be issued Nov. 21. For information, go to [www.bpa.gov/goto/RateCase](http://www.bpa.gov/goto/RateCase).

### POWER

#### **Energy Efficiency Post-2011 Review [Regionwide]**

BPA will host a meeting in Portland on Nov. 22 to kick off the public process to review and consider improvements to BPA's energy efficiency policy framework. The meeting will include a discussion on the draft

scoping document, released in October, which identifies issues and a timeline to review and update the policy framework. Most updates to the framework should be in effect by the start of fiscal year 2015. For information, go to [www.bpa.gov/Energy/N/post-2011/](http://www.bpa.gov/Energy/N/post-2011/). **SEE CALENDAR**

### TRANSMISSION

#### **I-5 Corridor Reinforcement Project [Cowlitz and Clark counties, Wash., and Multnomah County, Ore.]**

BPA and its contractors are conducting field work in the existing and proposed transmission line corridor to collect information for the project. The information will help BPA refine the proposed design for the project and determine its potential impacts. For information, go to [www.bpa.gov/goto/i-5](http://www.bpa.gov/goto/i-5) or call 800-230-6593.

### FOR MORE INFORMATION

Information on other projects under environmental review is available at [www.bpa.gov/goto/NEPA](http://www.bpa.gov/goto/NEPA).

For information about the National Environmental Policy Act in general, go to [www.bpa.gov/goto/environmentalplanning](http://www.bpa.gov/goto/environmentalplanning).

### CALENDAR OF EVENTS

#### **Quarterly Business Review**

- **Nov. 5**, 9:30 a.m. to 3:30 p.m.  
Rates Hearing Room, 1201 N.E. Lloyd Blvd., Suite 200, Portland, Ore.

#### **Energy Efficiency post-2011 Review**

- **Nov. 22**, 8:30 a.m. to noon  
Rates Hearing Room, 1201 N.E. Lloyd Blvd., Suite 200, Portland, Ore.

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

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](mailto:comment@BPA.gov). BPA home page: [www.bpa.gov](http://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](http://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.

