

Striking a Balance Between Energy and the Environment in the Columbia River Basin

Agreement Between BPA And Oregon Finalizes Mitigation For Wildlife Impacts Of Willamette River Basin Dams

The state of Oregon and the Bonneville Power Administration have signed an agreement that will direct about \$160 million over the next 15 years to projects to acquire and improve habitat for fish and wildlife affected by hydropower dams in the Willamette River Basin. Projects will be implemented through the Council's Columbia River Basin Fish and Wildlife Program.

Under terms of the agreement, Bonneville will provide funding through 2025 for the state of Oregon, tribes, nonprofit groups, and others to acquire and protect at least 16,880 acres of rare and important wildlife habitat, including wetlands, oak savanna, and bottomland forests. According to a Bonneville news release, at least 10 percent of the protected habitat will benefit both terrestrial wildlife and fish, including salmon and steelhead, to help satisfy federal guidelines that protect Willamette fish species.



Looking upriver on the Middle Fork Willamette River, the land on the right bank is the Wildish property, where the Bonneville Power Administration acquired a conservation easement as partial mitigation for the impacts of Willamette Basin hydropower dams on fish and wildlife. **Photo courtesy of Chris Orsinger, Friends of Buford Park & Mt. Pisgah.**

13 populations of ESA-listed Chinook salmon and winter steelhead. Many of the actions in the biological opinion also benefit wildlife, consistent with guidelines in the agreement signed by Bonneville and the state of Oregon.

The biological opinion covers actions to help the fish through 2023, including improving some of the dams so that juvenile fish can pass safely,

The guidelines are included in a biological opinion issued by NOAA Fisheries, the federal agency that implements the Endangered Species Act for salmon and steelhead. The Willamette biological opinion, issued in July 2010, examines the effect of 13 dams on Willamette tributaries, plus 42 miles of bank-protection projects on

and improving water temperatures downstream from the dams to a more natural seasonal pattern. The biological opinion includes research and monitoring to ensure that any improvements made to the dams, including changes to the measures,

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Agreement

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are scientifically based and likely to succeed.

The Willamette is one of the largest tributaries of the Columbia River; the confluence is in north Portland about 100 miles inland from the ocean. The Willamette Basin is also the most densely populated tributary basin of the Columbia. The six largest cities in Oregon, with a combined population of just over 1 million, are in the Willamette Valley.

The U.S. Army Corps of Engineers owns and operates the Willamette Basin dams, which were built primarily to control flooding downstream in the valley. Some have hydropower turbines. Bonneville transmits and markets the power generated from eight of the dams and the Bureau of Reclamation manages irrigation contracts for water stored behind the dams. The reservoirs behind many of the dams are used for recreation and fishing.

Meanwhile, the agreement between Oregon and Bonneville, which complements the biological

“These important easements will protect habitat and benefit fish and wildlife in perpetuity.”

Council Chair Bruce Measure

opinion, is intended to resolve past differences over how much Willamette Basin habitat the federal agency must protect to meet its legal obligation in the 1980 Northwest Power Act. The Act requires Bonneville to address the impacts of hydropower dams on fish and wildlife in the Columbia River Basin. Bonneville implements the fish and wildlife program created by the Council under the Act.

In a news release issued when the agreement was made available for public comment, Lorri Bodi, acting vice president for Environment, Fish, and Wildlife at Bonneville, said the agreement “creates a new partnership between BPA and

Oregon that has great value for fish and wildlife and for BPA ratepayers.” She said the agreement provides “reliable funding for the protection of increasingly scarce Willamette habitat and at the same time provides new clarity for ratepayers on mitigation costs going forward.”

Bonneville already has acquired more than 9,000 acres in the Willamette Basin and turned it over to others to manage, primarily the Oregon Department of Fish and Wildlife. With the new agreement, Bonneville’s mitigation obligation in the Willamette Basin will be fulfilled.

As a result of the agreement, two major habitat conservation easements will move ahead to benefit Willamette Basin fish and wildlife. Together, the easements total \$15.8 million. The Council considered the projects, including a review by the Council’s Independent Science Review Panel, and approved them for funding in August.

“These important easements will protect habitat and benefit fish and wildlife in perpetuity,” Council Chair Bruce Measure said. “We are pleased that the parties have been able to reach agreement on funding, objectives, and reporting of results, and that the easements are consistent with the Council’s objectives for the Willamette Valley.”

In one acquisition, The Nature Conservancy will receive \$11,065,105 to purchase a conservation easement from the Wildish family for a 1,270-acre parcel that includes six miles of river frontage at the confluence of the Middle and Coast Forks of the Willamette River near Springfield in the southern Willamette Valley. Bonneville will

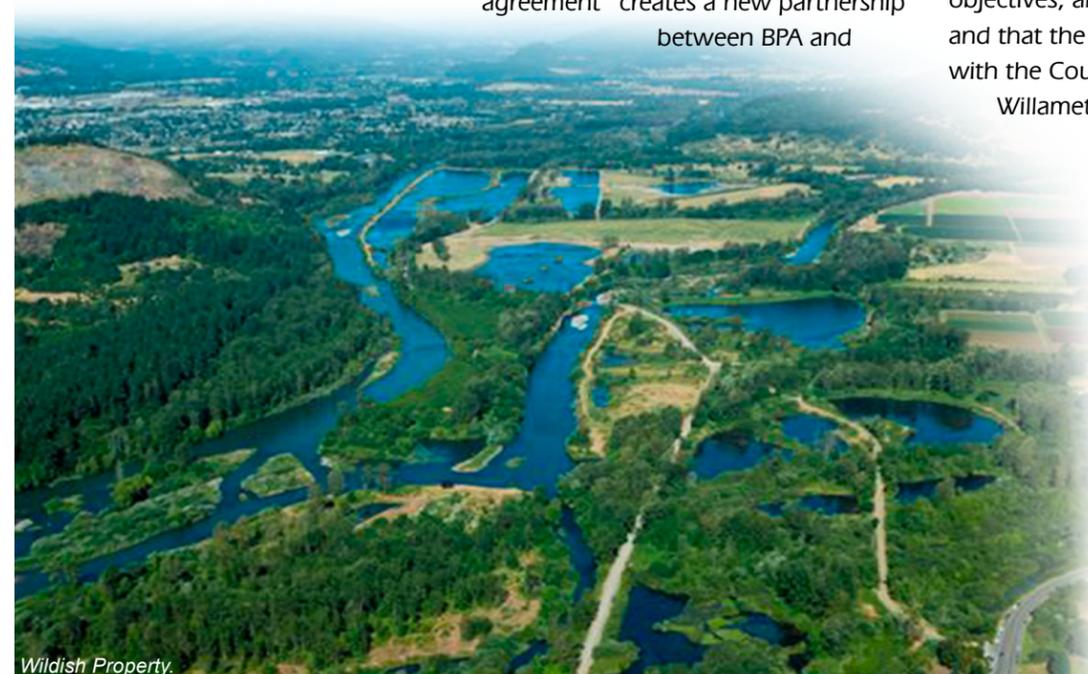
Notes From the Chair



Our cover story this season marks a milestone in fish and wildlife preservation in the most densely populated tributary basin of the Columbia. The Willamette River Basin agreement between the state of Oregon and the Bonneville Power Administration will protect over 16,000 acres of habitat for wildlife and fish, including listed populations. This is a big achievement. The agreement fulfills Bonneville’s mitigation obligation in the Willamette Valley and means that rare and diverse wetlands and forests, and the fish and wildlife that depend on them, will continue to thrive for generations to come.

Other stories in this edition include the potential of small, sustainable hydropower projects to provide clean, renewable power and jobs, both nationally and in the Northwest. The Council toured two such projects in Central Oregon, and you’ll learn about them in this edition.

And, following on a theme of hearing from different utilities in the region, we interview PacifiCorp President Pat Reiten, who talks about some of the energy challenges we face from the perspective of an investor-owned utility.



Wildish Property.

hold the conservation easement on the property. The parcel contains three miles of streams and more than 500 acres of adjoining upland prairie and oak habitat. The site supports 25 terrestrial and aquatic focal species, including ESA-listed spring Chinook, Oregon chub, and bull trout.

In the other acquisition, the Oregon Department of Fish and Wildlife will receive \$4,750,000 to acquire an easement on 1,310 acres of native conifer woodlands, upland prairie, oak savanna, oak woodlands, grasslands, and wet prairies located outside the town of Lafayette in the northern Willamette Valley. The conservation easement is on property owned by Our Lady of Guadalupe Trappist Abbey near Lafayette, Oregon. The abbey is located within a priority conservation area and contains high-quality native upland prairie habitat, as well as oak

woodlands, both identified as rare plant communities in the Willamette Valley and included in the Oregon Wildlife Conservation Strategy.

The two new conservation easements join two other parcels recently purchased as hydropower mitigation in the Willamette Basin. One is the 58-acre Melevin property, also known as the Green Island Addition, located near the original mouth of the McKenzie River near Eugene. Bonneville purchased it for \$1.2 million. The other is the Yamhill Oaks Gahr property in Yamhill County, a 319-acre parcel purchased for \$1.03 million. Bonneville will hold a conservation easement over those two properties, The Nature Conservancy will own the former Wildish property, and the monks of the Guadalupe Abbey, with Trout Mountain Forestry, will own and manage the abbey property. The monks put a portion of

the income from the sale into a trust to maintain the property in perpetuity.

Winter Forecast: Wet and Cold

Climate experts predict the coming winter will be cooler and wetter than average, based on evidence of an unusual shift in North Pacific Ocean sea-surface temperatures from warm last winter to cool this winter, a one-year shift that has happened only 15 times in the last 106 winters.

The shift in what is called the El Niño Southern Oscillation (ENSO) occurs in the tropical Pacific Ocean on average about every five years. Warming (El Niño) or cooling (La Niña) of sea-surface temperature causes changes in air pressure—higher pressure with the warmer El Niño, lower pressure with the cooler La Niña. These pressure changes affect weather patterns.

El Niño winters are warmer and drier than average in the Northwest—like the winter of 2009/2010, when a lack of snow

plagued the winter Olympics in Vancouver, B.C. During La Niña events, the odds improve for a cooler, wetter winter.

While the one-year shift is unusual, the result for the Northwest is predictable in general terms: more rain and snow, followed by higher spring runoff in the Columbia River, possibly boosting hydropower generation in the spring. Alan Hamlet, a climate scientist at the Climate Impacts Group (CIG) at the University of Washington, said La Niña winters boost Columbia River flows measured at The Dalles Dam by about 12 percent on average.

According to a report by the CIG, the poor snow pack last winter, which resulted in lower-than-average runoff in the spring (with the notable exception of unusually high flows following a period of heavy rain in June), suggest flows will remain below average going into the coming winter. In general, the six-month forecast issued by the Northwest River Forecast Center last summer suggests below-normal streamflows throughout the Snake River

Basin, and normal streamflows for the upper reaches to below-normal streamflows for the lower reaches of the Columbia River. These shifts in average winter conditions can affect future water supply, flood risk, winter recreation, and wildfire risk, among other things.

Looking to the coming winter, the odds are good for below-average temperatures and above-average precipitation through March 2011. According to the CIG's report, "Historically, a transition from warm-phase ENSO to cool-phase ENSO in a single year has produced unusually wet Pacific Northwest winters with surprising reliability."

Research suggests that the one-year shift from warm to cool may be predictable, which would be good news for water-supply planners. According to the CIG, the implication is that a

strong warm phase

in one year increases the odds of a rapid shift to a cool phase—and corresponding high flows—in the following year. Thus in June 1997, with a strong warm phase clearly established, increased odds of very wet conditions in 1998-1999 would have been predicted in the Northwest, a lead time for summer streamflow prediction of about 24 months. Such forecasts may have important implications for power marketing, irrigated agriculture, and other water-resources applications, the CIG reported.

In a bit of weather-related advice, the CIG scientists offered the following in their report about the upcoming winter: "Although a comprehensive physical explanation for these observed patterns of variability has not yet been established, if you were thinking of getting your roof replaced or buying a full-season ski pass, it looks like 2010-2011 might be a good year to do it!" 



Sawtooth Mountains in Idaho

Northwest Q&A: Pat Reiten, President, Pacific Power

Patrick Reiten is president of Pacific Power at PacifiCorp, a position he has held since September 2006. Reiten is responsible for delivering electricity safely and reliably to 733,000 customers in Oregon, Washington, and California.

Prior to joining PacifiCorp, Reiten was president and chief executive officer of PNGC Power, an energy cooperative located in Portland, Oregon.

Prior to PNGC Power, Reiten served as an aide to U.S. Senator Mark O. Hatfield.

He currently serves with multiple organizations, including the Oregon Business Council, Associated Oregon Industries, Greenlight Greater Portland, The Freshwater Trust, Cascade Council of the Boy Scouts of America, and Jesuit High School. He was appointed by Governor Ted Kulongoski to the Oregon Energy Planning Council and is the chair of the Oregon Business Plan in 2010. Reiten also chaired Oregon's Transportation Vision Committee.

He earned a bachelor's degree in political science with an emphasis in economics from the University of Washington, and he completed executive training at the Wharton School of Business, University of Pennsylvania.



Q You arrived at Pacific Power at what might be described as a tumultuous time in the history of your organization. Your former parent company, Scottish Power had just sold PacifiCorp to MidAmerican Energy Holdings Company, which appears to have a different operating model than the former owner. What were some of the challenges you faced during those first few months, and what changes were the most important to the future of the utility?

I was brought in by the new owners when PacifiCorp was acquired by MidAmerican Energy Holdings Company, which is the energy wing of Berkshire-Hathaway. MEHC has a reputation for having tough, bottom-line oriented business people, and the merger integration after the 2006 acquisition didn't diminish that view for most. I'm a local guy, with primarily Northwest utility experience. How would I fit in? Honestly, it has been a

great experience. I'm grateful for the fact that local management is part of MEHC's business model, and that our team has become a key part of the holding company's operations. We've attracted and retained some great people – which is obviously the best way to assure success going forward.

My time at PNGC Power turned out to be a wonderful background for this experience in that its model features great alignment between the company and its customer/owners. I like the immediacy of working for owners, and I have that same opportunity at Pacific Power, as well as the opportunity to continue to implement a "customer first" mentality. The best word I can come up with to describe the business philosophy here is "correct."

The focus is on creating solid business plans and on strong operational execution. There is an equally huge focus on the business fundamentals and on creating value for customers. That's great to see in a company that is 100-years old this year.

We've faced challenges common to any business in the current severe economic downturn. The truth is that the discipline we've applied to the business as part of the merger positioned the company well for stability during these difficult times. In many ways, the timing was perfect. Here's a precise example: Starting in 2007, operations budgets were set at 2005 run-rates – and we've succeeded in holding that constant for a period of four years in a row. That's tough. That means absorbing labor and material and other cost increases, and finding ways to drive additional efficiencies into the business. As part of that, there are less people doing more here, and we've found new ways to do things better. We've

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had to. In the process, we've avoided furloughs, lay-offs, and benefit curtailments because we did hard things early in order to build a more sustainable business—and one that our customers can see is being run efficiently on their behalf.

And the really encouraging thing is that overall performance is up. Safety and environmental performance has improved tremendously over the last four years; reliability performance has improved, and we remain a very low-cost business despite substantial capital investments that are costly, but will save our customers more in the future.

Those investments include the Energy Gateway transmission project and more than 1,700 megawatts of new renewable resources. The latter has positioned PacifiCorp as the second largest wind owner among U.S. regulated utilities. Our sister company, Mid American Energy, is the largest.

That all constitutes great progress. And, Pacific Power was recently announced as number one in customer satisfaction among the largest 60 utilities in the nation – for the second straight year. Those are solid indications that things are headed in the right direction.

Q Describe your service territory and how Pacific Power's operations are distinct from those of your parent company, PacifiCorp.

Pacific Power now provides electric service to more than 730,000 customers in Oregon (550,000), Washington (140,000) and California (45,000). In Oregon, we serve 243 communities and have facilities and/or service territory in 31 of Oregon's 36 counties. In Washington, we serve the Yakima and Walla Walla areas. In California, we serve parts of Del Norte, Siskiyou, and

Shasta counties – all really great places. Our customer service territory is 10 times more dispersed than PGE, so it's much more rural in nature. Only 12 percent of our customers are located in Portland, with the majority of them spread out over a large geographic area. I love that because the company plays such a long-standing and integral role in so many great communities. We make a point of spending a lot of time around the system, which is my favorite part of the job.

Pacific Power is the regulated distribution arm of PacifiCorp and also manages the consolidated transmission assets. PacifiCorp does business in Utah, Idaho, and Wyoming as Rocky Mountain Power, which also manages the customer service infrastructure including call centers and metering activities. PacifiCorp Energy is the third leg of the PacifiCorp triangle, owning and maintaining the fleet of PacifiCorp's energy generation and managing our commercial and trading activities. Together, we serve 1.7 million customers in six western states.

PacifiCorp has one of the largest single-owned and operated transmis-

“The challenges of developing renewable power are finding appropriate, cost effective sites and developing transmission to bring the power to the grid”

*Pat Reiten
President, Pacific Power*

sion systems in the U.S. at 16,000 line miles, and it has a generating capability of more than 10,400 megawatts from coal, hydro, gas-fired combustion turbines, and renewable wind and geothermal power. Our three companies are distinct in their geographic and/or functional differences, but work together, hand-in-glove.

Q PacifiCorp has worked to include renewable energy into its resource portfolio, most of it wind. What renewables will the company be focusing on in the future? What are the principal issues with developing them?

We've been more active than any other utility in the region, and in the nation, in adding new renewable resources.

Since 2006, we've invested more than \$2 billion in wind facilities in the West, all added within the last four years.

The challenges of developing renewable power are finding appropriate, cost-effective sites and developing transmission to bring the power to the grid. And variable wind power also needs equivalent backup power to be available when the wind isn't blowing. As a result, in the last four years we've added two natural gas plants – one near Salt Lake City and one in Chehalis. More will need to come as we look to meet load while integrating additional renewables.

Currently, we are well ahead of pace in achieving our wind and renewable target. When that is combined with a dampening in load growth due to the economy, we'll see a slowdown in new wind development until adequate additional transmission is built. We're doing at least our share through 2,000 miles of additional planned transmission, but it takes a

long lead-time to permit and construct those projects. Until more high voltage transmission is constructed, we'll see curtailment conditions that will inhibit new wind development, so solving that is an absolute priority. Based on our current resource planning results, we fully expect to develop a substantial amount of additional wind, but not until we get beyond the in-service dates of key Energy Gateway segments. We were pleased to have the Populus to Terminal line go into service in mid-November, and we're working to move our Mona to Oquirrh, Sigurd to Red Butte, and Gateway West segments forward next.

Beyond wind, the company has a geothermal plant in Utah and has bestowed grants to dozens of small-scale, community-based solar projects – primarily through our Blue Sky renewable energy program that is customer-driven and nationally prominent. We have more than 1,000 customers in Oregon using solar energy through net metering agreements. We have dozens of customers using Oregon's solar incentive tariff to build their own solar generation. We recently put out a request for proposal for a utility-scale solar project. More solar and much more distributed generation is in our future, and that's a good thing.

Q How do you view utility development of energy efficiency as a resource?

We strongly support energy efficiency efforts throughout our service territory. In five states, we provide it directly and have for decades. Some of you may remember that Pacific Power pioneered energy efficiency, nationally, in the 1970s. And in Oregon, we work closely with the Energy Trust of Oregon to bring our customers the incentives and tools to move forward on energy efficiency projects and mea-

“Bottom line, we have increased our investment in energy efficiency from \$20 million a year to \$120 million a year in the past three years.”

*Pat Reiten
President, Pacific Power*

asures. As a utility, we look at these tools in three basic ways:

Energy efficiency allows our customers to manage their uses and costs, and that is increasingly important given the state of the economy and the incremental rate increases electric utility customers will see over time.

Energy efficiency measures are critical components of our Integrated Resource Plan, which is the long-range tool we use to determine how we will produce and deliver energy. If we can reduce the need for new capital deployment and dampen the overall growth curve of new energy generation, that helps us and helps our customers.

Energy efficiency also reduces overall emissions and assists in reducing environmental impacts, both for our customers and for us as a utility.

At a policy and collaborative level, we are extremely active and participate in this issue at the regional level through the Northwest Energy Efficiency Alliance and the Northwest Energy Efficiency Task Force. Bottom line, we have increased our investment in energy efficiency from \$20 million a year to \$120 million a year in the past three years.

Q Reducing our reliance on coal plants will become increasingly important if we're to meet carbon reduction goals. PacifiCorp is long on coal plants. What is the company's strategy for reducing carbon production? How does energy efficiency fit into those plans?

We've been investing for several years in emissions reduction technology, both in accord with, and in some cases exceeding, state and federal emissions reduction requirements. Over the last three years, we've stopped adding coal resources to our generation mix. New coal plants are completely out of our plans, and we are currently evaluating existing plants in terms of their future cost-effectiveness. We see the next round of generation build to be a combination of new natural gas, wind, and transmission projects. Carbon reduction will also entail additional investment in energy efficiency as well as distributed generation and the scaled growth of geothermal, solar, and biomass technology.

Q The Council's Sixth Power Plan calls for serious acceleration of energy efficiency gains by utilities and perhaps doubling efficiency investments over the next five years. How does your plan stack up against the Council's targets?

The Council has set ambitious targets to deploy conservation to meet 85 percent of regional load growth over the next 20 years. It's important to remember that the region is complex and not all individual utility systems have the same amount of efficiency potential. The Council – I believe – recognized that when it included language noting that its plan is designed to provide guidance and is not necessarily a plan for every individual utility

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in the region.

All of that said, PacifiCorp does model energy efficiency in its resource planning similar to the Council's treatment of conservation resources in the power plans. Our targets for the 2010-2014 period established through our last planning update (2008), and adjusted for I-937 requirements, are higher than the Fifth Power Plan's – about 16 percent higher. We haven't completed our 2011 update yet. Initial indications, though, are that energy efficiency selections will be substantially higher than the last version. My guess is that we'll compare favorably to the levels in the Sixth Power Plan, but we'll have to see how that plays out.

Q The Energy Trust does much of the efficiency work for Pacific Power in Oregon. How is that working? How does it compare to your approach in other states served by you and other PacifiCorp subsidiaries? Is one approach better than another?

The situation is different for us in Washington and California, where we're able to promote and work directly with customers of all types. It's a different way of operating. Customers in Oregon benefit best when the utilities and the Energy Trust are on the same page, working in lock-step so the trust of the customer/utility relationship is maximized.

We work hard to ensure that our customers are aware of energy efficiency services and incentives, regardless of the delivery mechanism. Pacific Power is rated first in the nation in large customer classes, and nearly as high in all customer classes for quality of customer relationship and satisfaction. Providing this information on energy efficiency is

increasingly important to customers as they evaluate us. The Energy Trust of Oregon brings a dimension to the customer relationship that we're all learning.

We've held over 20 energy efficiency workshops, reaching well over a thousand of our customers this year, and we've sent invitations and information to thousands more. Our model is that we work together on outreach and education, and the Trust and their contractors provide the program delivery. We've discovered and exploited several joint promotional avenues that "family" well with our other customer information campaigns – exponentially increasing their value. So, is it a different way of working? Yes. Does it work? Yes, again. 

Council Decisions

September 2010

Council adopts Bitterroot River Subbasin Plan

The Council voted to amend the Columbia River Basin Fish and Wildlife Program by adding the management plan of the Bitterroot River Subbasin Plan. From 2002 to 2005, the Council led a planning effort to develop subbasin plans for tributary subbasins of the Columbia River. The plans contain specific objectives and measures for mitigating the impacts of hydropower dams on fish and wildlife. Some plans, including one for the Bitterroot, were under development at the time and the Council committed to consider them for adoption when they were complete.

November 2010

Montana fish and wildlife habitat acquisition approved

The Council approved the Montana Resident Fish Habitat Acquisition project, through which the Bonneville Power Administration will provide \$15.5 million to secure remaining priority fish habitats in the Swan River Valley, a tributary of the Flathead River. The project implements the Columbia Basin Fish Accord between Bonneville and the state of Montana. The project is part of an effort that has been going on for more than 13 years to purchase 311,000 acres of corporate timberland in western Montana, including 66,000 acres in the Swan River valley, to protect fish and wildlife habitat while promoting sound timber management and continued public recreational opportunities.

New Small Hydro Projects Hold Potential for Clean Energy, Jobs

The federal Columbia River power system has long been the foundation of the Pacific Northwest's energy supply and continues to provide most of the region's electricity. About 71 percent of the region's generating capacity comes from hydropower dams. Nationally, hydropower accounts for 67 percent of domestic renewable generation and 7 percent of total electricity generation.

While the age of major dam building in the region is over, according to a recent study by Navigant Consulting, the country's hydropower industry could double its energy output and create over 1.4 million jobs by 2025.

In a presentation made at the Council's meeting this fall, utility representatives outlined the potential of small, sustainable hydro projects in the region and their attendant job creation: Idaho, 35,443; Montana, 28,195; Oregon, 115,612; and Washington, 218,381. Technology advances like pumped storage systems; adding generation capacity to existing dams; modernizing turbines and generators and adding new capacity; and developing small, sustainable projects that have a low impact on the environment, could all combine to reach the industry's goal. Hydrokinetic technologies also hold potential. The power of stream currents could be harnessed through "underwater windmills" thanks to new technologies. Wave and tidal energy are also potential resources being explored

in many countries, including in the Pacific Northwest where pilot projects have been ongoing. Along with providing clean energy, hydropower's output can be quickly adjusted to meet real-time electricity demand, and it helps to integrate other variable renewable resources like solar and wind power.

Small, In-canal Hydro Projects

This fall, Council members toured a couple of small hydro projects in Central Oregon. At the end of a two-and-a-half-mile stretch of the Pilot Butte Canal sits the Juniper Ridge hydropower plant. The Central Oregon Irrigation District project was made possible through federal and state funding, with partners like the Energy Trust of Oregon and the Deschutes River Conservancy. The plant's nameplate capacity is 5 megawatts and its anticipated production is about 13 million kilowatt hours of electricity, which will go to 1,300 homes in the Bend area through PacifiCorp.

"The plant only runs during irrigation season," says Steven Johnson, district manager. "We have the ability to extend the pipe upstream, which will allow us to produce 17 million kilowatts—that's the next phase."

Piping the canal has also resulted in a more efficient deliv-

ery system, conserving 7,412 acre feet of water, which has been permanently placed and protected with an instream water right in the Deschutes River.

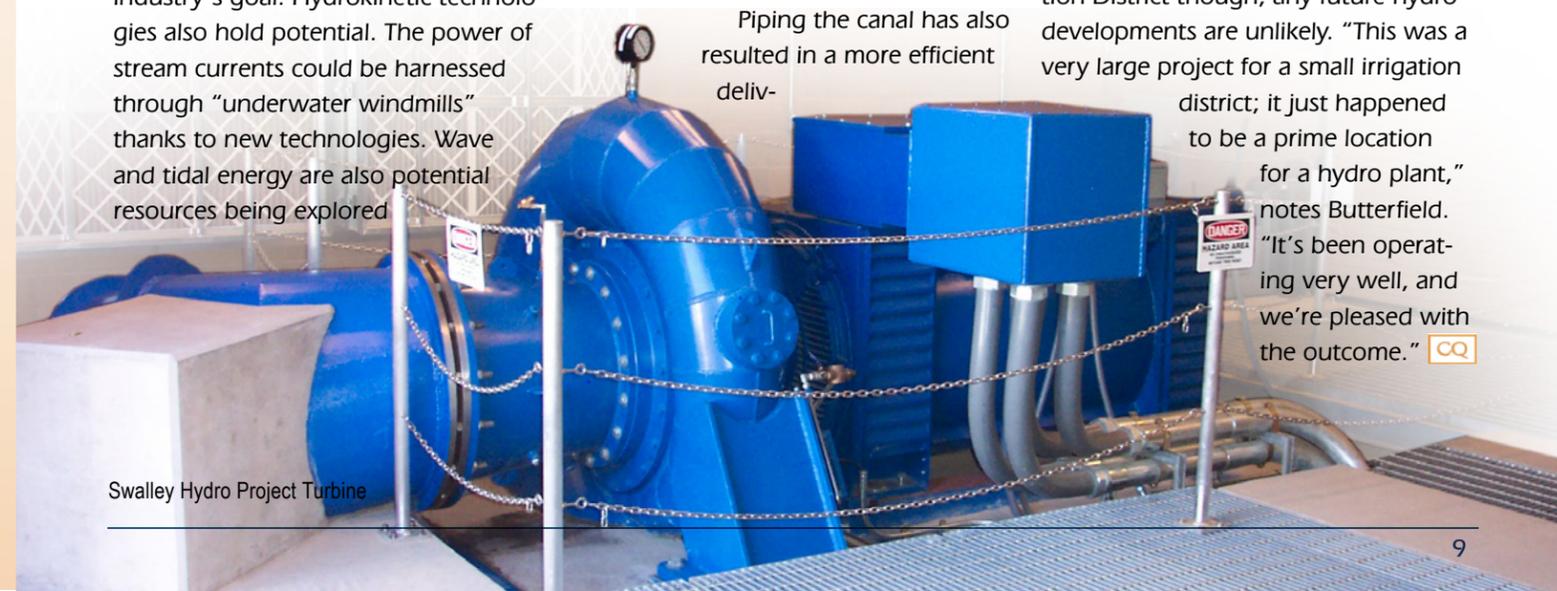
"We anticipate adding more hydro in the future," says Johnson. "It helps us to stay financially stable and keep the irrigation district's ongoing costs down for our patrons."

The Swalley Irrigation District's project includes 5 miles of pipeline ending in a .75 megawatt in-canal hydroelectric plant that generates about 2.7 million kilowatt hours of electricity annually. The electricity, through a contract with PacifiCorp, goes to about 375 homes in the Bend area.

"The plant runs throughout the year, but mostly during irrigation season, April 1 through October 31," says Suzanne Butterfield, manager for the district.

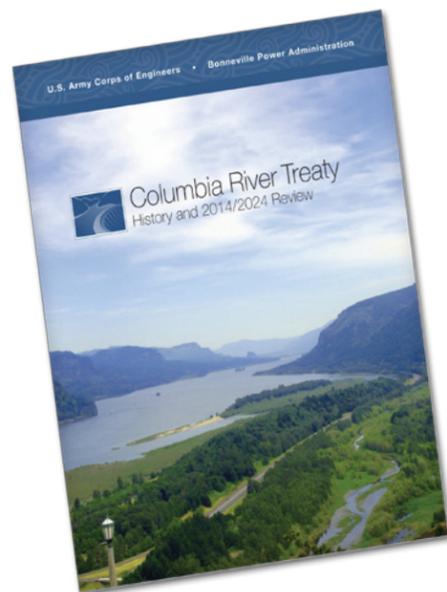
The project, which was made possible through a broad coalition of funding partners and federal money, updated a very old canal and conserves 18 million gallons of water a day, which is placed back into the Deschutes River with a permanent water right.

Unlike the Central Oregon Irrigation District though, any future hydro developments are unlikely. "This was a very large project for a small irrigation district; it just happened to be a prime location for a hydro plant," notes Butterfield. "It's been operating very well, and we're pleased with the outcome." 



Swalley Hydro Project Turbine

Interest Grows In Future Dam Operations As Columbia River Treaty Deadline Approaches



Electric utilities, academics, tribes, and government agencies in the United States and Canada are beginning to think about the future of the Columbia River Treaty, the 1964 agreement between the two countries that directs the operation of dams for hydropower generation and flood control.

Under the treaty, the assured flood control operation that the region has lived with for 50 years ends in 2024, to be replaced by something far less certain. The power system coordination provisions of the treaty could end in 2024 if either country gives 10 years' advance notice, and so the first opportunity for either country to signal its intention is just four years away.

"This could be a defining issue for the region for the next 50 years because of the many implications of river and dam operations for fish, wildlife, energy, and the environment," Council Chair Bruce Measure said.

The Columbia River Treaty coordinates the operations of water-storage dams in British Columbia to maximize

hydropower generation downstream in the United States and also provide flood control for the Portland/Vancouver area and other lower-river communities. The treaty does not address modern-day dam operations not envisioned in 1964, such as boosting flows in the spring and summer to aid salmon and steelhead migration to and from the ocean.

Representatives of the Bonneville Power Administration, U.S. Army Corps of Engineers, and BC Hydro are beginning to study future scenarios with and without the treaty. The studies are part of a multi-year effort to understand the implications of various future options for the treaty—termination, continuation, or modification. Bonneville and the Corps constitute the United States entity for treaty implementation, and BC Hydro is the Canadian entity. The joint study is called the 2014/2024 Columbia River Treaty Review. Before 2014, the entities will advise the governments of Canada and the United States regarding the future of the treaty.

The Northwest Power and Conservation Council, which conducts regional power planning and produces a program to address the impacts of Columbia River Basin dams on fish and wildlife, is interested in the future of the treaty because of the potential

changes in Columbia River flows and how this could affect hydropower generation. In the future, reservoirs behind dams in both countries could be operated much differently for flood control, putting at risk either flood control, beneficial operating conditions for fish and wildlife, or both.

Flows and reservoir levels could change significantly, which could affect salmon, steelhead, and resident fish spawning, rearing, and migration. Because of changes in reservoir operations, hydropower generation patterns could change dramatically from month-to-month.

According to the studies, without the treaty the annual average reduction in hydropower would be about 90 to 94 average megawatts. Currently that is enough power for about 57,000 Northwest homes—not a huge amount. But the monthly and

seasonal changes are potentially much larger—1,460 average megawatts in dry years in the summer, for example, an amount of power greater than the power consumption of Seattle today.

In Phase One of the 2014/2024 Treaty Review, Bonneville, the Corps, and BC Hydro conducted studies to provide fundamental information about post-2024 conditions both with and without the treaty, and only from the limited perspective of power and flood control. The entities released the Phase One report for public review in July 2010. In October, Bonneville and the Corps completed a supplemental study that includes river and dam operations required by Endangered Species Act biological opinions and other regulations. The supplemental studies are important because they present a more realistic picture of current

and future river operations under the various scenarios. The studies are posted on the 2014/2024 Treaty Review website, <http://www.crt2014-2024review.gov/>

While the treaty has no specified end date, either Canada or the United States can terminate most provisions of the treaty on or after September 16, 2024, with a minimum advance notice of 10 years. Unless the two nations terminate or mutually modify the treaty, it continues indefinitely with one exception—the

treaty's provisions for systematic flood control end in 2024 whether the treaty is terminated or not, to be replaced by provisions allowing for "called upon" flood control subject to a number of conditions.

The future of the treaty is attracting attention outside of government as well. Oregon State University hosted a symposium on the treaty in November. Aaron Wolf, who chairs the geosciences department and is an expert on international water law, coordinated the symposium for a consortium of five universities in the United States and British Columbia that are interested in the treaty. At the Council's November meeting, following the conference, Wolf said the symposium included government officials, academics, tribes, and others from both countries who have an interest in the future of the river and the treaty.

"Everything was on the table, everything was open for discussion,"

Wolf said. "It's all one basin, north and south of the border; people candidly offered ideas and concepts—getting salmon back to the Columbia River in BC, for example—that would not necessarily be discussed in a more formal process." 



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