

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

The Sixth Power Plan: The Region's Energy Blueprint



In September, the Council invited public comment on its draft Sixth Power Plan, which the Council had been developing for more than a year in collaboration with utilities, utility associations, trade associations, and other citizen groups. The power plan guides the Bonneville Power Administration, which is the region's largest electricity supplier with 147 utility customers. Bonneville's administrator is required to make decisions about future electricity supplies that are consistent with the plan. It also serves as a regional blueprint to assist utilities in their own planning within their service territories.

The plan was developed in a very different energy environment from even a few years ago, and that environment continues to evolve, creating uncertainty about future costs and energy sources. Demand has declined because of the economy, fuel prices are lower after years of rapid increases, and the costs of new resources have stabilized or declined. Still, these trends may last only through the current economic downturn. The most significant change in the past few years has been broadening concern about climate change, galvanizing many states to pass laws aimed at reducing carbon emissions, including the states of Montana, Oregon, and Washington, which now have renewable portfolio standards in place.



To address this new uncertainty, the plan includes analysis of a range of possible carbon-cost scenarios to understand what we would need to do to lower emissions, and the costs and trade-offs associated with those reductions. The Council found that lower emissions occur when carbon prices exceed \$40 per ton. But to achieve significant reductions in emissions, the region would have to rely less on coal plants, which emit 85 percent of the carbon from the power system.

Wind power, a variable resource requiring additional energy to integrate it into the power system, will continue to be the leading resource to meet renewable portfolio standards. And while the hydroelectric system still provides the generation needed

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Council approves indicators to track success of The Columbia River Basin Fish and Wildlife Program

This fall, the Council approved three high-level indicators to help measure the success of projects that implement the Columbia River Basin Fish and Wildlife Program and, thus, the success of the program. The approved indicators are: 1) abundance of fish and wildlife; 2) fish survival past the mainstem Columbia and Snake river dams; and 3) coordination of mitigation actions — that is, an assessment of management coordination among agencies and projects. A fourth indicator, ecosystem health, is being developed by the Pacific Northwest Aquatic Monitoring Partnership.

The Council calls these high-level indicators because they assess progress at a broad level in the general categories of land, water, fish passage, fish harvest, and habitat improvements. The indicators will provide an assessment of the biological, implementation, and management components of projects that implement the program.

The Council will use the indicators in its annual reports to Congress and the region's governors.

In early 2009, the Council asked for public comments on a set of proposed indicators. A number of comments were received, some supporting the proposals, others opposing them or recommending changes, and still others recommending additional indicators. In response, the Council revised the original set and then conducted a public workshop with fish and wildlife managers and other experts from state and federal agencies and Indian tribes. From the discussions at the workshop, the Council is also developing a set of management questions that will be linked to the indicators. Council staff will use the questions to guide development of the high-level indicators.

The Council chose to focus on a small number of indicators that are clear and easy to understand. Other agencies, such as the Columbia Basin Fish and Wildlife Authority (CBFWA), have developed more detailed indicators that track progress of projects and species at the

subbasin level. The Council's indicators take a broader approach.

Council Member Rhonda Whiting, a Montana member and chair of the Council's fish and wildlife committee, said the Council's high-level indicators will complement the more detailed analysis in CBFWA's annual Status of the Resources Report. Council Member Tom Karier, a Washington member and the one who initiated the Council's work to develop the indicators more than a year ago, said the indicators approved by the Council "are organized in an understandable way and will emphasize the important things the Council does." He said the annual reporting of the indicators should be useful to the Northwest governors and members of Congress. "We may fine-tune them over time, but they provide a focus that is critical."

The Council plans to begin reporting data in the four categories in 2010. 



Notes From the Chair

This fall, the Council released its Draft Sixth Power Plan for public comment. The plan is the region's roadmap to a secure and economical power supply, and it has never been more relevant or timely than now. Today, we face numerous risks and uncertainties on many fronts. Some are familiar like future demand and fuel costs, while others, like future climate-change policies and the challenge of dealing with increasing amounts of wind energy, are new. The Council's plan analyzes these risks against a variety of resource options and actions to determine the best path forward. An overview of the plan and its recommendations is the featured story in this issue.

Also included is a story on the Council's adoption of high-level indicators that will be used to track how well we are meeting our goals for fish and wildlife. These indicators cover actions for land, water, fish passage, fish harvest, and habitat improvements, and the Council will use them in its annual reports to Congress and to the region's governors.

In an interview with Senator Risch of Idaho, he gives his thoughts on the challenges facing the region with respect to energy issues from climate-change legislation to advances in energy technology. It provides a well reasoned perspective from one of the region's most experienced and thoughtful elected officials and, I might add, an interesting read.

Northwest Q&A: Idaho Senator James Risch

James E. Risch, is Idaho's 28th Senator and has 37 years of experience in elected office.

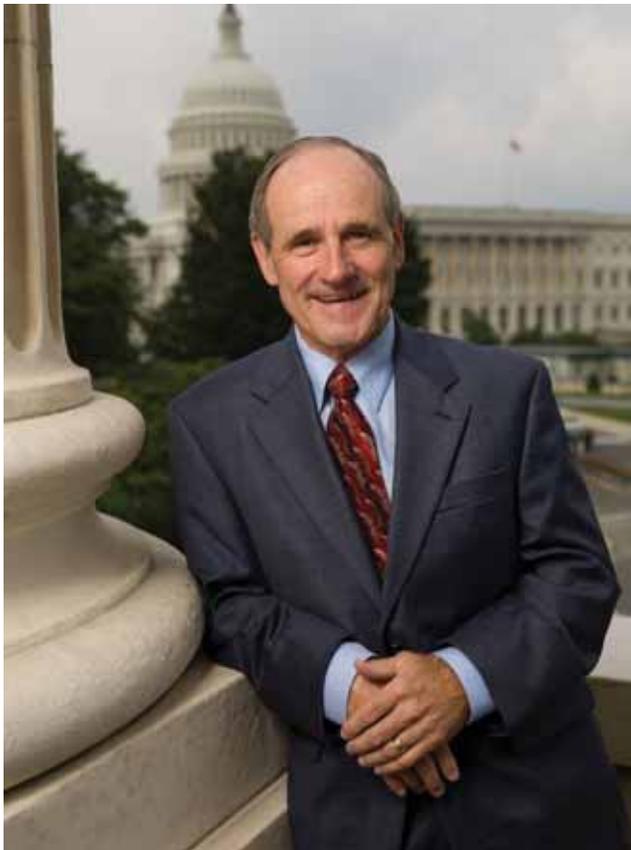
Senator Risch was elected to the United States Senate in November of 2008 after serving as Idaho's state senator, lieutenant governor and governor. He has served on numerous Senate Committees, including the Energy and Natural Resources Committee, giving Idaho a voice in legislation that dramatically shapes the West. Risch's other committee assignments include the Senate Committee on Foreign Relations, Select Committee on Intelligence, Select Committee on Ethics, Committee on Small Business and Entrepreneurship and the Joint Economic Committee.

During his service as Idaho's 31st Governor, Risch lowered property taxes by 20 percent, providing much needed tax relief to Idaho taxpayers, while setting aside \$100 million in a rainy-day fund for schools. He also designed a plan to manage Idaho's roadless areas and supervised the adoption of a rule that effectively prohibits the construction of traditional mercury-releasing pulverized coal power plants. Both measures earned Risch bipartisan acclaim for his pragmatic approach to natural resource issues and land management.

Senator Risch received a bachelor's degree in forestry from the University of Idaho, and a juris doctor degree from the University of Idaho, College of Law. He served on the Law Review and the College of Law Advisory Committee at the University of Idaho and has taught criminal law at Boise State University. He was a small business owner, a rancher/farmer and senior partner in the Risch Goss Insinger Gustavel Law

firm at the time of his election to the U.S. Senate.

Senator Risch and his wife Vicki have been married for 41 years. They have 3



sons, 2 daughters-in-law and 6 grandchildren. Their commitment to Idaho and their work together earned them the distinction of being selected as Idaho's Healthy Marriage Ambassadors in 2007. They live on a ranch outside of Boise and maintain an apartment in Washington, D.C.

Q By all accounts, you have the most unique and diverse range of committee assignments than anyone else in the Northwest congressional delegation. You serve as ranking member on the influential Energy Subcommittee of the Energy and Natural Resources Committee; the Foreign Relations Committee; the Select Committee on Intelligence; the Committee on Small Business and Entrepreneurship; the Joint Economic Com-

mittee; and the Senate Ethics Committee. Given this diverse portfolio, what have been some of the most rewarding and interesting issues you have worked on in your first year in the U.S. Senate?

The issues addressed by the committees I serve on have ranged from an agreement with the United Arab Emirates for nuclear power generation to salmon recovery funding to a new energy bill to virtually all aspects of the economy and our relationships with every other country on earth. Some have been more interesting than others, but two that really stand out are my foreign relations and intelligence work. It has been decades since Idaho last had a voice on those committees and a lot has changed in that time. We now live in a truly global economy and foreign issues affect Idahoans and their businesses just as much as they do those in coastal states. Seeing that Idaho's interests are represented in these matters has been especially

rewarding.

Q Climate change legislation continues to be a major topic of conversation in the Pacific Northwest and the rest of the country. The House has passed a comprehensive cap and trade bill which caps total emissions but issues emission allocations to various industry sectors, including the electric power industry. The Senate is just getting started with its consideration of climate legislation but questions remain about the cap and trade concept, the various allocation formulas themselves, and transparency and accountability of an allowance trading market. If you could roll back time, what kind of climate change legislation would you put before

Continued on next page.

the Congress? A modified cap and trade bill? A straight energy tax of some kind? What provisions would you include to protect Pacific Northwest electric power customers? Or do you believe the region is better off to allow states to pass their own legislation, and for the current administration to use existing authorities under the Clean Air Act?

I worked in the state Senate for almost 30 years in several leadership capacities. I think we did things the right way in that body: If there was a problem, you figured out how to solve it, and then you solved it. Before we even talk about what kind of legislation is needed, you first have to figure out what the problem is. Before you talk about what a climate bill would look like, you first have to determine the nature of climate change, its cause and the ability of humans to fix it.

There is a wide range of conflicting scientific evidence regarding the human contribution to global warming, the effect of sun spots, and the effect of global tilt. Having said that, I do think there is widespread agreement, myself included, that we can do more to reduce emissions being released into the atmosphere. The solution is easy: clean up the air directly, not through politically-enacted, complex programs.

The easiest, most cost-effective way to do that is to build more nuclear power plants and convert a substantial percentage of our transportation force to electrically-driven vehicles. A cap and trade plan is nothing but an invitation to speculative investors, like those that caused the Enron debacle and the housing crisis, to interfere with energy prices. Enron was an early backer of cap and trade schemes.

The climate change bill recently passed in the House is a perfect example of this political wreck—those industries, areas of the country and even individual businesses with the best lobbying ability won exemptions and favored treatment to the detriment of all others. There is no doubt there will be economic pain

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*James E. Risch
U.S. Senator from Idaho*

to any country's economy that chooses to do this, and therefore, it is critical the U.S. not do this unilaterally. So far, India and China have said they will not cap their emissions. The simple answer some give is if we move forward, India, China and others will follow. I disagree in the strongest of terms. Those other countries will take every economic advantage of us and laugh all the way to the bank. Beyond the harm to energy consumers, a cap and trade bill also wouldn't do anything to solve the problem we've identified: cleaning up the air. Building new nuclear plants would.

The Pacific Northwest is already the cleanest region in the country because we have been building environmentally responsible power generation for years. Every piece of climate change legislation out there will result in higher rates for the Pacific Northwest and therefore, any such legislation needs to be done at the state level, as the residents of those states see fit. The Clean Air Act was never meant to be a tool to regulate carbon dioxide, and its application to carbon dioxide regulation would be a nightmare that would cripple the economy of the entire country.

Q The Northwest's long history of generating electricity from hydroelectric dams, combined with our acquisition of nearly 4,000 megawatts of energy efficiency over the past 30 years has kept our power rates low and reduced our reliance on fossil fuel. But Idaho and other parts of the Northwest are now sometimes net energy importers when demand exceeds available regional supplies. Do you believe we have about the right mix of hydropower, energy efficiency, renewable energy resources and dispatchable thermal baseload power in our current regional system? Or does your crystal ball indicate that we need to alter the mix significantly to meet our future energy needs here in the Pacific Northwest?

The unique nature of power generation in the Northwest highlights why any national plan would be harmful to our region. We have long exploited clean sources of power. Incredibly, people in Washington, D.C. don't see falling water as a renewable resource. They don't see our biomass as a renewable resource and, of course, it is all for political purposes to advertise their own part of the country to our disadvantage. This is our reward for the good stewardship we have shown.

The fact that we sometimes import energy from other regions is due in part to regulations crafted by Washington, D.C. bureaucrats that make it easier to build a new coal-fired plant than to upgrade a hydroelectric facility. If you care about air quality, that isn't right. Every time a zero-emission dam needs to be relicensed, environmental lawsuits hold up the process. We had to fight tooth and nail to even get hydroelectric power into the dialogue. Some of my Senate colleagues think a piece of wood off of federal land isn't a renewable resource but a piece of wood off of private land is. So it's hard to argue that a policy crafted in Washington, D.C. would be good for the Northwest when Washington, D.C. has no appreciation of our stewardship.

We have a good mix right now, but we need more of all of the above to meet our future needs. We can increase the amount of electricity from hydropower sources by upgrading equipment or adding turbines to existing dams. That should be a no-brainer. It wouldn't emit any pollutants into the atmosphere. We also have existing biomass resources that could provide baseline power to the region, but those attempts are opposed by people who claim to want "renewable" energy which they limit by definition to wind and solar. We can add immeasurably to energy by constructing nuclear power plants. Again, if we are cleaning up the air, let's actually get it done.

Q Due to the existence of the Federal Columbia River Power System and the Bonneville Power Administration, the Pacific Northwest states probably have more common interests in energy policy than any other region in the nation. As a senator from a Northwest state, do you approach energy issues with the sense that you are representing regional interests as well as Idaho's?

Yes, we share much in common in the Pacific Northwest. There are some issues on which the region acts together, and energy has been one of those. I frequently talk with my colleagues from the region and enjoy serving on the Energy and Natural Resources Committee with Senators Cantwell and Wyden. We share the goals of ensuring an affordable, reliable supply of energy to the residents and businesses in the Pacific Northwest. Obviously, Idaho's interests are first and foremost in my mind, but these interests, when it comes to energy, are frequently congruent with the other Northwest states. I believe that any time I vote to constrain the power of the federal government or to empower the states to chart their own course, it furthers the ability of Idaho and every state in the Northwest to address their challenges as they see fit.

"We share the goals of ensuring an affordable, reliable supply of energy to the residents and businesses in the Pacific Northwest."

*James E. Risch
U.S. Senator from Idaho*

Q There is growing concern and recognition that California's aggressive, state-enacted renewable portfolio standards will increase wind developers' desire to seek more and more wind sites in the Northwest. In September, Governor Arnold Schwarzenegger signed an executive order requiring California to get 33 percent of its energy from green sources by 2020, which translates into an additional 5,700 average megawatts of renewable energy for that state. Some see danger in the Northwest becoming a primary quencher of California's renewable energy thirst. The range of concerns runs from environmental to economic. Will the Pacific Northwest's landscape become littered with wind farms that send their generation south? Will increased competition for wind sites drive up electricity prices for Northwest consumers? Will BPA be required to use the federal hydrosystem to balance and shape this power that is bound for California? Do you have any initial thoughts on this issue, and is there the possibility that it could become a topic for future discussions in the Senate pertaining to a national renewable portfolio standard?

California's attempt to export its own self-inflicted difficulties is nothing new. Years ago, we went through this

when they wanted our water. One of the elephants in the room in this whole discussion is how we are going to get the power from where it is generated to where it is consumed. If you love the sight of 1,000 windmills on a ridgetop, just wait until you see the thousands of miles of transmission lines that have to cross your property to ship that power down to California or Nevada.

Again, building nuclear power plants—where the power is needed—solves both problems at once. Washington's preferred approach right now has been to give more power to the federal government to condemn land for power lines. I absolutely oppose that approach—and please note how quickly we've drifted from actually doing anything constructive to meet our actual goal of cleaning the air.

But the Northwest is just a microcosm of the entire country. These same problems are going to crop up on a national level with a federal renewable electricity standard. I oppose trampling on the property rights of Idahoans, or exploiting our unique ecosystems, to meet arbitrary generation goals when the true solution of increasing nuclear generation is completely taken off the table.

Q It appears that the nation is on the verge of a major energy technology explosion in the coming years. With increasing attention and funding being directed to smart grid, LED lights, batteries and other energy storage devices, the nation's electricity delivery and storage systems may be very different from what we see today. Do you think the Northwest is well positioned to participate in the research and development activities pertaining to these new technologies? Do you think the Northwest has the necessary infrastructure to take advantage of these opportunities and leverage them into a new energy economy in the coming years?

The Northwest has given birth to successful software companies like Microsoft and Real, hardware companies like

Micron, AMI and HP and our region will continue to play a key role in developing the next generation of energy technologies. Micron in Idaho is aggressively working to lead in LED light research development and production.

I recently returned from touring the Idaho National Laboratory where I saw firsthand the work they are performing to secure "Smart Grid" technologies that we believe will be part of our energy future. Work continues as well on the next generation nuclear plant and on renewable energy sources. But our region is no longer competing with other regions like Silicon Valley; we are competing with Mumbai, London, and Singapore.

Just like Micron competes with South Korean companies in the production of microchips, an Idaho company like Nordic Windpower will be competing with products made in China. We must take care that our energy policies don't raise costs and force such companies overseas. We need to stay away from policies like card check, cap and trade or nationalized health care that would cripple our economy and result in a mass exodus of our businesses overseas and destroy our ability to compete internationally.

We must also continue the development of our energy workforce, one of the positive things both Democrats and Republicans agree on.

Q Although commercial nuclear energy in the Northwest has a mixed track record, the concern over climate change is causing a lot of people to rethink their position in opposition to the construction of new nuclear plants in the Northwest. Recognizing that you have been a strong supporter of nuclear power, do you think a nuclear plant or two is in the Northwest's future, and if so, what needs to take place for that to happen?

Nuclear power needs to happen not just in the Northwest where our air quality is already better than most, but everywhere people care about air quality and

"Nuclear power needs to happen not just in the Northwest where our air quality is already better than most, but everywhere people care about air quality and emissions."

*James E. Risch
U.S. Senator from Idaho*

emissions. Although nuclear power can be cost-effective, our power rates in the Northwest are already so low that even nuclear has historically had a hard time competing. But with demand increasing, that equation changes and a simple thing like loan guarantees, which are extremely cost-effective, may be all that is needed to expand the fleet of reactors here in the Northwest.

Q If you were to lead a congressional delegation trip to Idaho, what are the projects or programs of national interest you would want them to see? And similarly, what are the most beautiful locations in the state you'd want them to visit?

One of the first stops would be the Idaho National Laboratory so they could see the history of nuclear power from its origins to current technologies developed there today, like next generation nuclear technologies and power grid security. The next stop would be the Hells Canyon dams to demonstrate what we're doing to enhance salmon migration and habitat improvements while generating clean, reliable power. From there, we would head north to Idaho's panhandle to see the timber, minerals, and other natural

resources that are being effectively managed and utilized by a wide variety of groups.

I would have them compare the health of our state-managed forest lands adjacent to federal forest lands. It will be very clear that you can wisely harvest trees, as is done on state lands, and maintain healthy forests, wildlife habitat, and clean water. From those trees you can have biomass production that is renewable. And, of course, we would also have to make a stop by my ranch.

CQ

Quarterly Quote

"The tree is more than first a seed, then a stem, then a living trunk, and then dead timber. The tree is a slow, enduring force straining to win the sky."

Antoine de Saint-Exupery

The Sixth Power Plan: The Region's Energy Blueprint

(cont. from page 1)

to keep the system in balance, this, too, is changing. Increasing peaks in energy use, especially in the summer, along with constraints on the operation of the hydrosystem, and the growing amount of wind generation on the system, all contribute to the heightened importance of including capacity and flexibility needs into resource planning. It is no longer enough to plan for the region's yearly energy requirements. Being able to quickly increase or decrease generation on a minute-to-minute basis is also critical now.

But by far the biggest message of the power plan is that improved energy efficiency has the potential to meet most of the region's future load growth—as much as 85 percent—in the next 20 years. Achieving the Council's proposed efficiency targets means avoiding costly

investments in riskier new generation, while also reducing carbon emissions. The record level of efficiency is due to technological advances and new opportunities in electricity distribution, consumer electronics, and lighting innovations. It expands the region's history of success in improving efficiency and it continues our tradition of commitment to clean and affordable energy. Over time, the Council expects it to be an even better value as the costs and risks of other resources increase.

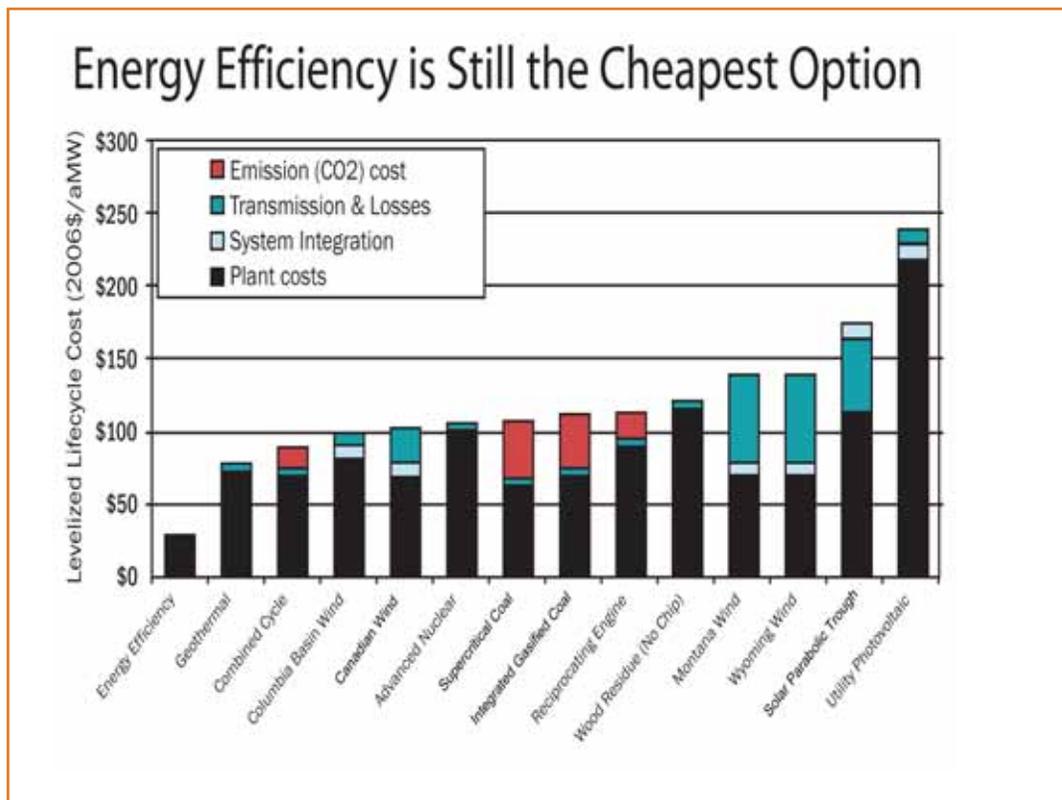
Future Regional Electricity Needs

Regional population is likely to increase from 12.7 million in 2007 to 16.3 million by 2030. The population growth will be focused on older-age categories as the baby boom generation reaches retirement age. While the

total regional population is projected to increase by 28 percent, the population over age 65 is expected to nearly double. Such a large shift in the age distribution of the population will change consumption patterns and electricity uses.

The cost of energy (natural gas, oil, electricity) is expected to be significantly higher than during the 1980s and 1990s, and carbon-reduction policies are likely to further raise these costs. While carbon costs increase electricity prices and thereby reduce demand, they also encourage development of new sources of supply and efficiency, expanding the number cost-effective efficiency measures.

Without efficiency improvements, electricity use is expected to grow by about 6,700 average megawatts between 2010-2030, growing at about



337 average megawatts, or 1.4 percent per year. Residential and commercial sector electricity use account for much of the growth in demand. Contributing to the growth in the residential sector is an anticipated increase in air conditioning and consumer electronics. Also, summer-peak electricity use is expected to grow more rapidly than annual energy.

Energy Efficiency Could Meet Most of the Region's Load Growth

The Council's power plan includes a detailed analysis of potential efficiencies in hundreds of applications resulting in a substantial increase in energy efficiency from the Fifth Power Plan's levels five years ago. This is due to advancing technology, reduced costs, efficiency estimates in electricity distribution systems, consumer electronics, and street, parking, and exterior building lighting. The estimated achievable potential conservation is nearly 6,000 average megawatts for measures costing under \$100 per megawatt-hour. Over 4,000 average megawatts are available at a cost of less than \$40 per megawatt-hour. This does not include savings from efficiencies that have already been secured through building codes, appliance efficiency standards, and utility programs. Energy efficiency is even more valuable because avoided costs have doubled since the carbon-cost risk is several times higher than in the Fifth Power Plan.

Resource Strategy

In addition to efficiency improvements, new renewable generation (primarily wind) will be needed to meet renewable portfolio standards in Washington, Oregon, and Montana. Analysis shows that meeting RPS requirements uses most of the lower cost wind potential (5,300 megawatts) in the region. In addition to the wind, some geothermal resources enter the plan, although in a limited amount. Given the risk of some form of carbon pricing in the future,

additional renewable generation is cost-effective. Natural gas-fired generation is optioned toward the middle of the planning period. It is attractive for energy and capacity needs and has the ability to displace coal plants in futures with high carbon costs or assumed coal plant closures.

In the short term (the first five years of the plan's timeframe), and from a regional perspective, the Council's analysis suggests that adding new generation is unnecessary due to slower demand growth, the large energy efficiency potential, and the required renewable portfolio standards resources. The Council recognizes that this is not the case for all utilities in the region. Individual utilities' needs and access to market resources will vary. Some utilities will need additional resources in the next few years even if they acquire all the energy efficiency available to their service territory and meet their renewable portfolio standards.

During the last 10 years of the power plan's timeframe, the resource priorities become less clear. Given current climate change policies and concerns, new coal without carbon sequestration is unlikely, and any significant reduction in carbon will require operating existing coal plants less often. Alternatives beyond natural gas are typically unproven commercial technologies or alternatives that require significant new transmission investments. Potential long-term generating resources include importing wind generation on new transmission lines, advanced nuclear, gasified coal with carbon sequestration, and developing relatively unproven renewable resources or ones that are currently too expensive. The plan identifies natural gas to meet long-term needs, but the Council recognizes that other alternatives are likely to become available over time.

Climate Change Policy

Nationwide, carbon dioxide accounts for 85 percent of greenhouse gas emissions and about 38 percent of carbon dioxide emissions are emitted from electricity generation. For the Pacific Northwest, the power generation share is only 23 percent since we rely so heavily on the hydroelectric system. Coal-fired plants produce over 85 percent of carbon emissions from the region's power system, even though they only produce about 20-25 percent of the region's electricity. Analysis by others has shown that substantial and inexpensive reductions can come from more efficient buildings and vehicles. Substituting non- or reduced-carbon electricity generation such as renewable resources and nuclear, or from sequestering carbon, are more expensive options.

Various policy approaches to reduce emissions include: regulatory mandates (renewable portfolio standards or emission standards), emissions cap-and-trade systems, a carbon tax, and efficiency-improvement programs. Northwest state policies to address climate change concerns have focused on renewable portfolio standards and new generation emission limits. National and regional proposals have focused on cap-and-trade systems, although none have been adopted successfully nationally or in the region. Although carbon taxes are easier to implement than cap-and-trade systems, none have been proposed.

The power plan reflects the uncertain costs of potential carbon-pricing policies by assuming a possible range of carbon costs between \$0 and \$100 per ton. The average of these increases over time and reaches about \$47 per ton by 2030. These potential costs play an important role in the proposed resource portfolio, with the exception of the energy efficiency resource, which remains a key component regardless of climate-change

policies. The key findings from the Council's analysis are:

- Without any carbon control policies, including existing ones, carbon emissions from the Northwest Power System would continue to grow to 5 percent over 2005 levels by 2030.
- Without additional carbon-pricing policies like state renewable portfolio standards and renewable energy financial incentives, current policies would reduce carbon emissions, but not enough to meet current policy goals.
- Assuming forecast carbon prices, the plan's resource strategy has the potential to reduce carbon emissions to below 1990 levels, or 35 percent below 2005 levels adjusted for normal hydro conditions.
- Significant reductions of carbon emissions from the power system require reduced reliance on coal. Retiring coal-fired generation and replacing it with

conservation, renewable generation, and lower-carbon emission resources could reduce carbon emissions to 35 percent of 1990 levels.

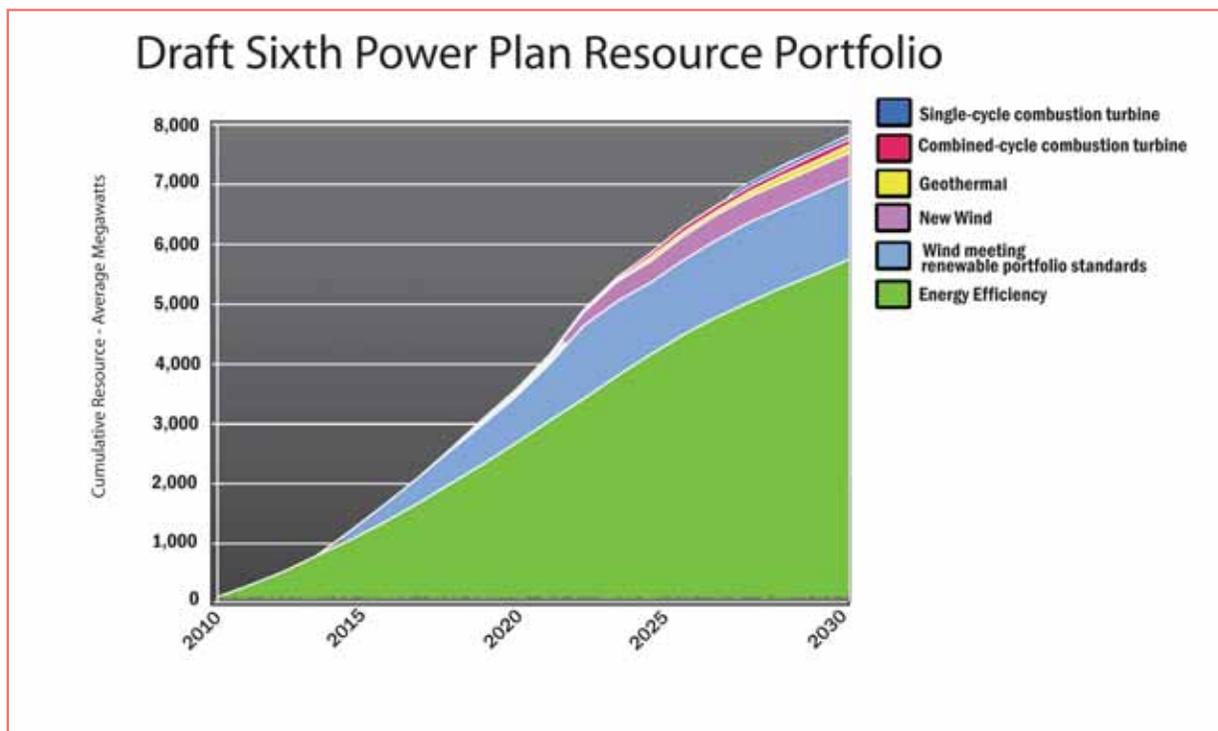
- To the extent that public policy raises the cost of carbon, we can expect an increase in a typical consumer's electric bill and a decrease in carbon emissions, especially when the carbon price begins to exceed \$40 per ton.
- Protecting the capability of the existing regional hydroelectric generation through energy efficiency and preserving its generating capability keeps costs and carbon emissions down. In scenarios where the capability of existing resources are reduced, whether hydroelectric or coal, the energy and capacity are largely replaced with gas-fired generation.

Wind Integration Capacity, Flexibility, and

The power system requires matching electricity generation to varying elec-

tricity demands on a minute-to-minute basis. This ability to quickly increase or decrease generation is called flexibility. In the Pacific Northwest, resource planners have been able to focus mostly on annual average energy requirements, leaving flexibility problems to system operators. This is because, historically, the hydroelectric system has been able to provide this flexibility. This is changing for several reasons: Growing regional electricity needs are reducing the share of hydroelectricity in total demand, peaks in energy use have grown faster than annual energy needs, the capacity and flexibility of the hydrosystem has been reduced over time for fish operations, and growing amounts of variable wind generation have added to the flexibility requirements of the system.

As a result, planners must now consider resources in terms of their energy, capacity, and flexibility contributions. The rapid growth of wind genera-



tion, which does not provide capacity and increases the need for flexibility, means that the region will need to add these capabilities to the power system. Changes can be made to the operation of the power and transmission system to reduce the need for flexibility reserves, and these operational changes can probably be made more quickly, and are less expensive, than adding peaking generation, demand response, or flexibility storage resources just to provide flexibility.

The Fish and Wildlife Program and the Power Plan

The fish and wildlife program is part of the Council's power plan. It is intended to guide Bonneville's efforts to mitigate the adverse effects on fish and wildlife from the construction and operation of the Columbia River hydroelectric system. One of the roles of the power plan is to help assure the reliable implementation of fish and wildlife operations. The power system, guided by the power plan, has done this in the past and will continue to do this in the future. It has done so by acquiring conservation and generating resources to make up for the 1,170 average megawatts of lost hydroelectric generation from actions to aid fish migration, by developing resource adequacy standards, and by implementing strategies to minimize power system emergencies and events that might compromise fish operations.

The future presents a host of uncertain changes that are sure to pose challenges to balancing power system and fish and wildlife needs. These include possible new fish and wildlife requirements, increasing wind generation and other variable renewable resources that require more flexibility in power system operations, conflicts between climate-change policies and fish and wildlife operations, possible changes to the water supply from climate change that

might make it more difficult to deliver flows for fish and meet power needs, and possible revisions to Columbia River Treaty operations.

To address current operations and prepare for these additional challenges, the Council has adopted a regional adequacy standard to help ensure that events like the 2000-01 energy crisis, when fish operations were affected, do not happen again. In addition, the Wind

Integration Forum is addressing issues to help integrate wind into the power system. Large swings in wind output have sometimes adversely affected hydropower and fish operations. The Sixth Power Plan addresses these issues to improve electricity reliability and help insure reliable fish operations. 



History Now

The Columbia always has been a river of commerce. Thomas Jefferson envisioned a water route across North America to the Pacific for the purposes of commerce, and he envisioned the Columbia as a key part of it. Inland fur-trading routes utilized the river and its tributaries; sea-going vessels increasingly explored the lower Columbia waterway beginning in the late 1700s.

Image courtesy of O.P.B. and Florentine Films

To learn more about Columbia River history, visit the Council's Columbia River History Project website: www.nwcouncil.org/history

The image is a historical map of the Pacific Northwest region, showing the Columbia River basin. The map is overlaid with text. The text describes the river's historical significance as a 'river of commerce' and mentions Thomas Jefferson's vision of a water route across North America. It also notes that inland fur-trading routes and sea-going vessels used the river and its tributaries starting in the late 1700s. The map labels 'OREGON COUNTRY', 'SPANISH TERRITORY', 'BRITISH TERRITORY', and 'UNITED STATES'. The Columbia River is highlighted in purple. The map is set against a corkboard background.

Council Decisions

July

Council recommends projects to benefit wildlife

The Council recommended to the Bonneville Power Administration 34 of 36 wildlife project proposals submitted for the wildlife category review of the Columbia River Basin Fish and Wildlife Program. The 34 projects were reviewed by the Independent Scientific Review Panel (ISRP) and meet scientific criteria. The other two proposals did not meet scientific criteria. The Council approved an expense budget for the projects of \$70,882,855 for five years (fiscal years 2010-2014), and a capital budget of \$67,597,752 over three years (fiscal years 2010-2012).

September

Council urges action on invasive mussels

The Council approved letters to the Department of the Interior, Northwestern Division of the U.S. Army Corps of Engineers, and NOAA Fisheries asking that actions be implemented to prevent the introduction of invasive mussels into the Columbia River Basin, providing for their control, and undertaking related mitigation efforts to minimize the ecological and economic impacts if the mussels take hold in the basin.

October

Council approves high-level indicators

The Council approved three high-level indicators to help measure the success of projects that implement the Columbia River Basin Fish and Wildlife Program and, thus, the success of the program. The approved indicators are: 1) abundance of fish and wildlife; 2) fish survival past the mainstem Columbia and Snake river dams; and 3) coordination of mitigation actions -- that is, an assessment of management coordination among agencies and projects. A fourth indicator, ecosystem health, is being developed by the Pacific Northwest Aquatic Monitoring Partnership. See story in this issue of the Council Quarterly.

Power and Conservation Council invites Public comments on fish and wildlife plans For Bitterroot and Blackfoot rivers

The Northwest Power and Conservation Council has received plans for the Bitterroot and Blackfoot river basins of Montana to protect fish and wildlife and direct funding to projects to improve their survival. The proposed plans are posted on the Council's website, www.nwcouncil.org, and are available for public comment through February 11, 2010. Contact information for the proponents of the Bitterroot and Blackfoot plans is posted with the proposed plans on the Council's website.

If adopted by the Council, the plans would have the potential to direct funding provided by the federal Bonneville Power Administration, the

region's largest electricity supplier, to pay for projects such as acquiring and improving habitat for fish and wildlife, boosting fish production, and paying for research in the two river systems, whose waters eventually flow into the Columbia River.

Montana's representatives on the Council, Bruce Measure and Rhonda Whiting, are happy with the development of the plans. In a statement, the Council members said, "We are pleased that the plans were developed in an open and public process with a lot of input from a variety of sources in the Bitterroot and the Blackfoot. We look forward to further completing the Council's fish and wildlife program by adding these two subbasin plans." 

Energy Efficiency Tip

When possible, wash clothes in cold water.

About 90% of the energy used in a clothes washer goes to water heating.



BrainPower

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