The Sixth Power Plan: Toward a Clean Energy Future

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Risk has always been part of energy planning, and never more so than today. Rising electricity demand and fuel costs, evolving climate-change policies, and the growing need for system capacity and flexibility are factors that require careful examination to understand their impact.

Renewable portfolio standards have been adopted in Montana, Oregon, and Washington, with other potential regulation to reduce carbon emissions on the horizon.

Historically, the Pacific Northwest's hydropower system has been able to meet both peak-hour load and provide system flexibility—quickly increasing or decreasing power to keep generation and load in balance. Today, the region faces increasing peaks in energy use coupled with fish protection requirements that reduce hydroelectric production, and increasing wind generation that requires more flexibility. How to add more capacity and flexibility into the power system is a critical question.

The Council's Sixth Power Plan examines the many changing circumstances that affect the power system to determine the best strategy to ensure that the Pacific Northwest's energy is economical and reliable.

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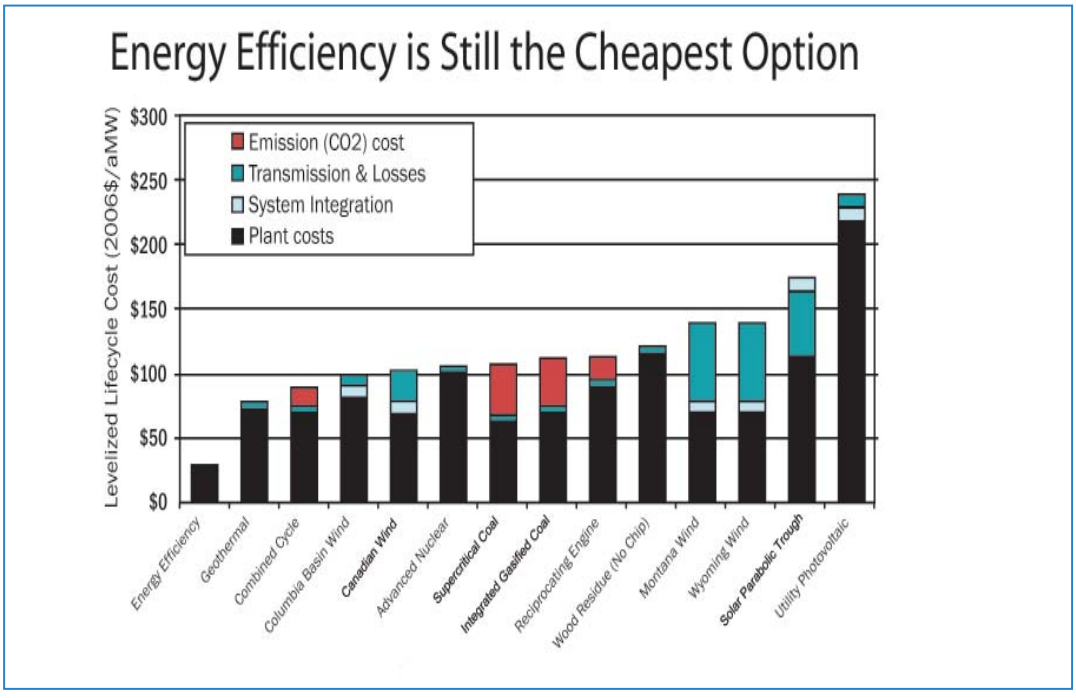
Energy Efficiency Could Meet Most of the Region's Future Load Growth

The overwhelming conclusion from the Council's analysis is that energy efficiency is the most cost-effective and least-risky resource available, and could, on average, meet 85 percent of the region's load growth for the next 20 years.

The 1980 Northwest Power Act made improved efficiency the highest-priority resource to meet the region's rising demand for electricity. It is about a third of the cost of building new power plants fueled by natural gas, coal, or wind, and the region has a proven record of meeting its efficiency goals. Since 1983, we've developed more than 3,900 average megawatts—enough power for all of Idaho and western Montana—saving consumers nearly $1.8 billion in 2008 alone. Carbon emissions also were reduced by about 15 million tons. It's a win-win for consumers *and* the environment.

Demand is expected to grow by about 7,000 average megawatts by 2030. The Council estimates that about 5,900 average megawatts of energy efficiency are cost-effective and achievable. This is comparable to the amount of electricity needed each year to power five cities the size of Seattle, and it has the potential to usher in a new era of clean and affordable energy.

The record level of efficiency is due to technological advances and new opportunities in electricity distribution, consumer electronics, and lighting innovations. Over time, the Council expects it to be an even better value as the costs and risks of other resources increase.

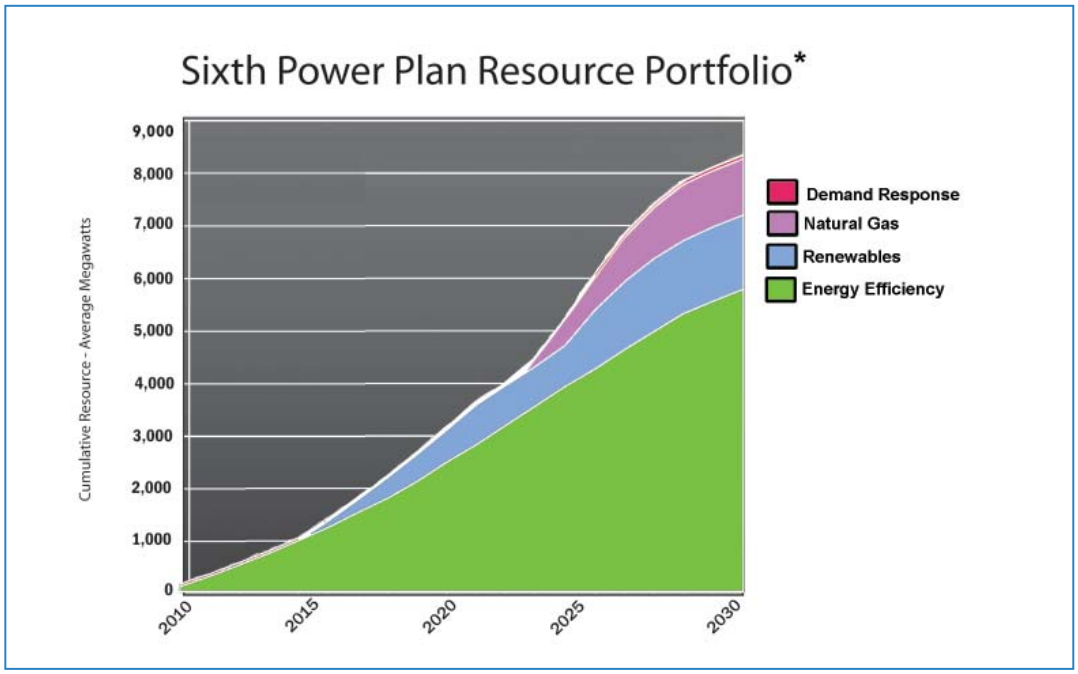


Preparing for the Future: Adding New Resources, Enhancing System Reliability

Along with the tremendous energy efficiency potential, wind generation is the leading resource in the near term to meet renewable portfolio standards in Washington, Oregon, and Montana. But because wind turbines operate only when the wind is blowing, they cannot be relied upon to generate electricity during periods of high demand. Power system operators have to find ways to ensure that electricity service is reliable 24 hours a day. The Council encourages the region to improve forecasting and scheduling of wind power, as well as other system operating procedures, to address the variable nature of wind generation. If that doesn't solve the problem, new gas-fired power plants will need to be built to back up the wind turbines. The Council also encourages developing other cost-effective renewable resources, such as small-scale hydroelectric projects. Analysis shows that geothermal resources are available, although to a smaller degree, and natural gas-fired plants are also a cost-effective option. New coal-fired power plants, always difficult to site and permit, are likely to become even more problematic to build given current climate-change policies. Therefore, the Council is not recommending that any new coal plants be built during the next 20 years. And in fact, significant reductions of carbon emissions will require reduced reliance on existing coal plants, which currently emit over 85 percent of the carbon dioxide from the regional power system.

Long-term strategies include wind generation imported into the region, gasified coal with carbon sequestration, advanced nuclear, emerging renewable technologies, demand-response programs, and storage technologies.

Investments in transmission upgrades and improving the operation of the system to incorporate site-based renewable energy will help improve its reliability. Smart grid technologies that improve the efficiency of electricity distribution and enable consumers to help solve energy problems—moderating peaks in energy use, for example—have the potential to transform the power system, and the Council encourages continued research.



*Expected Value Build Out. Actual build out schedule depends on future conditions

Balancing Fish and Wildlife and Energy

The Northwest Power Act requires the Council to develop a program to protect and enhance fish and wildlife as part of the power plan. The Columbia River Basin Fish and Wildlife Program, which relies on reviews by independent scientists, guides the Bonneville Power Administration's expenditures to mitigate the effects of the Columbia River hydrosystem on fish and wildlife. By emphasizing energy efficiency to meet demand, by carefully planning the region's generation development and monitoring its power supply, and by implementing strategies to protect fish and wildlife from the impact of power system emergencies, the Council fulfills its role to ensure that fish and wildlife remain on an equal footing with energy.

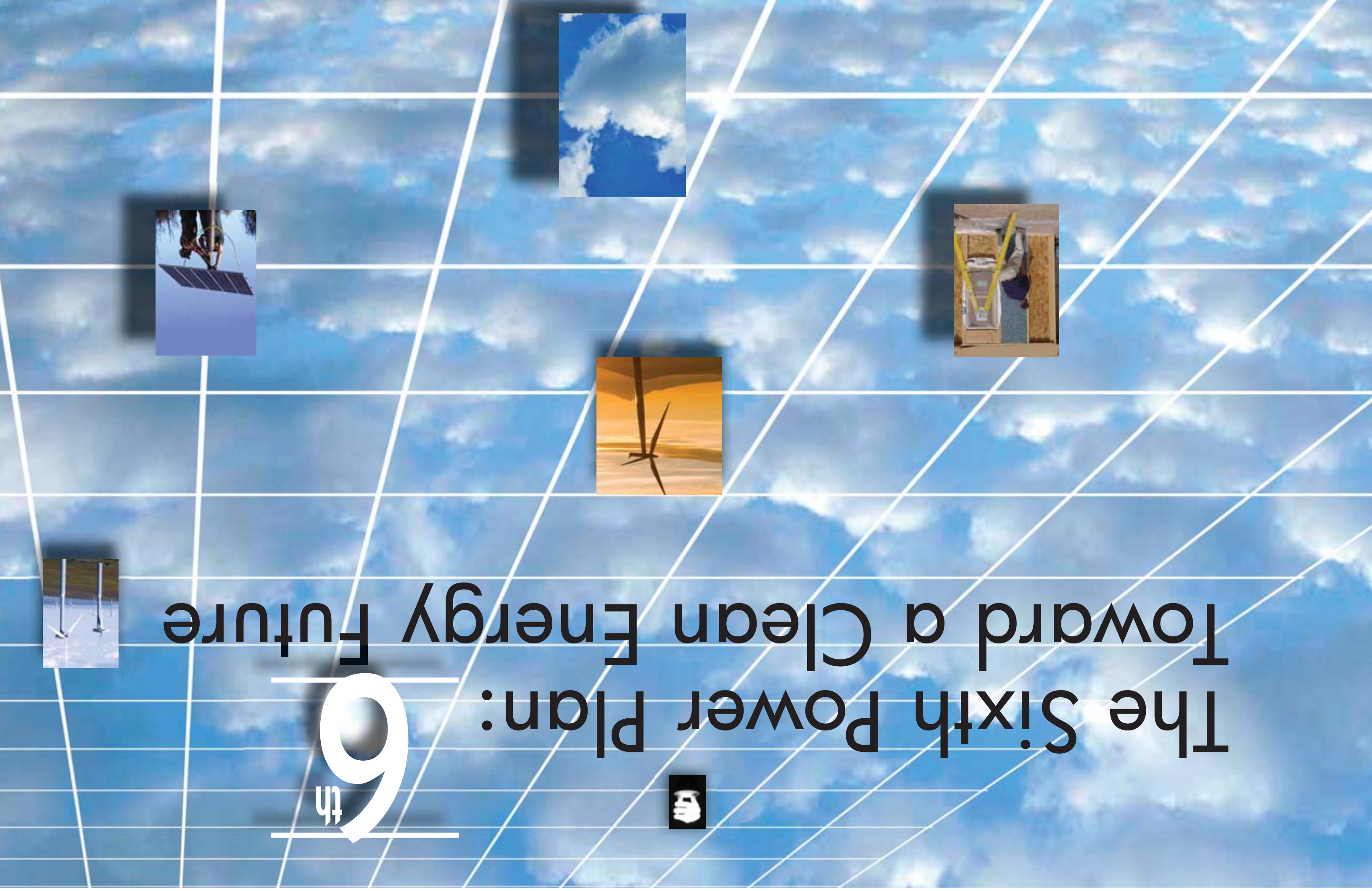
Photograph by Dick Wallace

Background

The Northwest is unique in how it plans its energy future. Through the Northwest Power and Conservation Council's power plan, strategies to ensure the affordability and adequacy of the power system are developed in an open forum where the public can voice its opinion. Why is this so important? With the building of the region's first mainstem Columbia River dams in the 1930s, the Northwest would have access to inexpensive electricity for many years. But by the 1960s, increased demand led energy planners to believe that hydro-generating resources would soon be unable to keep up with the pace of growth.

In the 1970s, the Bonneville Power Administration—the federal agency that markets the electricity generated at federal dams on the Columbia River—began working with public and private utilities in the region to develop major new generating resources, including several nuclear plants. But the projects proved to be hugely expensive and electricity rates skyrocketed. Growth in electricity demand fell far short of earlier projections, in part because of the high rates. The region was left with an energy surplus in the early 1980s, eliminating the need for most of these new and expensive generating plants. Many of the projects were abandoned, and the region was left with the then-largest municipal bond default in U.S. history. Northwest customers continue to make payments on part of this debt.

Amidst the turmoil caused by this massive planning failure, Congress enacted the 1980 Pacific Northwest Electric Power Planning and Conservation Act authorizing the states of Idaho, Montana, Oregon, and Washington to form the Council as an "interstate compact" agency. The Act requires the Council to develop a 20-year power plan to assure the region of an adequate, efficient, economical, and reliable power system; and to develop a fish and wildlife program to protect, mitigate, and enhance fish and wildlife affected by the dams.



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