DRAFT SEVENTH NORTHWEST CONSERVATION AND ELECTRIC POWER PLAN

SUMMARY BROCHURE

The Pacific Northwest power system faces a host of uncertainties, from compliance with federal carbon dioxide emissions regulations to future fuel prices, resource retirements, salmon recovery actions, economic growth, a growing need to meet peak demand, and how increasing renewable resources would affect the power system. The Council's Seventh Power Plan addresses these uncertainties and provides guidance on which resources can help ensure a reliable and economical regional power system over the next 20 years.

In developing its plan, the Council relies on feedback from technical and policy advisory groups and input from a broad range of interests, including utilities, state energy offices, and public interest groups. The plan also recognizes that individual utilities, which have varying access to electricity markets and varying resource needs, may require near-term investments in resources to meet their adequacy and reliability needs.

Using modeling to test how well different resources would perform under a wide range of future conditions, energy efficiency consistently proved the least expensive and least economically risky resource. In more than 90 percent of future conditions, cost-effective efficiency met all electricity load growth through 2035. It's not only the single largest contributor to meeting the region's future electricity needs, it's also the single largest source of new winter peaking capacity.

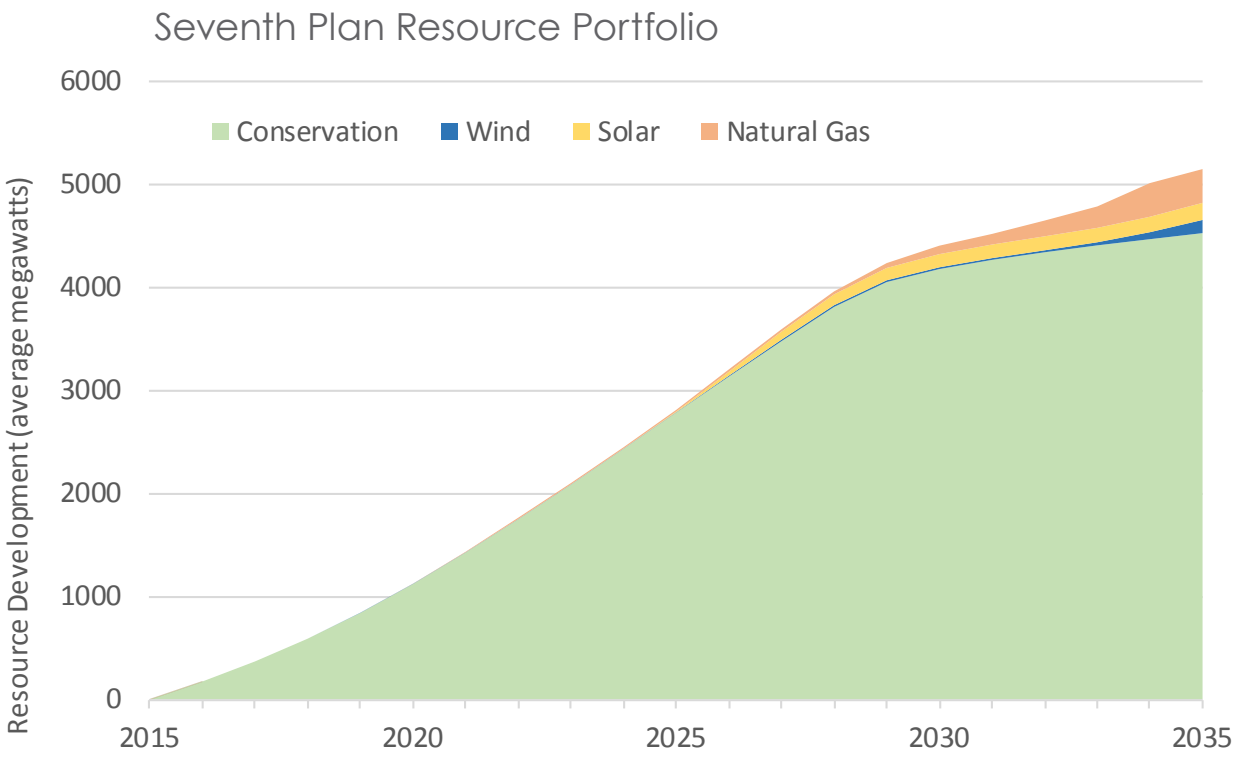
> If developed aggressively, in combination with past efficiency acquisition, the energy efficiency resource could approach the size of the region's hydroelectric system's firm energy output, adding to the Northwest's heritage of clean and affordable power.

Acquiring this energy efficiency is the primary action for the next six years. The plan's second priority is to develop the capability to deploy demand response resources — voluntary reductions in customer electricity use during periods of high demand and limited resource availability — or rely on increased market imports to meet system capacity needs

under critical water and weather conditions. While the region's hydroelectric system has long provided ample peaking capacity, it's likely that under low water and extreme weather conditions we'll need additional winter peaking capacity to maintain system adequacy. Because the probability of such events is low (but real), demand response resources, which have low development and "holding" costs are best-suited to meet this need. However, whether and to what extent the region should rely on demand response or increase its reliance on power imports to meet regional resource adequacy requirements for winter capacity depends on their comparative availability, reliability, and cost.

After energy efficiency and demand response, new natural gas-fired generation is the most cost-effective resource option for the region in the near-term. Similarly, after energy efficiency, the increased use of existing natural gas generation offers the lowest cost option for reducing regional carbon emissions.

A key question for the plan was how the region could lower power system carbon dioxide emissions and at what costs. The Council's modeling found that without additional carbon control policies, carbon dioxide emissions from



Average resource development across all 800 futures tested in the Regional Portfolio Model. Actual development, particularly of non-energy efficiency resources, will depend on actual future conditions.

the Northwest power system are forecast to decrease from about 55 million metric tons in 2015 to around 34 million metric tons in 2035[1], the result of retiring the Centralia, Boardman, and North Valmy coal plants between 2020 and 2026; using existing natural gas-fired generation to replace them; and developing about 4,500 average megawatts of energy efficiency by 2035, which is expected to meet all forecast load growth over that time frame.

In these circumstances, the region, as a whole, will be able to comply with the Environmental Protection Agency's carbon emissions limits, even under critical water conditions.

Investments to add transmission capability and improve operational agreements are important for the region, both to access growing site-based renewable energy and to better integrate low and zero-emission resources into the existing power system. The Council also expects that there are small-scale resources available at the local level in the form of cogeneration or renewable energy opportunities. The plan encourages investment in these resources when cost-effective.

The plan encourages research in advanced technologies to improve the efficiency and reliability of the power system. For example, emerging smart-grid technologies could make it possible for consumers to help balance supply and demand. Other resources with potential, given advances in technology, include geothermal, ocean waves, advanced small modular nuclear reactors, and emerging energy efficiency technologies. New methods to store electric power, such as pumped storage or advanced battery technologies may enhance the value of existing variable generation like wind.

Developing these technologies is a long-term process that will require many years to reach full potential. The region can make progress through investments in research, development, and demonstration projects.

Combined with investments in renewable generation, as required by state renewable portfolio standards, improved efficiency, demand response resources, and natural gas generation are the principal components of the plan's resource portfolio.

1 This is the level of carbon dioxide emissions estimated to be generated to serve regional load under average water and weather conditions. Actual 2015 carbon dioxide emissions could differ significantly from this level based on actual water and weather conditions. Average regional carbon dioxide emissions from 2001–2012 were 55 MMTE, but ranged from 43 MMTE to 60 MMTE.

Why We Have a Regional Power Plan

The Council was authorized by Congress 1980 when it passed the Northwest Power Act, giving the states of Idaho, Montana, Oregon and Washington a greater voice in how we plan our energy future and manage natural resources.

Congress created the Council partly in reaction to the region's disastrous decision to build five nuclear power plants in the state of Washington in the 1970s. The decision was based in part on inaccurate Northwest electricity load forecasts. Only one of the plants, the currently operating Columbia Generating Station, was ever completed. Due to exorbitant cost overruns, the other four plants were abandoned or mothballed prior to completion.

Two of the unfinished plants were responsible for one of the largest bond defaults in the history of the nation, while the financing for the other three plants was backed by the Bonneville Power Administration. Even today, more than 30 years after the Northwest Power Act was enacted, BPA pays millions of dollars a year on debt service for two of the unfinished nuclear plants. And, from 1978 to 1984, BPA was forced to raise its rates by 418 percent (adjusted for inflation) to pay for the cost of these plants. Congress concluded that an independent agency, without a vested interest in selling electricity, should be responsible for forecasting the region's electricity load growth and determining which resources should be built.

One of the Council's primary responsibilities, along with the fish and wildlife program, is to write a 20-year, least-cost power plan for the Pacific Northwest and update it at least every five years. The plan includes several key provisions, including an electricity demand forecast, electricity and natural gas price forecasts, an assessment of the amount of cost-effective energy efficiency that can be acquired over the life of the plan, and a least-cost generating resources portfolio. The plan guides BPA's resource decision-making to meet its customers' electricity load requirements.

In a decision that was ahead of its time, Congress concluded back in 1980 that energy efficiency should be the priority energy resource for meeting the region's future load growth. The Act includes a provision that directs the Council to give priority to cost-effective energy efficiency, followed by cost-effective renewable resources. In effect, for the first time in history, energy efficiency was deemed to be a legitimate source of energy, on par with generating resources. The rest is history. Since the release of the Council's first Northwest Power Plan in 1983, the region's utilities have acquired the equivalent of more than 5,600 average megawatts of electricity, enough savings to power five cities the size of Seattle.

See the Draft Seventh Power Plan at

nwcouncil.org/7thplan

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