



THE 2021 NORTHWEST POWER PLAN

DRAFT PLAN SUMMARY

Never in the 40-year history of the Northwest Power and Conservation Council, through seven revisions of the Northwest Power Plan, have we foreseen such dramatic changes in the future power supply as we envision in the Draft 2021 Power Plan.

Electricity generating resources in the Northwest – carbon-free hydropower and nuclear, gas, coal, wind, and solar – plus energy efficiency and demand response – have served the region’s electricity needs well, providing capacity and energy supporting a reliable, adequate, efficient, and economical power system. In the years since the Council last revised the power plan, however, the power system has experienced changes that place more emphasis on renewables, such as wind and solar generation. In the near term, five or six years, the power generation mix will likely see modest changes. However, through 2041 – the 20-year forecast length of the Council’s power plans – the region can expect a more substantial transformation.

The Draft 2021 Plan charts a course through this transformation. The draft recognizes that there are

social, political, and economic drivers leading to the region’s turn toward cleaner sources of generation, primarily wind and solar. In recognition of those states, utilities, and municipalities that have requirements and policies pursuing emission reductions that support cleaner electricity generation, the Draft 2021 Power Plan includes significantly more renewable generation than all of our previous power plans. The draft plan also recognizes that over the next decade some power plants fueled by coal will retire for environmental and economic reasons. Intermittent or variable energy resource technologies are becoming less expensive to build and operate and are seen as the primary path

– combined with a reduction in fossil fuel generation - to reducing emissions associated with generating electricity.

To forecast the potential impacts of these various drivers and changes, the draft plan reflects the

results of several energy models, accounts for recently enacted public policies and advances in technology, and incorporates a blend of climate change assumptions and economics in preparing for the action-plan. The action plan period is from 2022 through 2027. The draft plan also assesses these factors for the 20-year horizon.

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CLIMATE CHANGE

The present and anticipated future changes in power system economics, policies, and generating technology are brought about in large part by concerns for the impacts of climate change. The potential impacts of climate change on electricity use and generation in our region was one of the key uncertainties the Council examined for the Draft 2021 Plan. The draft plan estimates the impacts of climate change on future demand for electricity, as well as impacts on hydropower and renewable energy generation in the region. The Council also explored a range of policies that could be pursued to reduce emissions throughout the economy.

MAINTAINING A RELIABLE AND ADEQUATE POWER SUPPLY

Increasing our dependence on sunshine and wind to make electricity has risks – primarily the risk of reduced output when the sun goes down and the wind stops blowing. Maintaining an adequate and reliable power supply will be challenging. In fact, this is a fundamental challenge, or uncertainty, the Council faced in developing the Draft 2021 Power Plan.

Dealing with uncertainty in the power system is not new. The uncertain future has been a consistent focus through all of the Council's power plans. The Council utilizes a combination of computer-based mathematical models and analysis to assess risks and uncertainties across thousands of scenarios of power demand and resources. Additionally, the Council engages extensively with advisory committees to collaboratively discuss and understand these uncertainties and explore solutions.

This is not just a challenge for the Council, but also for the entire Western United States. Adapting to the new mix of generating technologies will require coordination

among utilities, governments, and energy providers. The interconnected western power grid encompasses 14 states, two Canadian provinces and a portion of Mexico. Across this vast area, utilities, regulatory agencies, transmission managers, and interest groups will need to work together to ensure the entire power system remains adequate and reliable. The draft plan recognizes that individual utilities, which have varying access to electricity markets and varying resource needs, will require near-term investments in generating and energy efficiency resources to meet their adequacy and reliability needs.

As more renewables are added to the power system, this affects when hydropower can be generated. The Columbia River hydropower system can be used to help absorb and integrate additional renewable resources into the regional power supply and ensure it remains adequate and reliable. But as the system increasingly is used in this way, it will be important to better understand the potential impacts of operational changes at the dams, where there are legal constraints to assist fish passage. The Draft 2021 Power Plan includes as a component the Council's Columbia River Basin Fish and Wildlife Program, which includes the 2014 Program and the 2020 Addendum. Both the power plan and fish and wildlife program account for dam operations intended to protect, mitigate, and enhance fish and wildlife affected by hydropower dams.

THE RESOURCE STRATEGY

At the same time that clean-energy policies and decarbonization goals have been adopted at the state, utility, and community levels, significant retirements of coal-fired generating plants have been announced and planned – not only in the Northwest but throughout the West. These retirements are necessary in order to comply with clean-energy policies, but also because power prices today are increasingly influenced by



the inexpensive price of natural gas and renewable resources. As a result, these resources are out-pricing electricity from coal plants.

While the region adapts to factors including new economic signals, new resource development and dispatch, changing system operations, and uncertainty about the future, the Council is confident that the resource strategy in the Draft 2021 Power Plan will propel the region through the changes while maintaining an adequate, efficient, economical, and reliable power supply. Here are the elements of the resource strategy, which is described in detail in Section 6:

- **Energy efficiency:** The Council recommends the Bonneville Power Administration and regional utilities plan to acquire between 750 and 1,000 average megawatts of cost-effective energy efficiency by the end of 2027 and a minimum of 2,400 average megawatts by 2041. The Draft 2021 Plan includes less efficiency than past plans, which underscores the high achievements of the last 40 years. Much of the inexpensive efficiency has been achieved, and what remains is close to the price of power from the least-expensive generating resources.
- **Demand response:** The Council recommends utilities examine two types of demand-response (demand response is the voluntary reduction of power use during periods of high demand and limited resource availability, such as in the early morning and early evening, in return for compensation): 1) residential time-of-use (TOU) rates, and 2) demand voltage regulation (DVR). Our assessment shows that about 200 megawatts of TOU and 520 megawatts of DVR are available by 2027.
- **Renewable resources:** The Council recommends the region acquire at least 3,500 megawatts of renewable resources by 2027, as a cost-effective option for meeting energy needs and reducing emissions.
- **Existing resources:** Electricity imports from outside the region, particularly solar power from California, will be important to the future Northwest power supply. In the Seventh Power Plan, which the Council approved in 2016, electricity generated outside the region did not have a significant impact on the Northwest power supply. Today, it does. Solar and wind power have become so inexpensive that they are beating practically every other type of power in the wholesale market, making many inefficient thermal plants uneconomical to operate. The Council recognizes that the transition to an increasingly clean and low-cost power supply can't happen so fast that reliability and adequacy are diminished, and so the draft plan recognizes existing thermal plants – coal, natural gas, nuclear – as an important component of the power supply.
- **Regional collaboration:** In addition to these resources, the Council recommends Bonneville and regional utilities, along with their associations and planning organizations, work together and with others in the Western electric grid to explore the potential costs and benefits of new market tools, such as capacity and reserves products, that contribute to system accessibility and efficiency. The Council expects greater regional collaboration would produce significant cost savings and introduce more efficiency into system operations.

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BACKGROUND ABOUT THE COUNCIL AND THE POWER PLAN

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

The Act gives the four Northwest states a formal role in making decisions about the allocation of new energy resources for the region. In the years leading up to the congressional debate over the Act, decisions were made to build generating plants, including five nuclear power plants in the state of Washington. When the Act was passed in late 1980, many in the region had come to realize that those earlier decisions, based in part on inaccurate electricity load forecasts, were collectively a disastrous mistake.

Congress concluded that an independent regional body, without a vested interest in selling electricity, should be responsible for forecasting the region's electricity load growth and helping determine which resources should be built.

One of the Council's primary responsibilities, along with the development of its fish and wildlife program, is to craft 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 term of the plan, and a least-cost generating resources

portfolio. The plan informs Bonneville's resource decision-making to meet its customers' electricity load requirements.

In a decision that was ahead of its time, in 1980 Congress concluded 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 more than 7,200 average megawatts of energy efficiency, an amount of power equal to the annual energy consumption of 5.3 million Northwest homes or more than twice the annual average generation of Grand Coulee Dam.

Energy efficiency currently is our second-largest resource behind hydropower. Energy efficiency reduces demand for power and, as a result, effectively reduces peak demand when the power system is stressed. Energy efficiency acquired in the region has 'stretched' the regional hydropower system, largest in the nation, so that increasing demand could be met without building an equivalent amount of thermal generation.

See the draft plan at
nwcouncil.org/plan



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