



THE 2021 NORTHWEST POWER PLAN

2021 POWER PLAN SUMMARY

Never in the 40-year history of the Northwest Power and Conservation Council have we seen such dramatic changes in the future power supply than what the 2021 Power Plan outlines.

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. In the near term, the power generation mix will likely see modest changes. However, through the 20-year forecast length of the Council’s power plans – the region can expect a more substantial transformation.

The region is turning toward cleaner sources of generation, primarily wind and solar. States, utilities, and municipalities have policies pursuing emission reductions. As a result, the 2021 Power Plan includes significantly more renewable generation than all our previous power plans. Over the next decade, some power plants fueled by coal will retire

for environmental and economic reasons. Intermittent energy resource technologies are becoming less expensive to build and operate and are the primary path – combined with reduced fossil fuel generation – to reducing emissions associated with generating electricity.

To forecast the potential impacts of these changes, the plan incorporates the results of several energy models, recently enacted public policies, advances in technology, and a blend of climate change assumptions and economics in preparing the 20-year plan and its action plan, which covers 2022 through 2027.

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 2021 Plan. The 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.

See the 2021 Northwest Power Plan
at nwcouncil.org/plan



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. This is a fundamental uncertainty the Council faced in developing the 2021 Power Plan.

The uncertain future has been a consistent focus through all 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 collaborates extensively with advisory committees to discuss these uncertainties and explore solutions.

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 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 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 understand the potential impacts of operational changes at the dams,

where there are legal constraints to assist fish passage. The 2021 Power Plan includes the Council's Columbia River Basin Fish and Wildlife Program and 2020 Addendum. Both the power plan and fish and wildlife program account for dam operations intended to protect 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 these policies, 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 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, 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 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. 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, so the 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.

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.

One of the Council's primary responsibilities, along with developing a 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 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.

The Act directs the Council to give priority to cost-effective energy efficiency, followed by cost-effective renewable resources. 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 is our second-largest resource behind hydropower.

