

EXPLORING A RESOURCE ADEQUACY PROGRAM FOR THE PACIFIC NORTHWEST

An Energy System in Transition

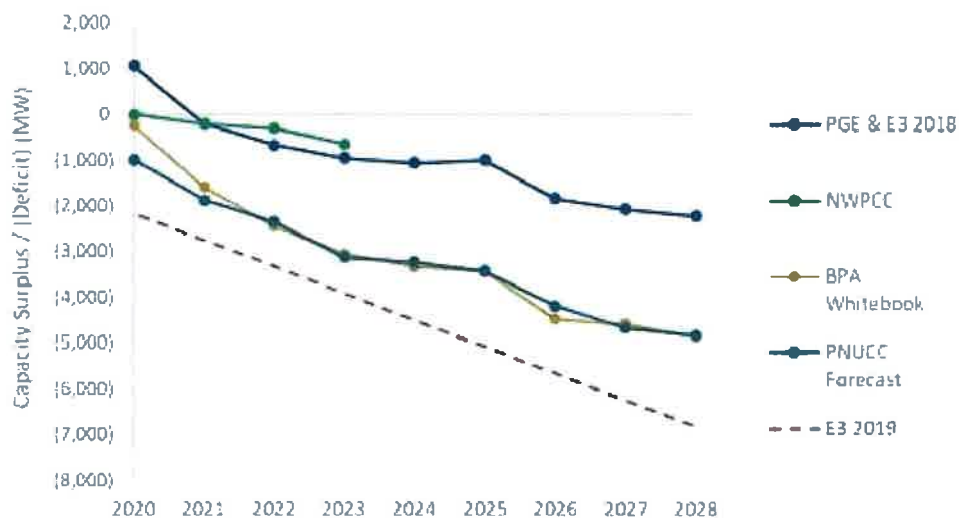
Meeting customer demands reliably, even on the coldest days of winter or the hottest days of summer, requires a significant amount of advanced planning. Utilities must forecast electric loads many years

The region may see capacity shortages as soon as next year.

into the future, not for an average day but for the most extreme weather and conditions. Then, they need to plan to serve that load even when system resources that are typically available

go off-line due to unanticipated mechanical problems or lack of available water, wind, sunlight or fuel supplies. And because no electricity system can be made perfectly reliable, utilities must grapple with the question of how much reliability they should ask their customers to pay for.

Figure 1: Summary of the region's capacity position across the studies considered



Note: This figure shows the central case from each study. The E3 2019 line is a linear interpretation of results for 2018 and 2030 in that study. The work groups also considered WECC's report to NERC in its Long-Term Reliability Assessment. However, that study was excluded from this figure because it examines the load and resource balance of the NWPP region in the summer, where the other studies agree that the largest challenges for the region are in the winter.

The NWPP Findings Report includes two primary conclusions:

1. The region may begin to experience shortages as soon as next year
2. By the mid-2020s, the region may face a capacity deficit of thousands of megawatts.

Deficits of that magnitude may result in both extraordinary price volatility and unacceptable loss-of-load.



Resource Adequacy

Resource capability on a year-ahead and potentially multi-year ahead basis to serve peak demand under all but the most extreme conditions

Resource Sufficiency

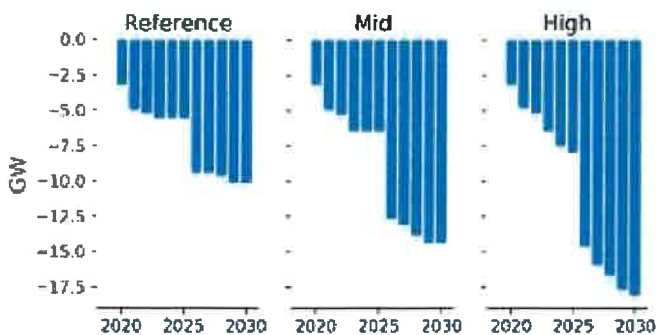
Resource capability for each operating interval i.e. every 15 min. or every hour on an hourly or day-ahead basis.

Recent developments have called into question whether the current mechanisms for addressing this challenge are sufficient to ensure adequate supplies of electricity in the region. This has led a broad coalition of electric utilities across the Pacific Northwest to believe that collective action is necessary. Acting through the Northwest Power Pool, these utilities have undertaken an evaluation focused on answering five key questions:

1. How are changes in loads and resources in the region expected to affect our ability to serve peak loads in the coming years?
2. Should current practices in the region be updated to meet the upcoming resource adequacy challenges?
3. What lessons can the Northwest learn from experiences in other regions?
4. How should electricity transmission constraints be considered when assessing resource adequacy needs?
5. How should the availability of fuel supplies be considered when assessing resource adequacy needs?

If coal plant retirements accelerate beyond current published closure dates as many expect, the Northwest Power and Conservation Council's most recent studies find that the region's Loss-of-Load Probability in 2024 would be 33%, exceeding what was calculated in 1999, just prior to the Western Energy Crisis

Figure 2: WECC Coal Retirement Scenarios



Note: These coal retirement scenarios were developed by PNUCC. PNUCC researched announced and potential retirements from across WECC.

Findings

- There is general consensus among regional studies that the Northwest is, or will soon be, short on capacity resources.
- There is no uniform method used by Northwest Power Pool members for measuring resource adequacy and no standard for how much of a buffer above our current peak loads is desirable.
- The working group's review of existing Resource Adequacy programs throughout the country found that the programs are different by region, but all provide benefits to regional planning.
- The Northwest region will need to develop a resource adequacy program tailored to its specific needs and resources.
- Mechanisms to assure firm fuel supplies and deliverability will be a key design element for a Northwest Resource Adequacy program.

Benefits of a Resource Adequacy Program

The region should take further steps to develop a regional resource adequacy program for several reasons:

- To maintain reliability during a period of significant transition of the region's electricity system;
- To promote increased transparency and uniformity of the region's resource adequacy position;
- To allow utilities to realize the benefits of the load and resource diversity that exists across the region;
- To provide a platform for utilities to coordinate planning reserves and make optimal use of existing resources and transmission assets; and
- To encourage timely identification and development of new investments when and where they are needed to meet regional requirements.

Next Steps

- Explore in detail features of an Resource Adequacy (RA) program that is suited for the Northwest energy system;
- Incorporate stakeholder input, including an advisory committee, to be regularly consulted during the design phase;
- Stand up an RA program by spring 2022.

Key Take Away Messages

1. The region may face a capacity deficit of thousands of megawatts
2. A regional Resource Adequacy program can identify needs and remedies
3. Standing up a Resource Adequacy program by 2022 will require industry coordination and stakeholder input

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