

DRAFT

Pacific Northwest Power Supply Adequacy Assessment for 2020-21

May 6, 2015

Executive Summary

The Pacific Northwest's power supply is expected to be close to adequate through 2020. The Council estimates that the likelihood of a power supply shortage in that year is ~~close to 5 percent, which equals just under~~ the 5-percent standard ~~set adopted~~ by the Council in 2011. By 2021, however, after the planned retirements of the Boardman and Centralia-1 coal plants (1,330 MW nameplate), the likelihood of a shortfall (also referred to as the Loss-of-load Probability ~~or~~ LOLP) rises to a little over 8 percent¹ and would lead to an inadequate supply without intermediate actions.

These results are based on a probabilistic analysis that examines the operation of the power supply over thousands of different combinations of river runoff volume, wind generation, forced outage and temperature for the 2020/21 operating years. However, in each case, the underlying demand was set to the Council's medium forecast and the availability of ~~market supply imports~~ from the southwest was also set to a fixed value. If demand growth were to vary from the medium forecast or if the availability of imports were to change, the LOLP could drop as low as one percent or rise as high as 17 percent. The availability of imports depends not only on surplus generating capability in the southwest but also on the south-to-north transmission capacity. Currently, the limiting factor during winter months is the transmission capacity. Resource adequacy is assessed every year because the power supply is dynamic, in the sense that factors such as demand and import availability can change unexpectedly. Varying the underlying load from the Council's low to high forecast changes the LOLP from 3 percent to 7 percent, respectively. Varying the amount of market supply from zero to the full south-to-north intertie transfer capability changes the LOLP from 13 percent to 1 percent, respectively. If load growth or market availability were to change significantly, conclusions about the adequacy of the power supply for both 2020 and 2021 would change accordingly. This is precisely the reason this analysis is revisited every year.

The results above assume that the region will continue to acquire energy efficiency savings as targeted in the Council's Sixth Power Plan, which amount to about 1,700 average megawatts through 2020. While no immediate other resource acquisitions ~~actions~~ are required to maintain adequacy through 2020, the region will likely have to ~~take some actions~~ plan for additional resources before prior to 2021 when the two coal plants are retired. Actions to bring the 2021 power supply into compliance with the Council's standard will vary depending on the types of new generating resources or demand reduction programs that are considered. For example, adding 1,150 megawatts of gas-fired generation would bring the LOLP back to 5 percent.

¹ Boardman and Centralia 1 coal plants are scheduled to retire in December of 2020. However, because the Council's operating year runs from October 2020 through September 2021, these two plants would be available for use during the first three months of the 2021 operating year. For this scenario, the LOLP is 7.6 percent. The Council must take into account the long term effects of these retirements and, therefore, uses the more generic study that has both plants out for the entire operating year.

~~Alternatively, lowering the 2021 annual load by about 850 average megawatts should do the same.~~

In all likelihood, some combination of new generation and load reduction programs will be used to bridge the gap. It should be noted that developing a strategy to provide the region with an adequate, efficient, economical and reliable power supply is beyond the scope of this analysis. Designing such a strategy is more appropriately done in the Council's Power Plan, which is due out later this year.

~~This analysis only counts existing resources and those that are sited and licensed. Looking specifically at utility plans, Portland General Electric is expected to have a Boardman replacement strategy in its next integrated resource plan. Puget Sound Energy is currently developing its plans and is considering options for the loss of Centralia 1. Other Northwest utilities, as reported in the Pacific Northwest Utility Utilities Conference Committee's 2015 Northwest Regional Forecast show a combined 1,800,900 megawatts of planned generating capacity over the next 10 years. But as conditions change over the next few years, it is expected that utilities will amend their resource acquisition strategies to ensure that sufficient investments in new resources will be made to maintain an adequate supply.~~

Formatted: Underline