Northwest **Power** and **Conservation** Council

January 4, 2023

MEMORANDUM

TO: **Council Members**

FROM: **John Fazio, Senior Power Systems Analyst**

SUBJECT: **2027 Resource Adequacy Assessment**

BACKGROUND:

Presenters: John Ollis, John Fazio, Dan Hua, Dor Hirsh Bar Gai

Summary: Staff will brief the Council on the results of the resource adequacy assessment for 2027. Analysis indicates that the regional power supply will not be adequate when relying solely on existing resources, existing reserve levels, and on no new energy efficiency measures. However, adequacy is expected to be maintained if resources and reserves identified in the 2021 Power Plan's resource strategy are added to the supply. If future electricity market supplies are significantly limited or if demand increases rapidly (e.g., with the implementation of accelerated electrification policies) or if major resources are retired earlier than expected without replacement, then additional resources and reserves will be required to maintain adequacy, as anticipated by the 2021 Power Plan.

Staff is asking the Council to agree to release of the 2027 Resource Adequacy Assessment publicly, including any committee amendments to the executive summary and after any needed editorial edits to the report. In addition, staff is asking the Council to direct staff to continue the development of the multi-metric approach for future assessments, as we believe it provides a more robust approach for assessing adequacy.

Staff is anticipating that the Power Committee will make a recommendation to the Council for both release of the report and the continued work on new metrics. Note that staff is seeking the informal endorsement of the Council members, not a formal decision of the Council by motion and vote.

Relevance: Resource adequacy is a critical component of the Council's mandate to develop a regional power plan that "ensures an adequate, efficient, economic and reliable power supply." To test the efficacy of the plan's resource strategy, the Council – in cooperation with regional stakeholders – annually assesses the adequacy of the power supply with planned resource additions derived from the plan's resource strategy. The annual assessment is based on a resource adequacy standard established by the Council in 2011. However, for this year's assessment, the Council enhanced its assessment by also examining measures related to shortfall frequency, duration, and magnitude.

Background: An adequate power supply should meet the electric energy requirements of its customers within acceptable limits, considering a reasonable range of uncertainty in resource availability and in demand. Resource uncertainty includes forced outages, early retirements and variations in wind, solar and market supplies. Demand uncertainty includes variations due to temperature, economic conditions, and other factors. Resource availability and demand are also affected by environmental policies, such as those aimed at reducing greenhouse gas emissions.

The Council uses a Monte-Carlo simulation model to assess the likelihood of a future year having one or more disruptions to service, when considering the many different combinations of future resource availabilities and demands described above. The metric used, referred to as the annual LOLP, has been instrumental in the development of the Council's power plans since the early 2000s. However, due to increasing complexities (e.g., significant development of renewable and distributed resources, adoption of clean-air laws and a more dynamic market environment), LOLP is no longer sufficient to accurately measure the adequacy of the region's power supply and the risk to customers.

An enhanced adequacy assessment includes metrics related to the frequency, duration, and magnitude of potential shortfalls. The objectives for the new standard are to:

- Prevent high use of emergency measures
- Limit occurrences of very long shortfall events
- Limit occurrences of big capacity shortfalls
- Limit occurrences of big energy shortfalls

With the approval of the Council, staff will continue to develop this approach to assess adequacy and will work with all stakeholders to refine the limits set for all adequacy measures.