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

March 3, 2026

MEMORANDUM

TO: **Council Members**

FROM: **Dor Hirsh Bar Gai, Power System Analyst**

SUBJECT: **Final Ninth Plan Needs Assessment**

BACKGROUND:

Presenter: Jennifer Light, Dor Hirsh Bar Gai

Summary: As part of final testing and preparation for the OptGen analysis, staff identified a need to reconfigure the GENESYS setup to further align model assumptions. The resulting change focused on updating balancing reserve alignments, and it required rerunning the needs assessment to calculate new adequacy reserve margins for all sensitivities included in the Ninth Plan. Staff will present updates to the approach and share the final adequacy reserve margins that will be used for the next stage of modeling.

Relevance: One of the crucial analytical steps in power plan development is an assessment of needs. This analysis essentially looks at the gap between existing system capabilities and forecasted load growth. This gap is translated into an adequacy reserve margin that informs the size and shape of the need. This adequacy reserve margin provides an important signal to the portfolio optimization modeling in OptGen, which ensures that resource buildouts meet the Council's adequacy criteria.

Staff have been working to fine-tune the signals between GENESYS and OptGen to ensure that the adequacy reserve margin is appropriately capturing the needs for

adequacy over the range of growth. Appropriately representing balancing reserves and is critical to power system modeling. This update, as well as other adjustments to ensure the signals between the two models are working correctly, will ensure that Ninth Power Plan strategies provide for an adequate system.

Workplan: B.3.2. Conduct assessments of regional needs to inform scenario modeling.

More info: The Power Division has presented multiple iterations of the needs assessment results for the Ninth Power Plan. This upcoming presentation provides the final set of results that will be used in the plan.

These previous presentations touch on the needs assessment modeling for the Ninth Plan. While useful context, the results from these presentations will ultimately be replaced with the final results shared at the March 2026 meeting.

- Primer on Needs Assessment, March 2025
- Initial Needs Assessment for Changing Hydro Operations Scenario, October 2025
- Initial Needs Assessment for New Resource and Transmission Risk Scenario, including in the Power Plan Update for December 2025
- Updated Needs Assessment Results for all scenarios, included in the Power Plan Update for January 2026 – this update was needed to correct irrigation data in the model.

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Recap of Needs Assessment Development

- Primer on Needs Assessment, March 2025
- Initial Needs Assessment for Changing Hydro Operations Scenario, October 2025
- Initial Needs Assessment for New Resource and Transmission Risk Scenario, including in the Power Plan Update for December 2025
- Updated Needs Assessment Results for all scenarios, included in the Power Plan Update for January 2026 – this update was needed to correct irrigation data in the model
- **Today: final set of results for the Plan after correcting reserve allocation and fine-turning methodology to relate GENESYS needs to OptGen signal**

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Correcting WECC wide Reserves Allocation

- During preliminary testing for adequacy checks (simulating an OptGen buildout in GENESYS) to validate methodology, staff identified a need to reconfigure GENESYS setup
  - the region was providing reserves for the whole WECC, which meant the hydro system (and system in general) was showing a need for resources for reserve requirements outside the region.
- After correcting the reserve alignment, it was required to rerun the needs assessment to calculate new adequacy reserve margins for all sensitivities included in the Ninth Plan
- The new results were further validated and staff are confident in outcome

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OptGen Typical Day

- Another outcome of preliminary testing for adequacy check highlighted a difference between how GENESYS and OptGen handle temperature-sensitive conditions
  - GENESYS simulates **all** temperature-sensitive and coincident conditions
  - OptGen simulates **typical day** conditions
- In other words, GENESYS needs are derived from the full spectrum of temperature-sensitive uncertainty, but OptGen's typical day approach simulates the expected conditions which dampen the signal of extremes from GENESYS
- To mitigate the signal discrepancy, the ARM methodology was fine-tuned to capture the extremes that GENESYS is simulating also in OptGen

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High Load Growth Trajectory

- Staff initially hypothesized that reserve margin percentages will scale with load trajectories
  - Recall, the reserve margins are a percent of load, and the assumption was that whatever load trajectory we tested, the reserve margin would account for that level of load
- However, testing showed this was not the case, and staff determined using the high load trajectory in the needs assessments to ensure the plan strategy will be adequate
  - The load trajectory used in the previous needs assessments was the Mixed Bag, the second-lowest of the five forecasts.
  - As the ARMs weren't scaling with load per expectation, it likely would have resulted in OptGen buildouts that are not adequate in the higher load trajectories.
- This is a more conservative assumption but is the right approach for planning

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Results Summary

- Modeling still shows significant need in the region in 2031
  - Peak needs in all seasons, particularly in winter and summer
  - Energy signal for summer and winter
  - Longest and largest events in the winter
- The main need driver is the expected load growth
- Still caution overreading differences between sensitivities, as it is both a function of the overall high needs and the nuance of how we get from the shortfall record to the reserve margins

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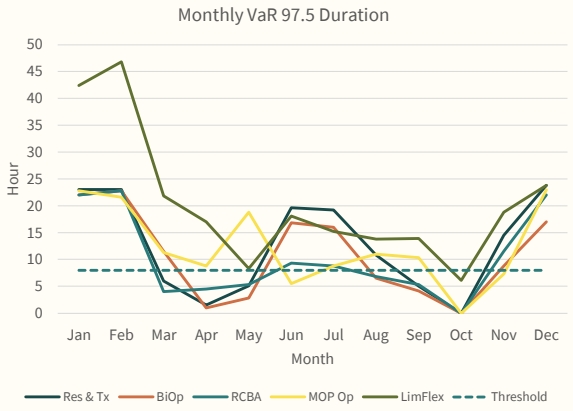
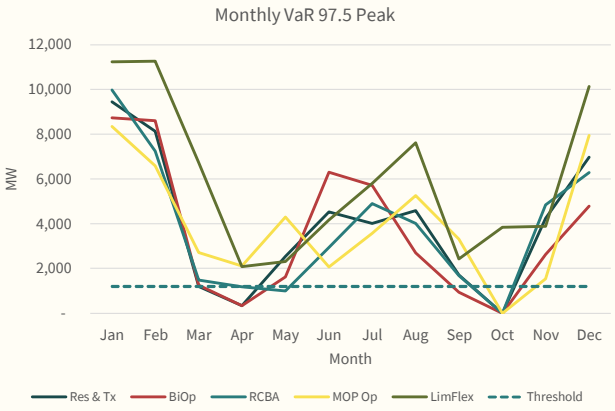
Longest and Largest Shortfalls are still in Winter and Summer





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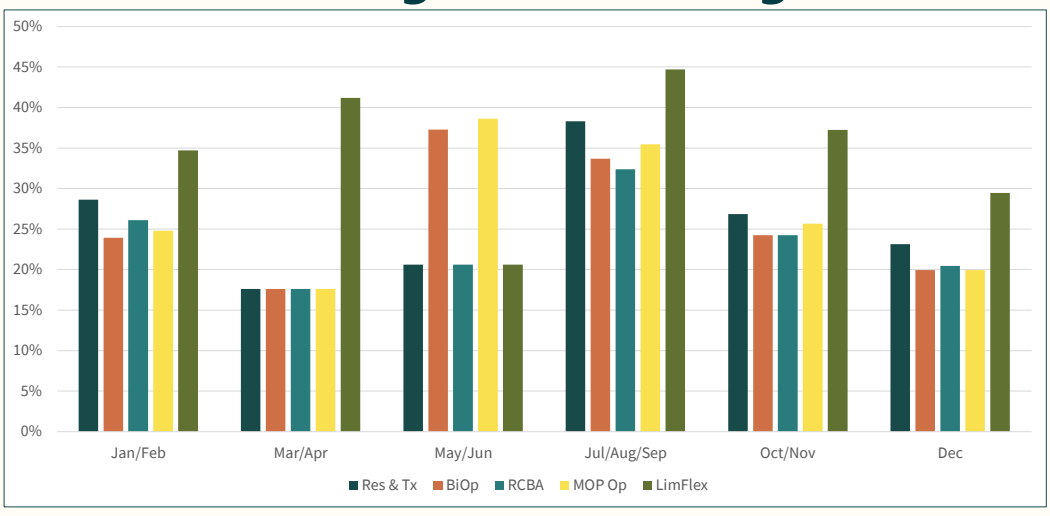
Final Planning Reserve Margin - Peak



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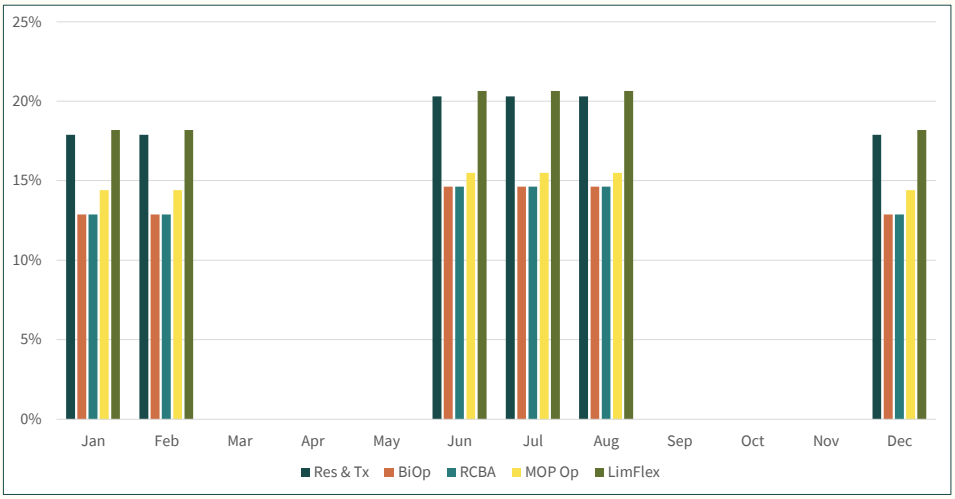
Final Adequacy Reserve Margin - Energy



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Important Reminder

- The reserve margin values are not the focus; they are the signals linking GENESYS needs to OptGen
- The final adequacy check of each strategy will ensure that the results shared meet the Council's adequacy standards

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Questions?

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