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October 1, 2024

MEMORANDUM

TO: Council Members

FROM: John Ollis, Manager of Planning and Analysis

SUBJECT: Primer on Representing Markets in Council Models

BACKGROUND:

Presenter: John Ollis

Summary: This presentation will provide a brief overview of the current market options in the Northwest, including bilateral transfers and participation by many utilities in the organized real-time market EIM (Energy Imbalance Market), discuss the current projections on the timing on the organized day-ahead market and Western Resource Adequacy Program efforts and provide an initial proposal for how to address these issues in the analysis supporting the upcoming plan.

Relevance: The Council's 2021 Power Plan spent significant time understanding the west-wide market fundamentals, with the understanding that decisions outside of the region have impacts on the Northwest power system. Leading up to the next power plan, changes in western market structures may impact the regional costs associated with different resource strategy decisions. Despite the uncertainty, at this time staff is proposing to represent the common features of the market structures in the power plan starting point (to the extent practicable) and is not recommending further scenario analysis.

Workplan: B.2.1 Prepare for the ninth power plan, developing a draft scope, preparing models and inputs, and developing environmental methodology.

Background: Unlike other parts of the country, the Northwest does not have a Regional Transmission Organization (RTO) or an Independent System Operator (ISO) that provides resource adequacy planning and compliance frameworks. In recent years, the Western Energy Imbalance Market (WEIM from the CAISO) in 2014 and Western Energy Imbalance Service (WEIS from SPP) in 2019, have benefited western utilities by facilitating cost savings associated with least cost dispatch of resources over a broader regional footprint. Shorter term markets, like the imbalance markets have traditionally not been where the bulk of market transactions have occurred, rather more volume had been associated with day-ahead market. Currently, western utilities outside the CAISO engage in bilateral day-ahead market transactions.

Utilities in the region and the broader west are currently exploring two different organized day-ahead market options, one offering from the California Independent Service Operator (CAISO) and another from Southwest Power Pool (SPP). Additionally, utilities throughout the west are collaborating via the Western Power Pool to stand up a regional reliability planning and compliance program (Western Resource Adequacy Program). On a shorter- and longer-term basis, these market structures have the potential to help bring more transparency and efficiency to region and the west in general.

More Info: Online FERC western markets primer
<https://www.ferc.gov/OPP/western-markets-explainer>

Ryan Roy, COO of the WPP, updated the Council in September 2024 about WRAP activities and timeline toward implementation.
https://www.nwcouncil.org/fs/18900/2024_09_11.pdf

Ryan Roy, Director of Operations & Technology and the WPP, updated the Council in July 2023 about WRAP activities and timeline toward implementation.
https://www.nwcouncil.org/fs/18372/2023_07_c2.pdf

Sarah Edmonds, President & CEO of the Western Power Pool, presented to the Council in August 2022 to provide an overview of the WRAP. Those materials are available here:
https://www.nwcouncil.org/fs/17855/2022_08_3.pdf.

Dan Williams, Director and Chris Devon, Director at CES MarketsIQ West, updated the Council in December 2022 on the current market options and a general overview of what efficiencies and benefits the day-ahead organized market might provide the region.
https://www.nwcouncil.org/f/18118/2022_1213_5.pdf

Primer on Representing Markets in Council Models

Council Meeting
October 8, 2024
John Ollis



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Agenda

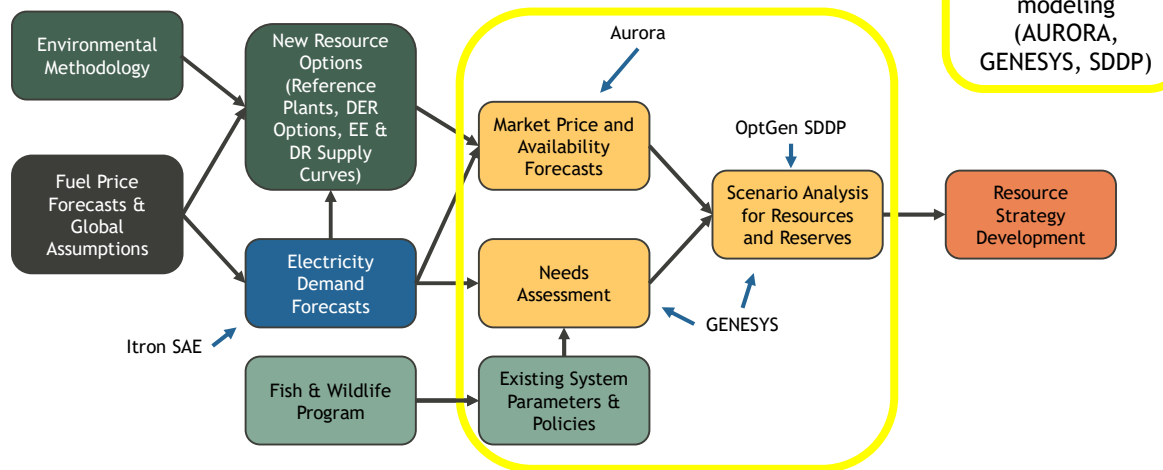
- Timeline
- Markets Review
- Initial Methodology for Incorporating into Council Analysis
- Next Steps



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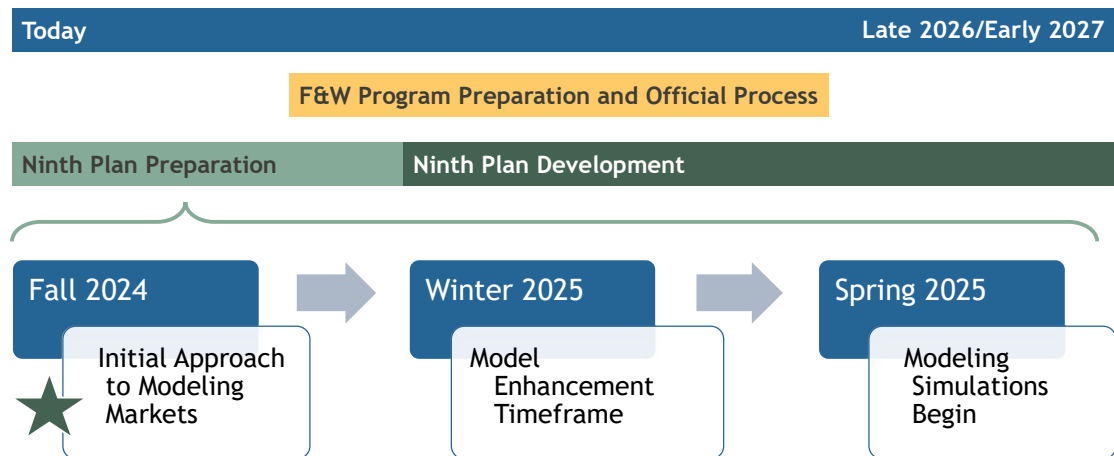
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Roadmap to building a Power Plan



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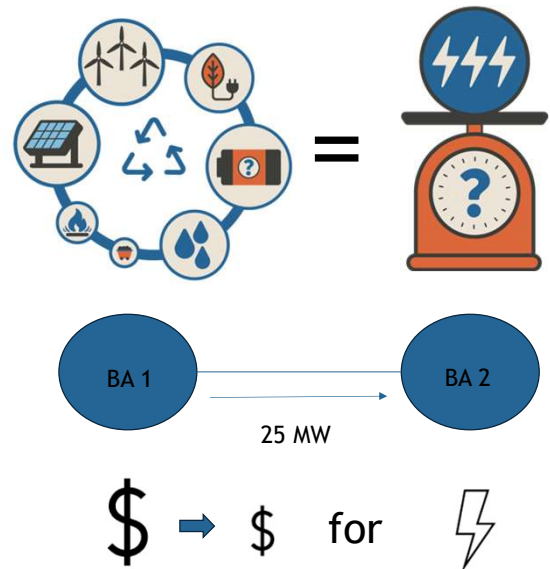
Rough Timeline



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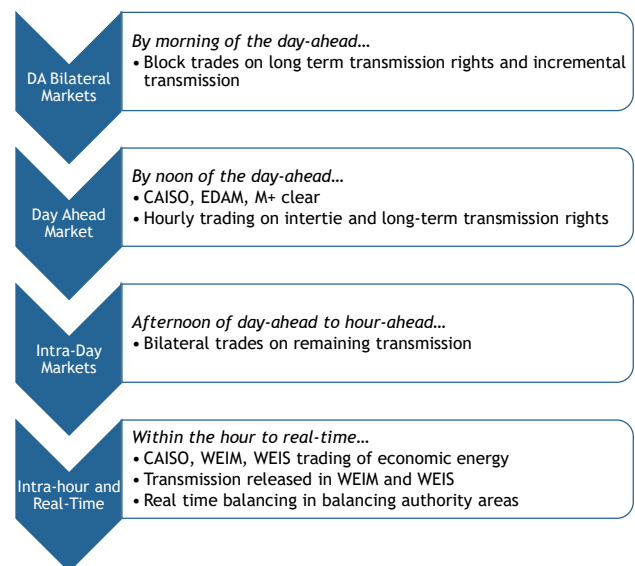
Wholesale Power Markets Review Part 1

- Utilities are **instantaneously** trying to match power generation to the customer demand for that power.
- Sometimes a neighboring utility/power producer will be able to offer power for a lower cost than the utility's generators can provide it. This can result in a market transaction.
- Why do wholesale electricity markets exist?
 - Primarily to exchange power to decrease overall power costs



Wholesale Power Markets Review Part 2

- Since utilities are **instantaneously** trying to meet customer demand, they develop plans and risk management strategies to ensure they can.
- Some of those plans involves building enough resources to meet that demand.
- Some of these plans involve engaging in contracts for power over different time frames



BAs

Boundaries are approximate and for illustrative purposes only.

WECC

Source: Western Electricity Coordinating Council

How will this work with emerging market structures?

Longer Term Market
Western Resource Adequacy Program

- Need contracts or resources by **7 months** before the binding season

Shorter Term Day-Ahead Markets
Enhanced Day Ahead Market (CAISO) OR Markets Plus (SPP)

- Need contracts or resources by **around noon** on the day before real time.

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Markets Timelines Versus Plan Timelines

- Anticipated start for Enhanced Day Ahead Market is 2026
- Anticipated start for Markets Plus is Q2 2027
- Anticipated transition to the binding program for WRAP is Summer 2028
- Decisions on intent for utilities varies:
 - Some utilities announcing (e.g. PGE, PacifiCorp)
 - Some not (e.g. BPA issuing final decision in May 2025, others funding both efforts)

Rough Timeline



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Where Does This Leave Us?

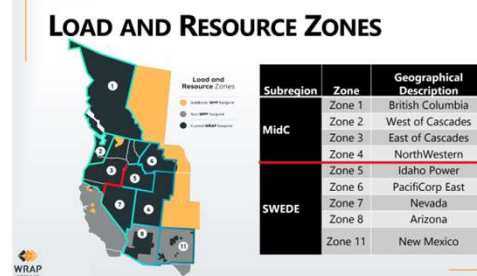
- The market decision for all WECC entities will *likely be too early to be informed by the plan* and *likely too late to inform the plan*.
- Fortunately, we can be prepared for a few main things:
 - WRAP seems to be on track to cover most of the western footprint not occupied by the CAISO and AESO. **Meeting planning reserve margins for these footprints will likely be a main driver some resource development** and likely coincides with having an adequate region.
 - Important for Council modeling
 - While there may be some changes in market fundamentals due to seams between markets (primarily seams which may result in higher cost to transfer between market footprints), **that is likely a smaller driver for resource development**. This probably mostly impacts shorter term economics and market prices, which potentially can be worked around with different market transaction strategies.
 - Less important for Council modeling

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Initial Proposed Market Modeling Strategy

Where can we show distinction between markets, with the information we have now?

- Seasonal planning reserve margins
 - Align as much as possible with the Western Resource Adequacy Program definitions for planning reserve margins while being consistent with regional adequacy criteria
 - Align with other assumptions for planning reserve margins throughout the WECC
- Wheeling rates
 - Utilize current tariff wheeling rates for power transfer between BAs



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How Different is This Than What We Do Now?

- In addition to tracking regional resources and loads, we also have BA level, out-of-region demand forecast and track out of region policies.
- Using that data, we run capital expansion simulation to figure out how entities will meet their load and policy obligations.
 - Within the capital expansion simulation, the production cost is simulated for any candidate resource strategy.
 - This production cost simulation simulates hourly market transactions using some simplifications.
- Since entities have traditionally coordinated with other entities via operating pools for contingency reserves (and more for CAISO), we assign planning reserve margins by pool.
 - Changing markets may change some of the footprints and assumptions on planning reserve margins of these operating pools



Model Attributes	Current State	Changes Due to Markets
Hourly Demand Forecast*	WECC-wide by balancing authority	WECC-wide by balancing authority
Existing Resources	WECC-wide by balancing authority	WECC-wide by balancing authority
New Resources Forecast	Capital expansion using AURORA and OptGen	Capital expansion using AURORA and OptGen
Planning Reserve Margins	By operating pool footprint, annually	By operating pool with modified footprints, seasonally
Market Transactions	Using one timeframe to simulate all**	Using one timeframe to simulate all**

*The out-of-region demand forecast includes existing and projected DSM. In region, the previous plan forecast is assumed in AURORA and the new plan forecast is calculated in OptGen.

** For adequacy modeling, we simulate week-ahead, day-ahead, and hour-ahead markets and the operational impacts and risks in GENESYS.

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Next Steps

Vet this approach with the System Analysis Advisory Committee (Q4 2024)

Explore whether any changes are needed to the proposed modeling approach (Q4 2024 - Q1 2025)

Report any modifications in approach (Q1 2025)

Continue to monitor progress on markets and report back periodically (Ongoing)

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Questions

John Ollis
jollis@nwcouncil.org

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