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

April 29, 2014

MEMORANDUM

TO: Power Committee Members

FROM: John Fazio, Senior Power Systems Analyst

SUBJECT: 2019 Resource Adequacy Final Report

At the Power Committee meeting on May 6, 2014, staff will brief Council members on the assessment of regional power supply adequacy for the operating year 2019.

The power supply for the Pacific Northwest is deemed adequate if the likelihood of future shortages, measured as loss of load probability or LOLP, is less than five percent. The Council approved the last adequacy assessment in December 2012. That assessment reported an LOLP of about 7 percent for 2017.

The current resource adequacy assessment shows a 6 percent LOLP for 2019. In 2021, after the Boardman and Centralia 1 coal plants (total 1,300 megawatts) are retired, the LOLP rises to 11 percent.

The LOLP results dropped from 7 percent for 2017 to 6 percent for 2019 primarily because anticipated resource additions are expected to be greater than forecast load growth. These results assume that the Council's annual energy efficiency savings target of about 350 average megawatts is achieved between 2017 and 2019.

Actions to bring the 2019 and 2021 power supplies into compliance with the Council's 5 percent LOLP standard will vary depending on the types of new generating resources or demand reduction programs that are considered. It is beyond the scope of this analysis to develop a resource acquisition strategy. That is done in the Council's power plan. However, PNUCC's 2014 Northwest Regional Forecast shows the sum of utility planned resources through 2024 to be about 1,800 megawatts.

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Resource Adequacy

Final Assessment for 2019

Power Committee Meeting
Boise, Idaho
May 6, 2014

Outline

1. Import Recommendation
2. 2019 and 2021 Assessments
3. EE Savings Impacts
4. Discussion of Final Report/ Recommendations to Council

Import Recommendation 2,500 MW

Import Availability and Tie Limits[1] (MW)

Month	SW Supply	5% Lowest Intertie	Assumed Limit
Jan	16,529	3,425	2,500
Feb	15,937	3,425	2,500
Mar	17,316	2,450	2,500
Oct	21,923	2,450	2,500
Nov	20,264	3,425	2,500
Dec	17,929	3,425	2,500

[1]Celilo-Sylmar DC transmission line is scheduled to be upgraded by up to 700 MW by 2019.

Changes Since 2017 Assessment

2017 LOLP: 7%

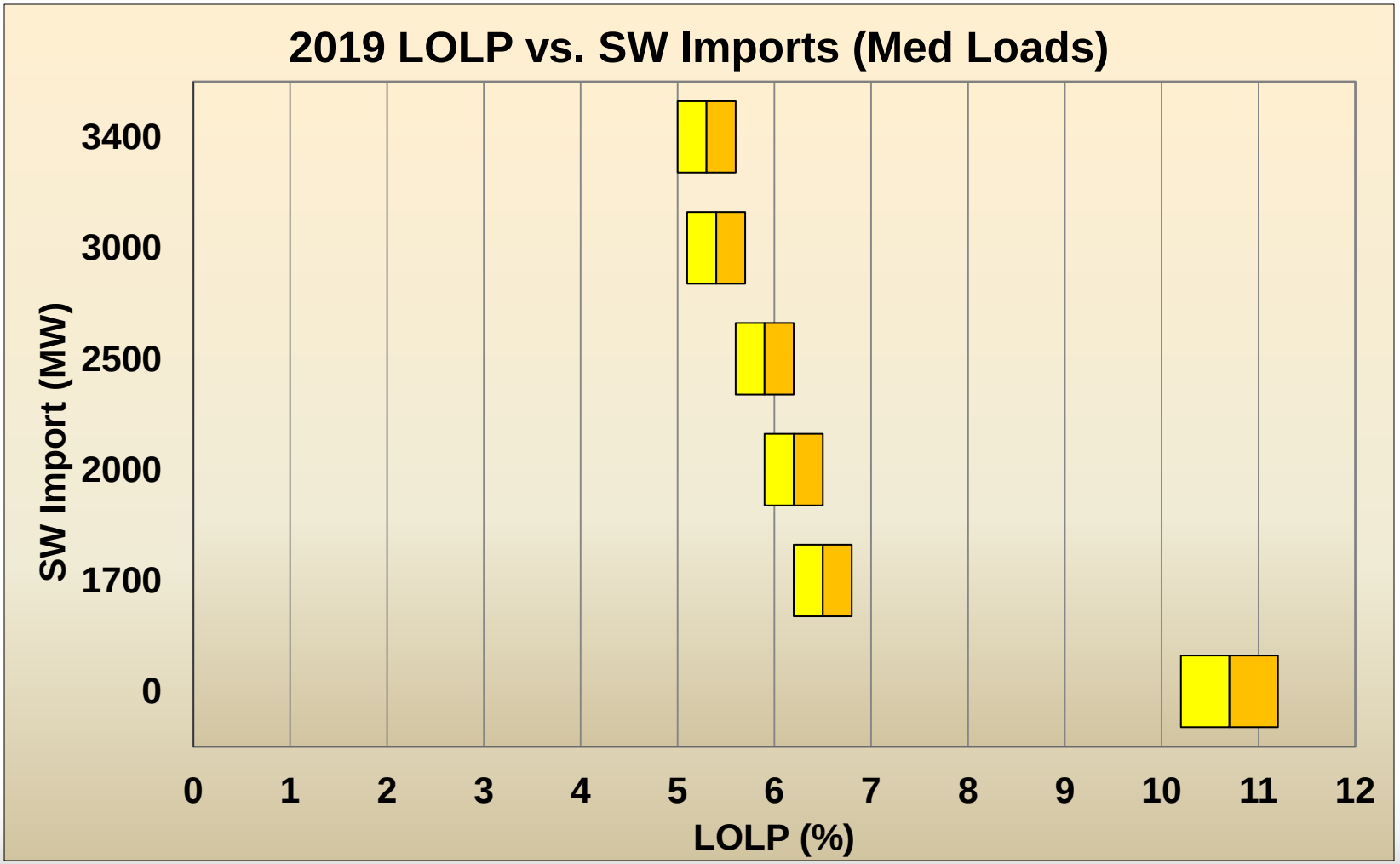
- Net Load Growth 206 MWa
  (including 700 MWa Energy Efficiency Savings)
- Southwest Imports 800 MW
- New Gas-Fired Generation 670 MW
- New Wind 260 MW
- Standby Energy - 42,200 MW-hours
- Standby Winter Capacity - 37 MW
- Standby Summer Capacity 113 MW

2019 LOLP: 6%

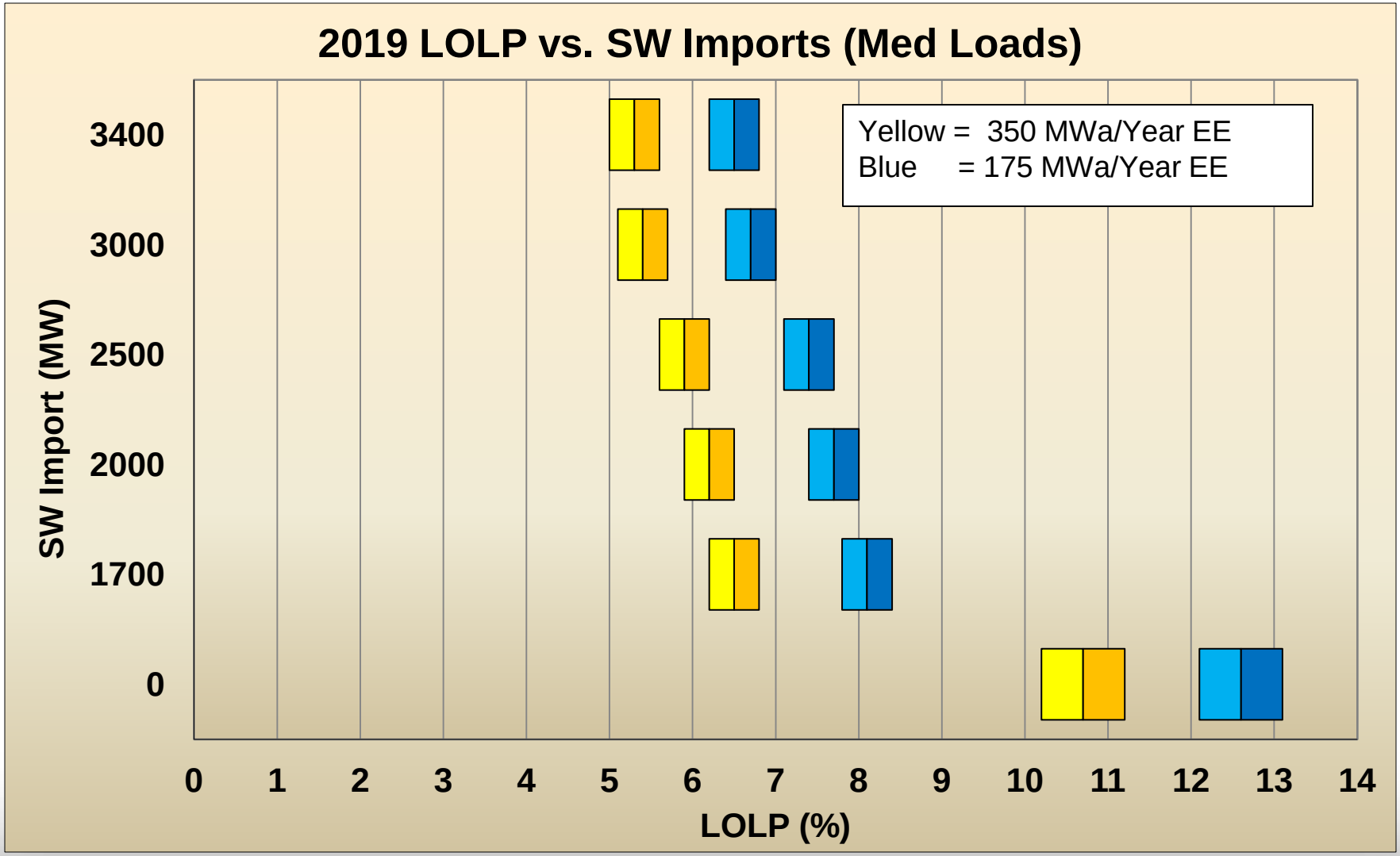
LOLP Results for 2019 (%)
(Effects of Load and Import Uncertainties)

Load / Import	-2.5%	-1.5%	Medium	+1.5%	+2.5%
0 (MW)	7.5	8.6	10.5	12.9	14.9
1700	4.5	5.3	6.5	8.0	9.3
2000	4.3	4.9	6.2	7.7	9.0
2500	4.0	4.7	5.9	7.2	8.5
3000	3.8	4.5	5.4	6.7	7.9
3400	3.7	4.4	5.3	6.4	7.7

Precision of LOLP ± 5% of Value



Effect of EE on LOLP (approx.)



2021 Assessment

2019 LOLP: 6%

- Net Load Growth 206 MWa
  (including 700 MWa Energy Efficiency Savings)
- Coal Retirements - 1,300 MW

2021 LOLP: 11%

Summary of Adequacy Report

1. 2019 LOLP = 6%
2. 2019 LOLP = 5% +400 MW capacity, or +300 MWa EE savings[1]
3. 2019 LOLP > 7% with half of EE savings
4. 2021 LOLP = 11% -1,300 MW coal capacity
5. PGE Boardman replacement strategy by 2019
6. Sum of utility planned new generating resources 1,800 MW by 2024
7. Assume EE shape = load shape, need better data
8. Lots of SW winter surplus power supply available: address new intertie transmission to help meet needs

[1]Estimated by reducing loads 300 MWa, since the EE hourly shape is the same as the load shape in our analysis.