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

June 5, 2018

MEMORANDUM

TO: **Council Members**

FROM: **Gillian Charles, John Fazio**

SUBJECT: **The State of the Northwest Power System: 2018 Northwest Regional Forecast**

BACKGROUND:

Presenter: Shauna McReynolds, Executive Director and Tomás Morrissey, Senior Policy Analyst

Summary: The Pacific Northwest Utilities Conference Committee (PNUCC) released its annual update to the Northwest Regional Forecast (NRF) in March. This report is a summation of the region's loads and resources over the next ten years from the utilities' perspective.

The 2018 NRF highlights several key trends, including (from the Executive Summary):

- Regionwide, electric demand forecasts are being revised downward, while growth in demand differs greatly by individual utility.
- The gap between peak power supply and demand is narrowing in the winter, but growing in the summer.
- There are few power plants expected to be built in the coming years and available generation is expected to shrink as coal-fired power plants are taken offline.
- More renewables are coming online, in part to meet customer preferences.

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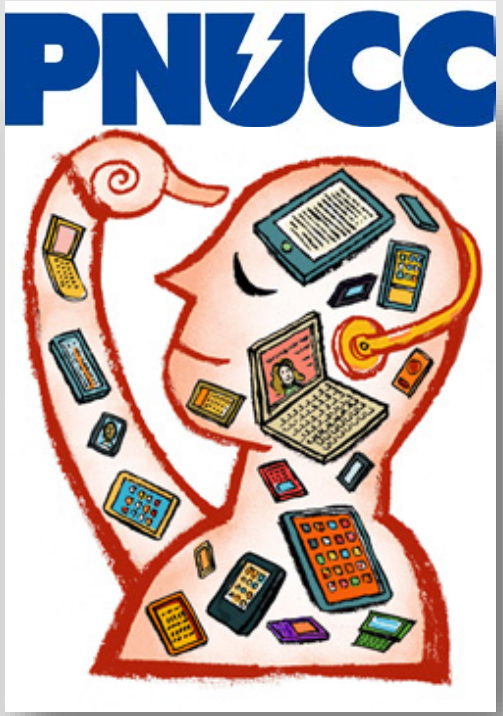
- Utilities, in aggregate, continue to exceed regional energy-efficiency goals.
- The Northwest is one of the lowest-carbon areas in the nation in terms of electric generation due to the abundance of hydropower.

Relevance: Similar to the Council's annual resource adequacy assessment, the NRF provides a forecast of loads and of resource supply to identify potential needs in the near future. It differs in that the NRF is essentially the sum of each utilities' load forecast and current/expected resources, thus only providing an expected projection of future needs. The resource adequacy assessment uses the Council's own regional load forecast along with current/expected resources to perform a probabilistic analysis of future needs under many different combinations of future conditions. Council staff will be presenting the latest annual resource adequacy assessment at this meeting. Together, these presentations will provide a more complete summary of the current and future state of the system.

More Info: 2018 Northwest Regional Forecast
http://www.pnucc.org/system-planning/northwest-regional-forecast

What's on the horizon for the NW power industry?

Northwest Power & Conservation Council – June 2018



Northwest Regional Forecast

What is it?

Sum-of-utilities loads & resources projections

- Monthly energy & peak loads
  - normal weather conditions
  - capacity - 16% planning margin
- Demand side management
  - Utility's savings forecasts
- Contracts (in & out of region)
  - long-term only
- Hydropower
  - low water conditions

- Generating resources
  - utility-own only
  - utility's expected operation

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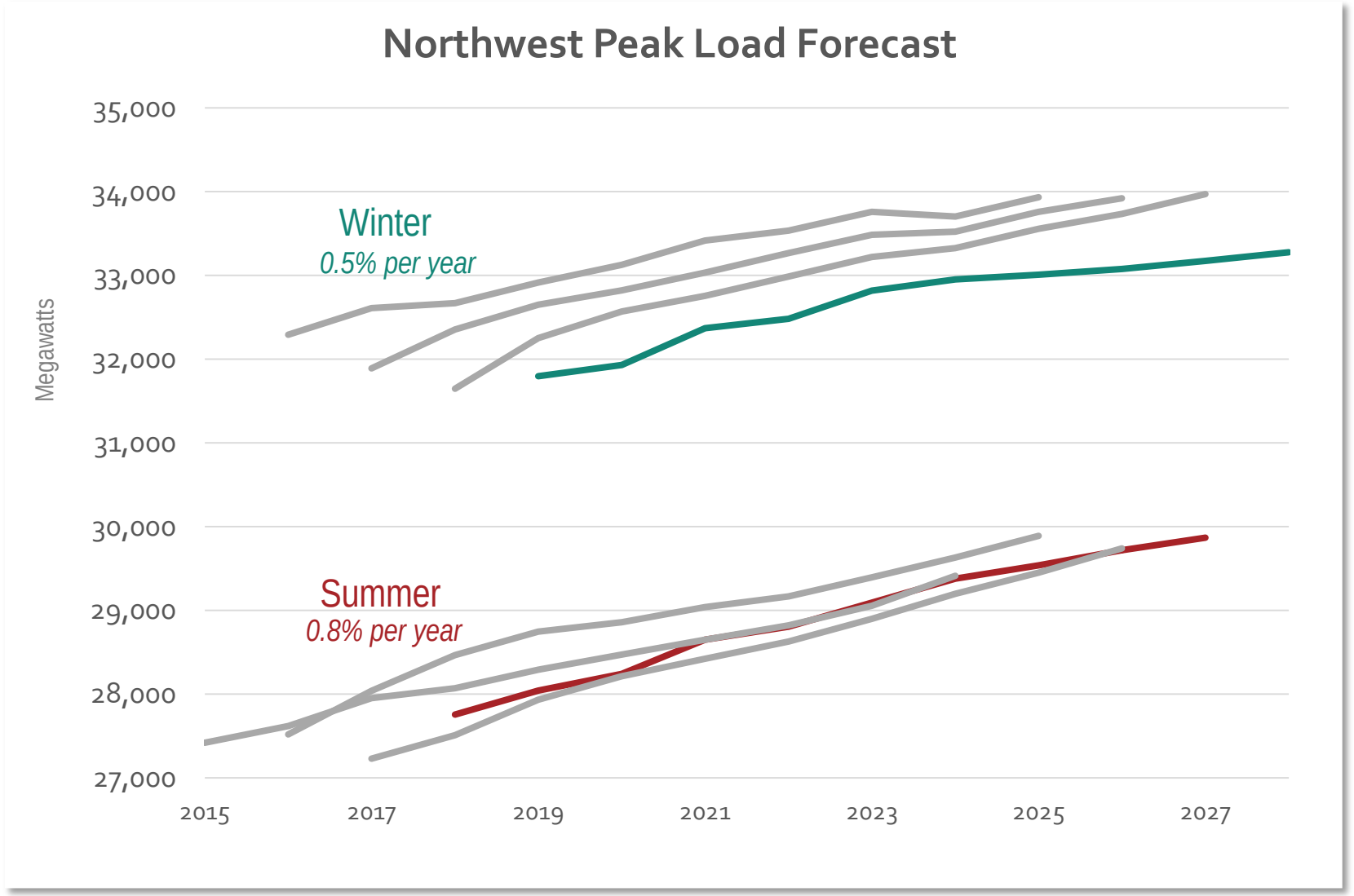
LOADS

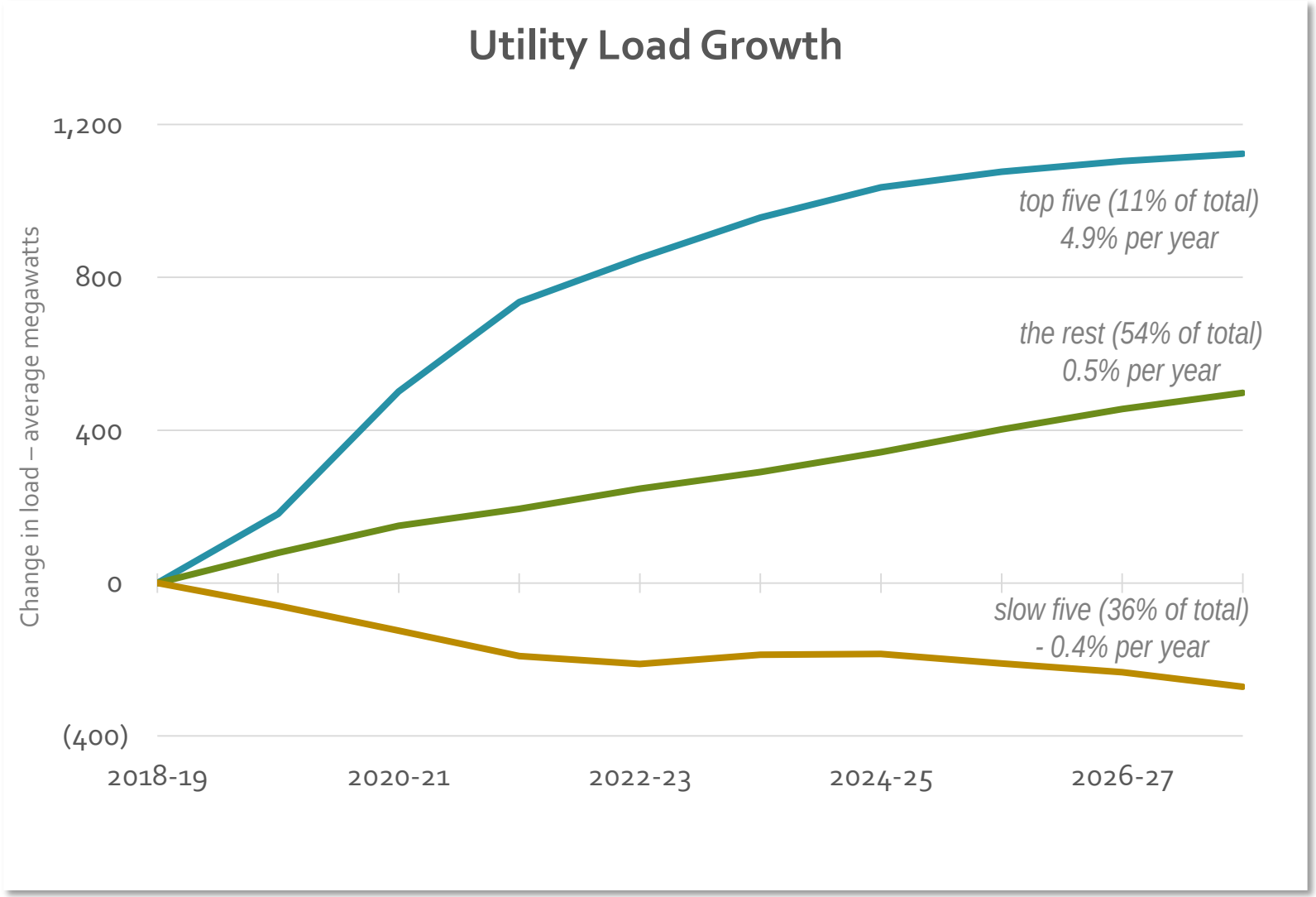
Winter load growth flattening

Summer forecast steady



LOADS

Load puzzle…
varies by utility



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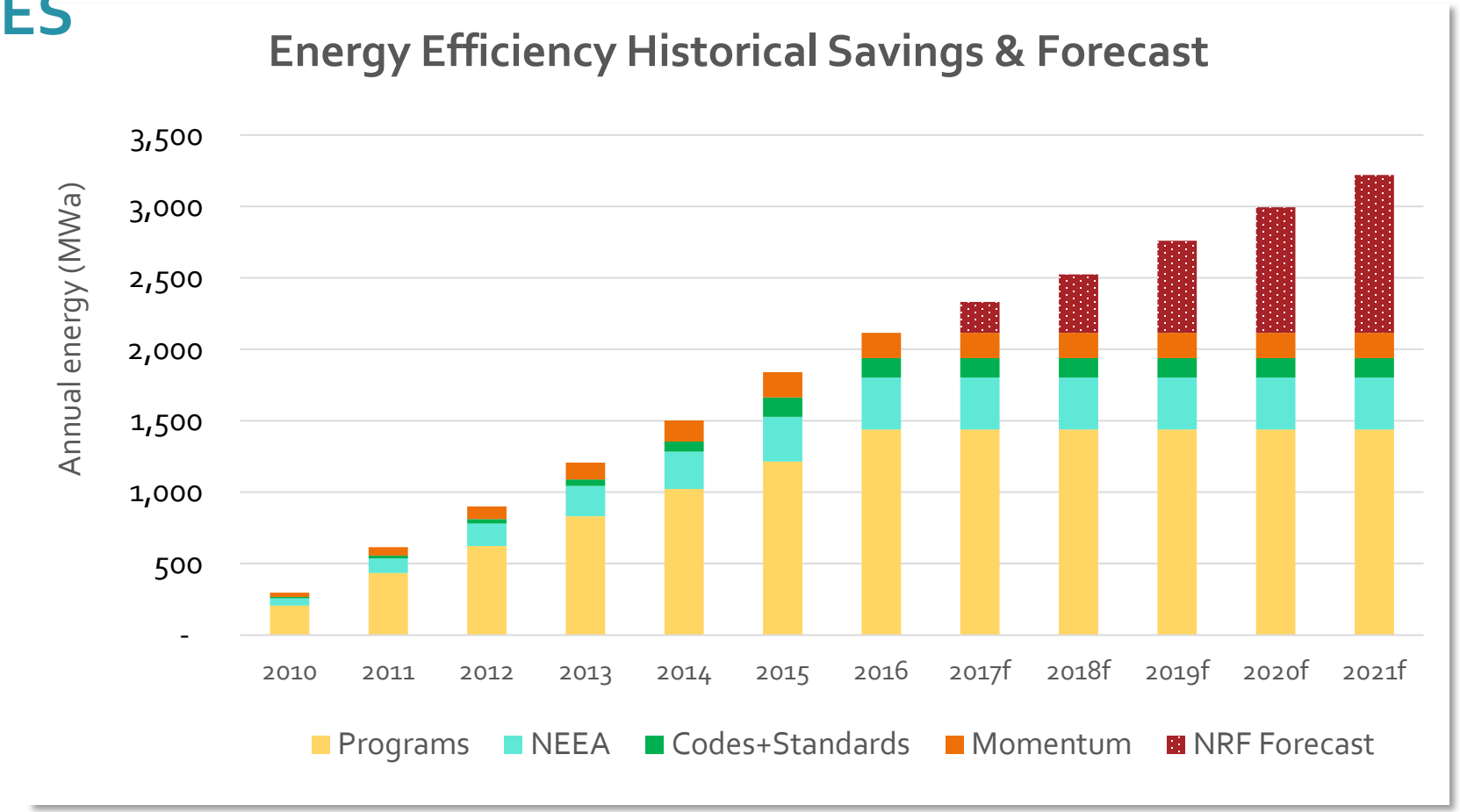
DEMAND-SIDE RESOURCES

Lots of EE going forward

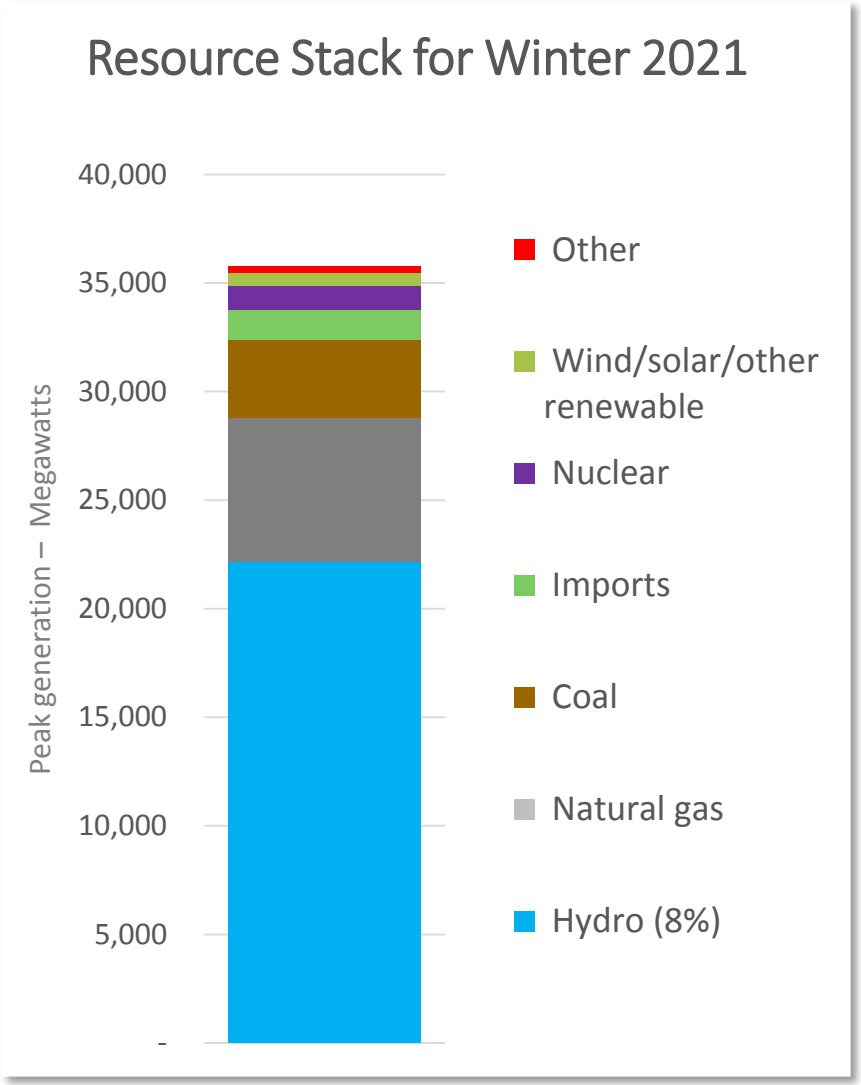
DR still mostly summer



Demand Response (MW)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Jan (existing + new, cumulative)	60	85	151	164	194	226	258	304
Aug (existing + new, cumulative)	372	376	410	420	446	466	481	501

EXISTING RESOURCES

Hydro is huge in the Northwest



Winter peak - 35,800 MW

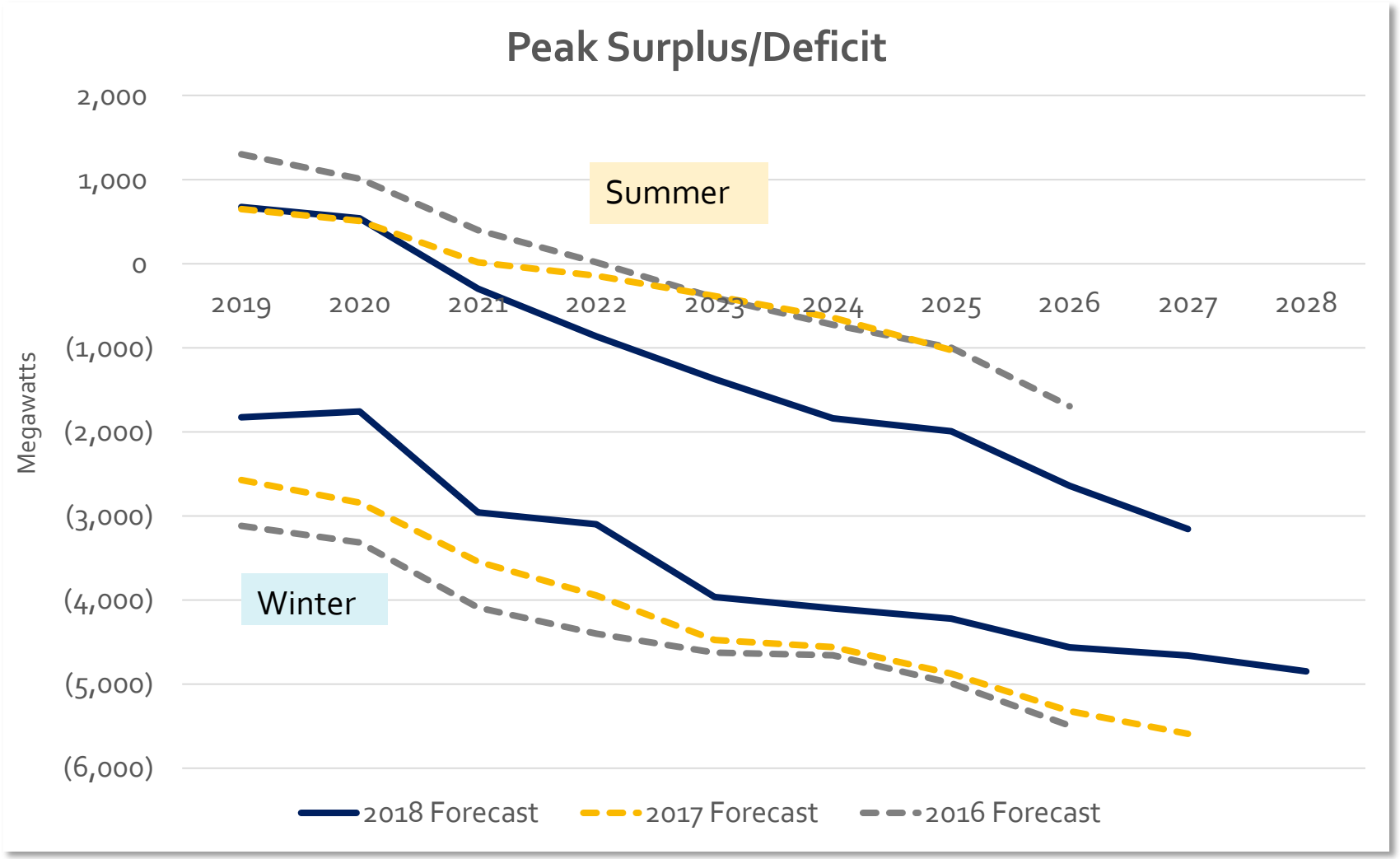
Summer peak - 34,600 MW

Energy - 21,300 MWa

CAPACITY PICTURE

Summer deficit growing

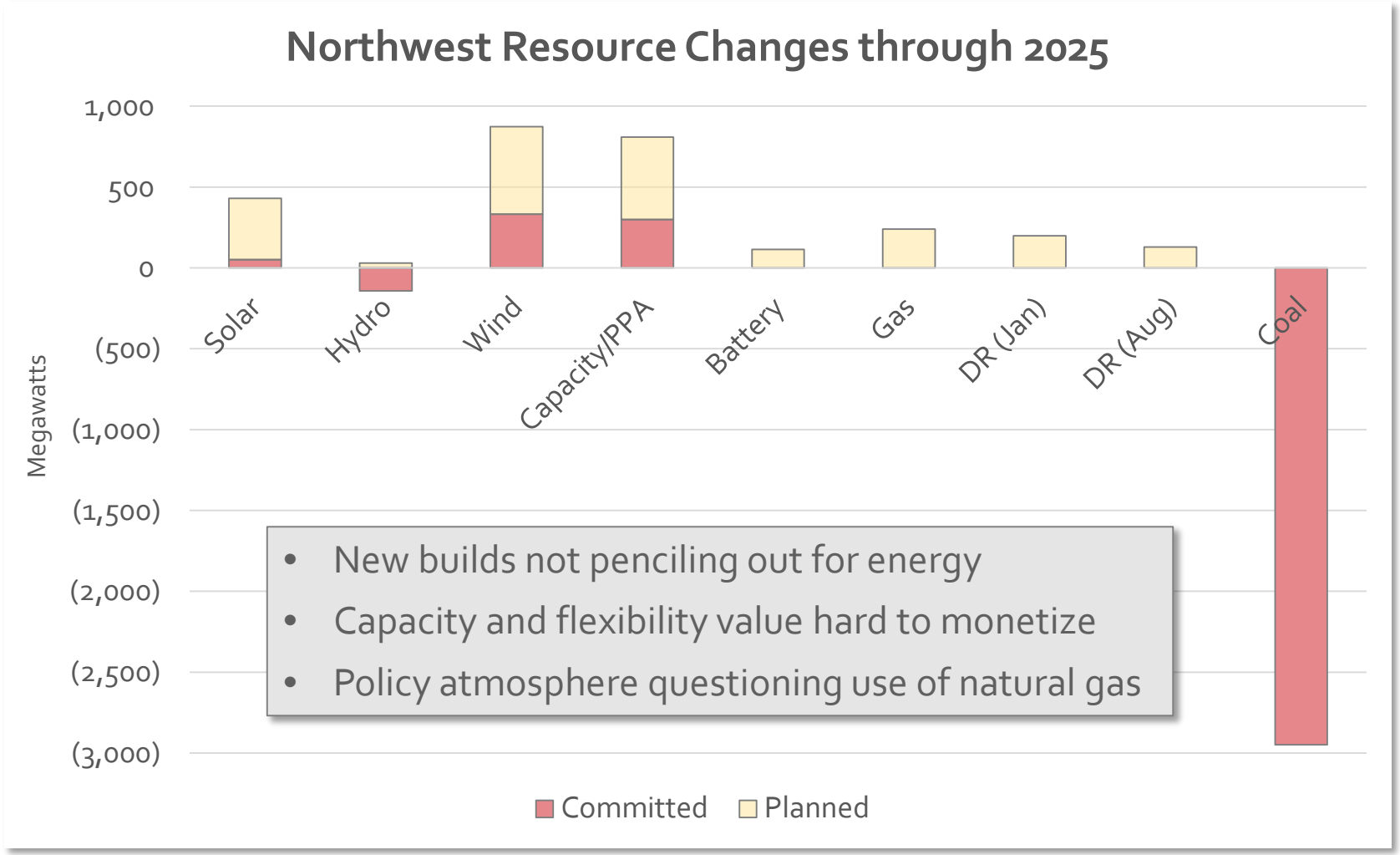
Winter deficit lessening



FUTURE RESOURCES

Few new resources; dispatchable or otherwise

Retirements add up



CAPACITY NEED?

How are we feeling?

Walk in the park?

- Reduced load expectations
- *Forecast* deficit improving
- Market expectations

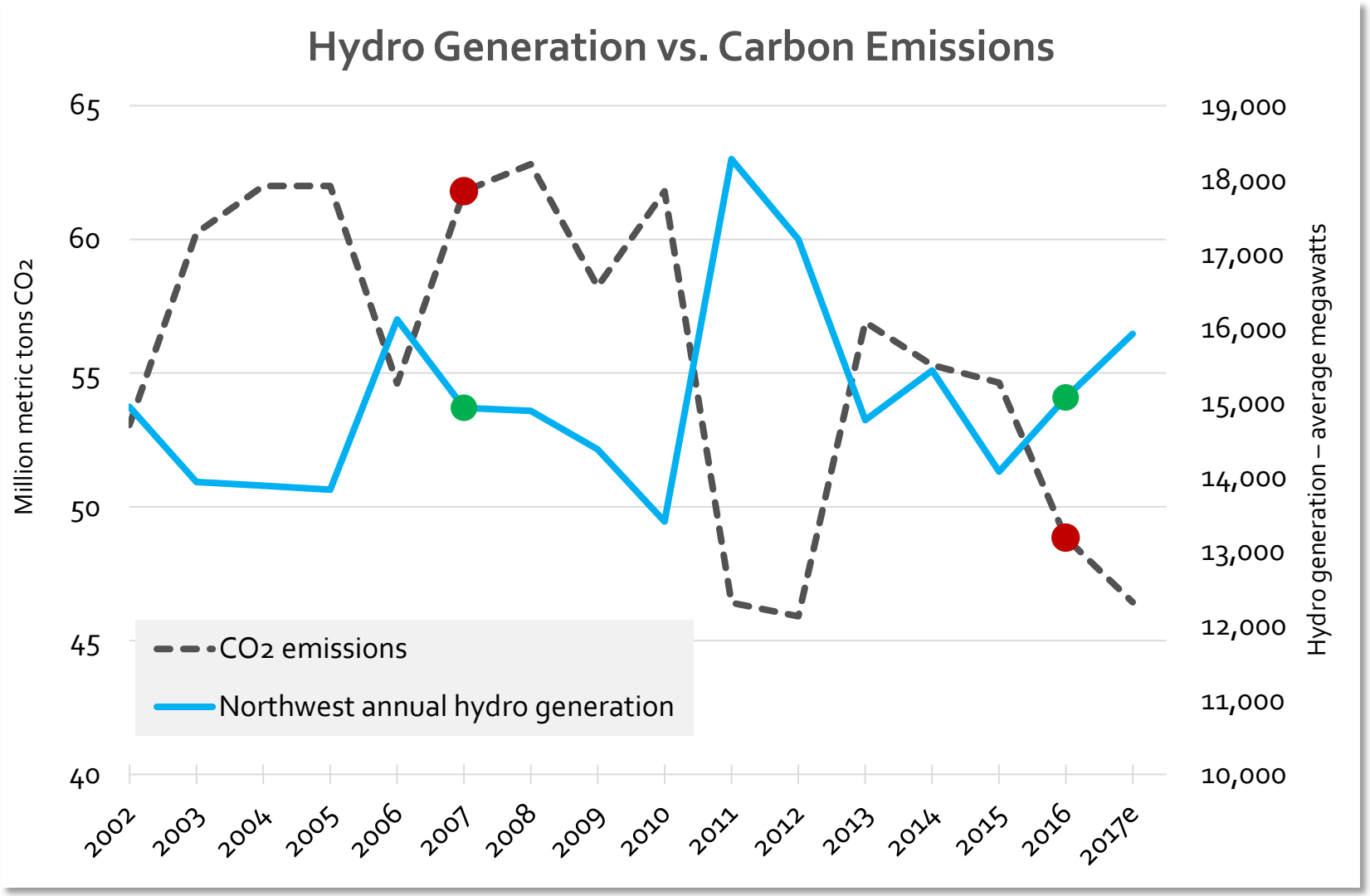
Precarious balance?

- Large thermals retiring WECC-wide
- Good hydro can mask adequacy issues
- Policy atmosphere adding uncertainty
- NWPPC expects deficit by 2021

CARBON EMISSIONS

NW emissions trending down

Values in MWa	2007	2016
Hydro	14,930	15,070
Coal	5,500	3,760
Natural gas	2,730	3,430
Wind	500	2,270
Other, CO_2 free	1,220	1,460
Other CO_2 emitting	160	250
Total generation	**25,040**	**26,240**
Total CO_2 (MMT)	**62**	**49**

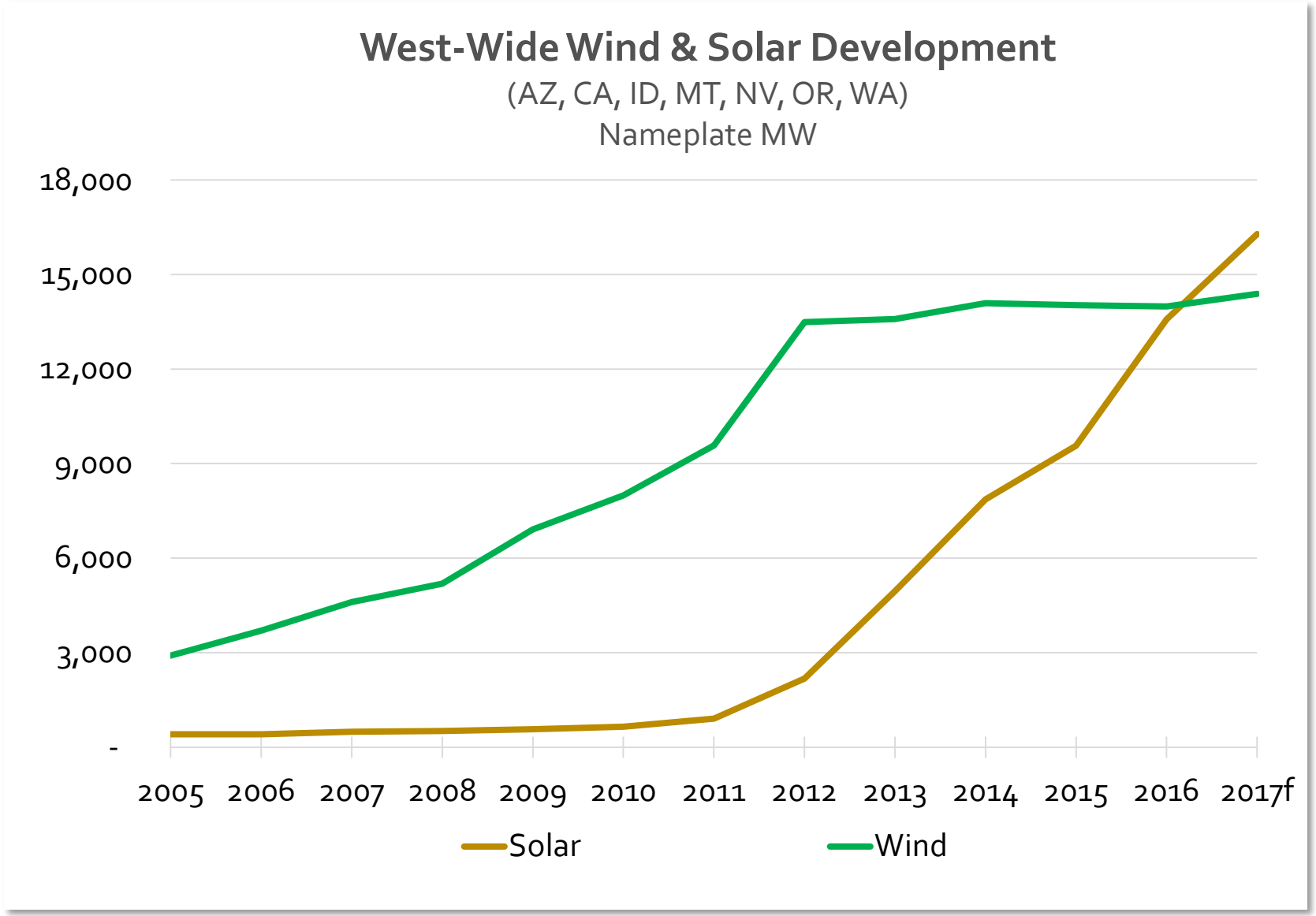


WIND & SOLAR

Wind was preferred new renewable up to 2012

Inexpensive solar and changes in RPS rules led to large rise in solar 2012+

More wind and solar coming



Does not include behind the meter solar; in California this is ~6,000 MW

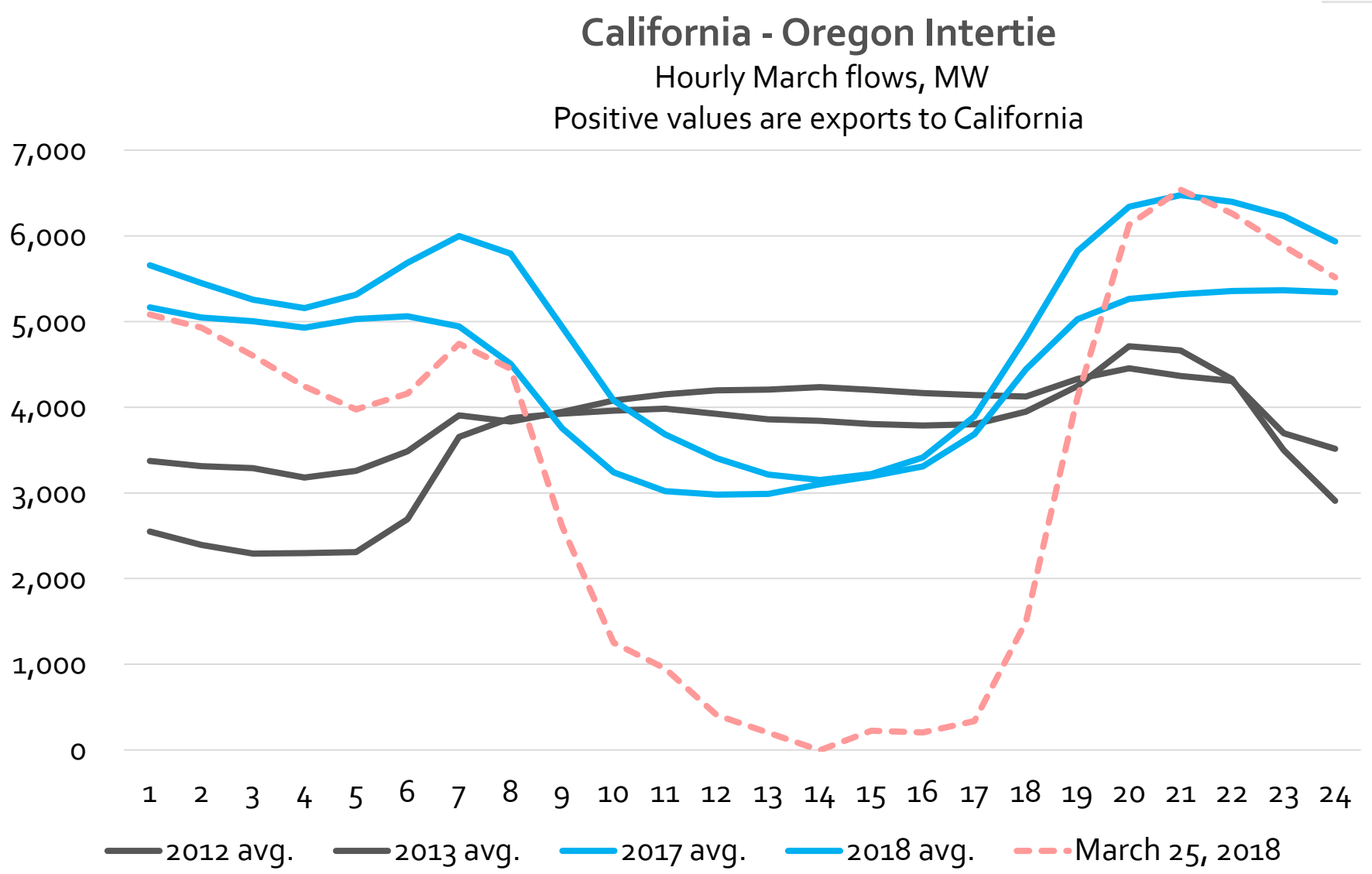
FLEXIBILITY NEED

Solar's impact:

*CAISO has large evening ramps

* shaping exports

* shaping prices



This shape is most pronounced in the spring

FLEXIBILITY NEED

Flexibility, how to best describe concerns?

Are we concerned or aware?

- EIM reducing curtailments
- More renewables WECC wide adds to ramping need
- Hydro system looks more constrained than 10 years ago
- Limited visibility into remaining flexibility on the system

- Is it a regional or utility by utility issues?
- Gas delivery constraints in California?
- What are the limits for export/import?

PNUCC

Did you hear…

- Demand flattening regionally, still quite varied by utility
- Utilities continue to exceed regional energy-efficiency goals
- Winter peak gap shrinking, summer's growing
- Few new power plants expected while existing coal plants retiring
- Electric generation carbon emissions trending down
- Utilities focused on need for flexibility as renewables grow

Thank You

Questions?

Shauna McReynolds

Tomás Morrissey

PNUCC

Whose story?

- Avista
- Benton PUD
- Bonneville Power
- Central Lincoln PUD
- Chelan PUD
- Clark Public Utilities
- Clatskanie PUD
- Cowlitz PUD
- Douglas PUD
- Emerald PUD
- EWEB
- Flathead Electric Coop.
- Franklin PUD
- Grant PUD
- Grays Harbor PUD
- Idaho Power
- Mason PUD #3
- NorthWestern Energy
- Pacific Power
- Pend Oreille County PUD
- PNGC Power
- Portland General Electric
- Puget Sound Energy
- Seattle City Light
- Snohomish PUD
- Springfield Utility Board
- Tacoma Power

Northwest vs. remaining U.S. generating resource mix

The NW is over 70% carbon-free

compared to

the rest of the U.S. under 35%