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

March 5, 2024

MEMORANDUM

TO: **Council Members**

FROM: **Tomás Morrissey**

SUBJECT: **January 2024 Cold Weather Event**

BACKGROUND:

Presenters: James Gall, Avista; Tomás Morrissey, Northwest Power & Conservation Council staff.

Summary: In mid-January 2024 the Northwest region experienced a cold weather event. Some utilities in the Northwest hit record load levels, including the Bonneville Power Administration balancing area which reached loads not seen since before the 2001 Power Crisis. James Gall, Avista, and Tomás Morrissey, Council staff, will share data and insights on temperatures, loads, resource performance, and power prices during the event.

Relevance: Cold weather in January 2024 stressed the Northwest power system. By studying the event we can learn how the power system performs under extreme conditions. This can help inform the Council's resource adequacy assessments and other planning work.

January 2024 cold weather event

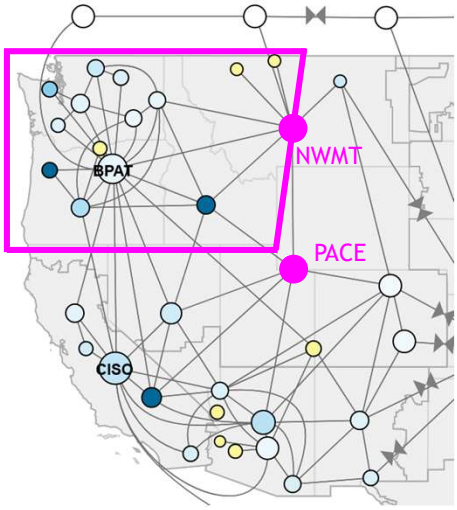
March 2024

Northwest Power and Conservation Council

1

January cold event and the Northwest

- The Northwest, as defined by the Power Act, includes all of Idaho, Oregon, Washington, and Western Montana
  - This breaks up the Northwestern Energy and PacifiCorp East balancing areas. Some of the material today include those full areas for simplicity
  - **Other groups may have different definitions of the Northwest**
- The Northwest is part of the larger Western Interconnection



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Temperatures around the Northwest

Minimum daily temp in January 2024

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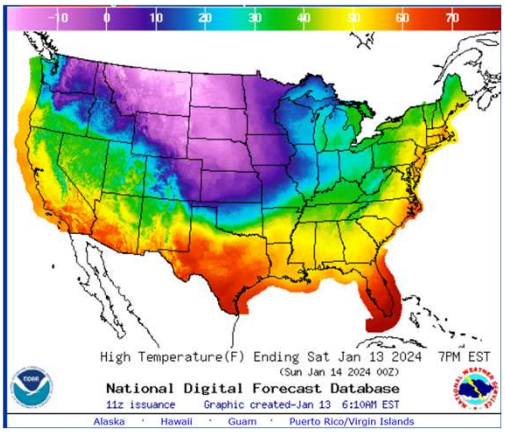

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Map from NOAA
Data from NOAA, taken from airport stations

3

Cold, but not record low, temperatures

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6% Boise
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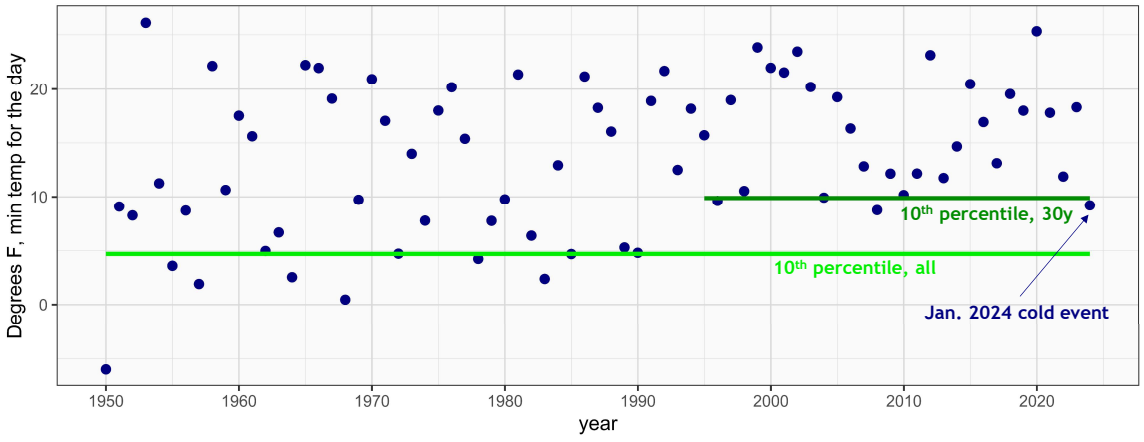
Historical min temps NW region (1950-2024)



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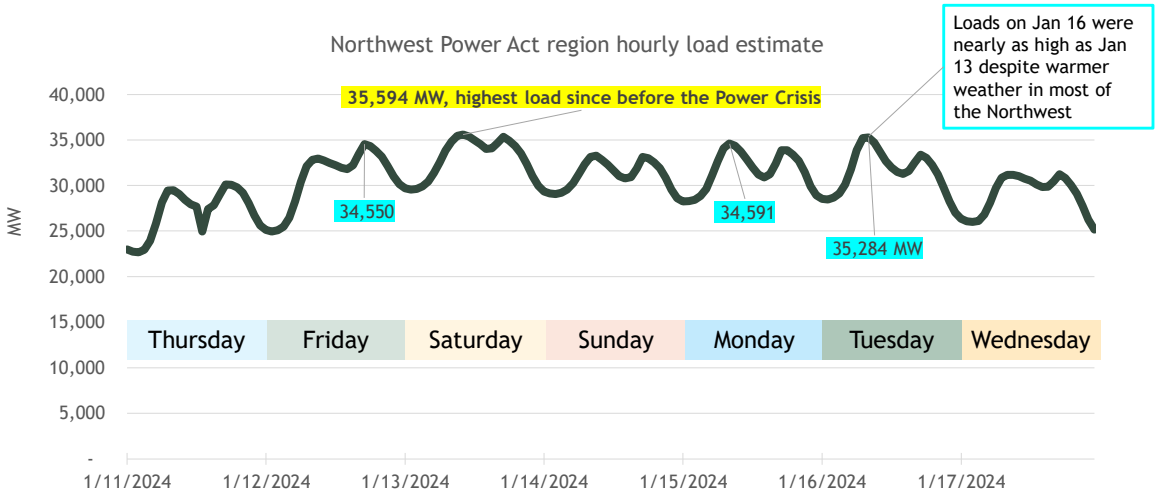
Northwest region loads during the event



Northwest Power and Conservation Council

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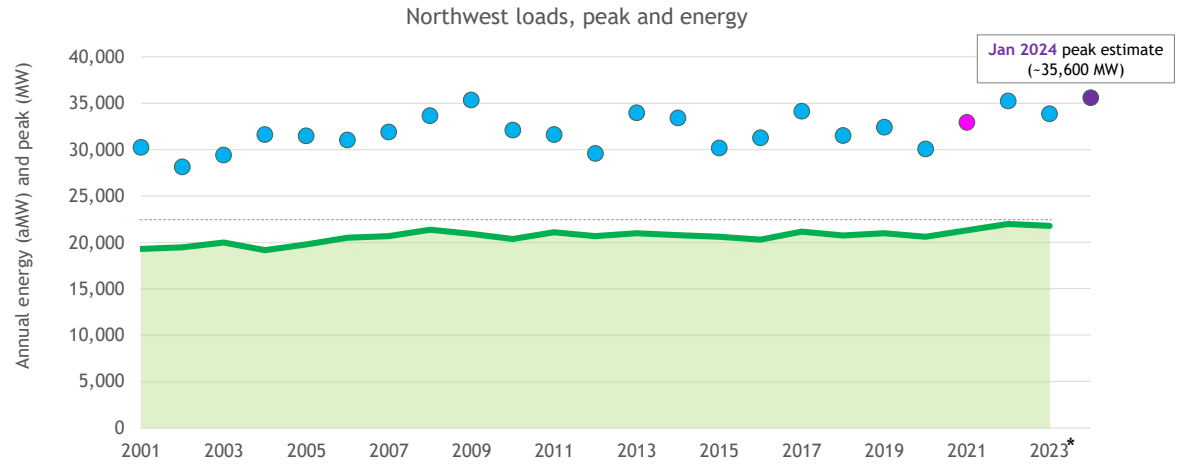
Historical load trends



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FERC 714 and EIA 930 data

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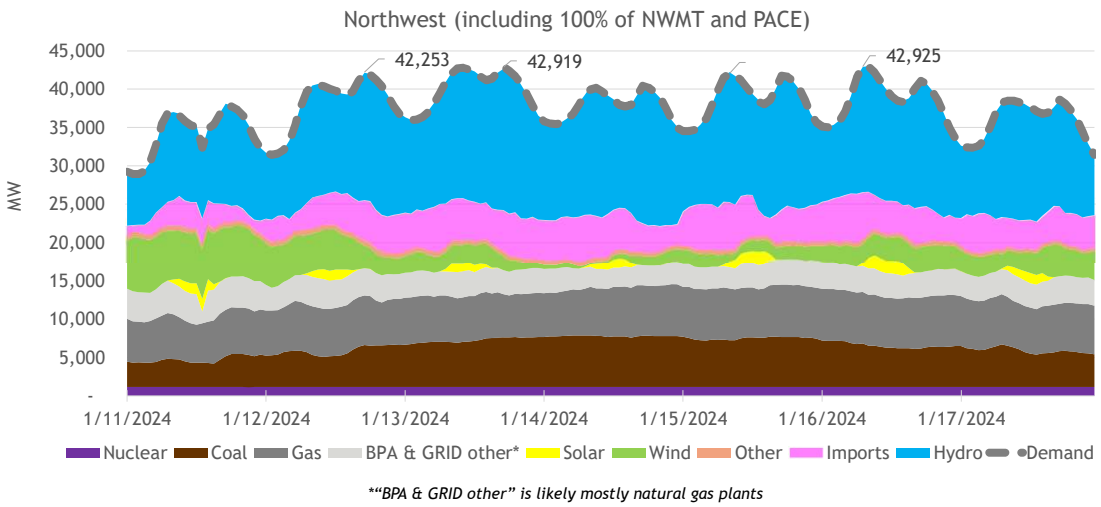
Resource stack (*approximate*)



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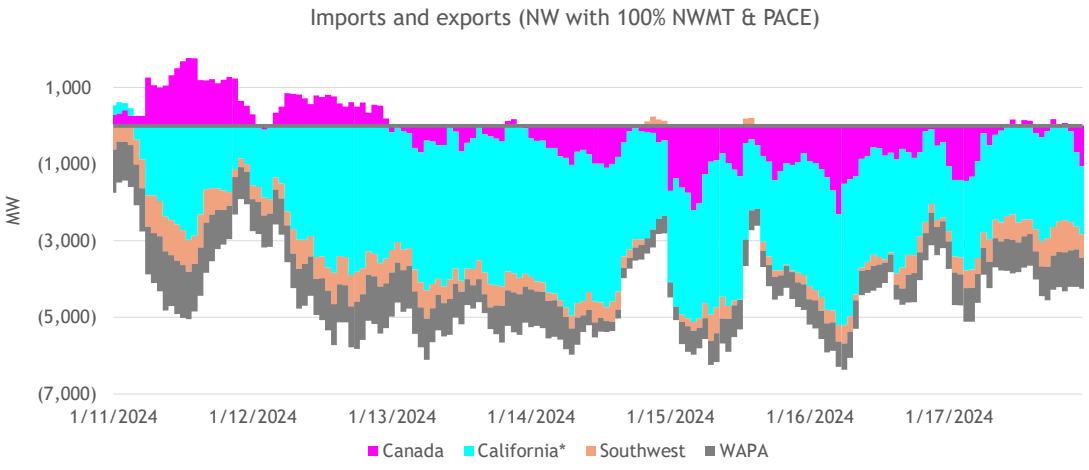

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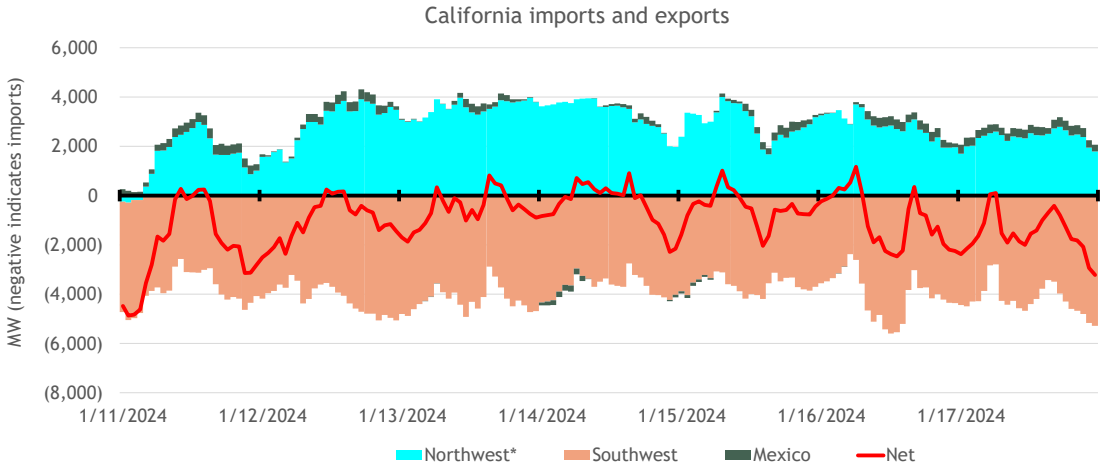

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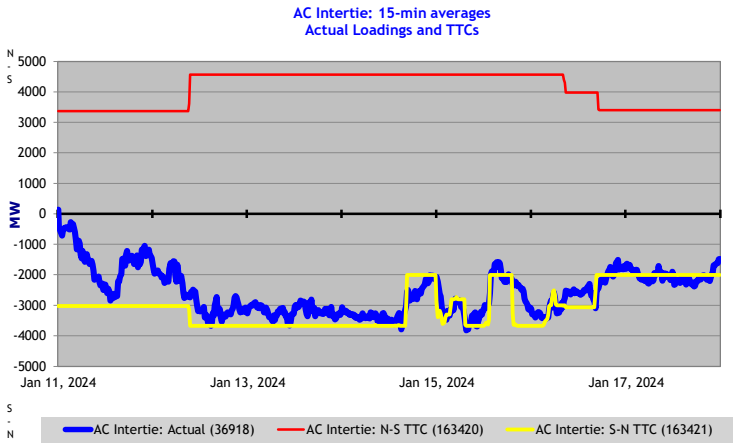

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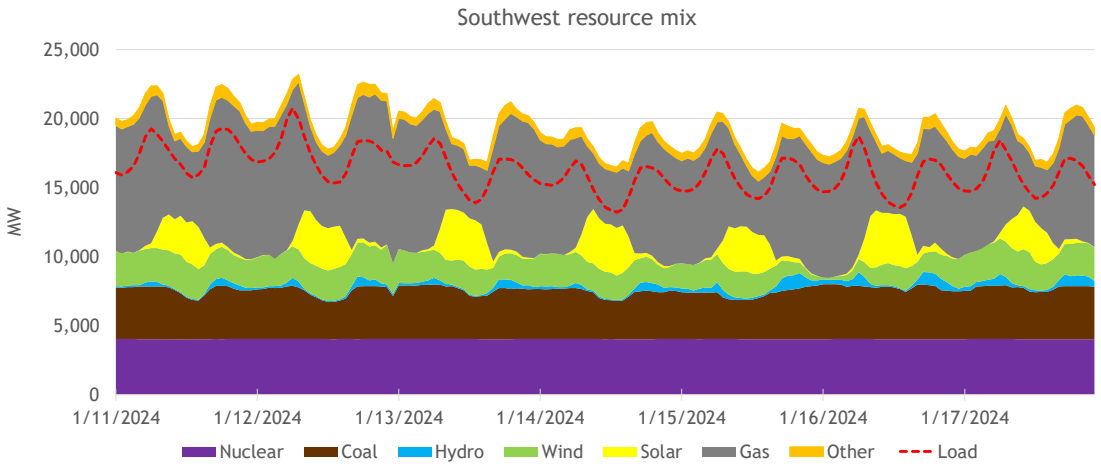
Resources in the Southwest



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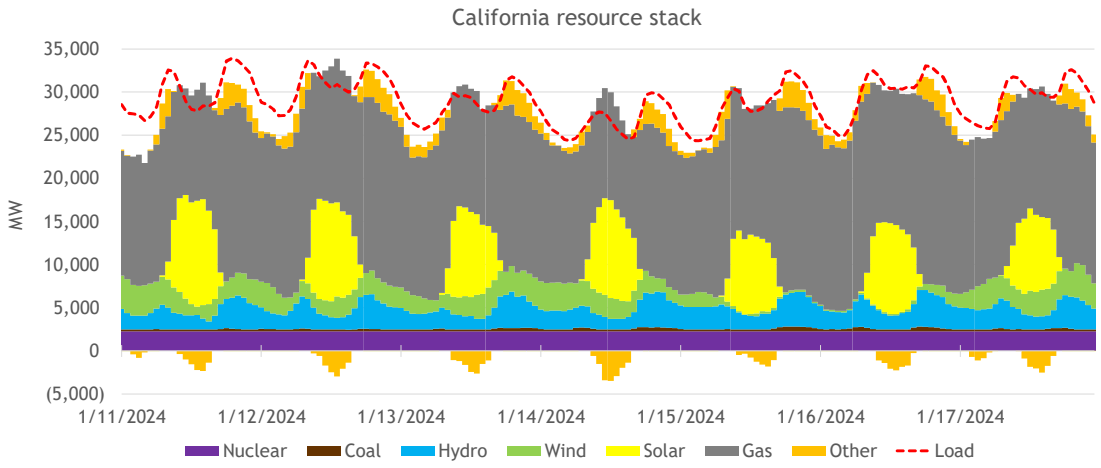

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Tying into the Council's work

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Extra slides

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Temperature background

January 13, 2024, max and min temperatures (F)

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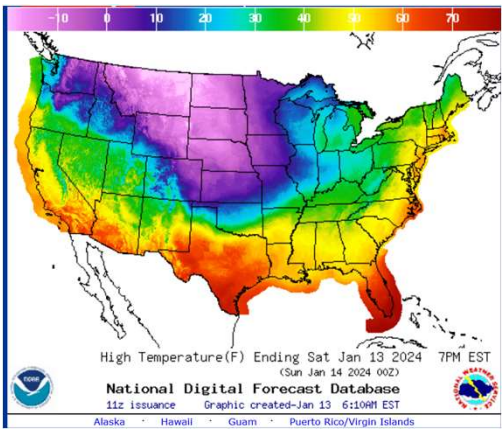

Map from NOAA
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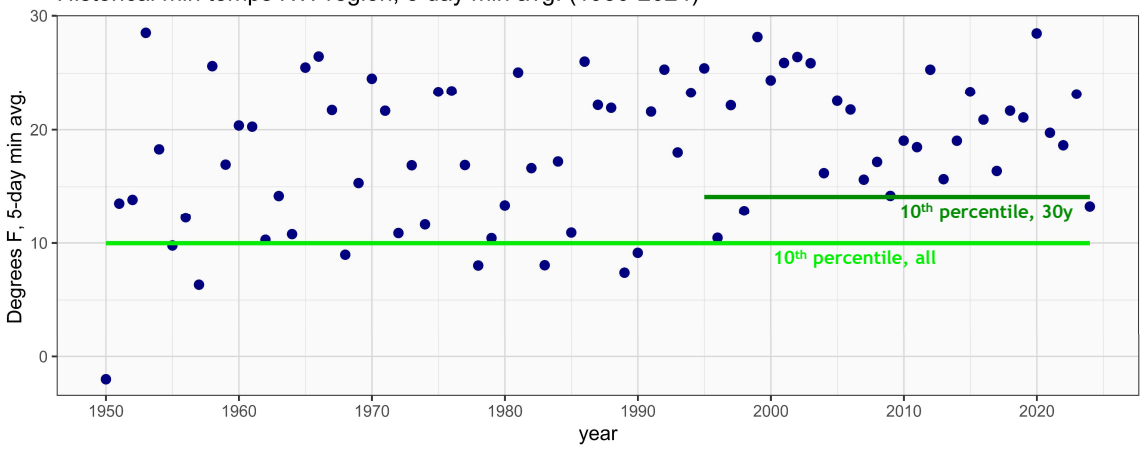
Regional lowest daily temp

Historical min temps NW region, 5 day min avg. (1950-2024)



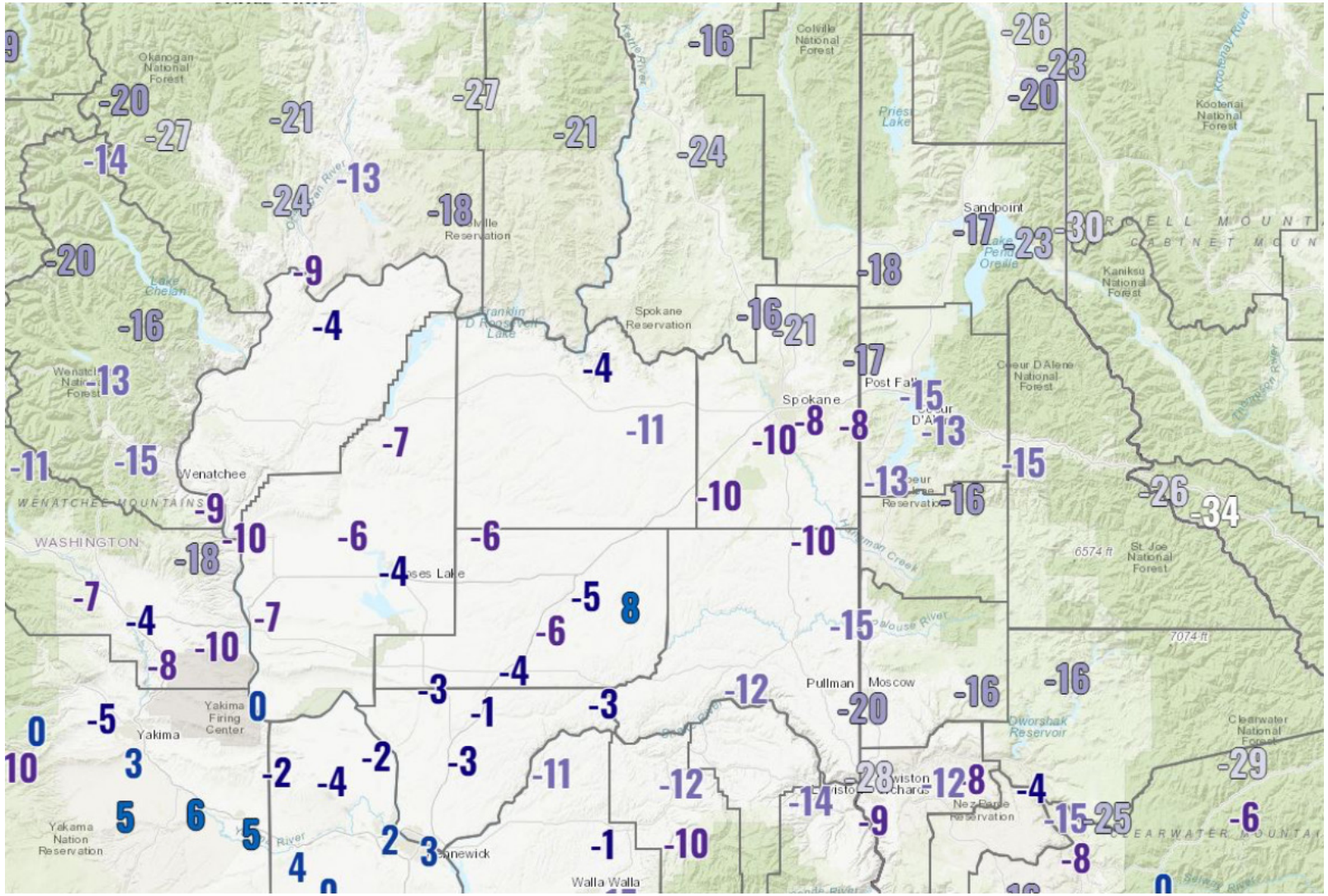
MLK Weekend Weather Event

James Gall
Manager of Integrated Resource Planning

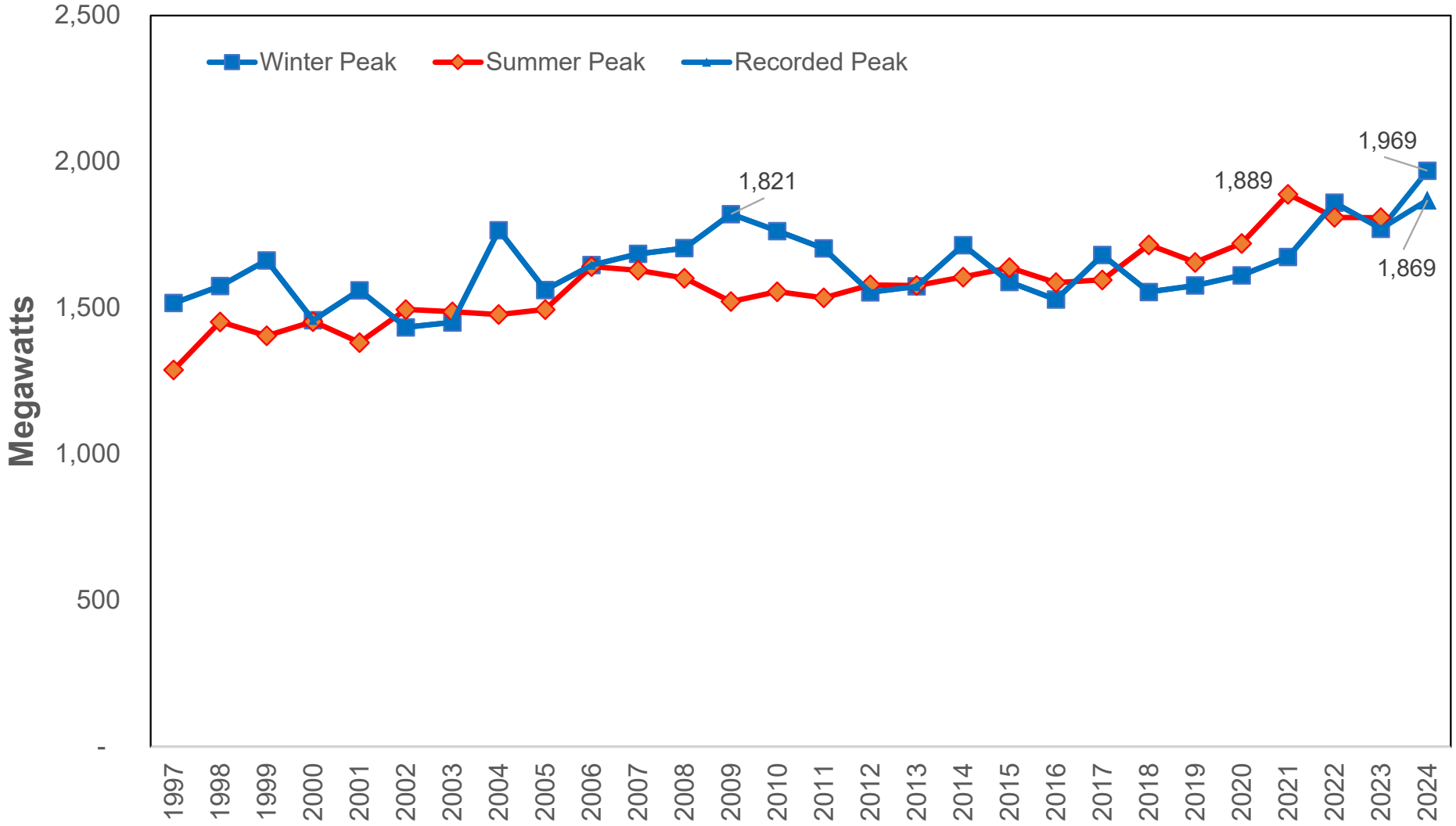
Tom Pardee
Natural Gas Planning Manager

March 13, 2024

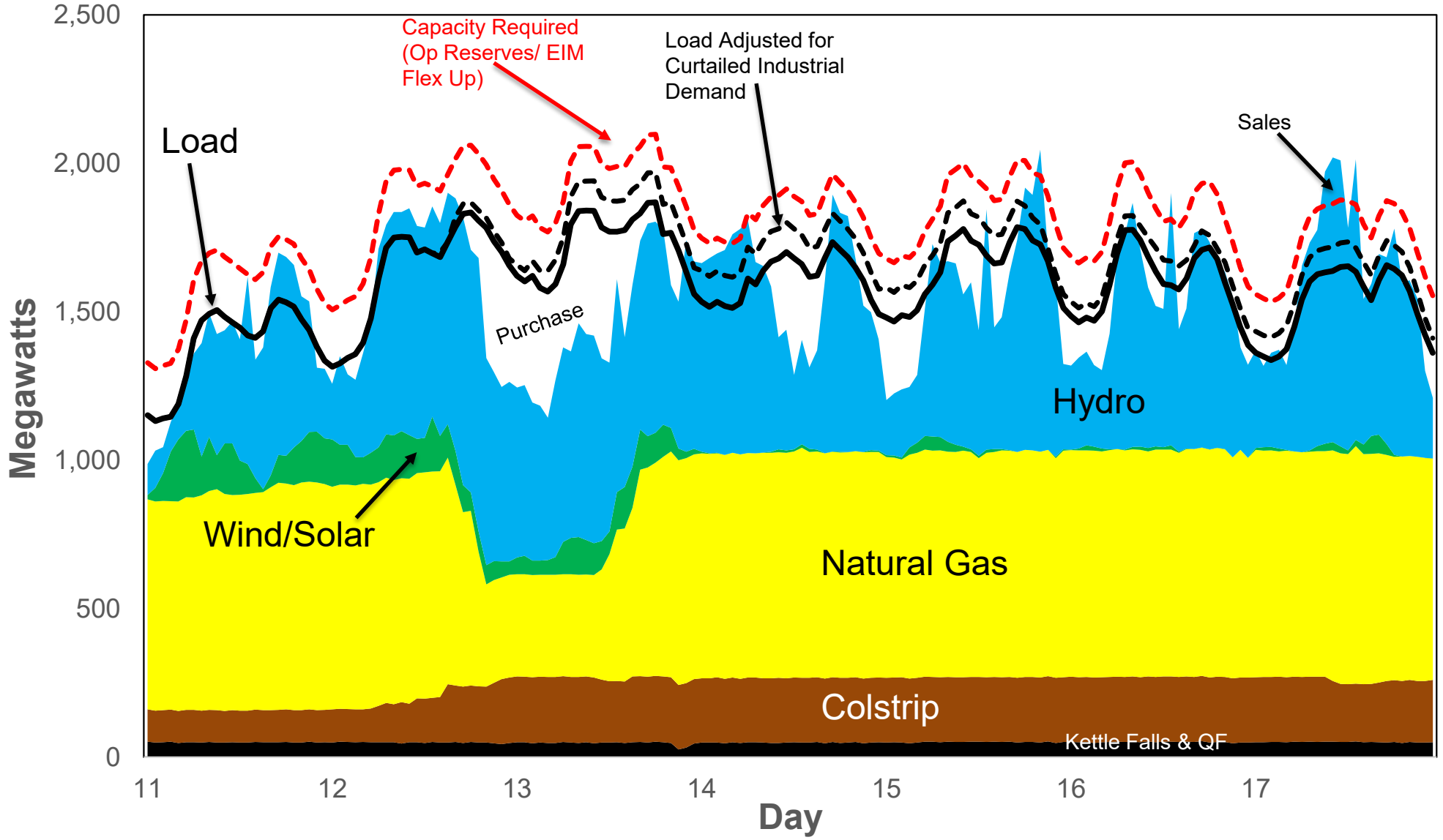
January 13, 2024 Low Temperatures



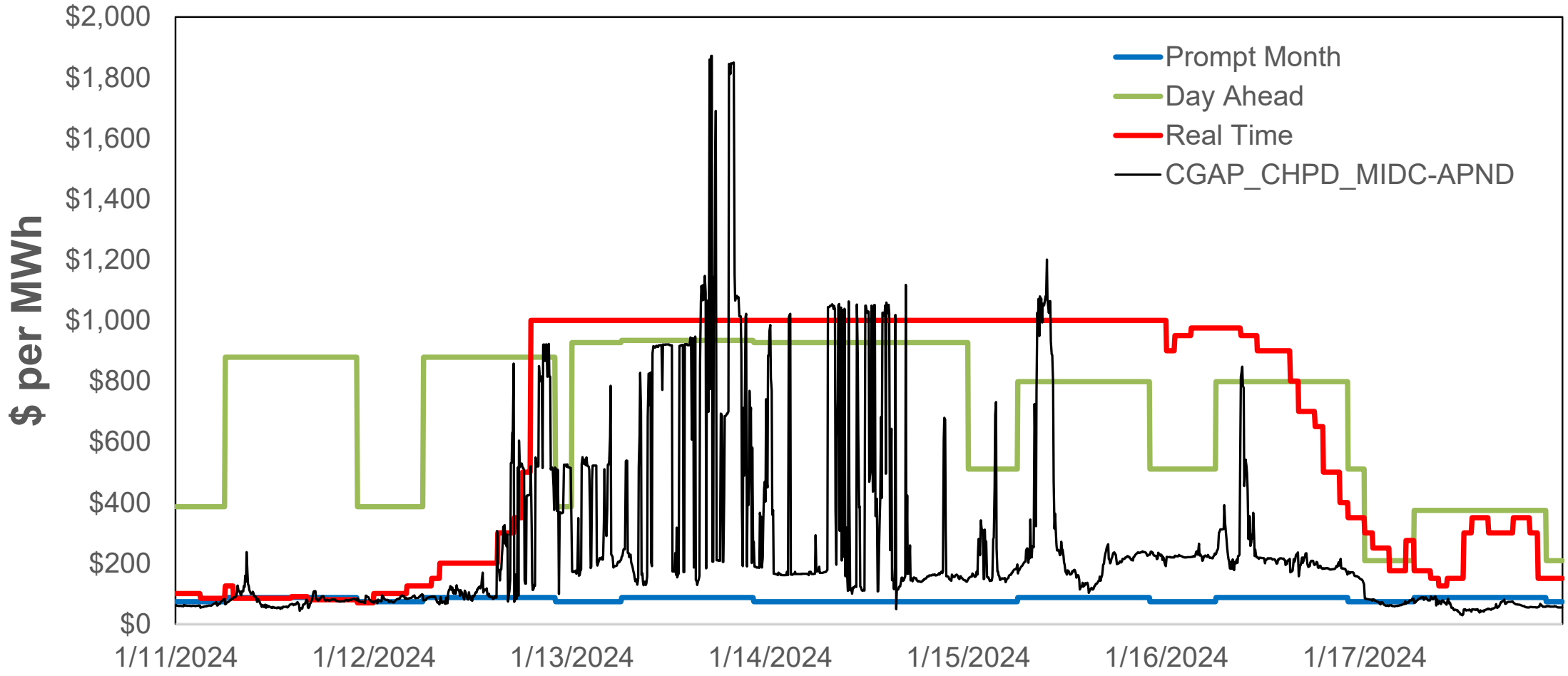
Historical Peak Load (Avista Customers)



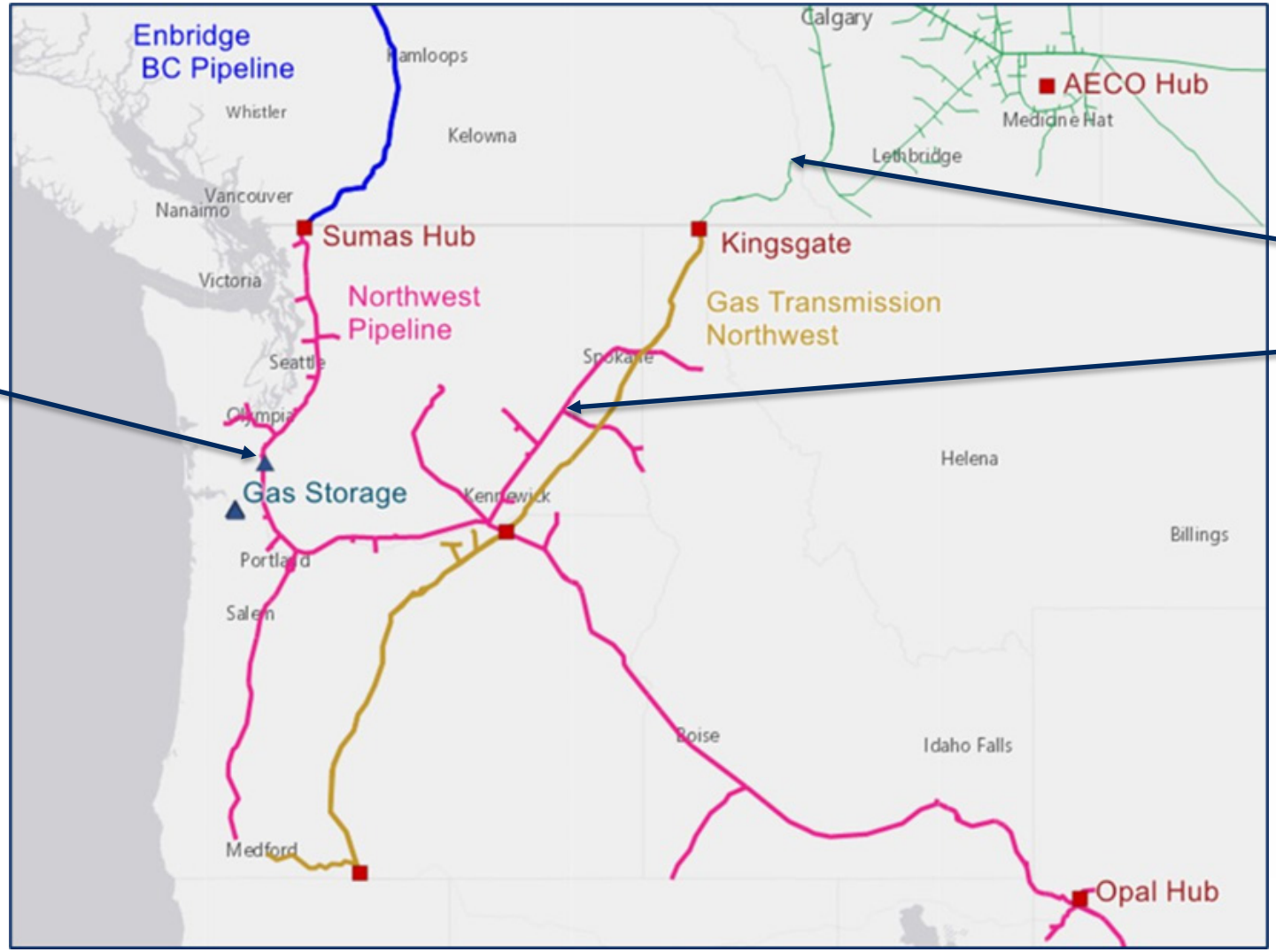
Loads and Resources



Mid-C Area Pricing



Jackson Prairie & GTN – Gas Supply Impact



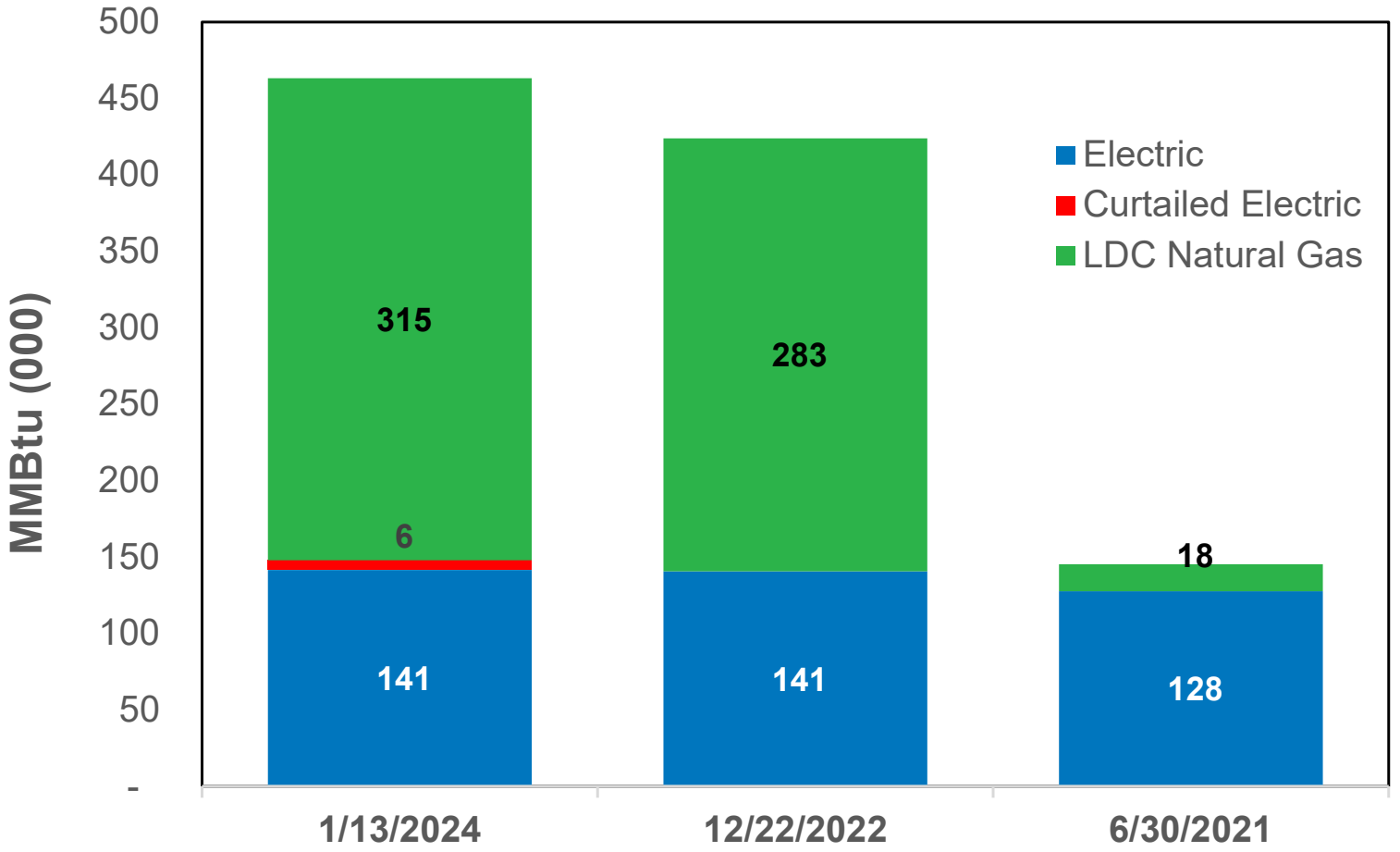
Jackson Prairie

Crowsnest

Mesa

Avista's WA/ID Gas & Electric Demand

Total MMBTU of Daily Demand



Daily electric MWh multiplied by 3.412

Potential Resource Adequacy Changes

- ✓ Update load forecast dataset to include new event.
- ✓ EIM Uncertainty Flex Ramp Up will be additional planning requirement.
- ✓ If planning margin is less then the single largest contingency resource, the planning margin will be adjusted to this level.
- Should we assume a low water for storage hydro resources QCC?
- Is a lower Loss of Load Probability (5%) target more prudent?
- Can Avista depend on the market in extreme events (330 MW)?

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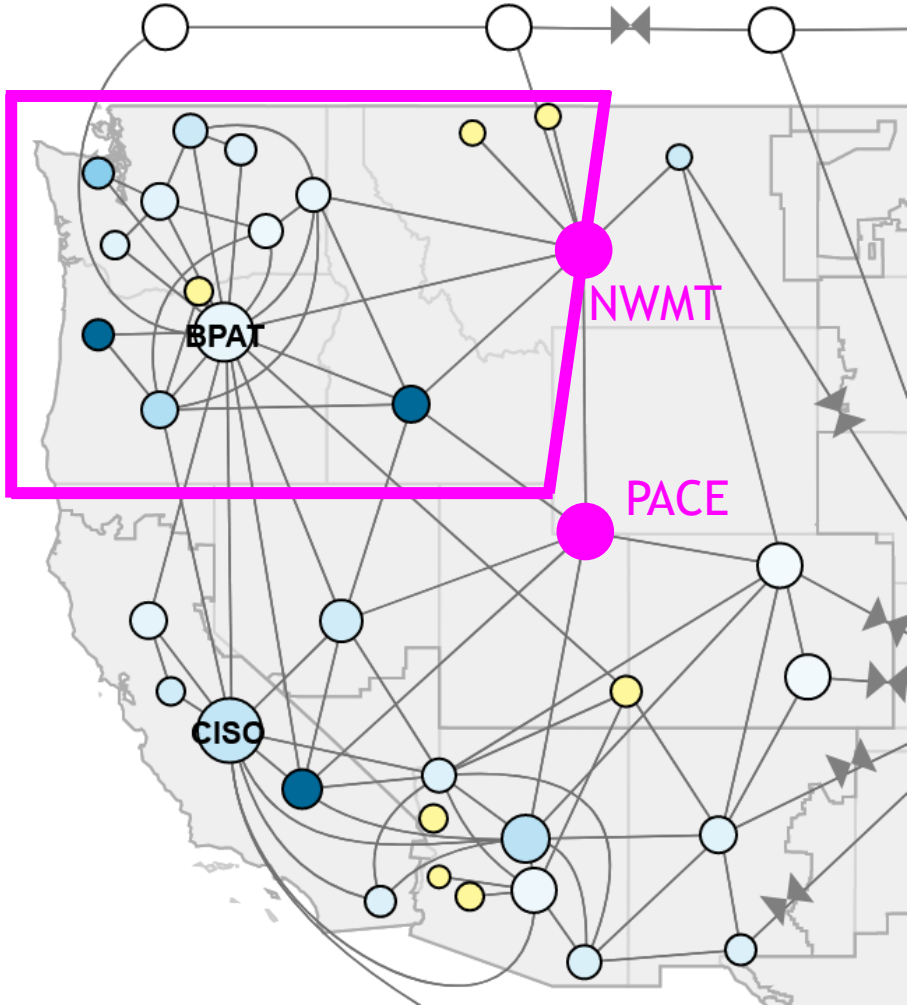

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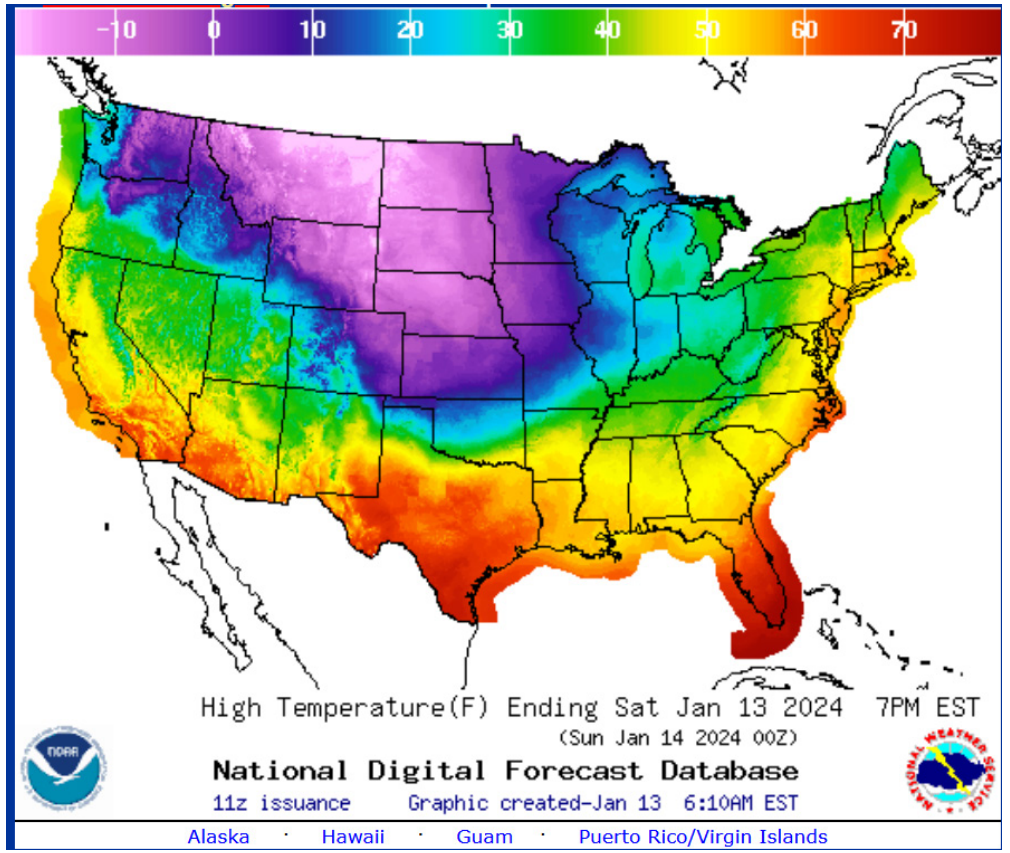

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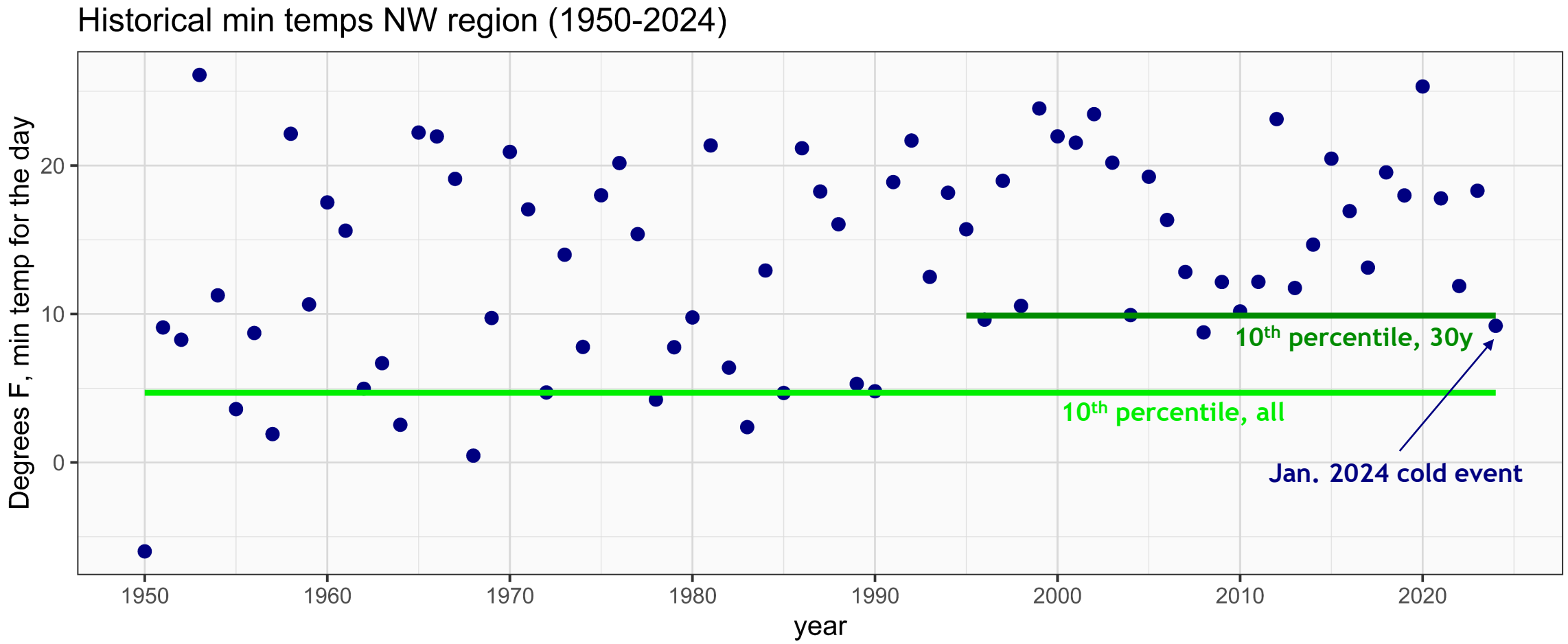

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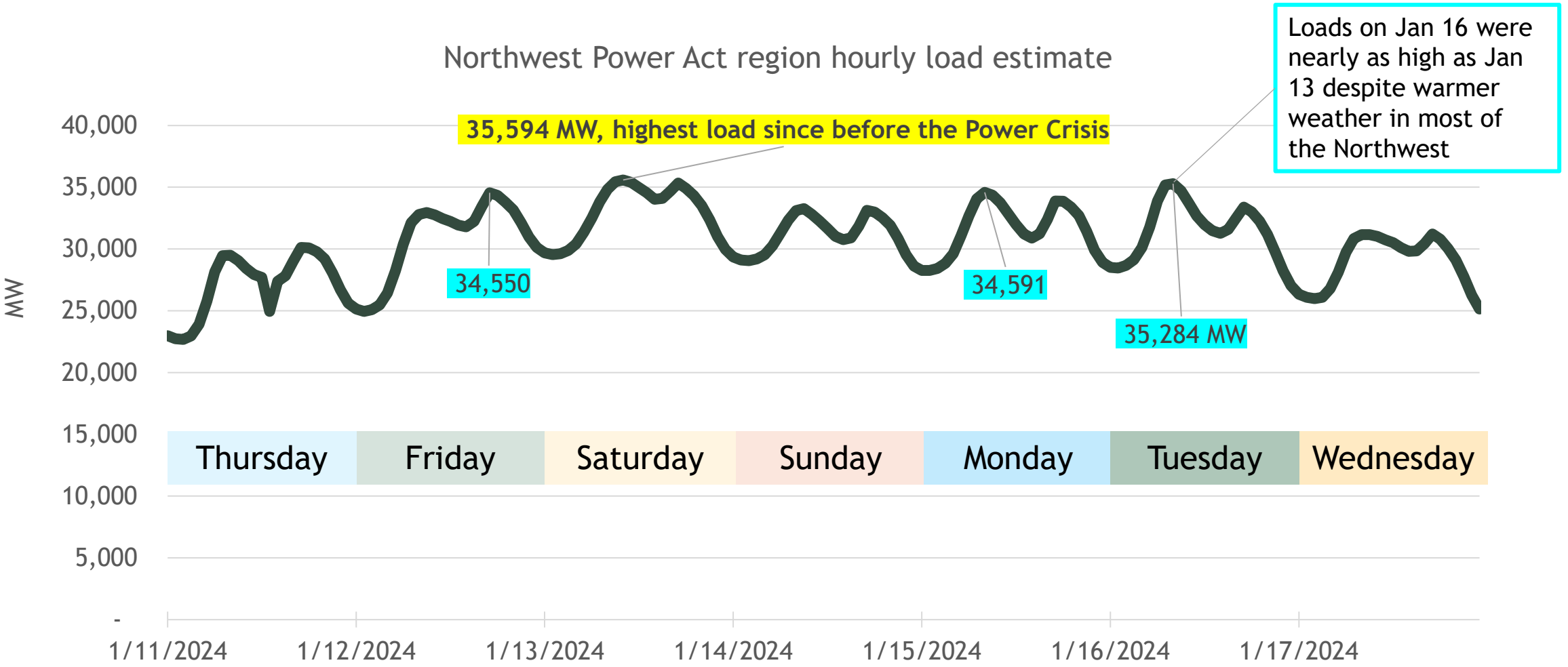

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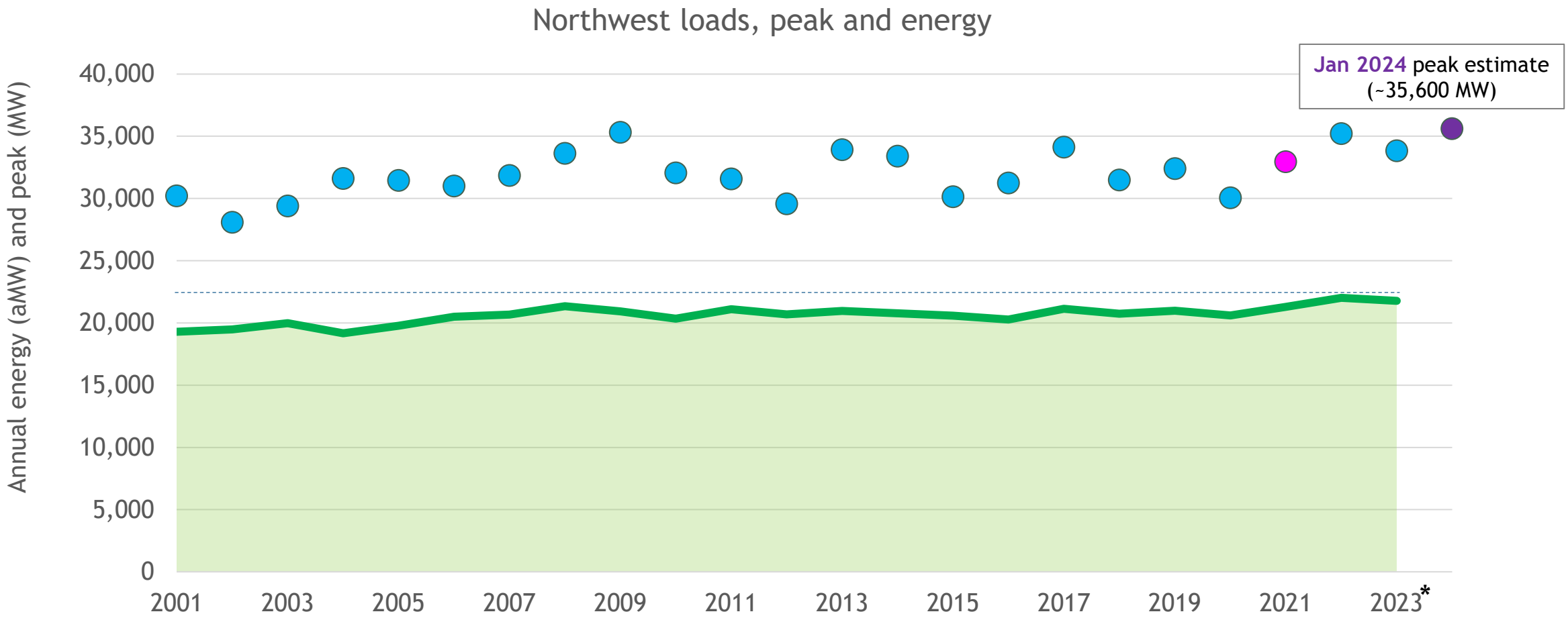

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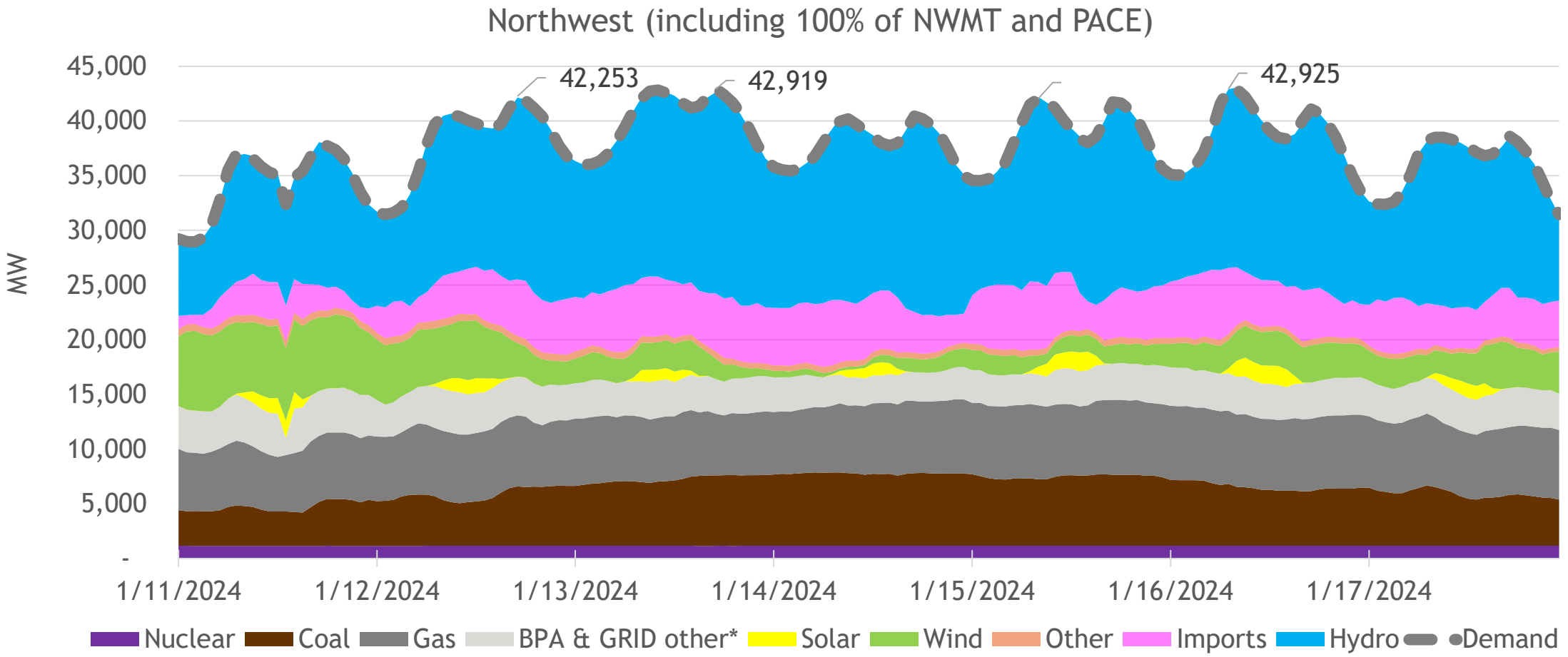

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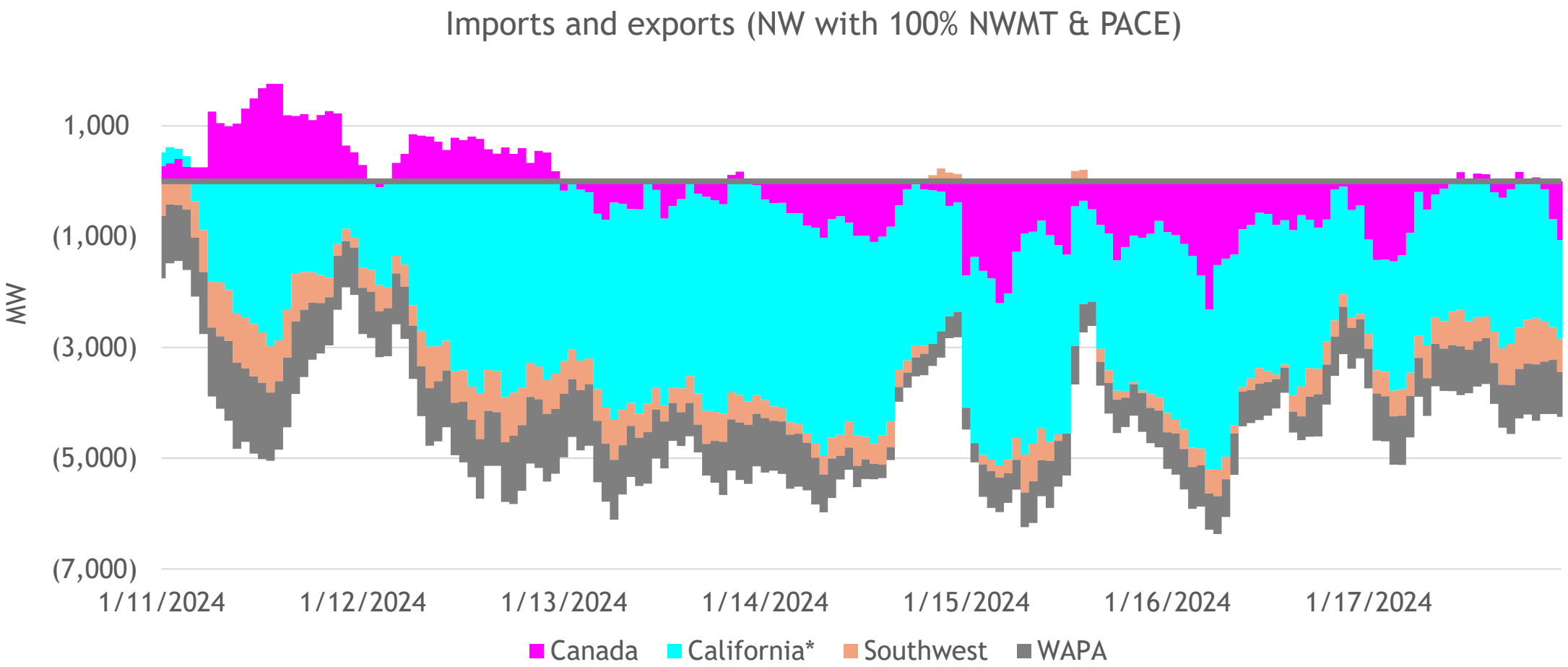

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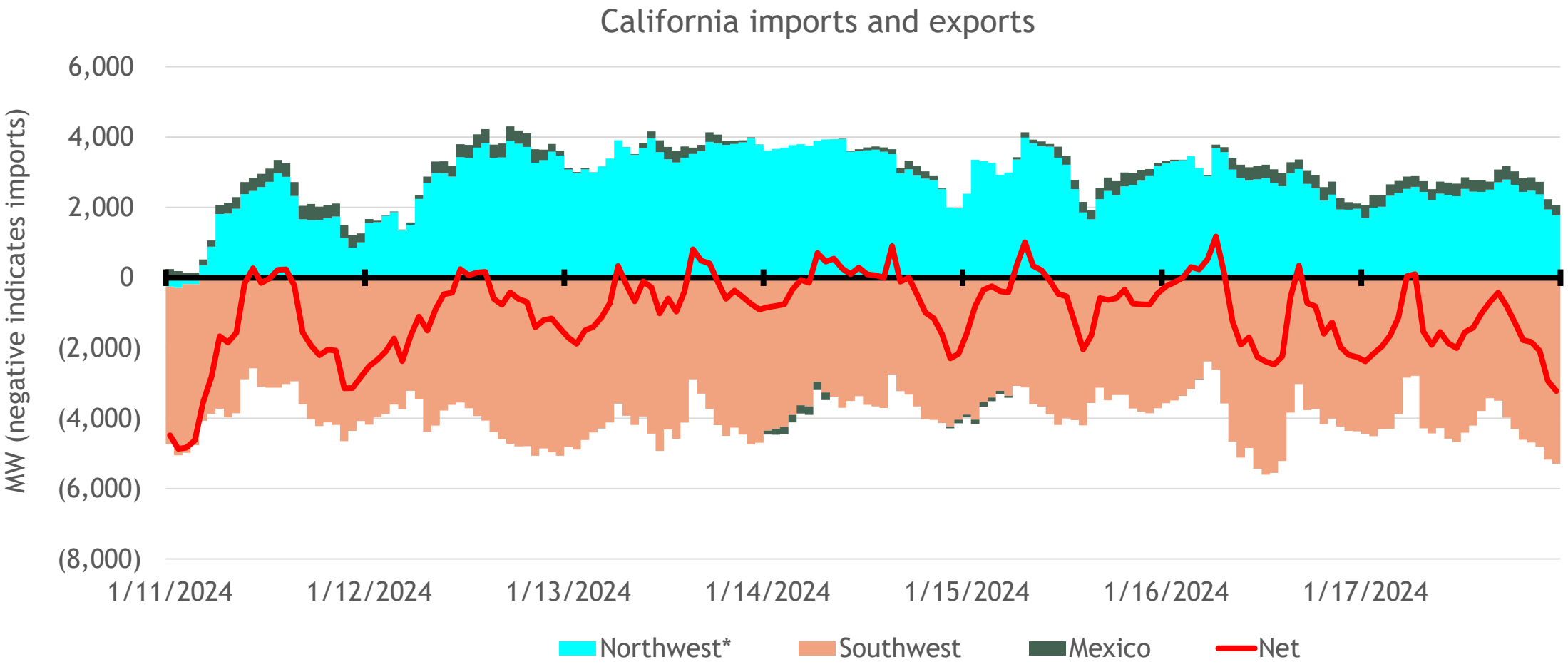

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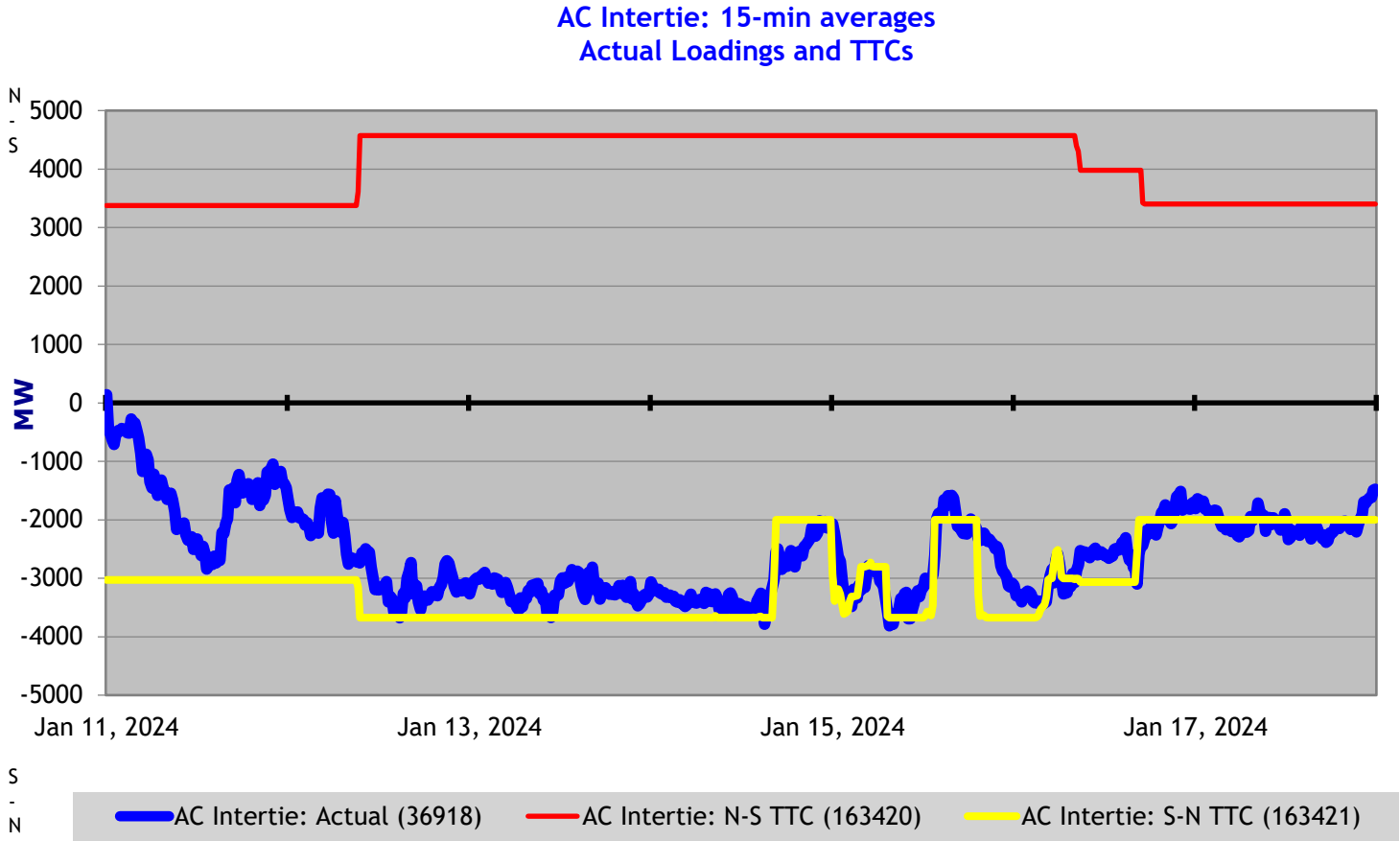

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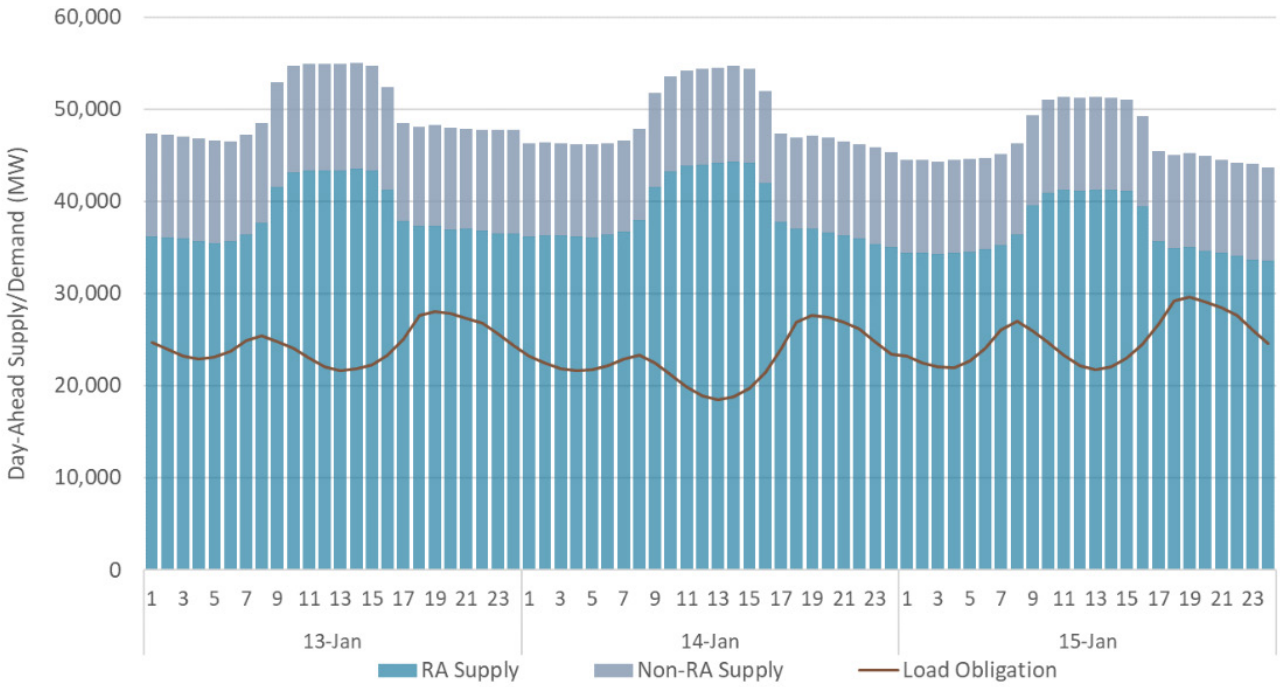
Thoughts on the CAISO / Southwest dynamic

- CAISO had a resource surplus during the cold event (see graph)
- In real-time the cheapest resources were often in the Southwest
  - The day-of economics are largely calculated by the EIM
- There were transmission limits on how much power could flow up to the Northwest

Figure 33: CAISO available supply to meet demand from January 13 to 15



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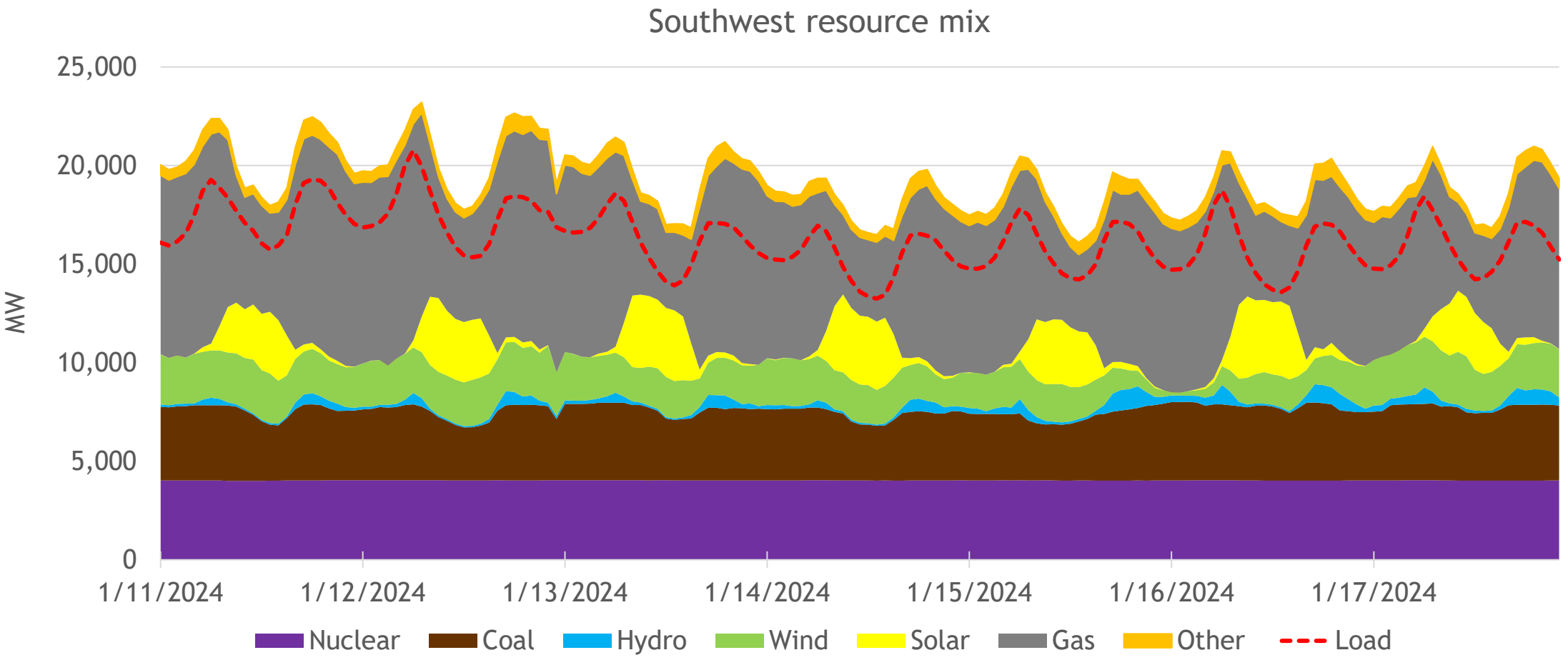

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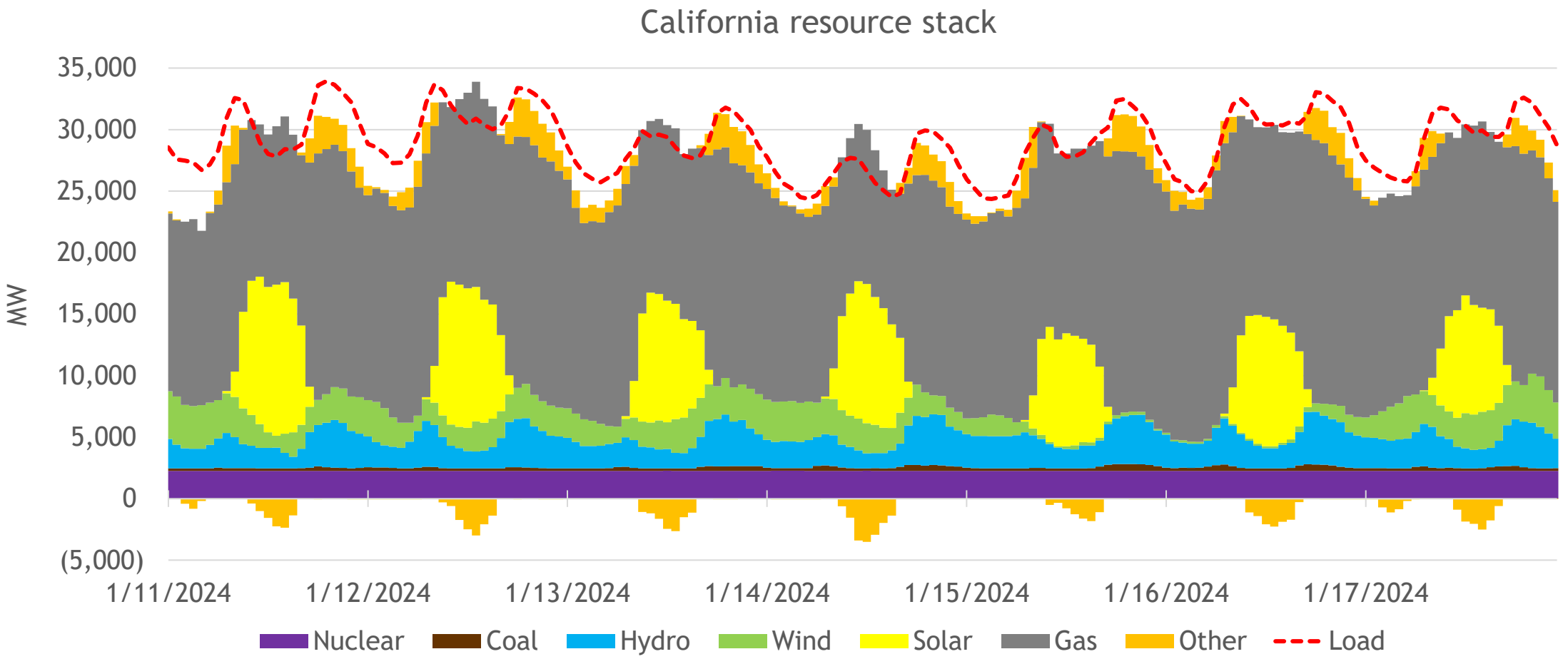

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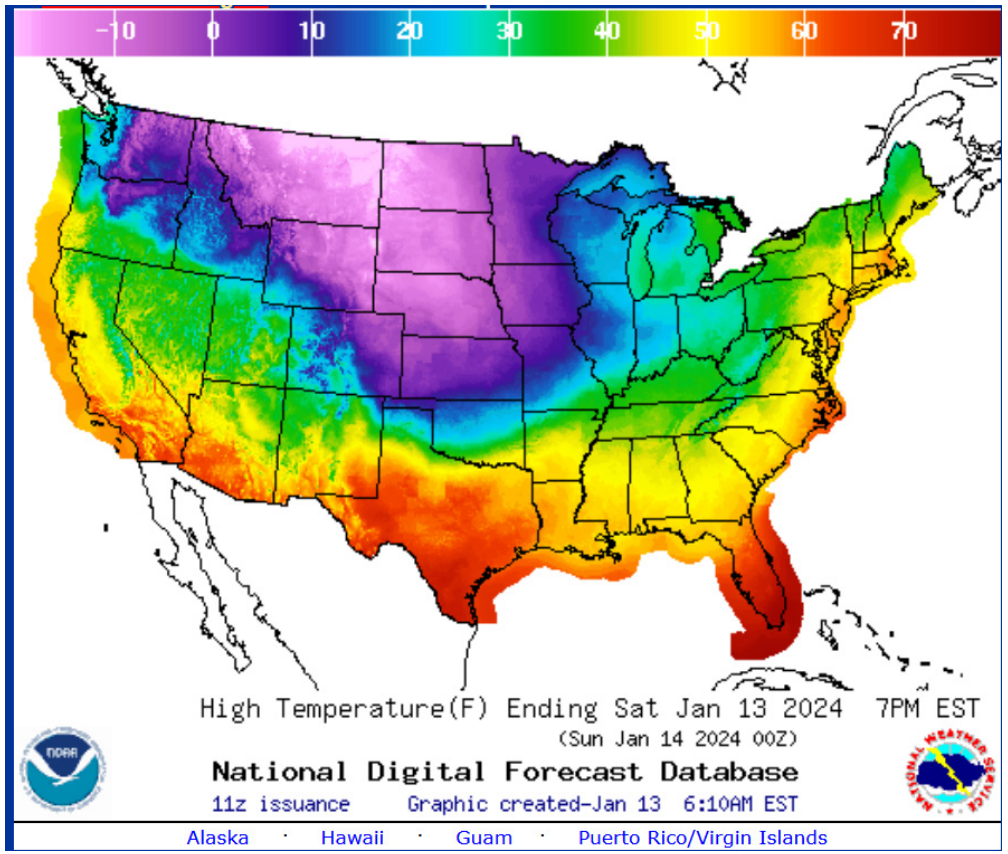

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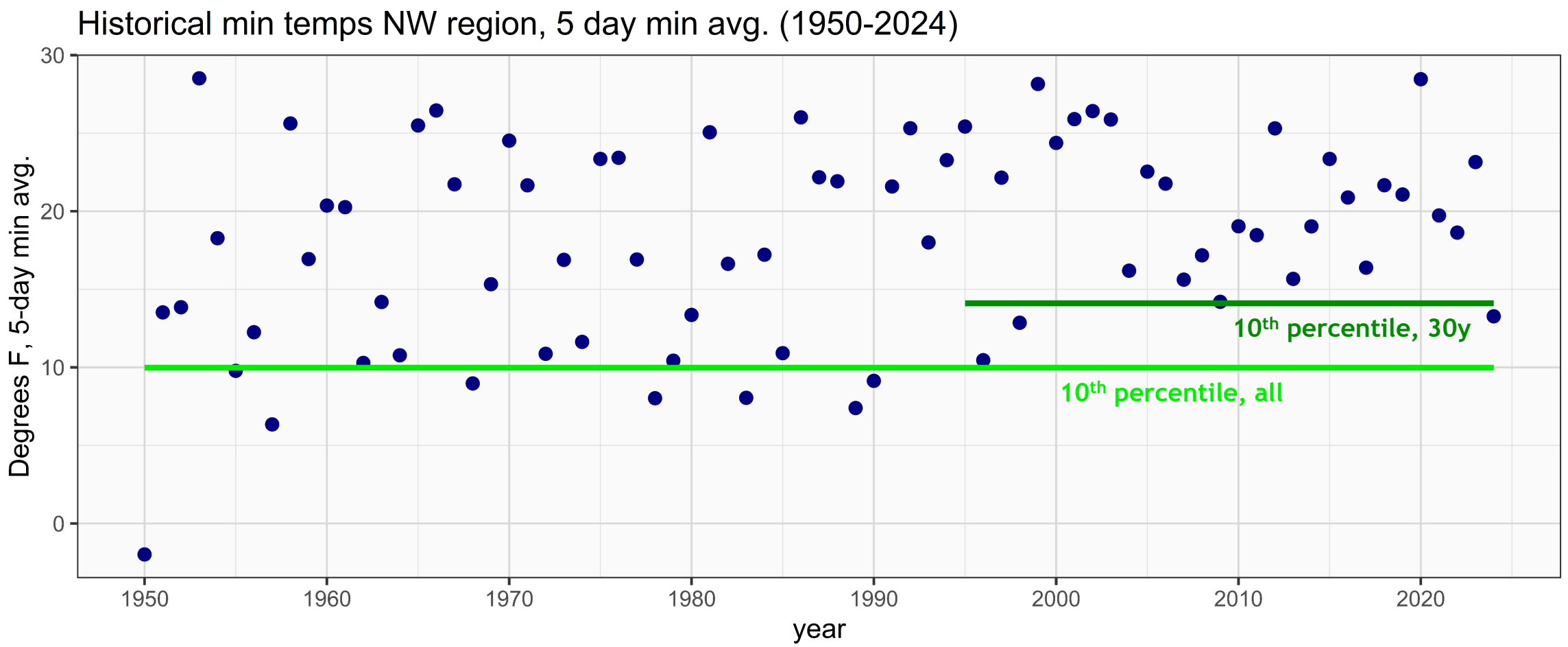

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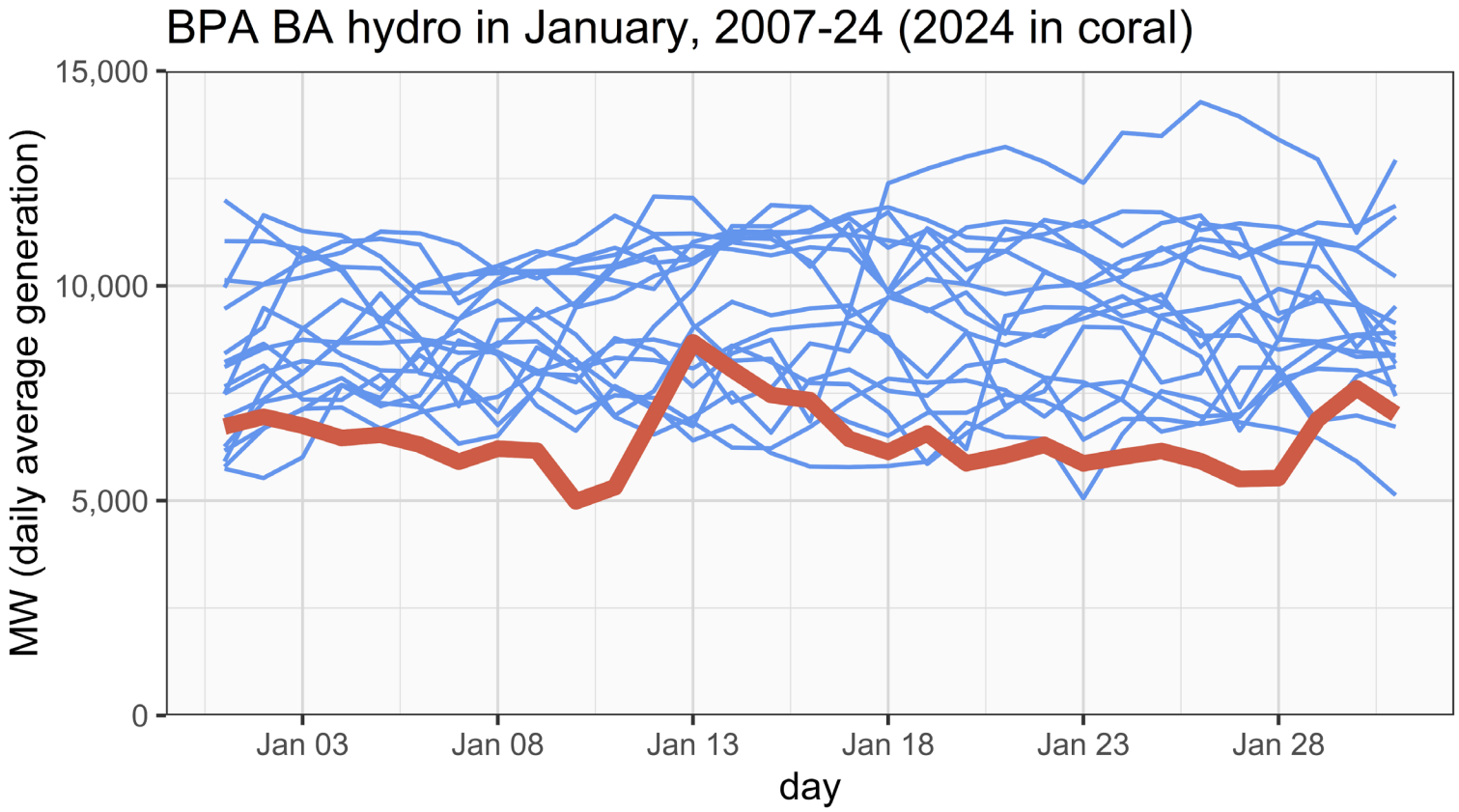
BPA hydro in January (2007 – 2024)



BPA 5-minute data (averaged into daily values)
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