



2025 Preliminary PJM Load Forecast

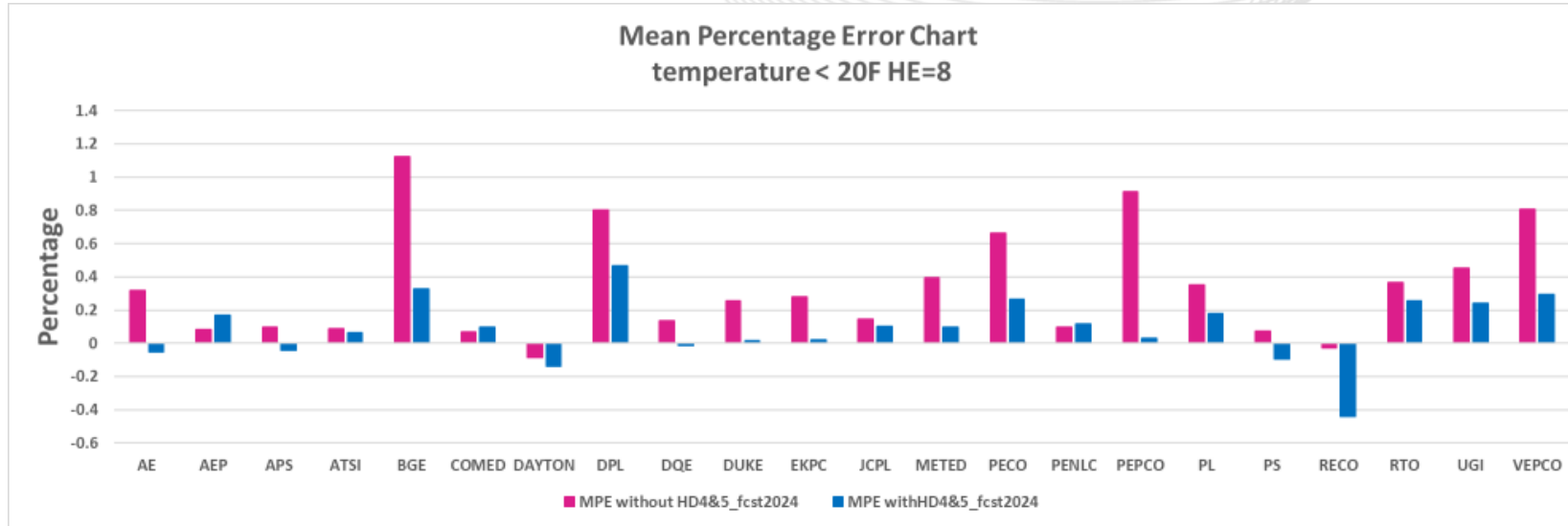
Load Analysis Subcommittee
December 9, 2024

Molly Mooney
Resource Adequacy Planning

- Added HD4 and HD5 to capture more extreme winter weather

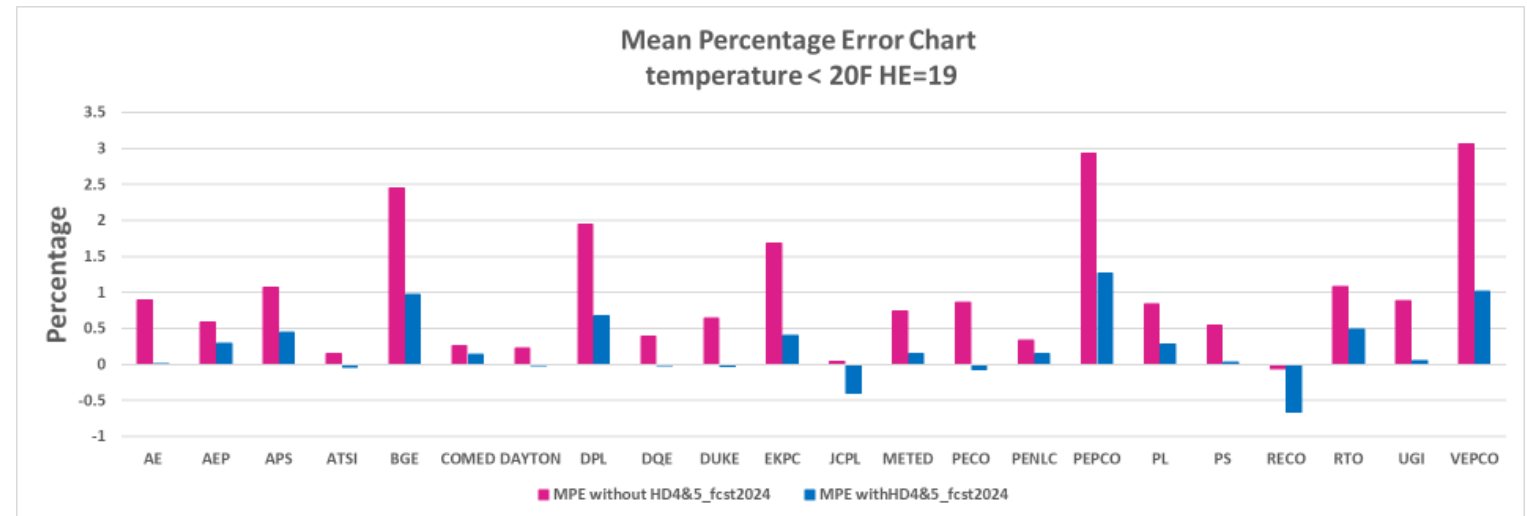
$$HD4_t = \max(Base_Point_{HE} - 20 - Temp_t, 0)$$

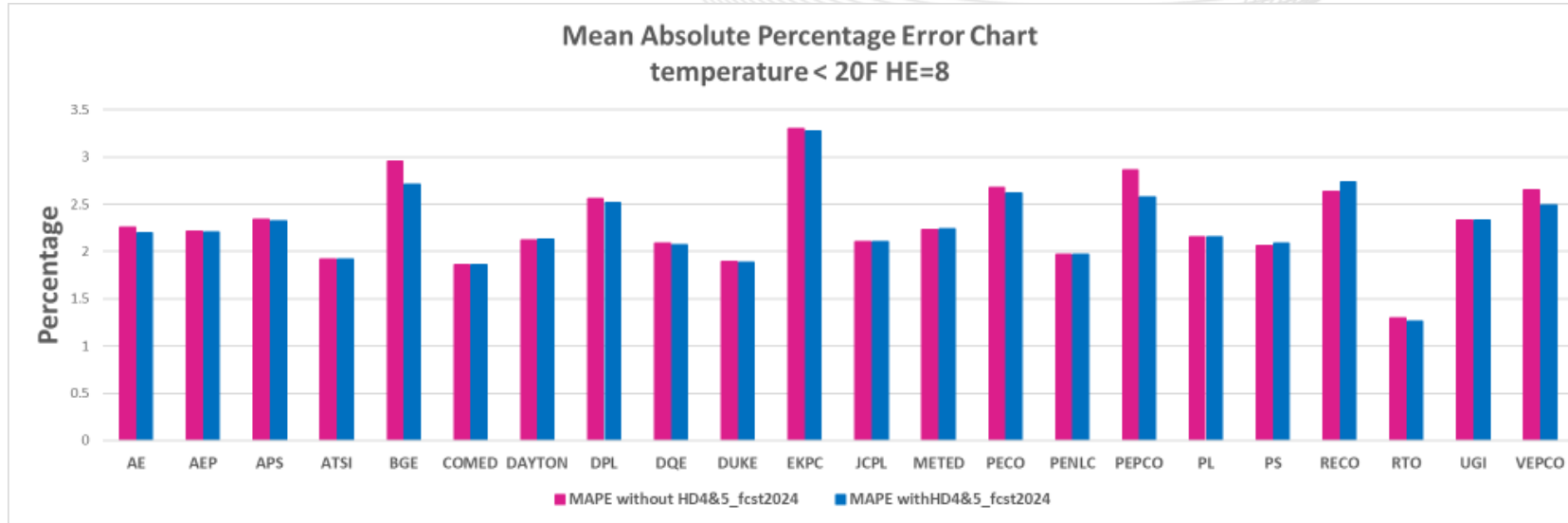
$$HD5_t = \max(Base_Point_{HE} - 25 - Temp_t, 0)$$



MPE chart
<< Current hour ending = 8
Temperature < 20F

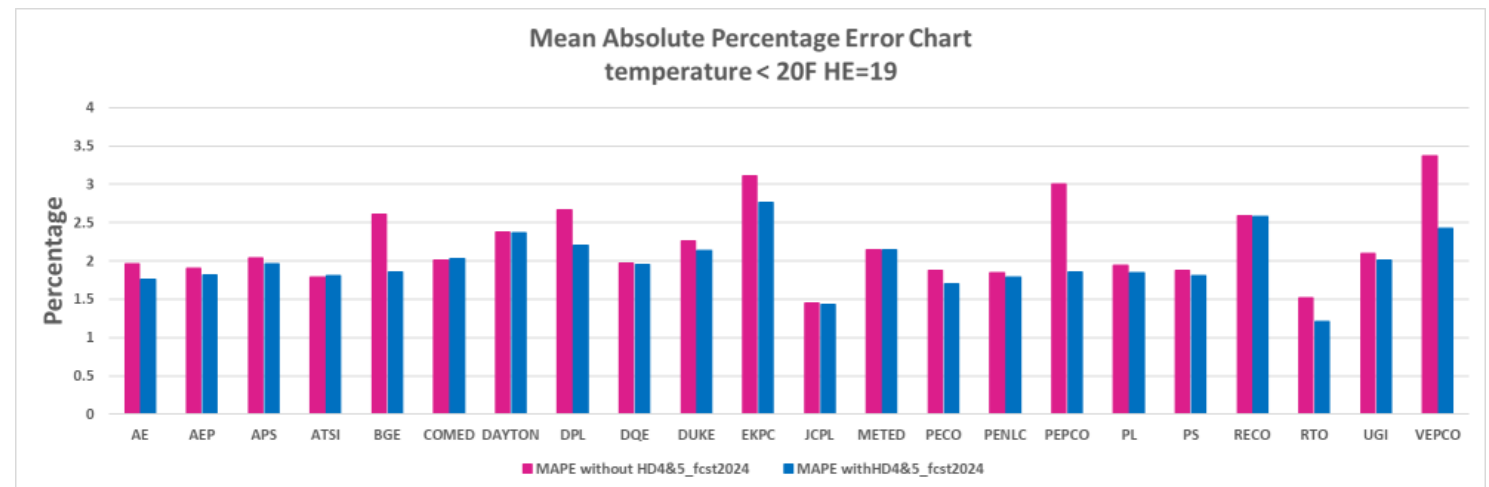
MPE chart
Current hour ending = 19
Temperature < 20F >>





MAPE chart
<< Current hour ending = 8
Temperature < 20F

MAPE chart
Current hour ending = 19
Temperature < 20F >>

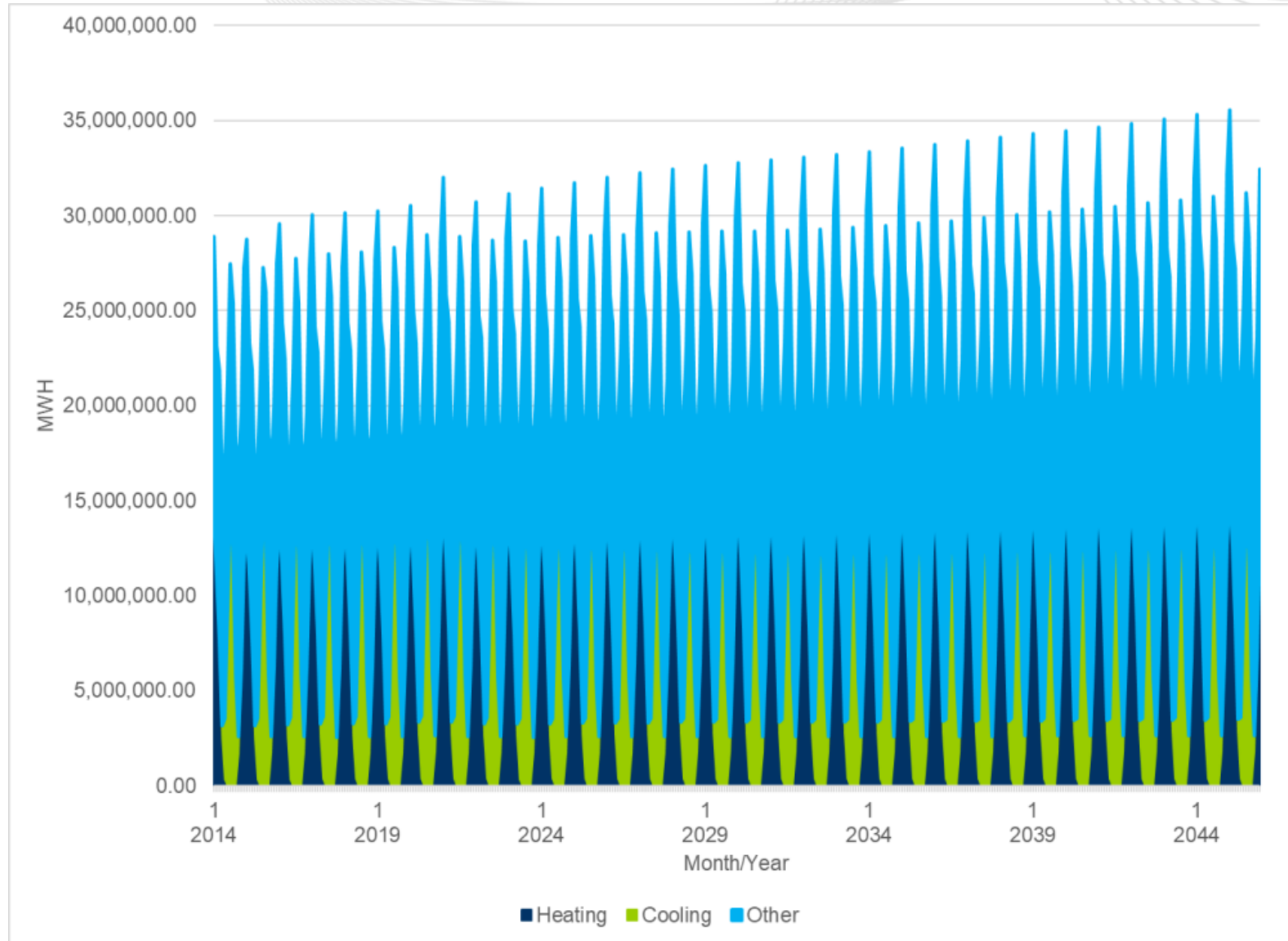


- Estimation Period: January 2015 through August 2024
- Weather Simulation: 1993 to 2023 (403 scenarios)
- Sector Models (2014-2023 Monthly from EIA 861 and EIA 861m)
 - End Use Data: Based on Itron's 2023 release
 - NJ Executive Order on Electrification
 - Economics: September 2024 vintage from Moody's Analytics
- IHS (S&P Global) Solar/Battery Forecast (zonal & peak allocation by PJM)
 - Production estimates by UL
- S&P Global - Plug-in Electric Vehicles (PEVs)

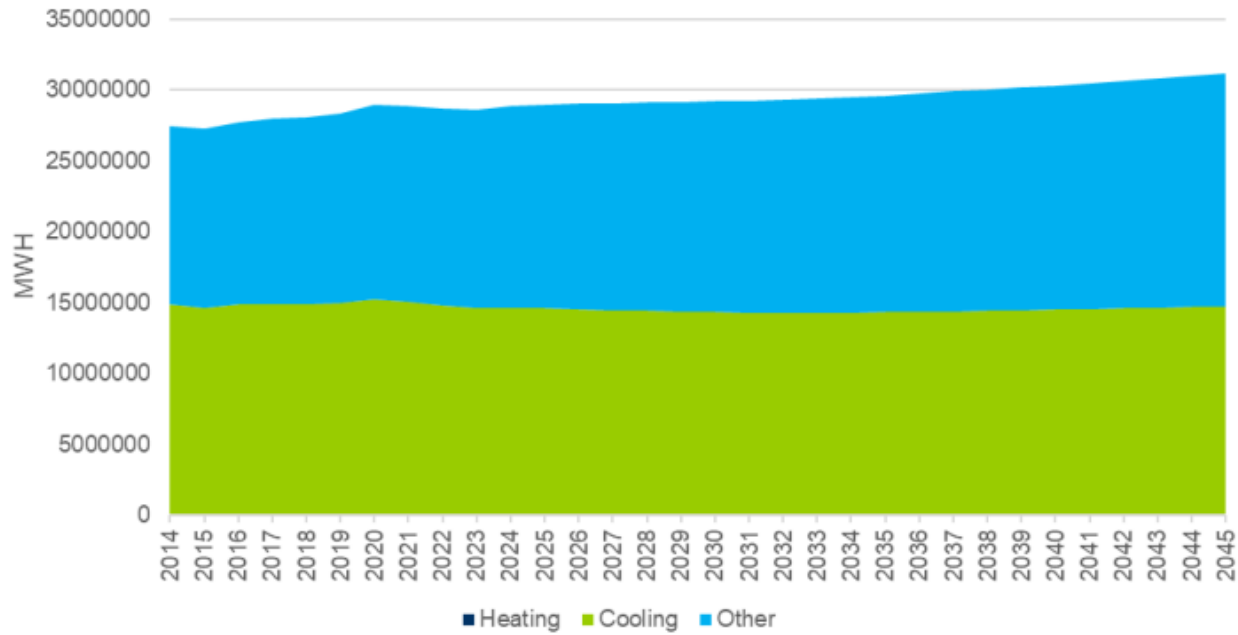
- Load Adjustments:
 - Data Centers (AEP, APS, ATSI, BGE, Comed, Dayton, PECO, PL, PS, Dominion);
 - Industrial (AEP)
 - EV Battery Manufacturing (COMED);
 - Steel Facility (Duke);
 - Port Electrification (PS);
 - Voltage Optimization (Dominion);
 - NRBTMG (ATSI, Dominion);
 - Peak Shaving Adjustment (EKPC)

Heating/Cooling/Other

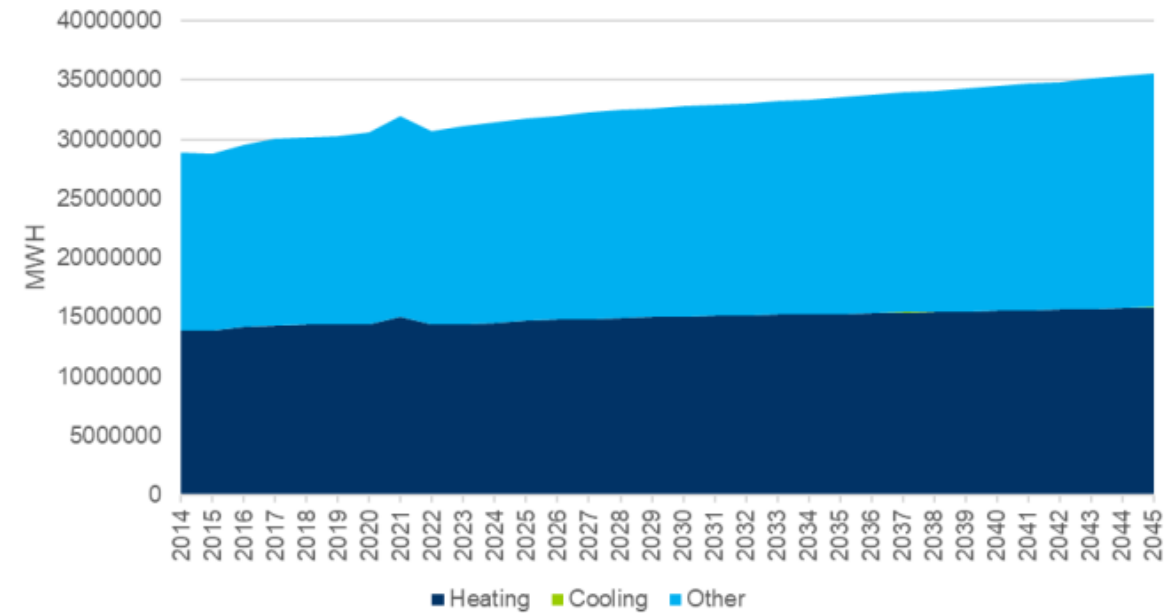
- Heat/Cool/Other are driven by Sector (Residential/Commercial/Industrial) models. Sector model results are influenced by two factors.
 - Economics
 - Residential – Households, Personal Income, Population per household
 - Commercial – Employment, Population, Output
 - Industrial - Output
 - End-use (saturation/efficiency/intensity)
 - Residential
 - Commercial
 - Industrial

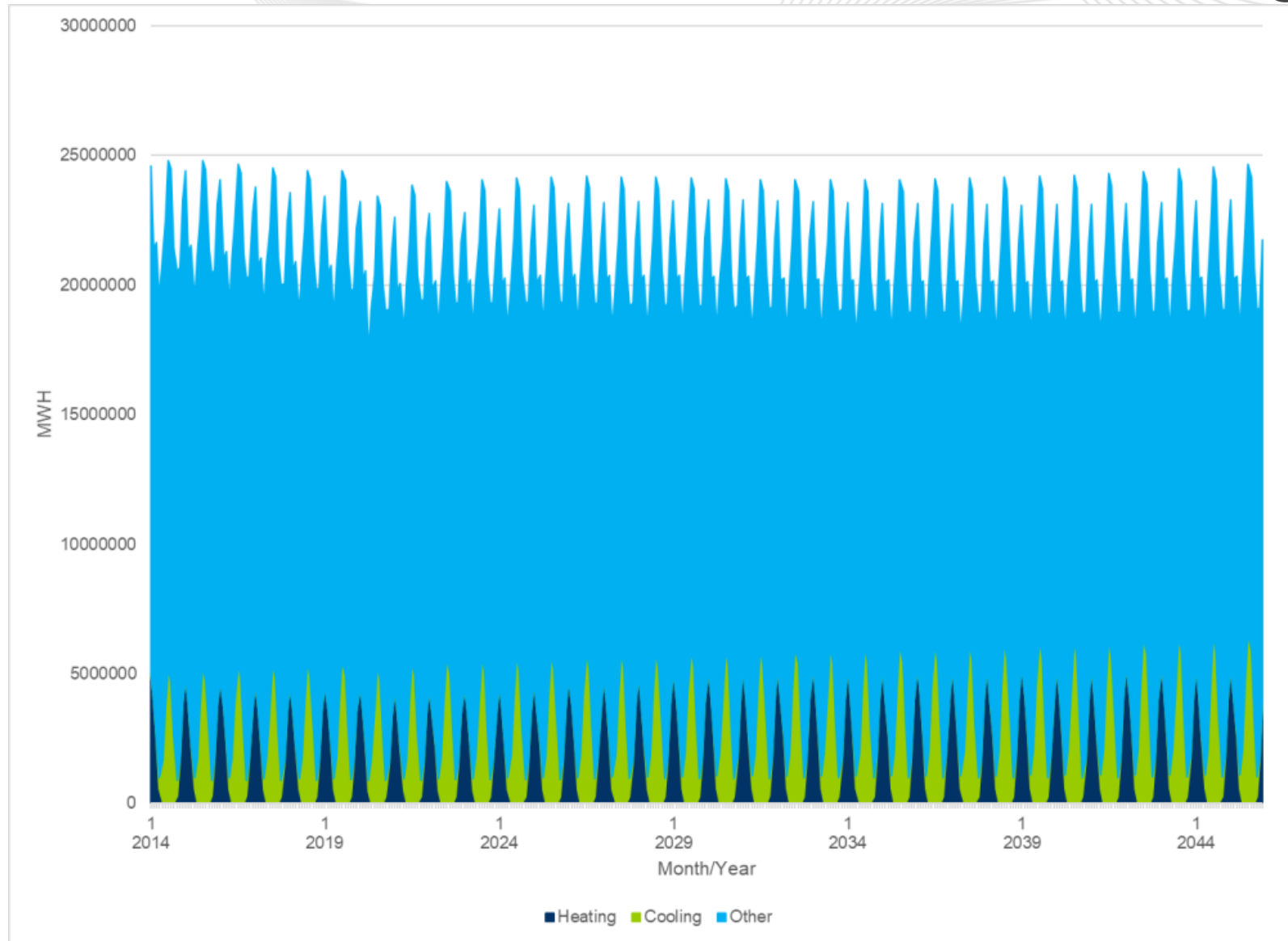


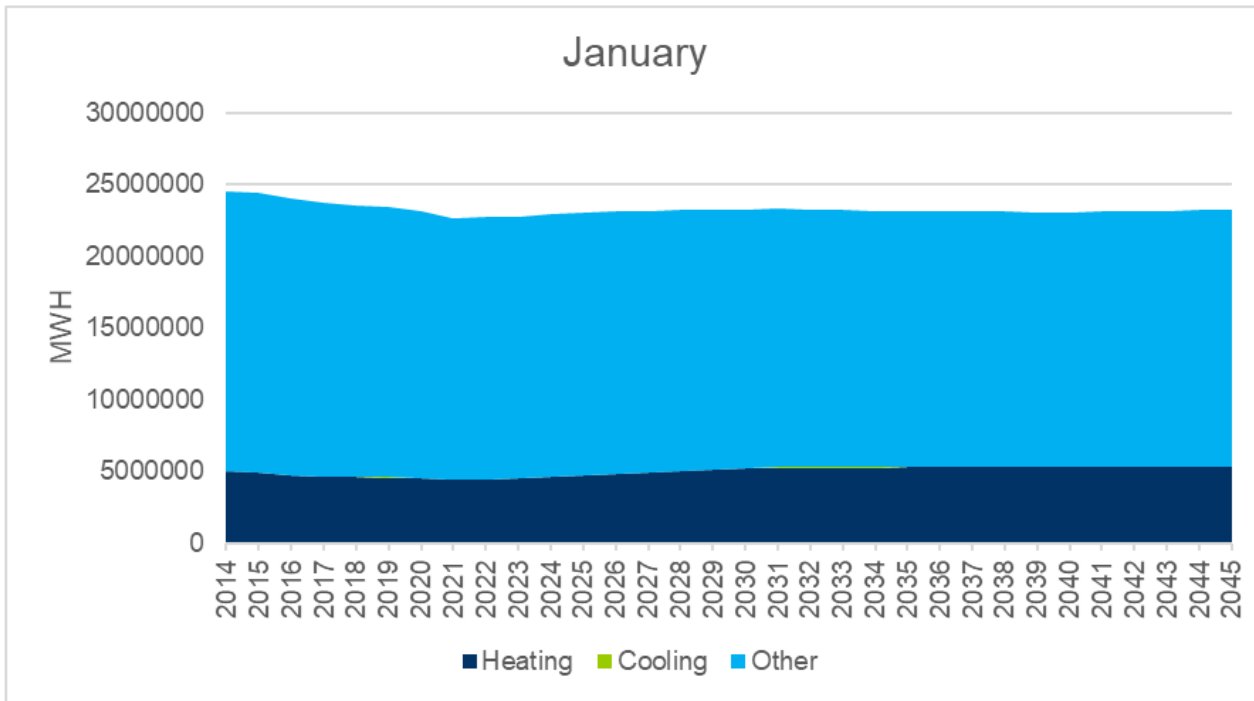
July

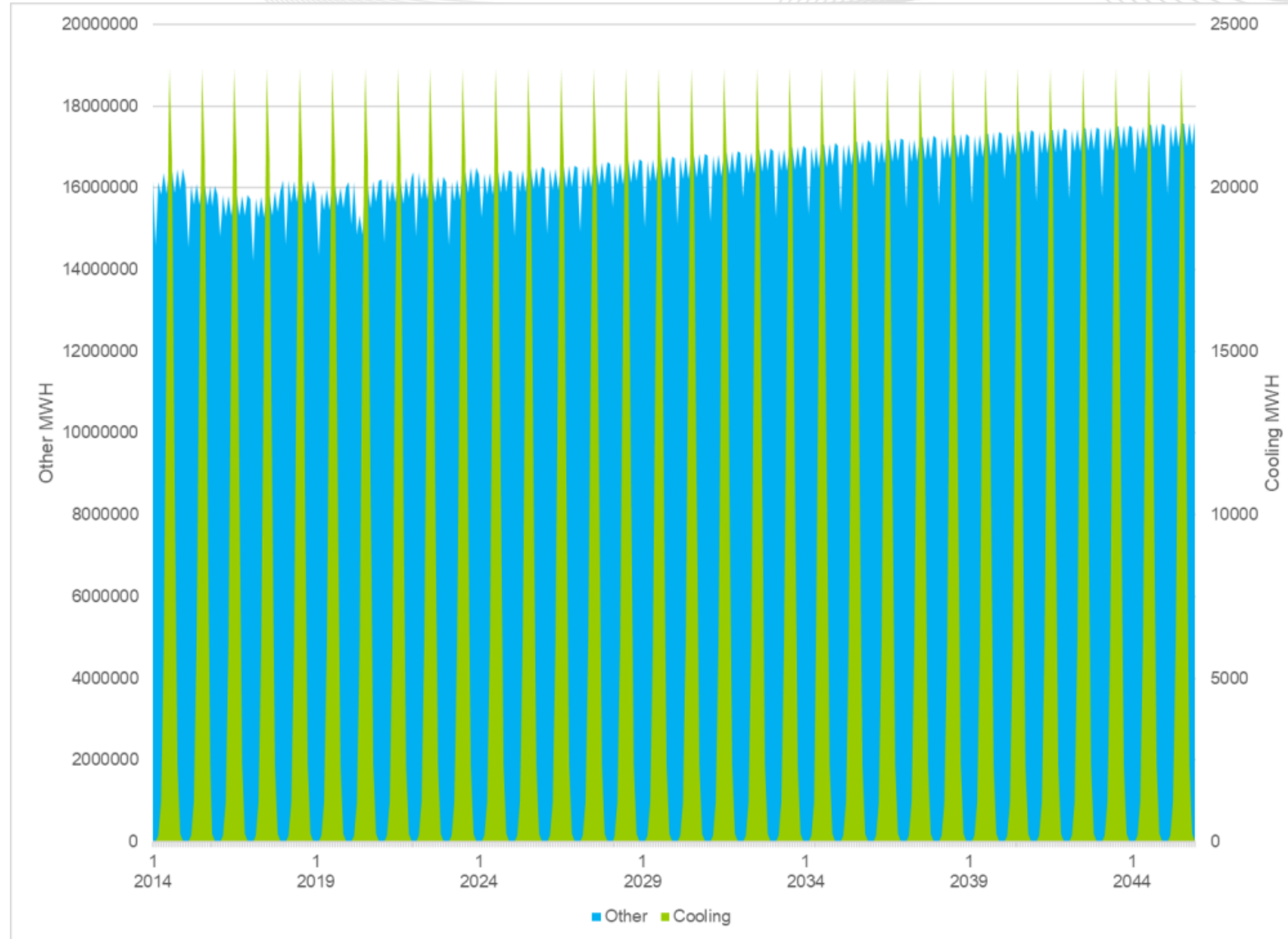


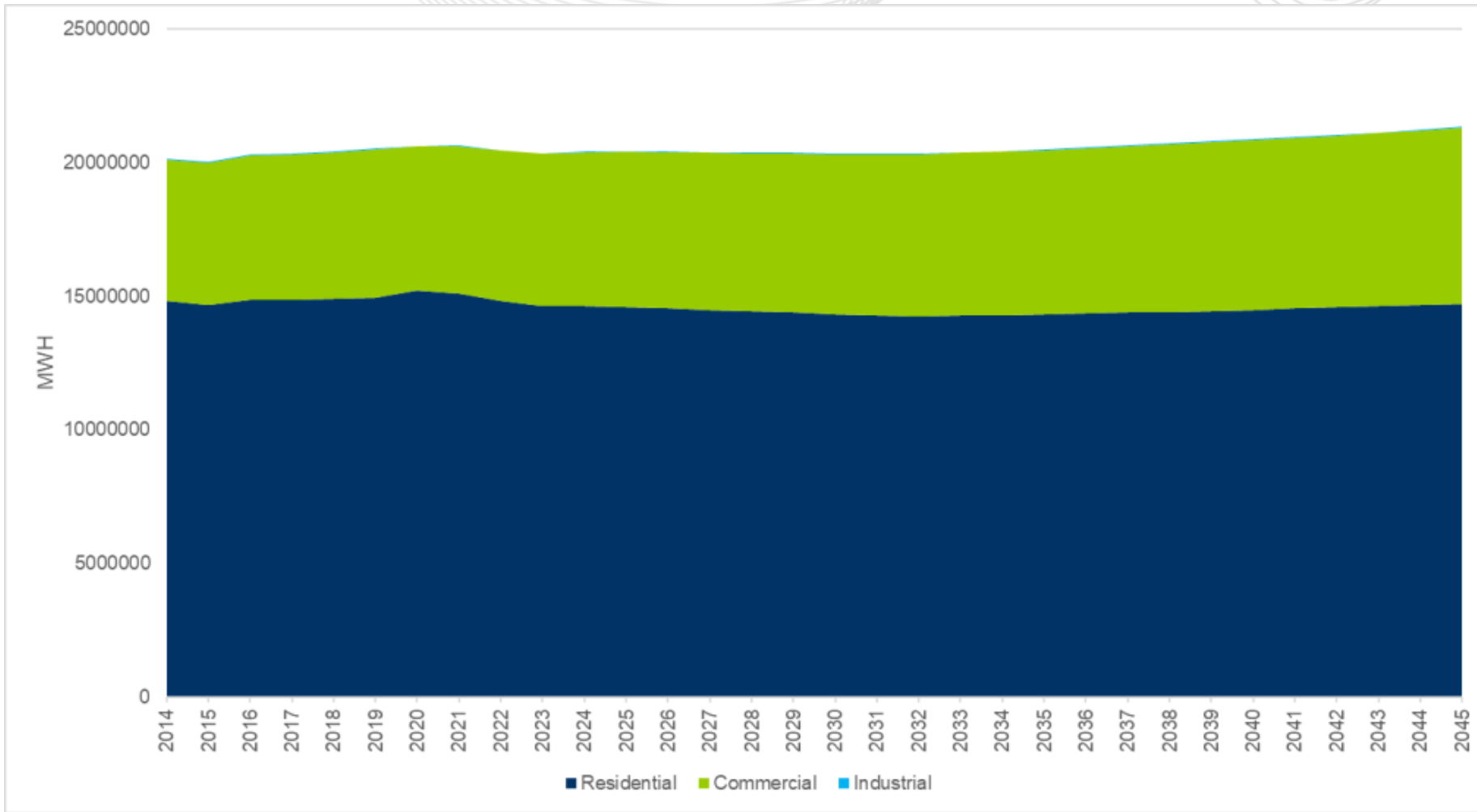
January

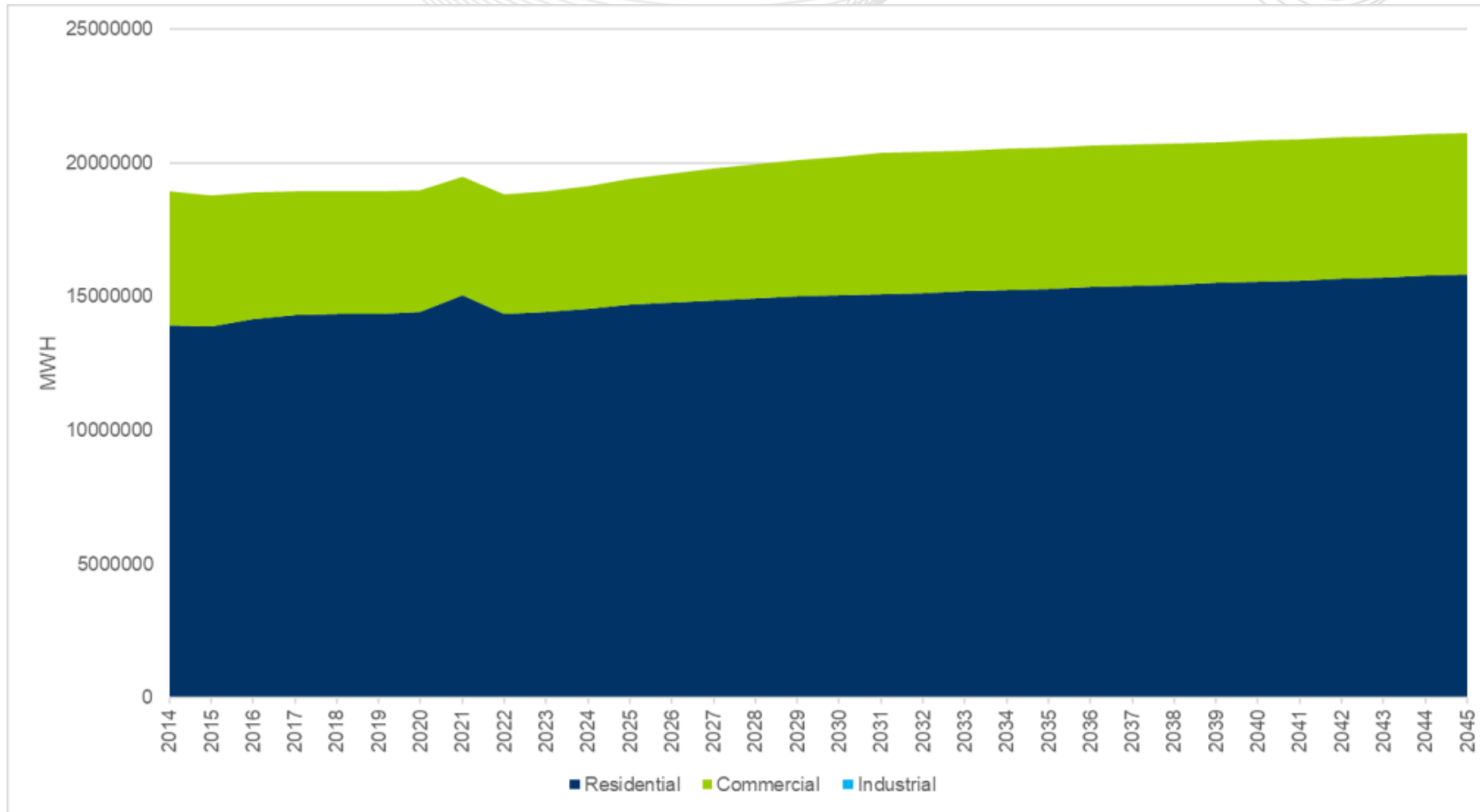


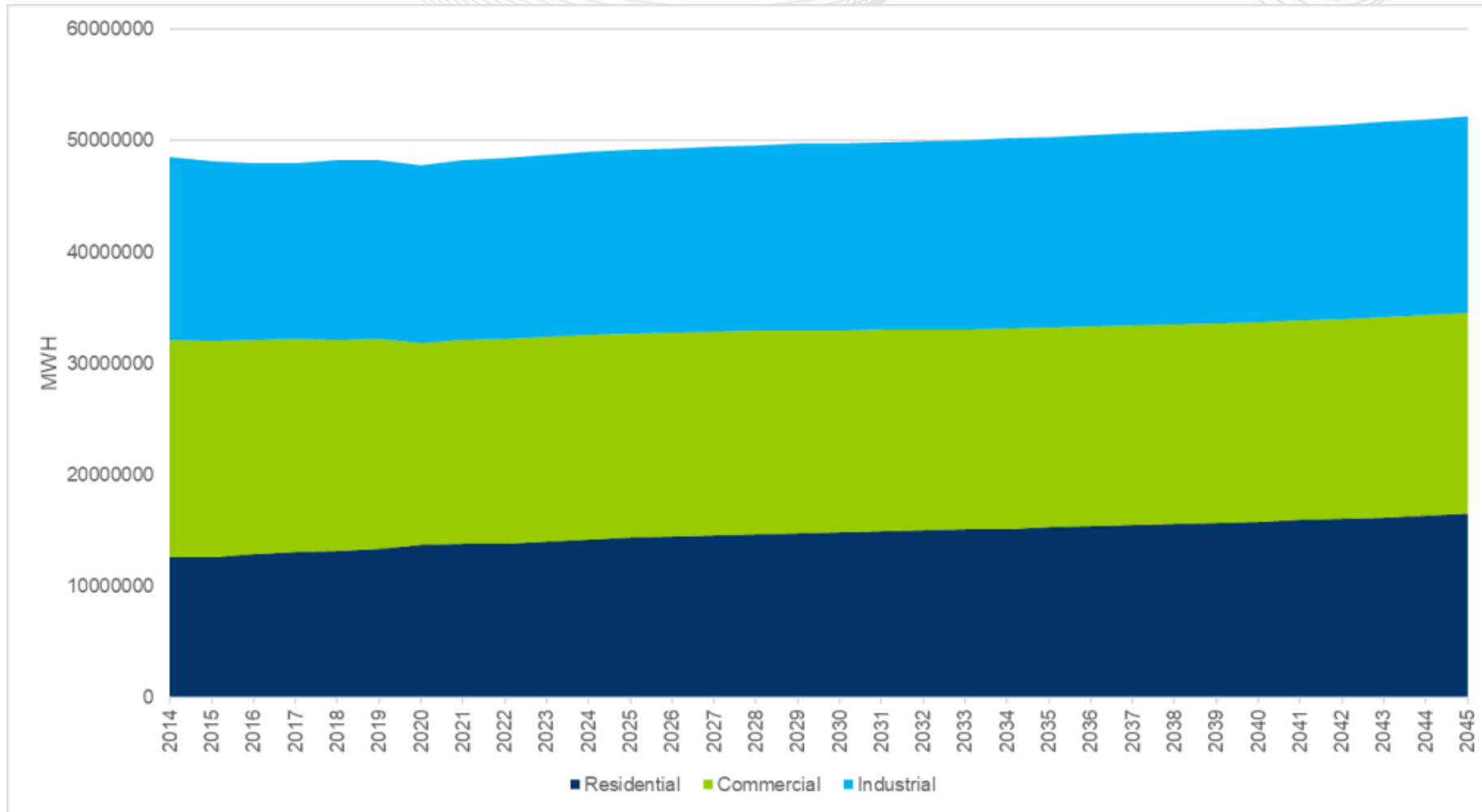






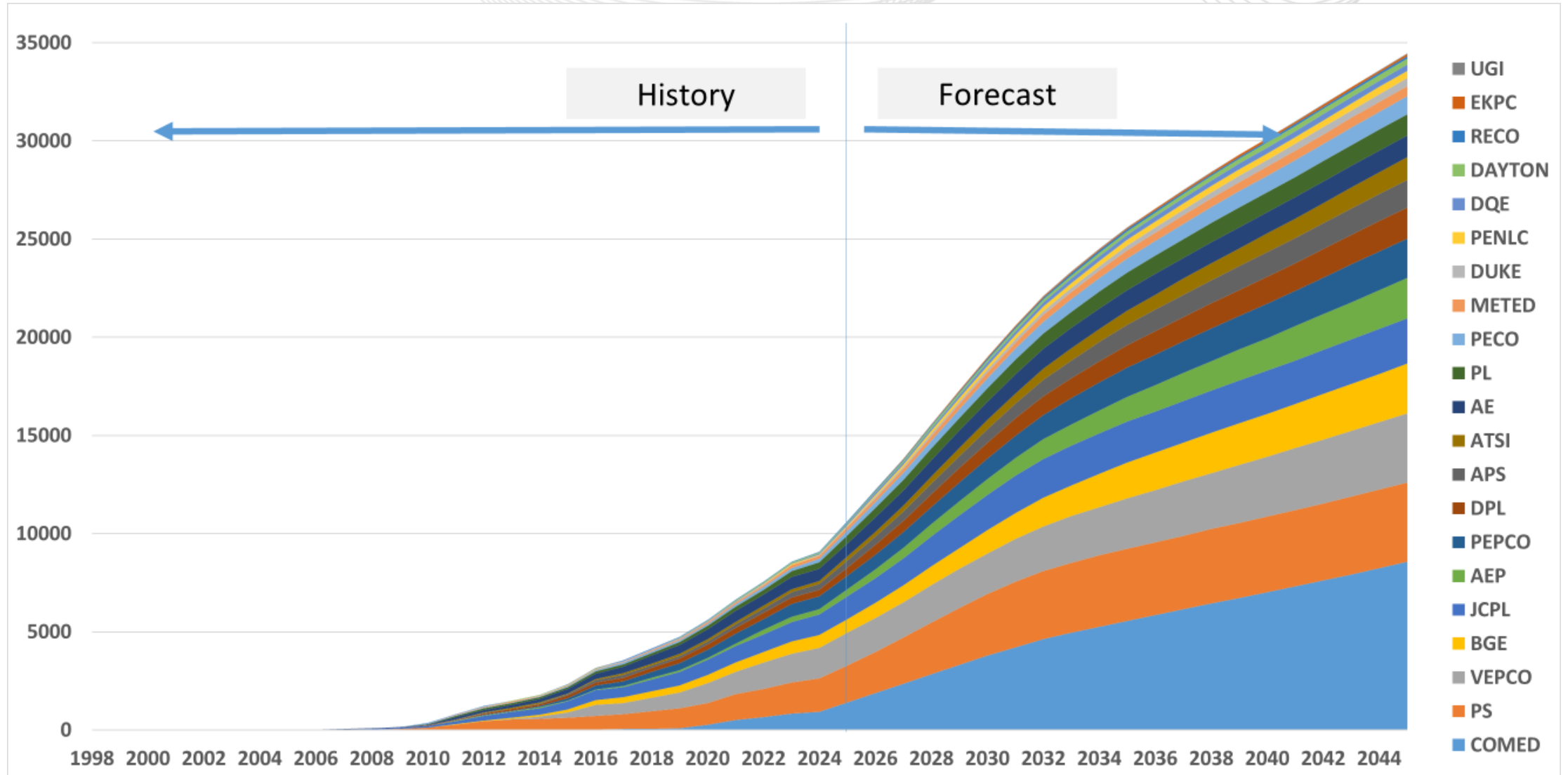






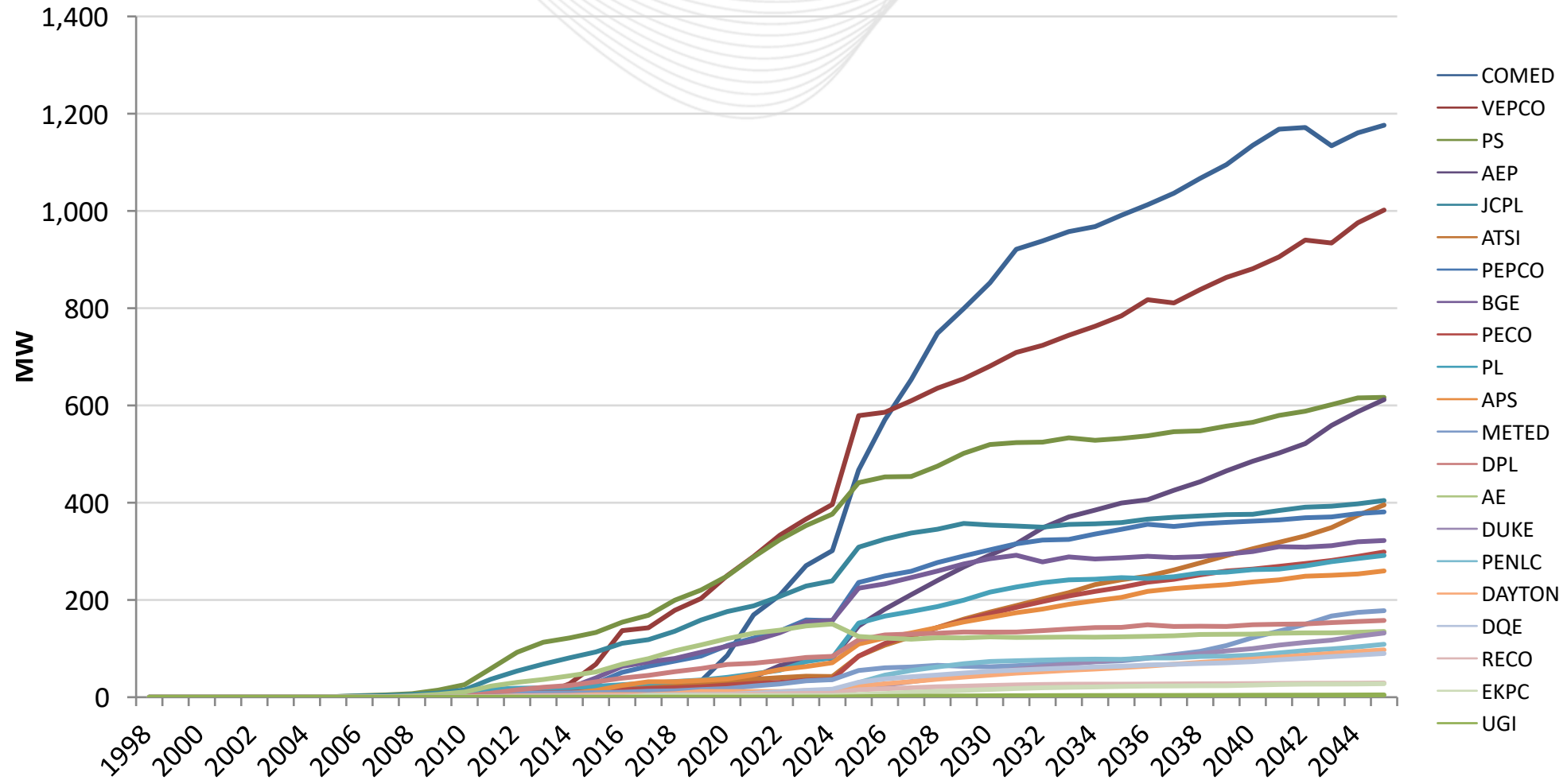
Distributed Solar and Battery Generation

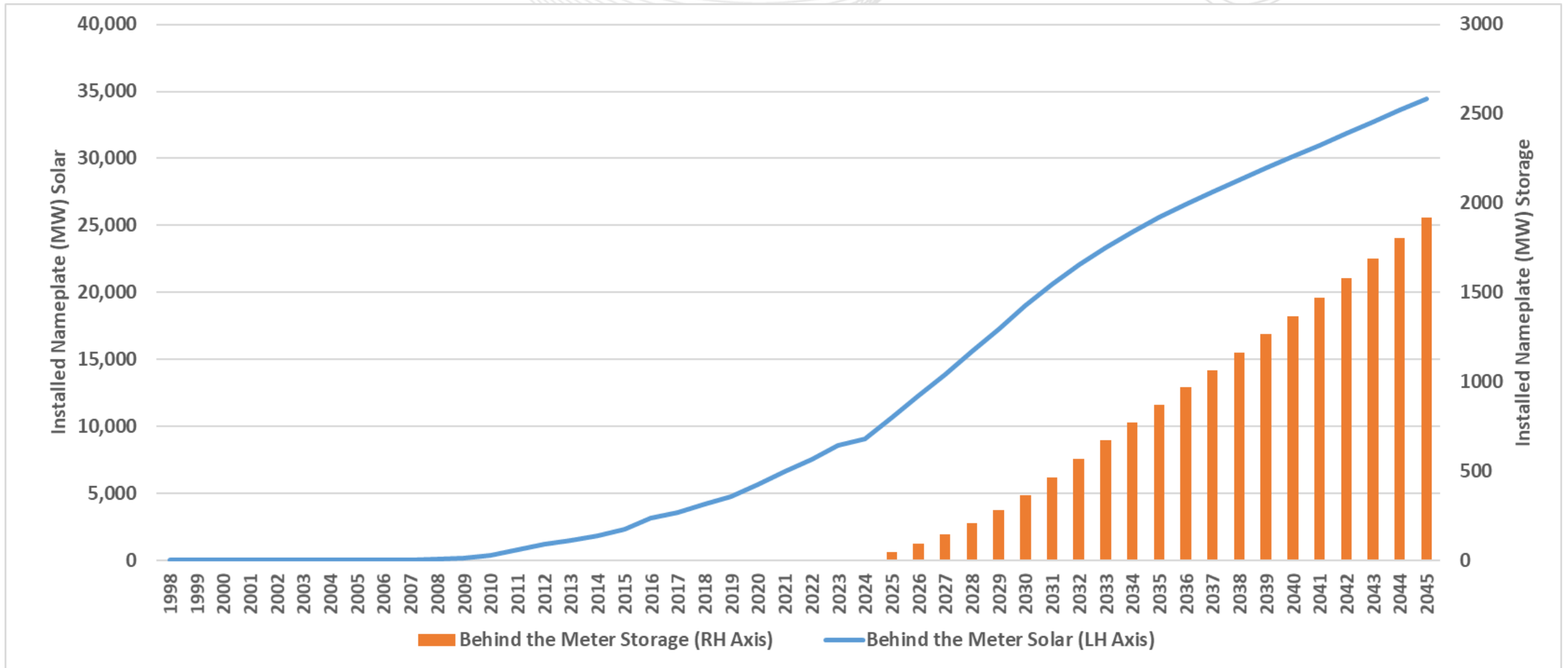
Distributed Solar Generation 2025 Forecast by Zone



Distributed Solar Peak Forecast by Zone

Average Solar Value from Summer Peak Distribution

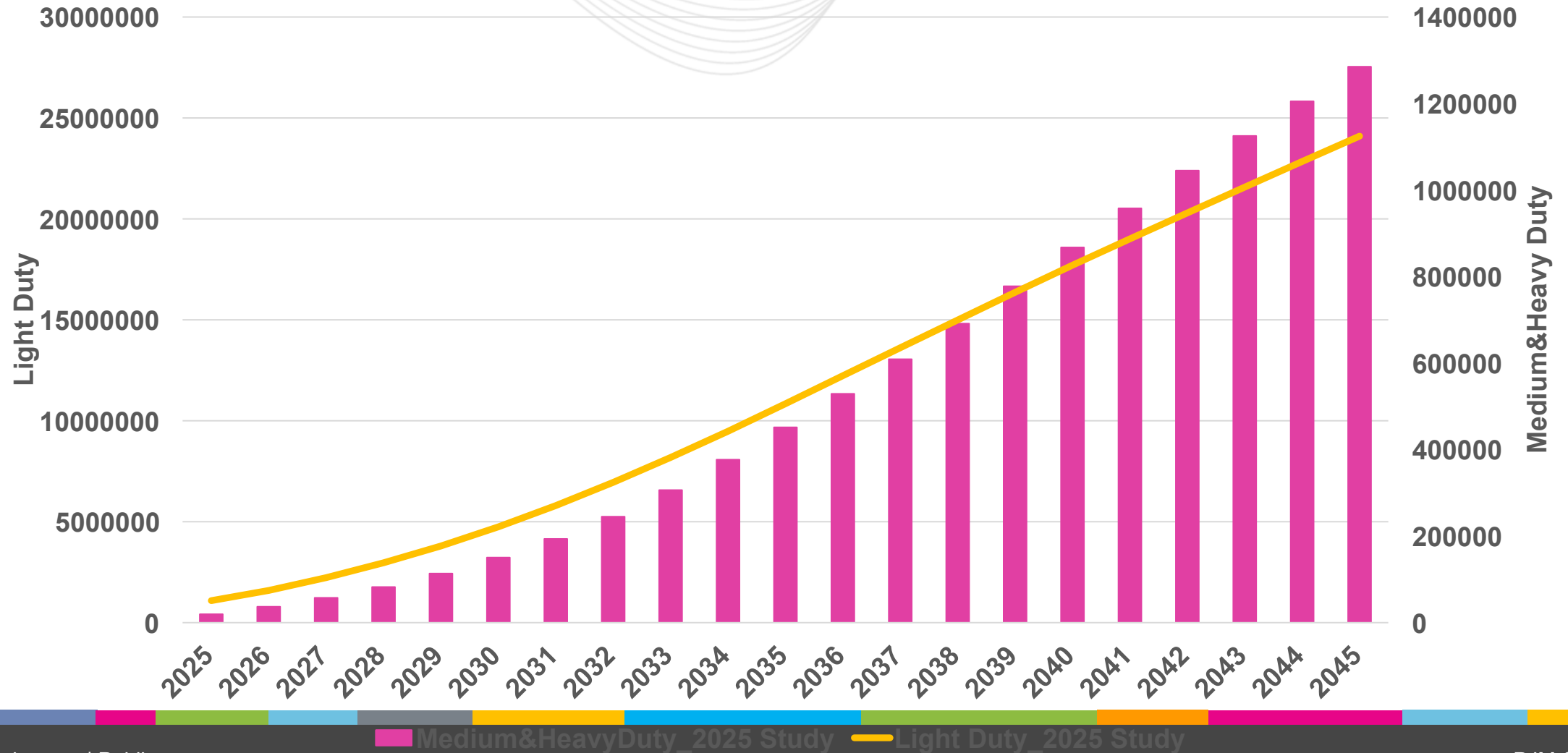




Plug-in Electric Vehicles

- PJM has contracted with S&P Global to produce an Electric Vehicle forecast for Light Duty and Medium & Heavy Duty
- S&P Global provided PJM with:
 - Zonal forecasts of vehicle counts by class
 - Zonal hourly charging by vehicle class for forecast horizon

Total VIO trend - August



Load Forecast Adjustments

- EDCs are encouraged to provide PJM with information about large changes that may not be captured in the forecast process.
- We view requests through the lens of:
 - Is the request significant?
 - Is there risk of double counting?
 - Is the trend likely captured in the economic forecast?
 - Can the trend be removed from the history?

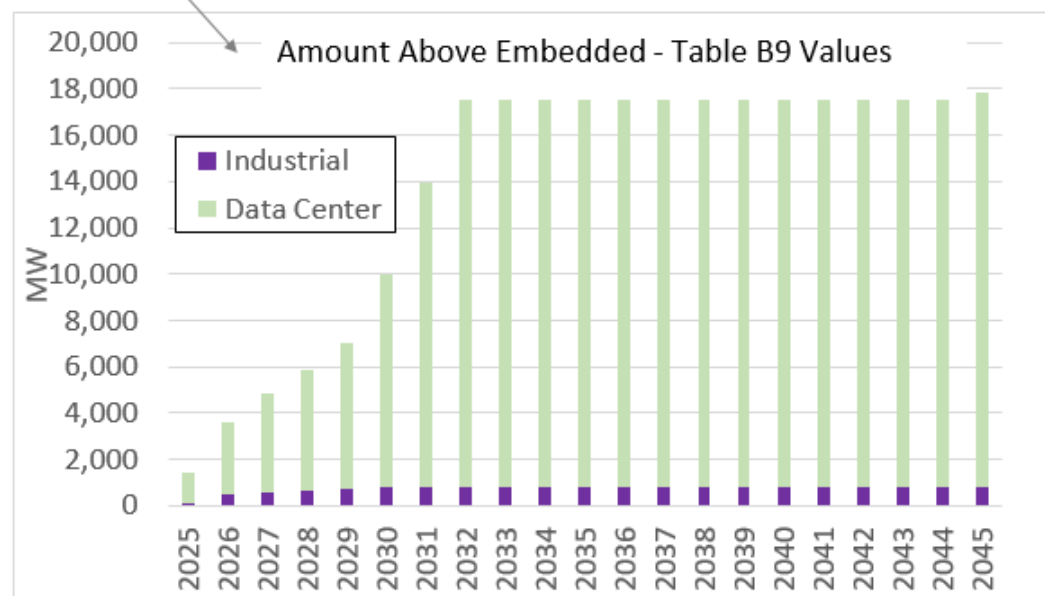
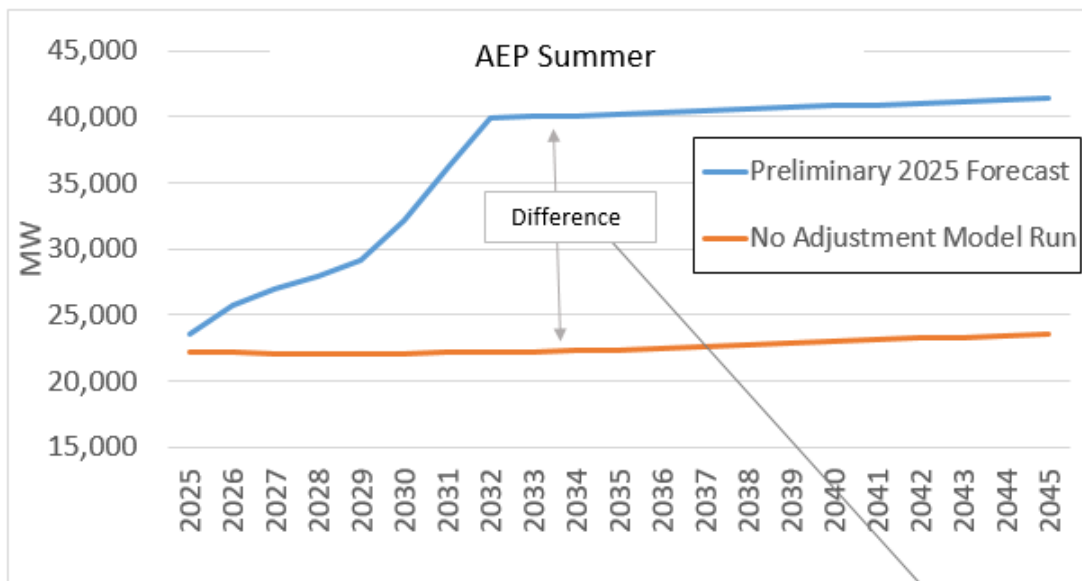
- Members presented at the October 25, 2024 Load Analysis Subcommittee.
- PJM presented details of requested and preliminary accepted requests at the November 25, 2024 Load Analysis Subcommittee.
 - See more information here:
 - <https://www.pjm.com/-/media/committees-groups/subcommittees/las/2024/20241125/20241125-item-05---preliminary-load-adjustment-requests-summary.ashx>

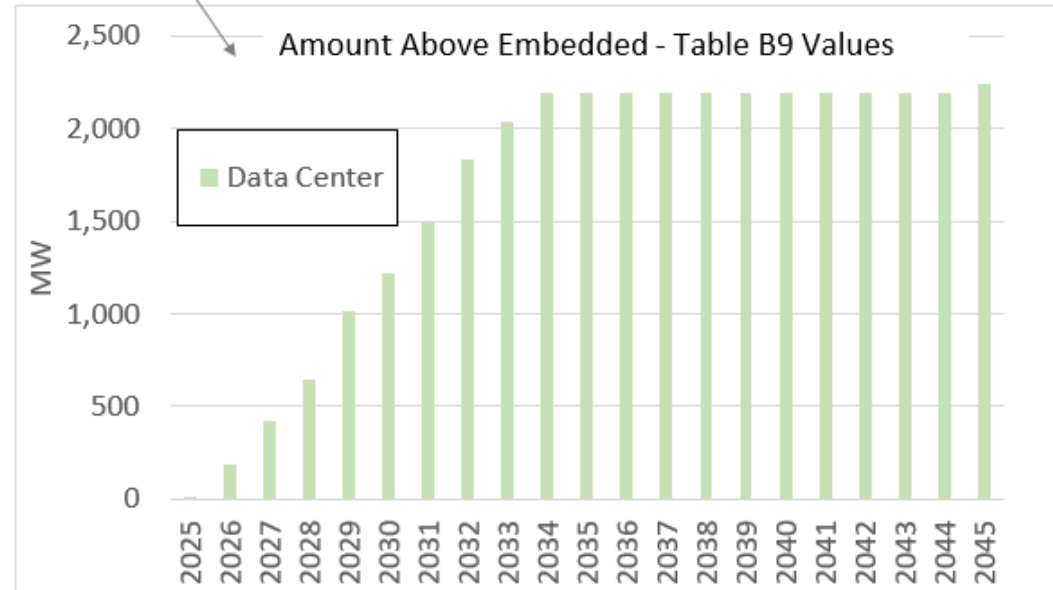
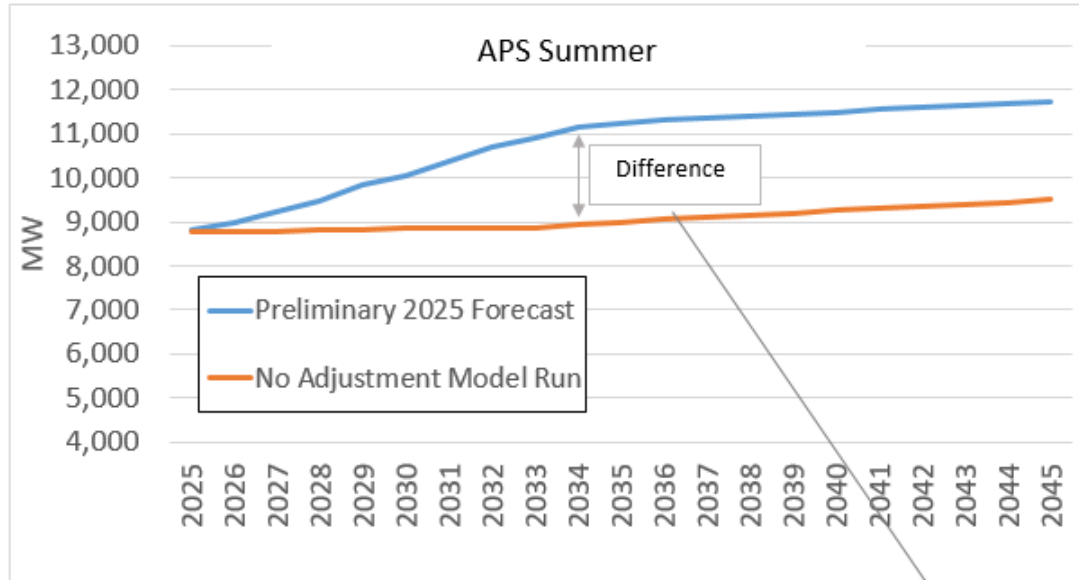
2025 Forecast (blue line):

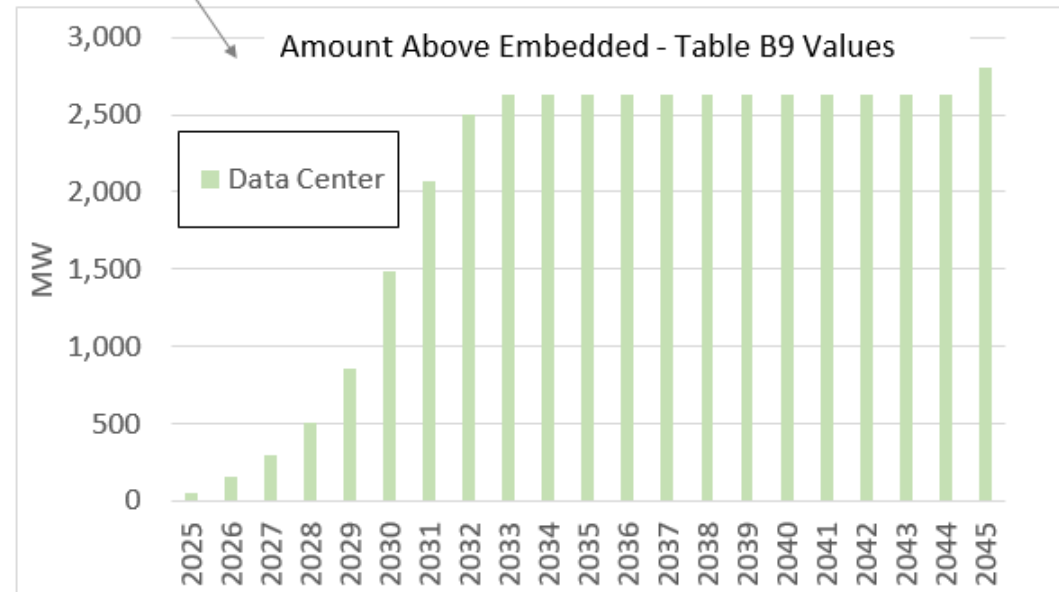
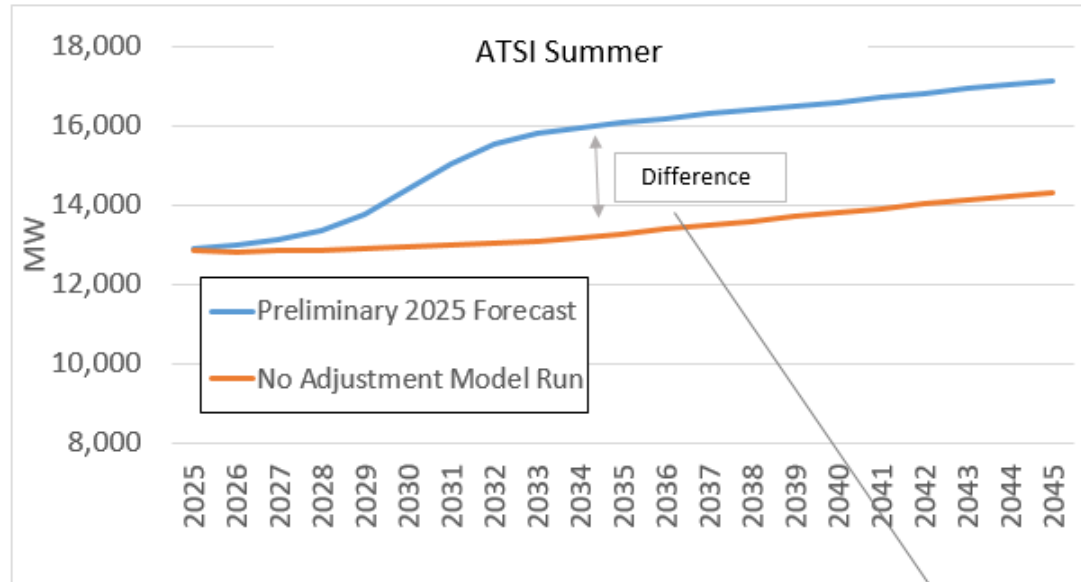
- For any zone with existing data center loads in history:
 - PJM removes monthly data center load from the commercial EIA data in an effort to remove any double counting
 - PJM also removes hourly data center load from our historical loads that get used in our model estimation
 - Final total accepted load gets added
- For any zone without existing data center loads in history:
 - Final total accepted large load gets added

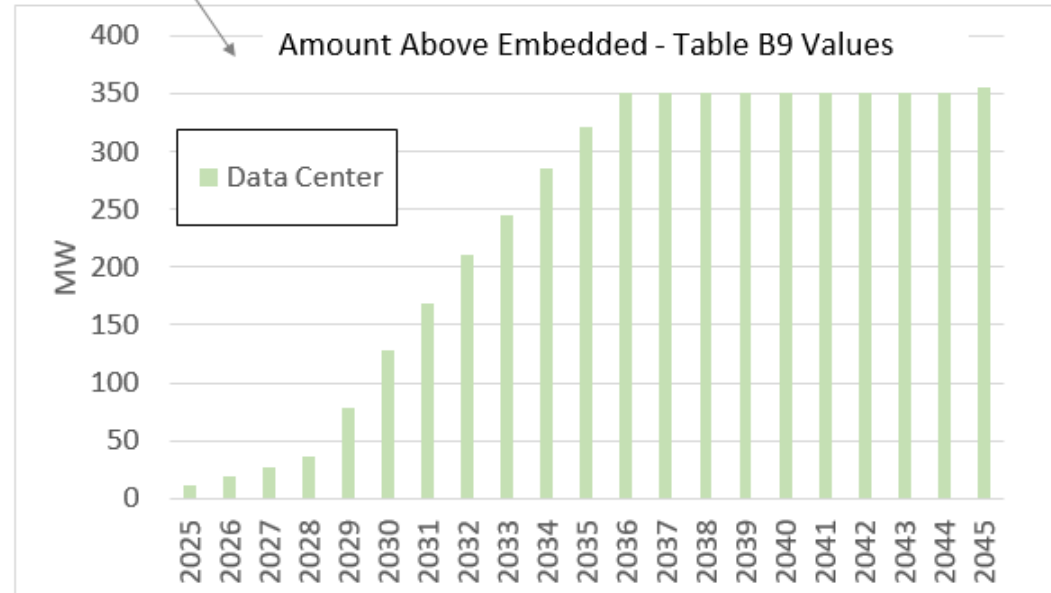
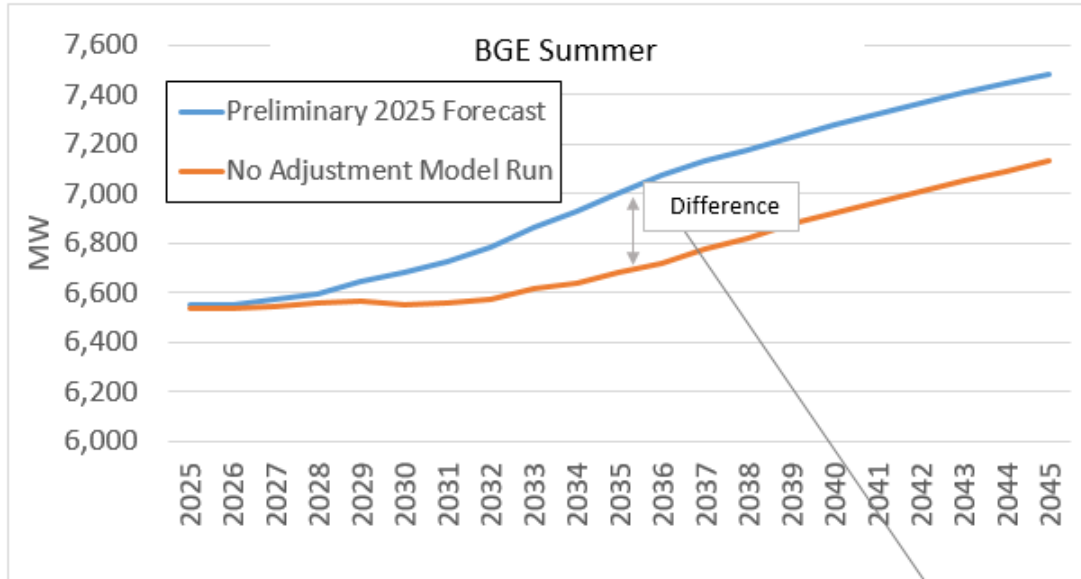
For Table B9 (amount above embedded) :

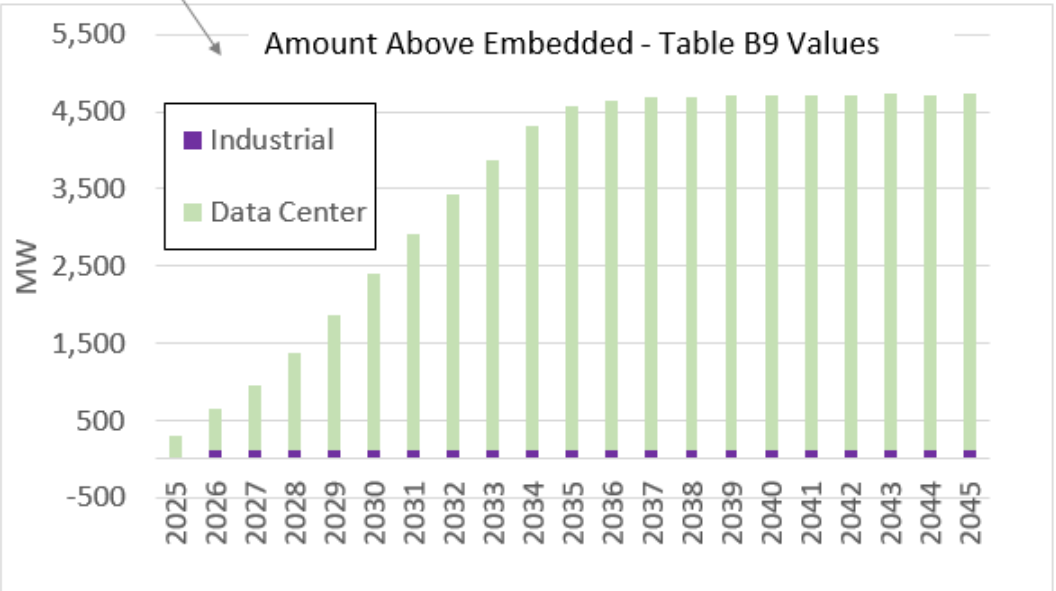
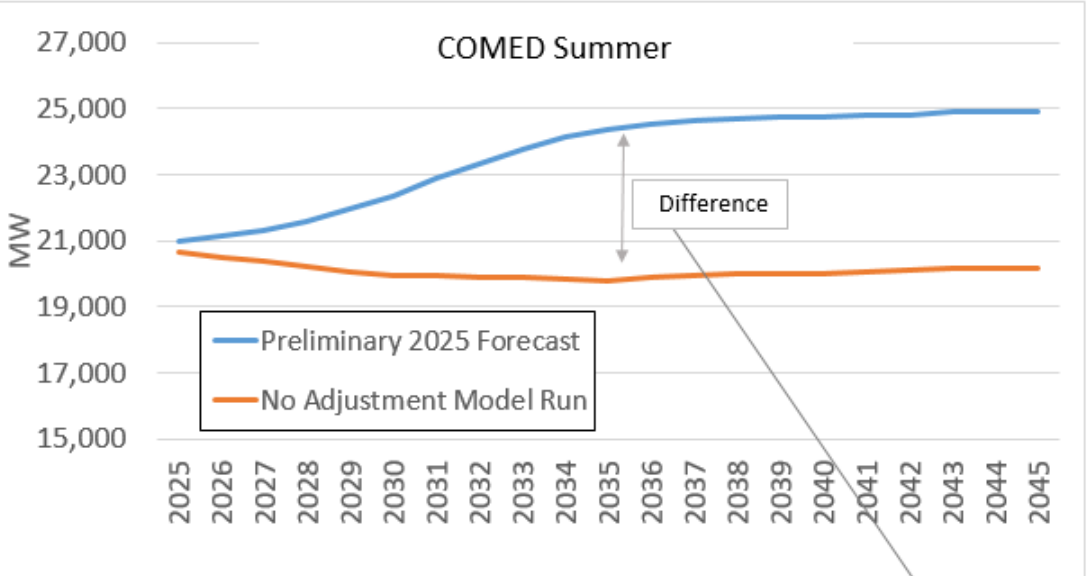
- To compute B9 values
 - A sensitivity is run with no data center loads removed from history in Commercial loads and historical loads (orange line)
 - This forecast is compared to final forecast to show amount above embedded (green bars)

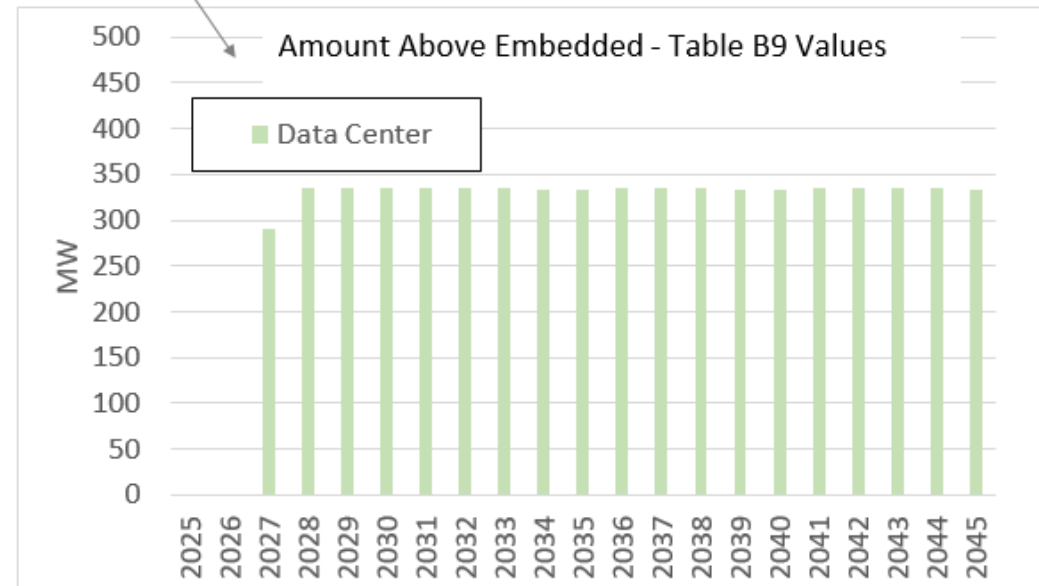
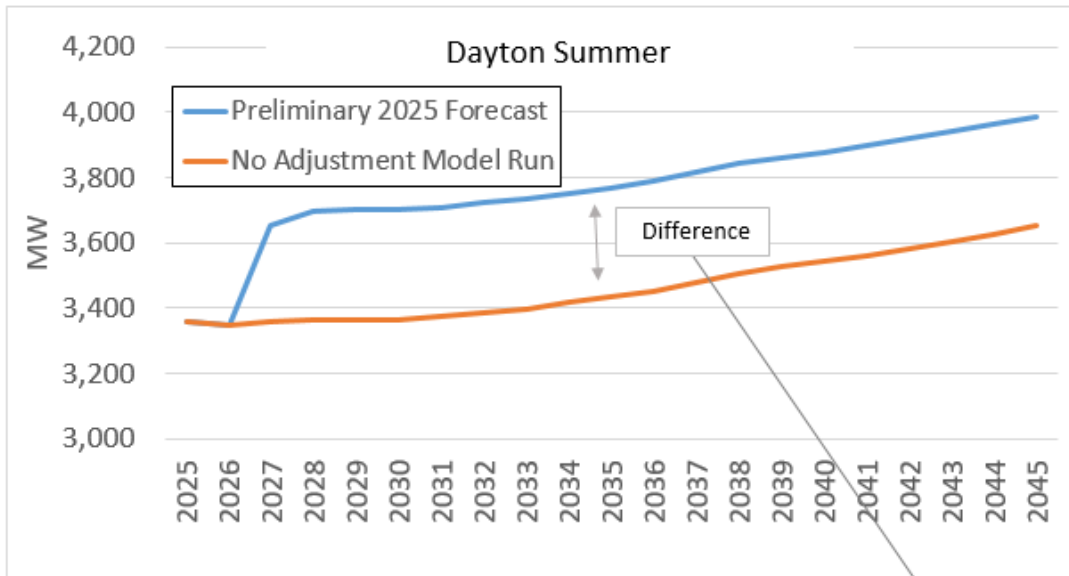


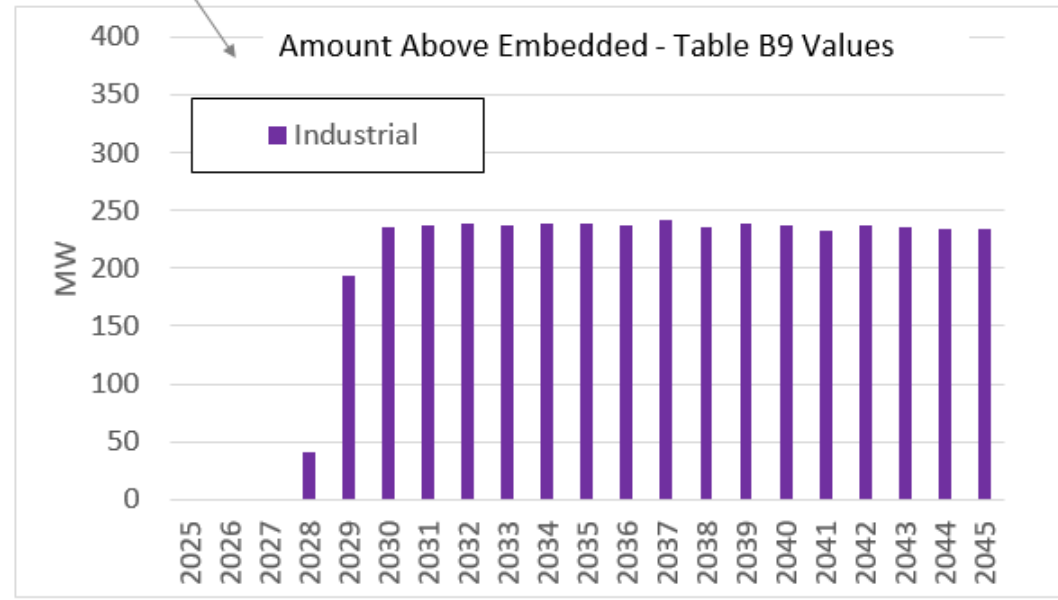
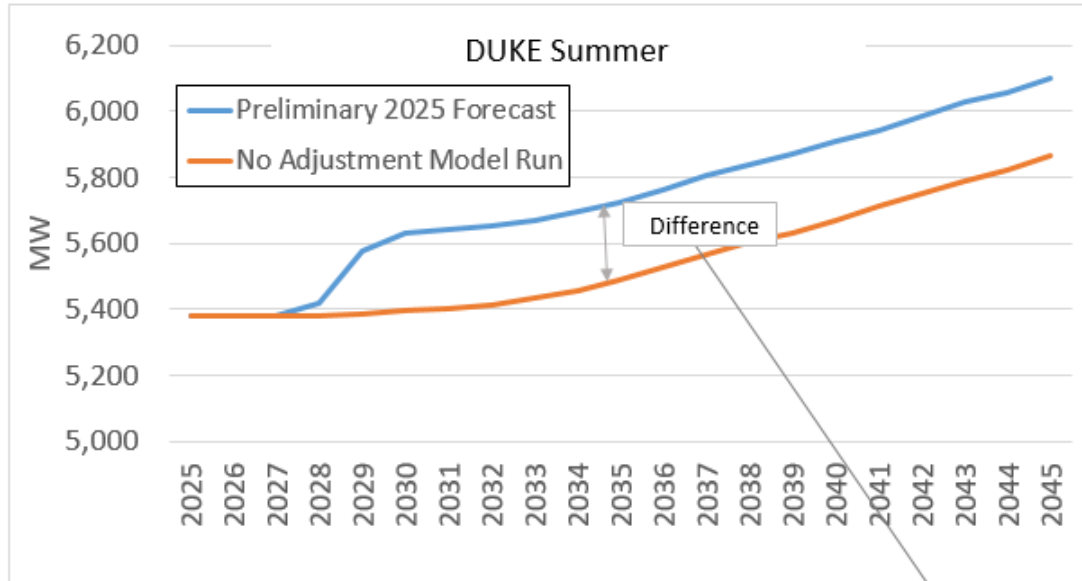


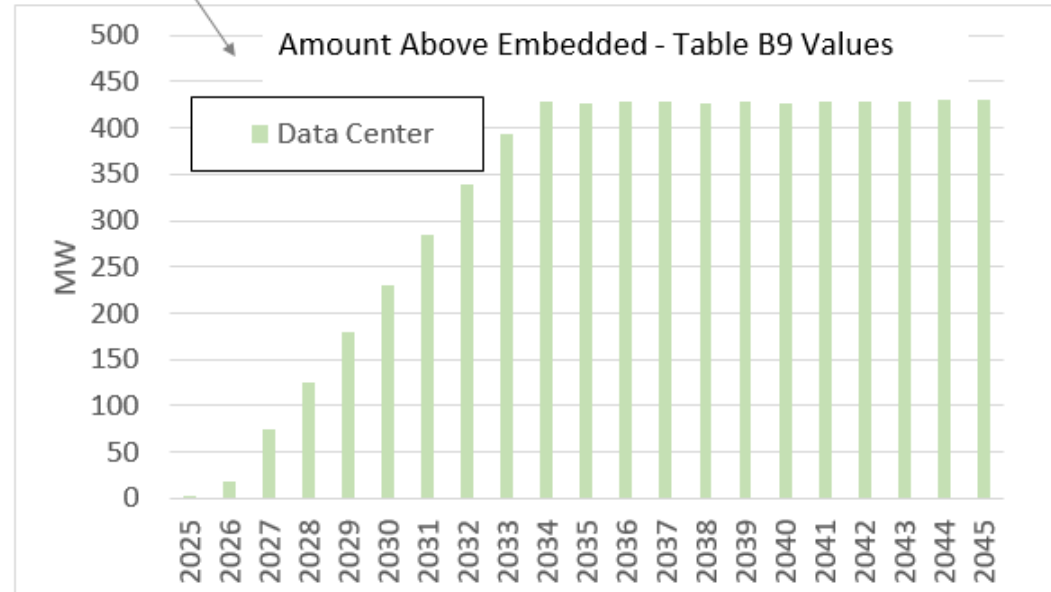
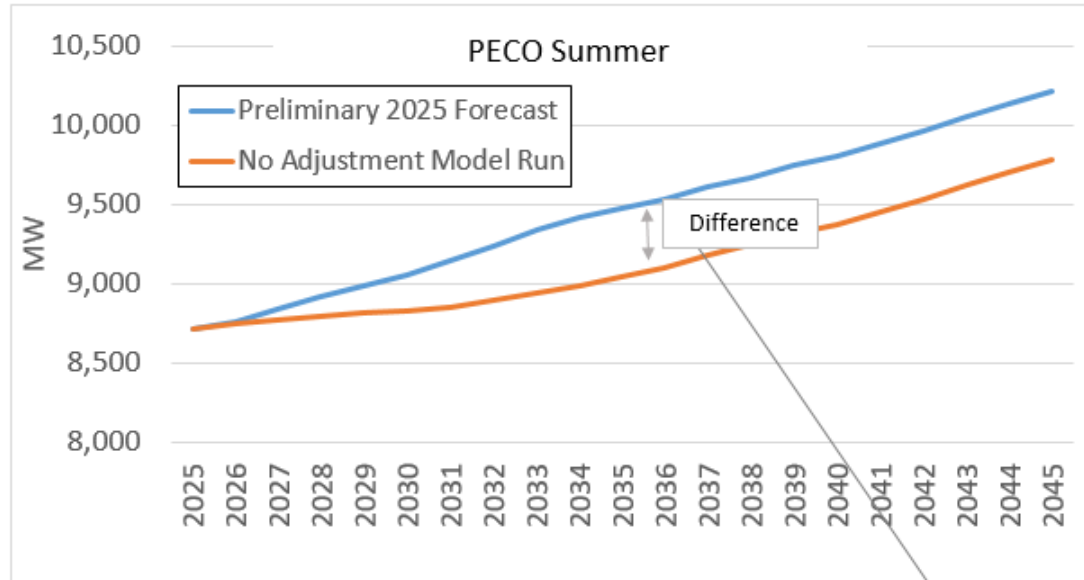


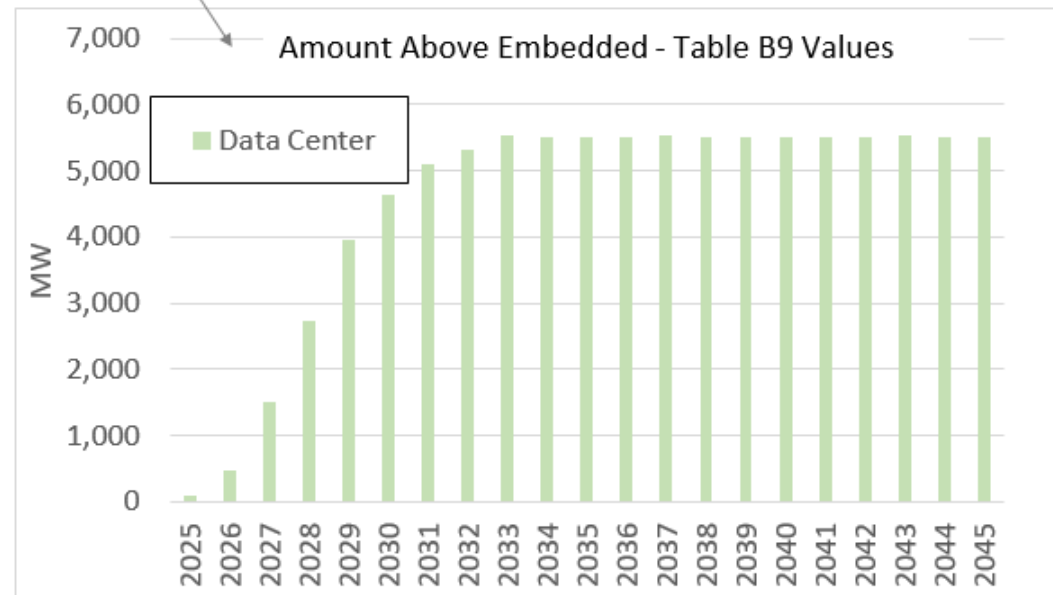
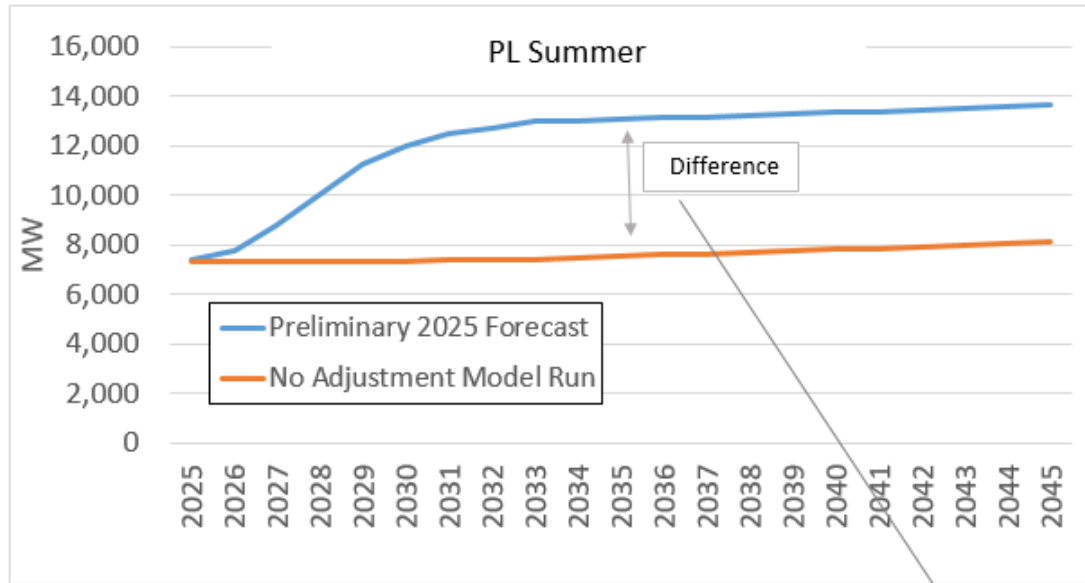


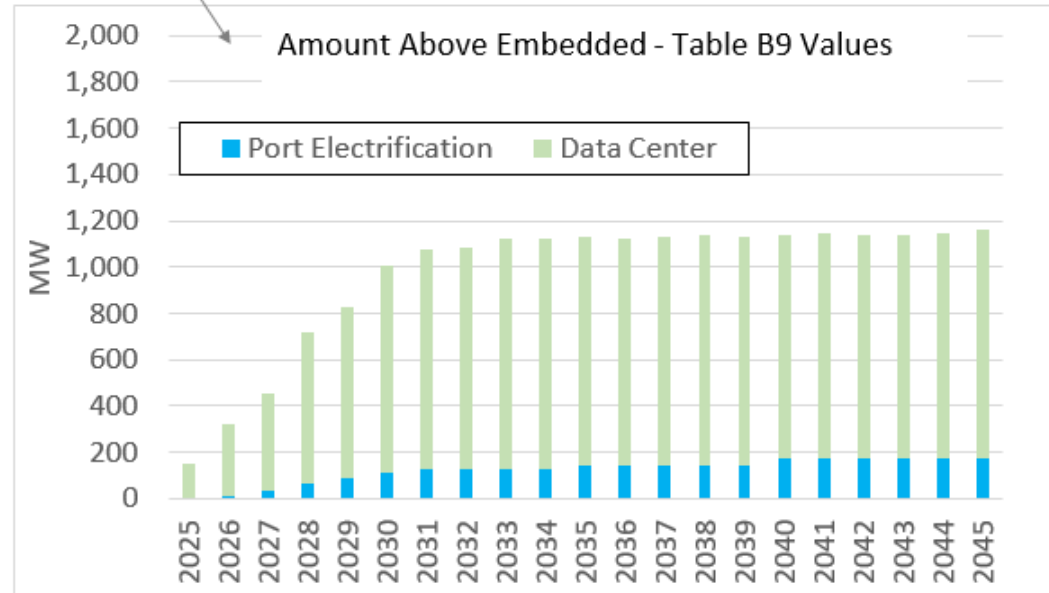
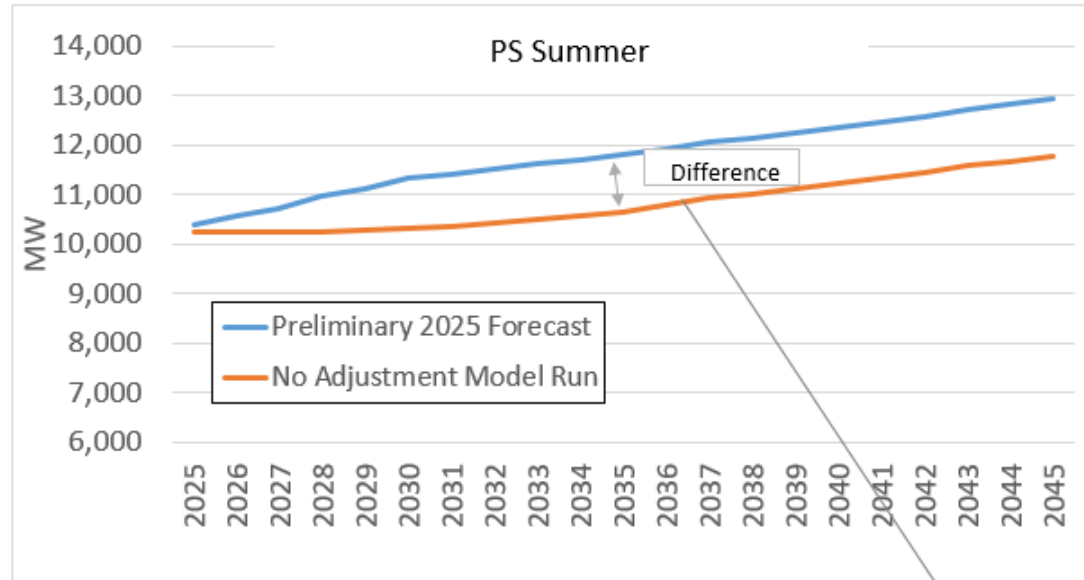


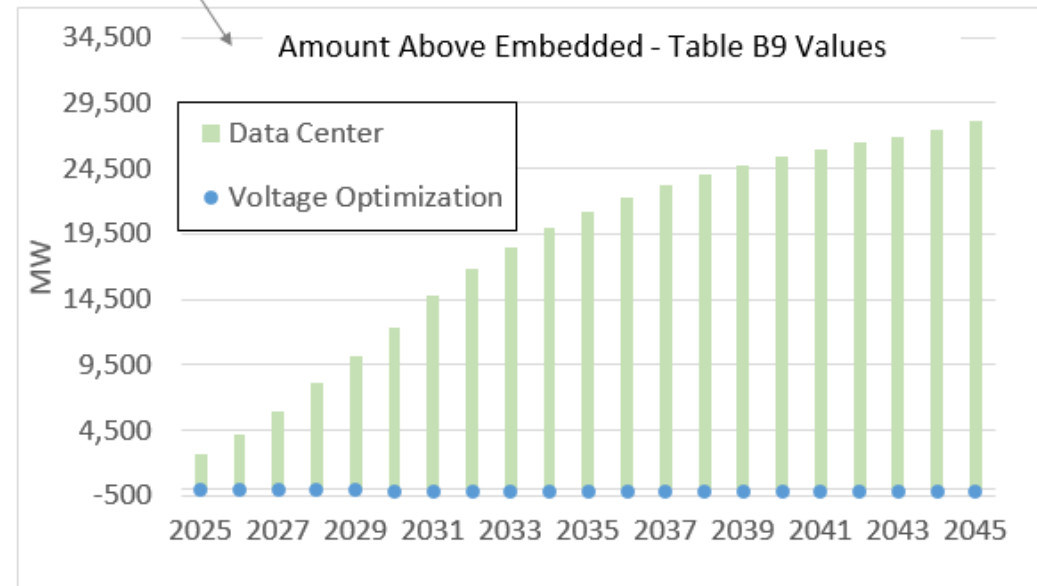
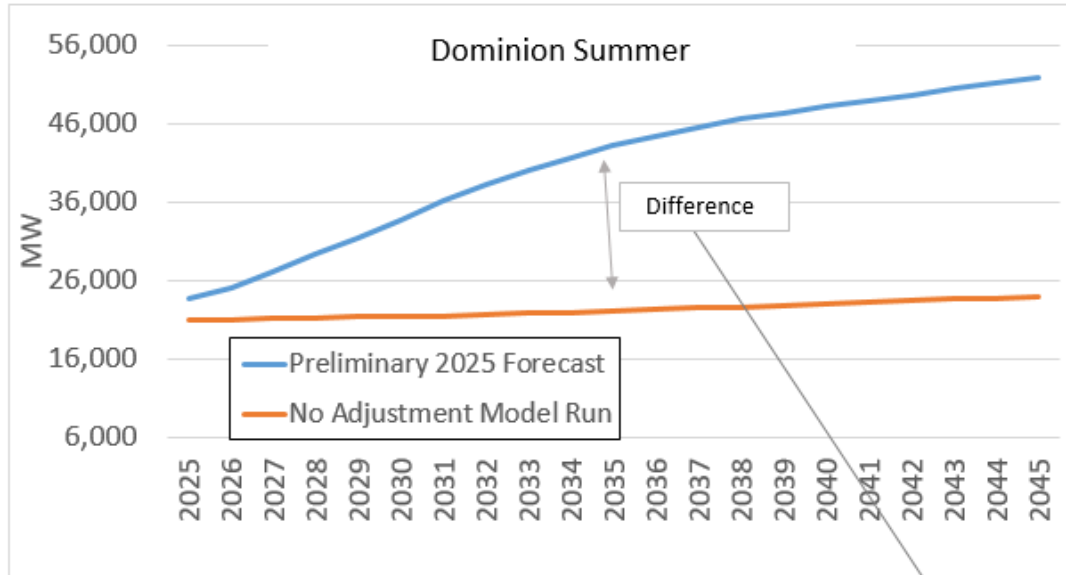






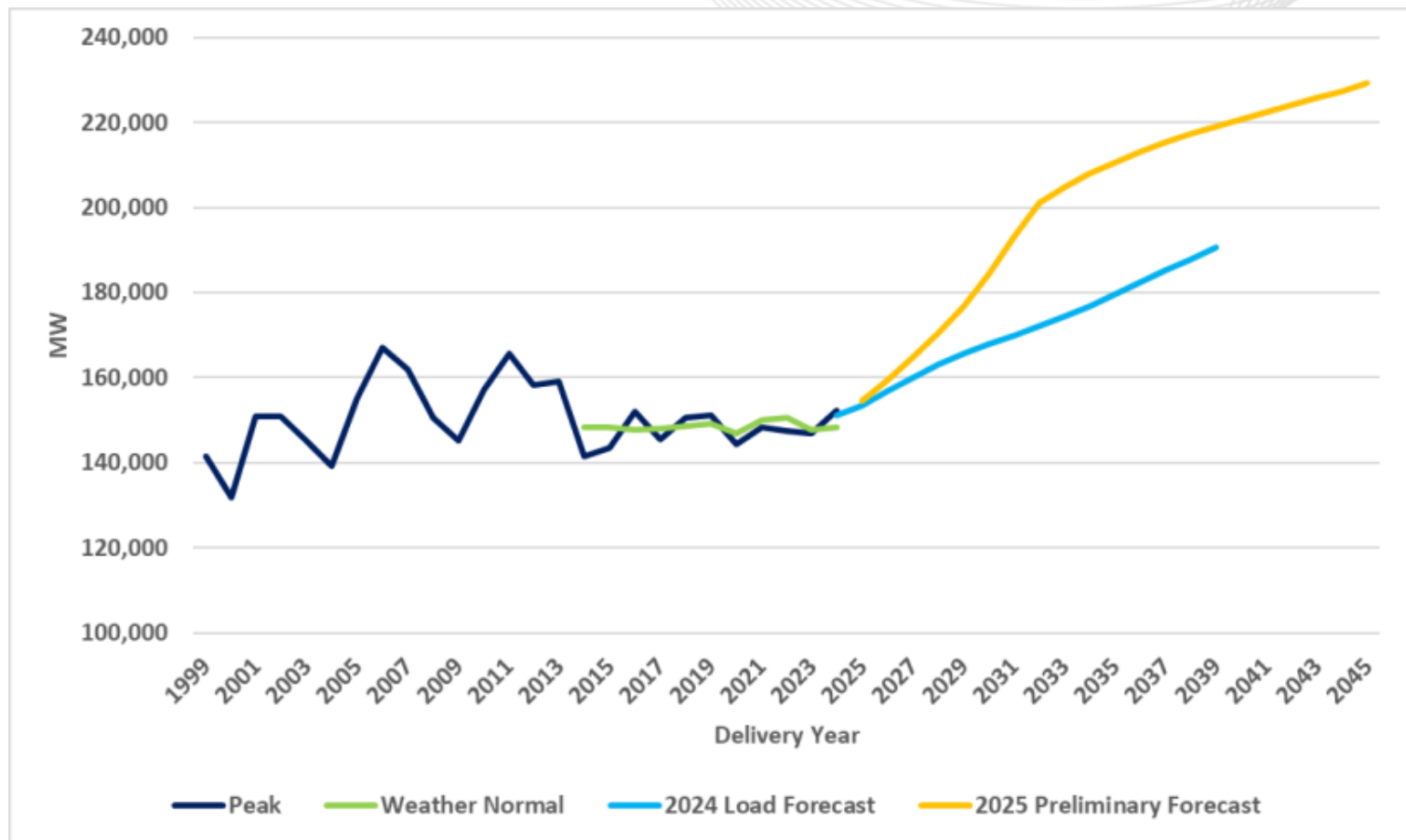






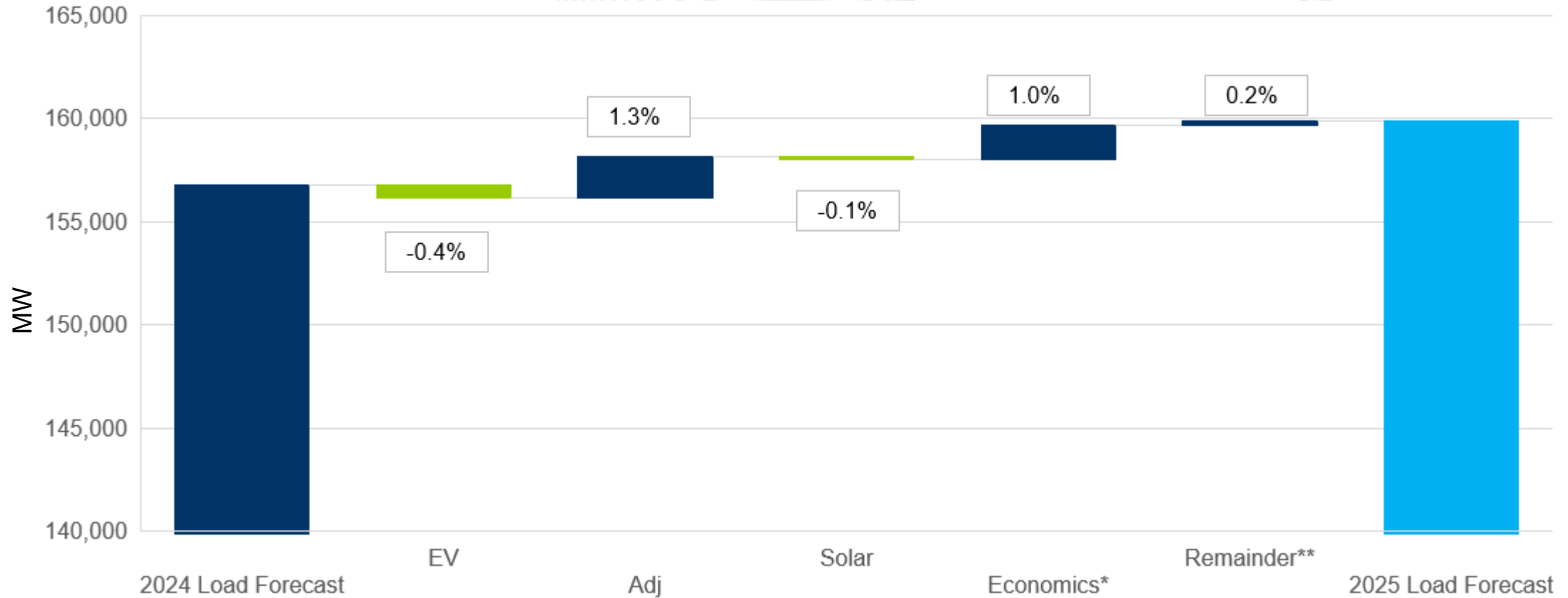
Preliminary Forecast

Summer Forecast Comparison 2024 vs 2025 Preliminary



- 15/20-year/ Annualized Growth Rate
 - 2024 Forecast: 1.6%
 - Prelim 2025: 2.0%
- Select year comparisons (Prelim 2025 vs 2024 Forecast)
 - 2026: +1.7% (~2,700 MW)
 - 2028: +4.6% (~7,500 MW)
 - 2030: +9.9% (~16,600 MW)
 - 2039: +14.8% (~28,300 MW)

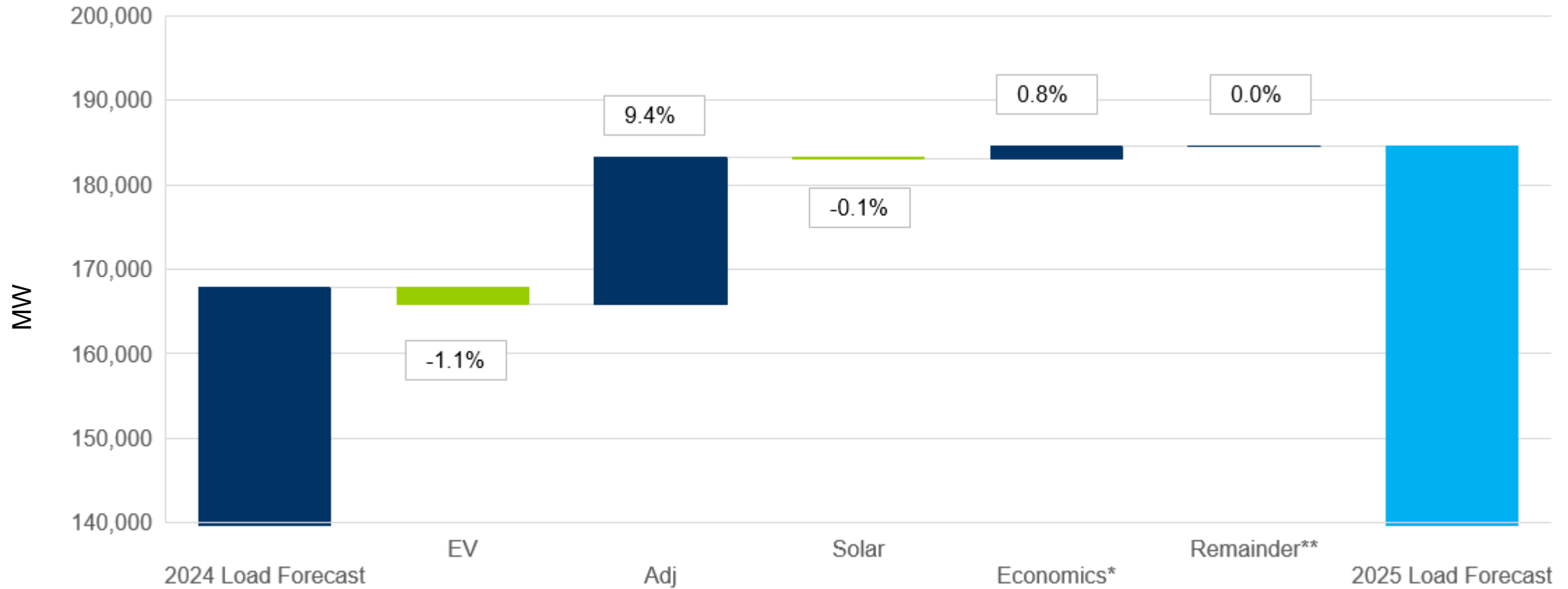
Summer 2026 Forecast Waterfall Comparison



*Economics is impact of re-estimation as well as new economics

**Remainder is impact of re-estimation of R,C,I models and hourly models

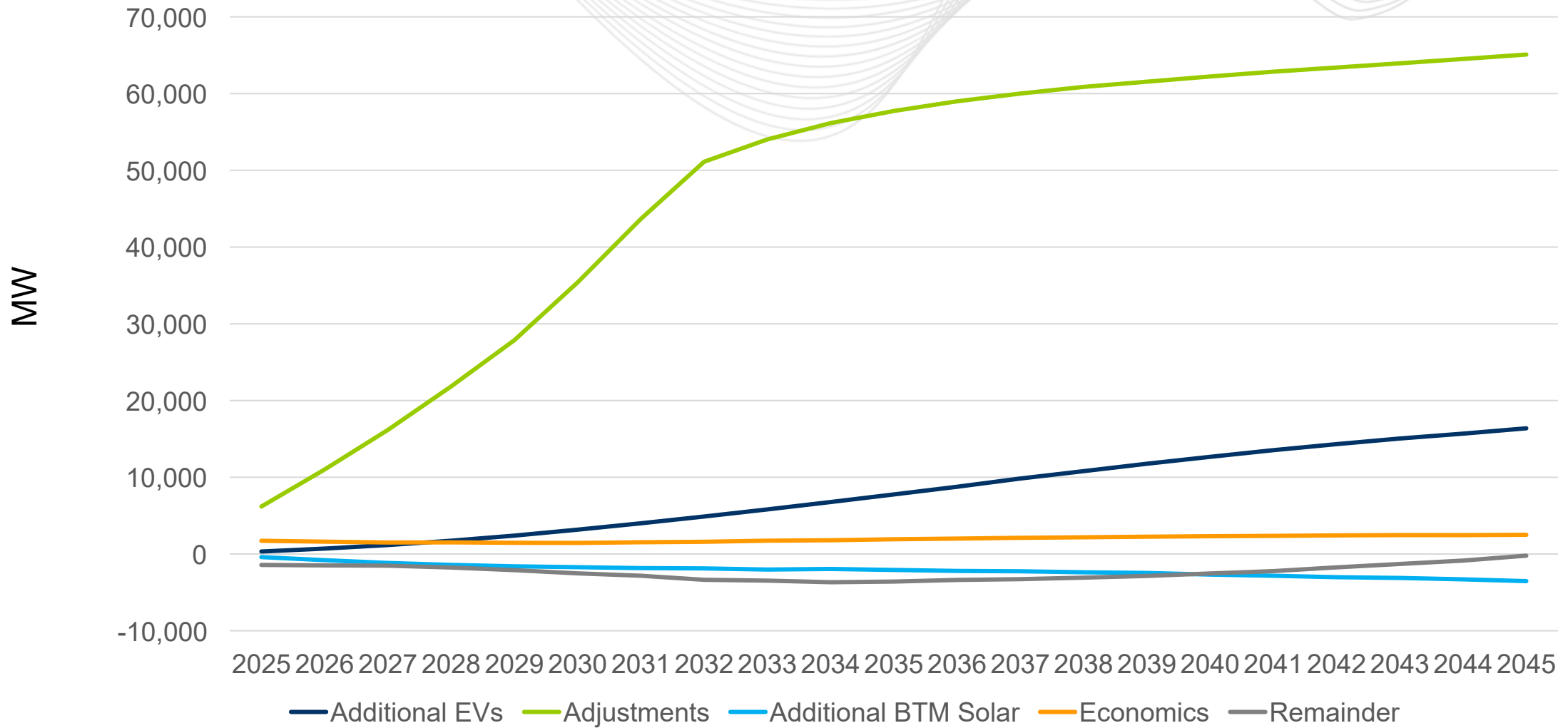
Summer 2030 Forecast Waterfall Comparison

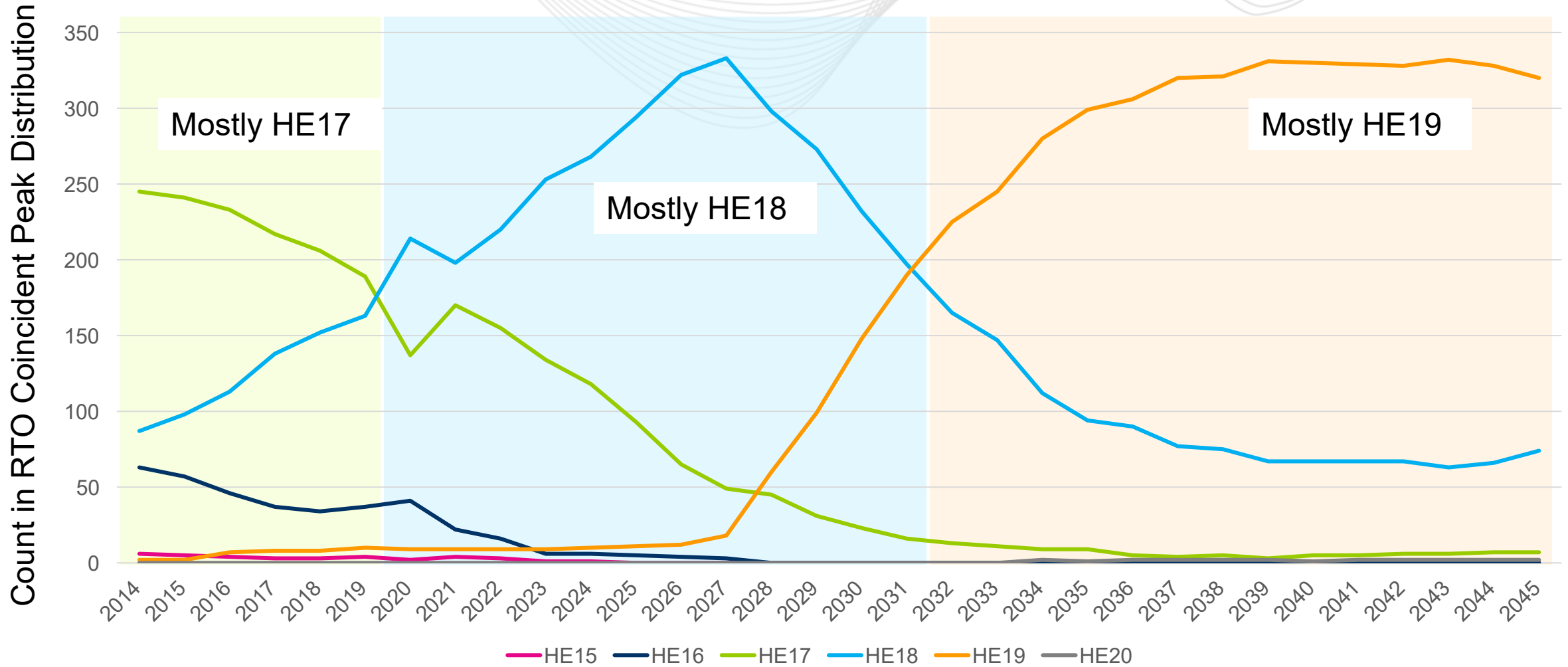


*Economics is impact of re-estimation as well as new economics

**Remainder is impact of re-estimation of R,C,I models and hourly models

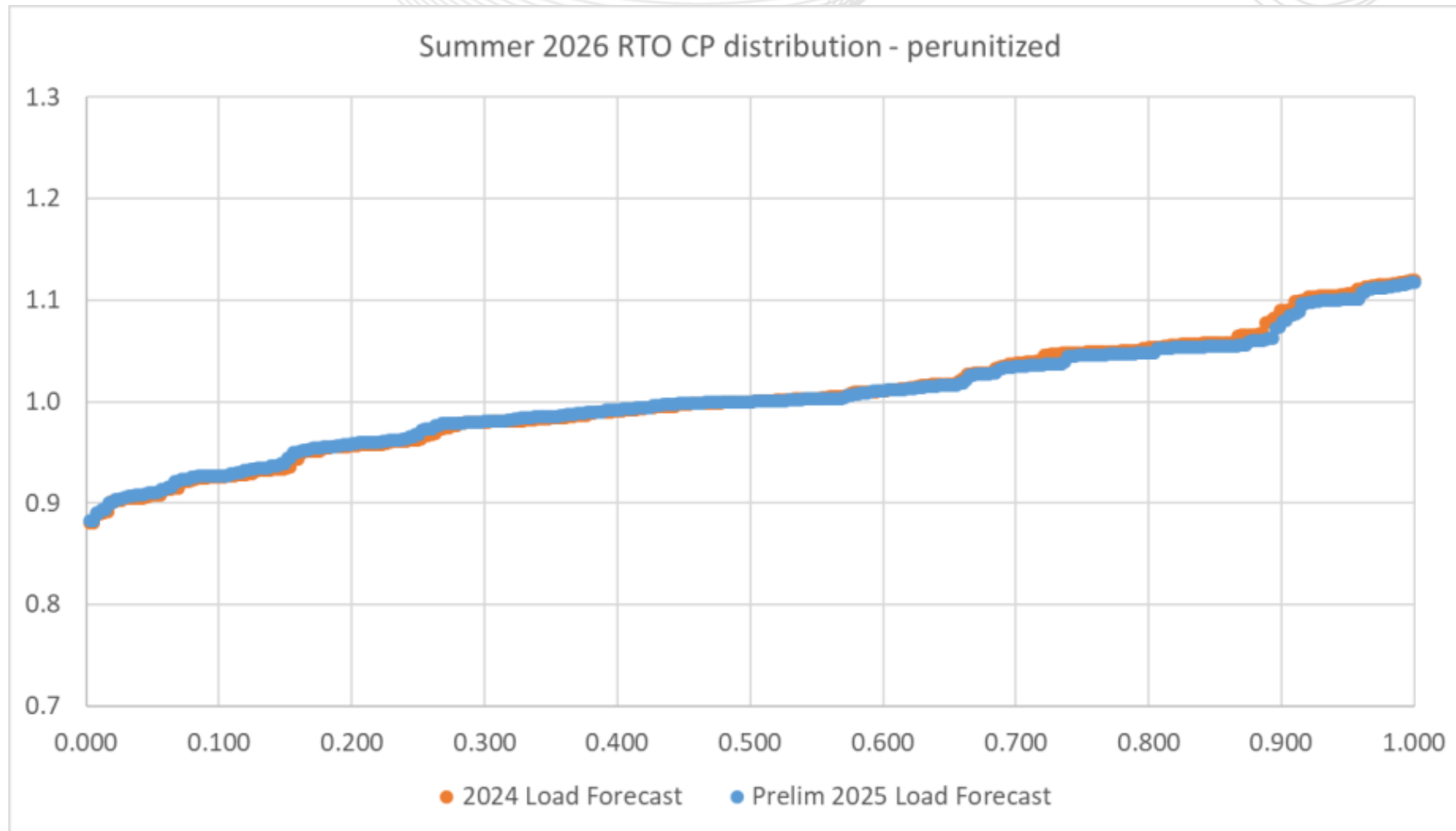
Summer Forecast Flow – Additions and Subtractions



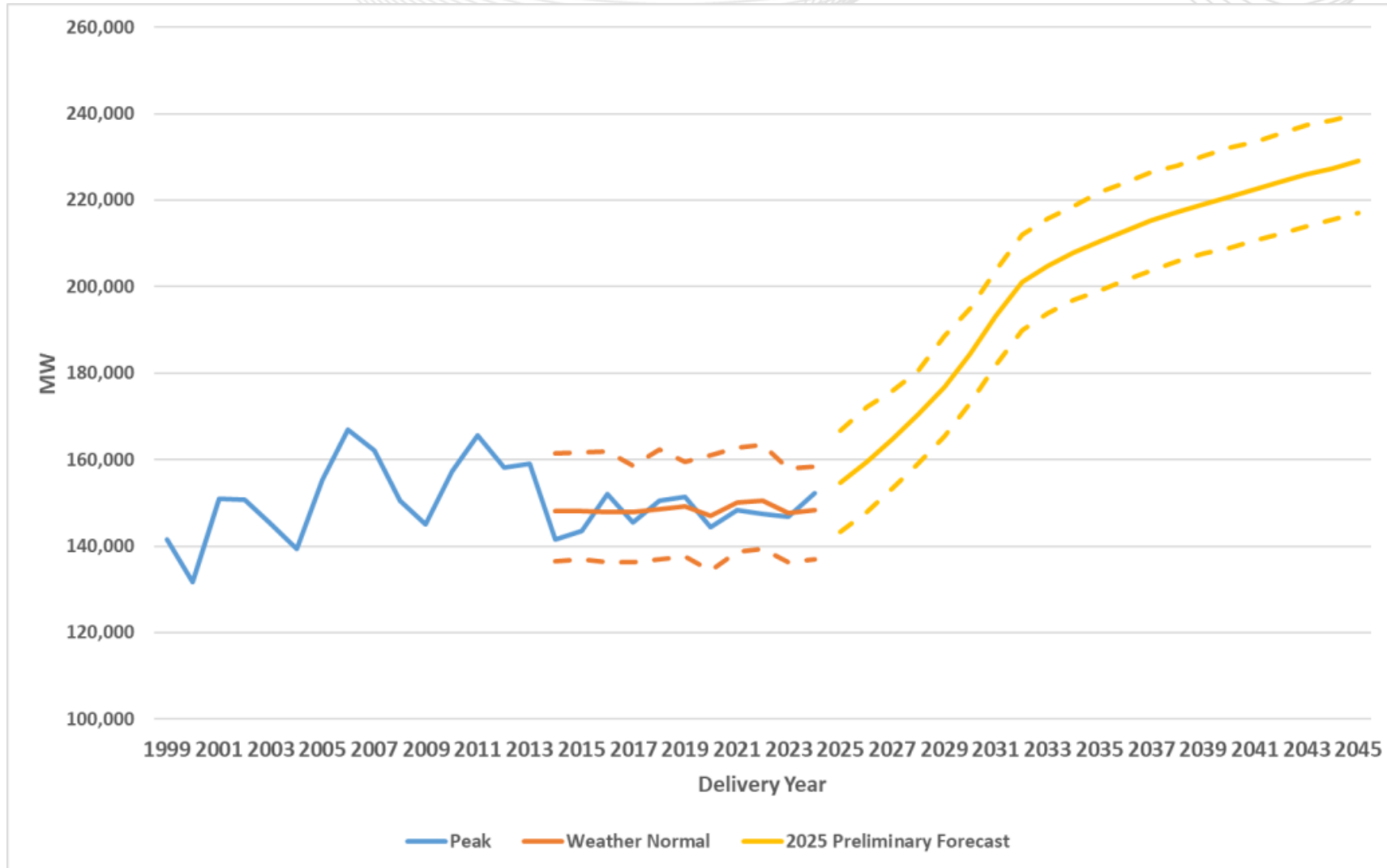


2026 Summer Peak Distribution Comparison

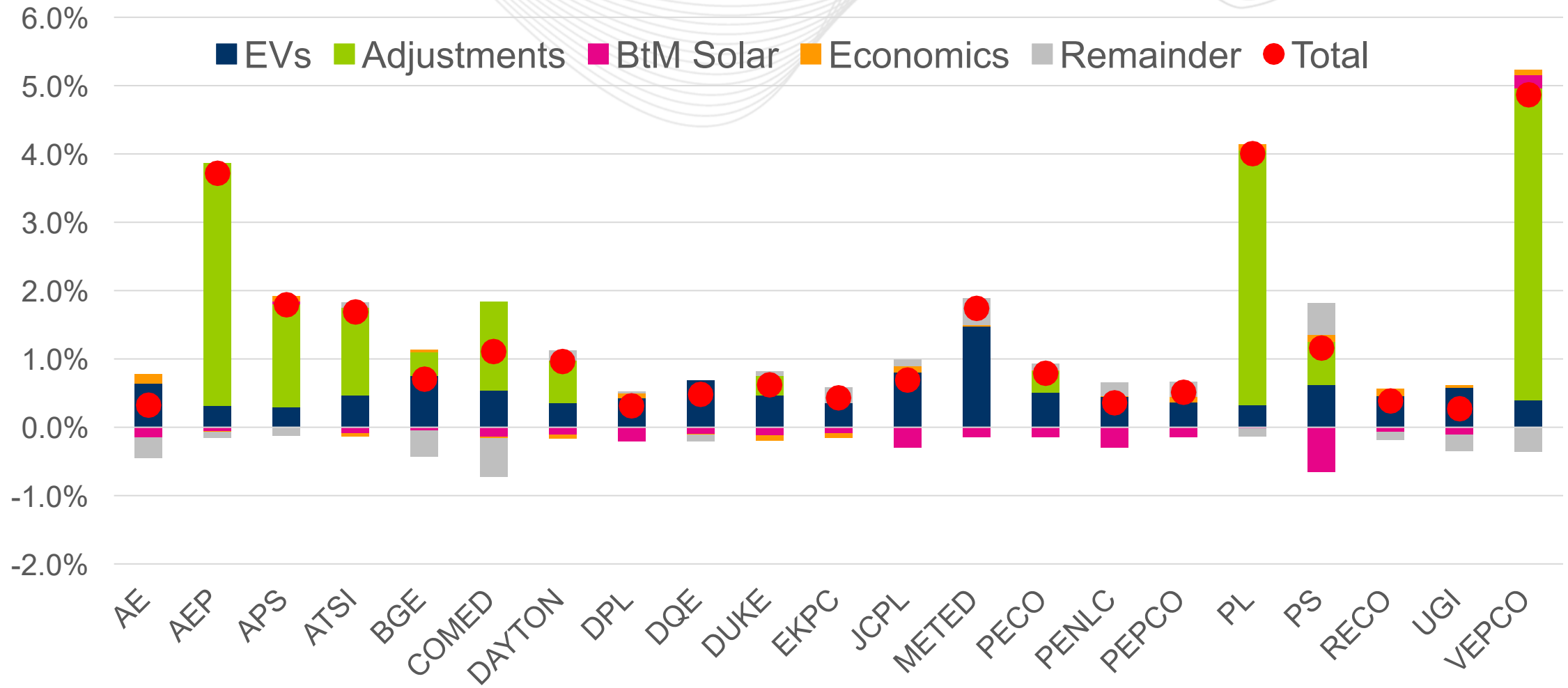
50/50 Forecast = 1.0



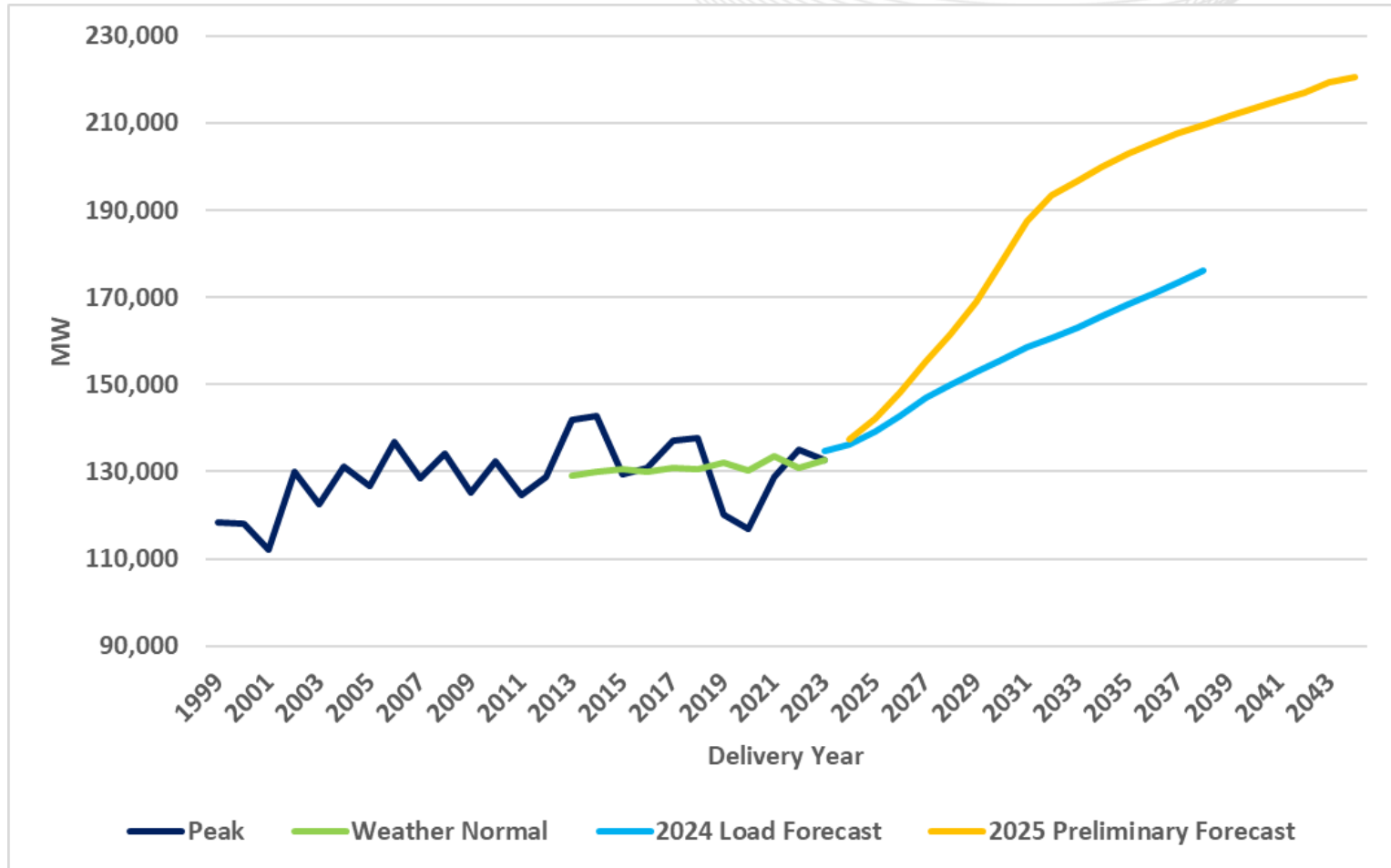
2025 Preliminary Summer Forecast w/ 10th and 90th Percentile Weather Bands



Summer Peak Average Annual Growth (2025-2040)

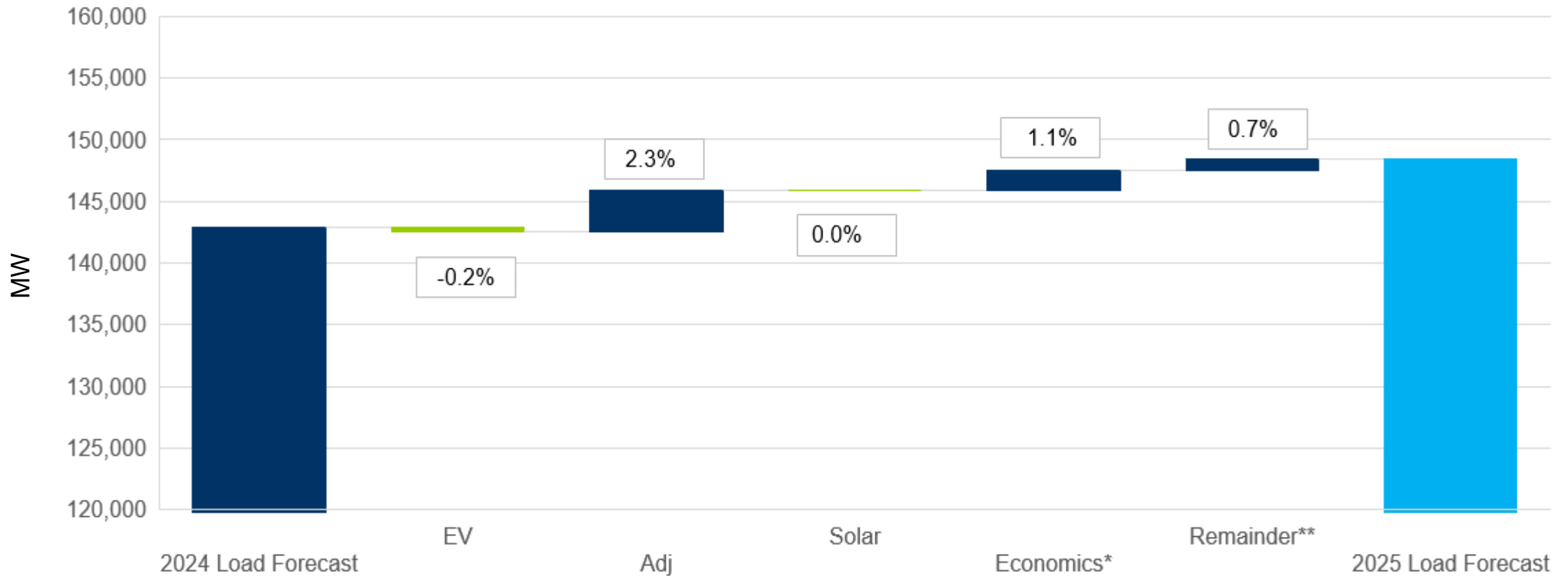


Winter Forecast Comparison 2024 vs 2025 Preliminary



- 15/20-year Annualized Growth Rate
 - 2024 Forecast : 1.8%
 - 2025 Prelim : 3.2%
- Select year comparisons (2025 Prelim vs 2024 Forecast)
 - 2026: +3.7% (~5,300MW)
 - 2028: +7.8% (~11,600MW)
 - 2030: +14.4% (~22,300MW)
 - 2038: +19.0% (~33,400MW)

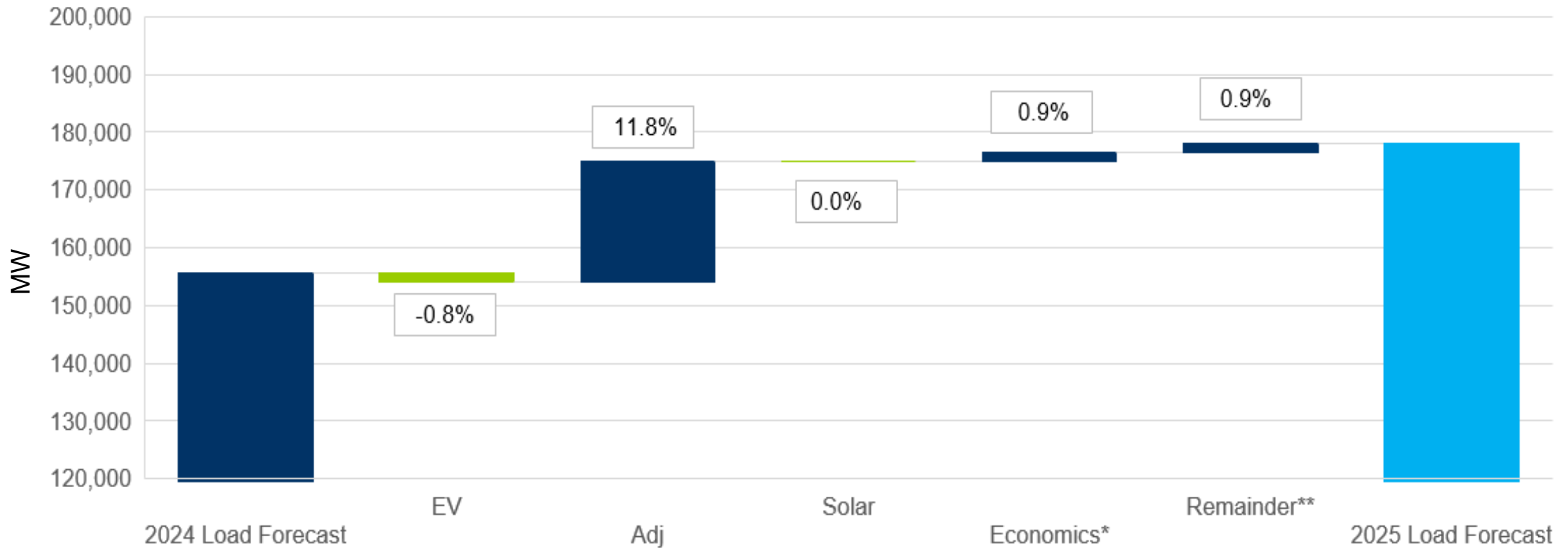
Winter 2026/2027 Forecast Waterfall Comparison



*Economics is impact of re-estimation as well as new economics

**Remainder is impact of re-estimation of R,C,I models and hourly models

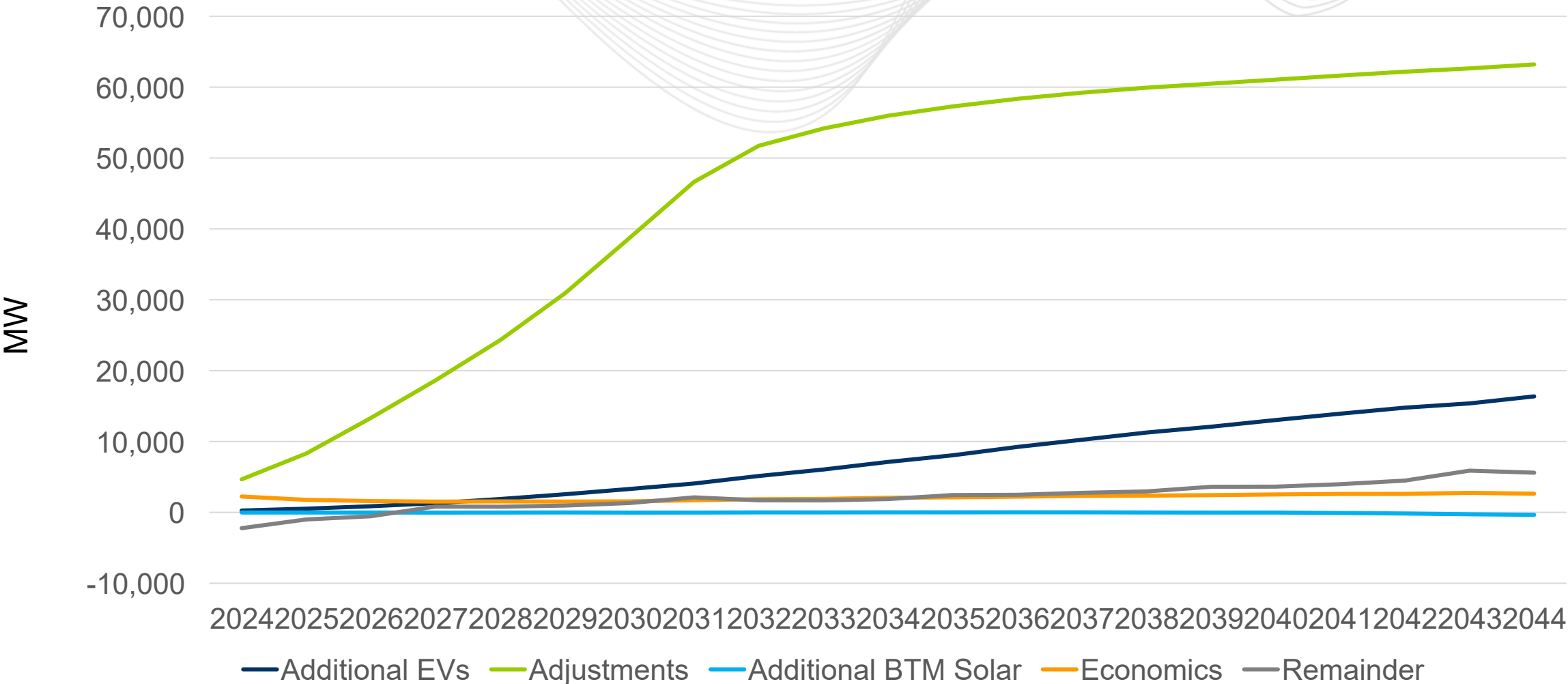
Winter 2030/2031 Forecast Waterfall Comparison

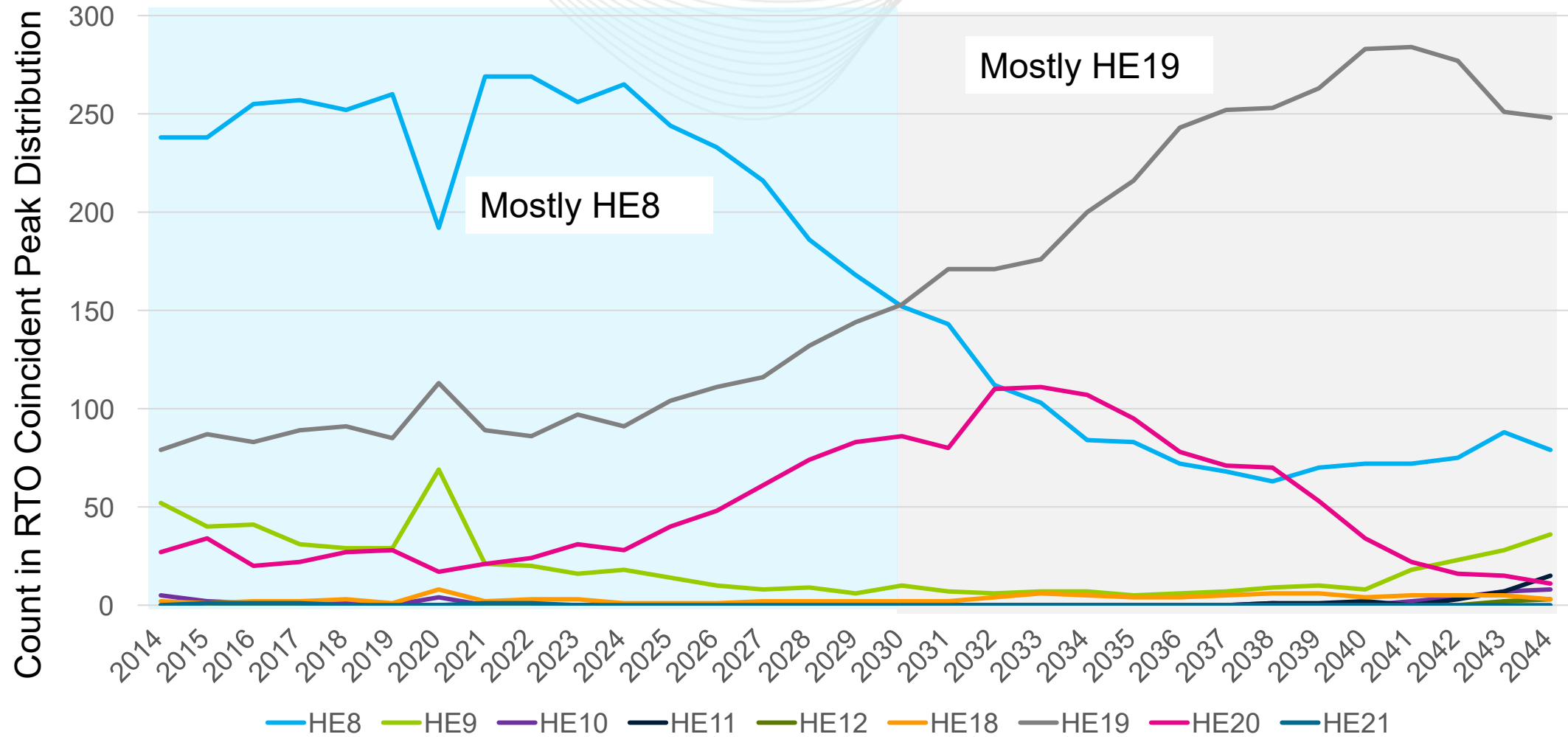


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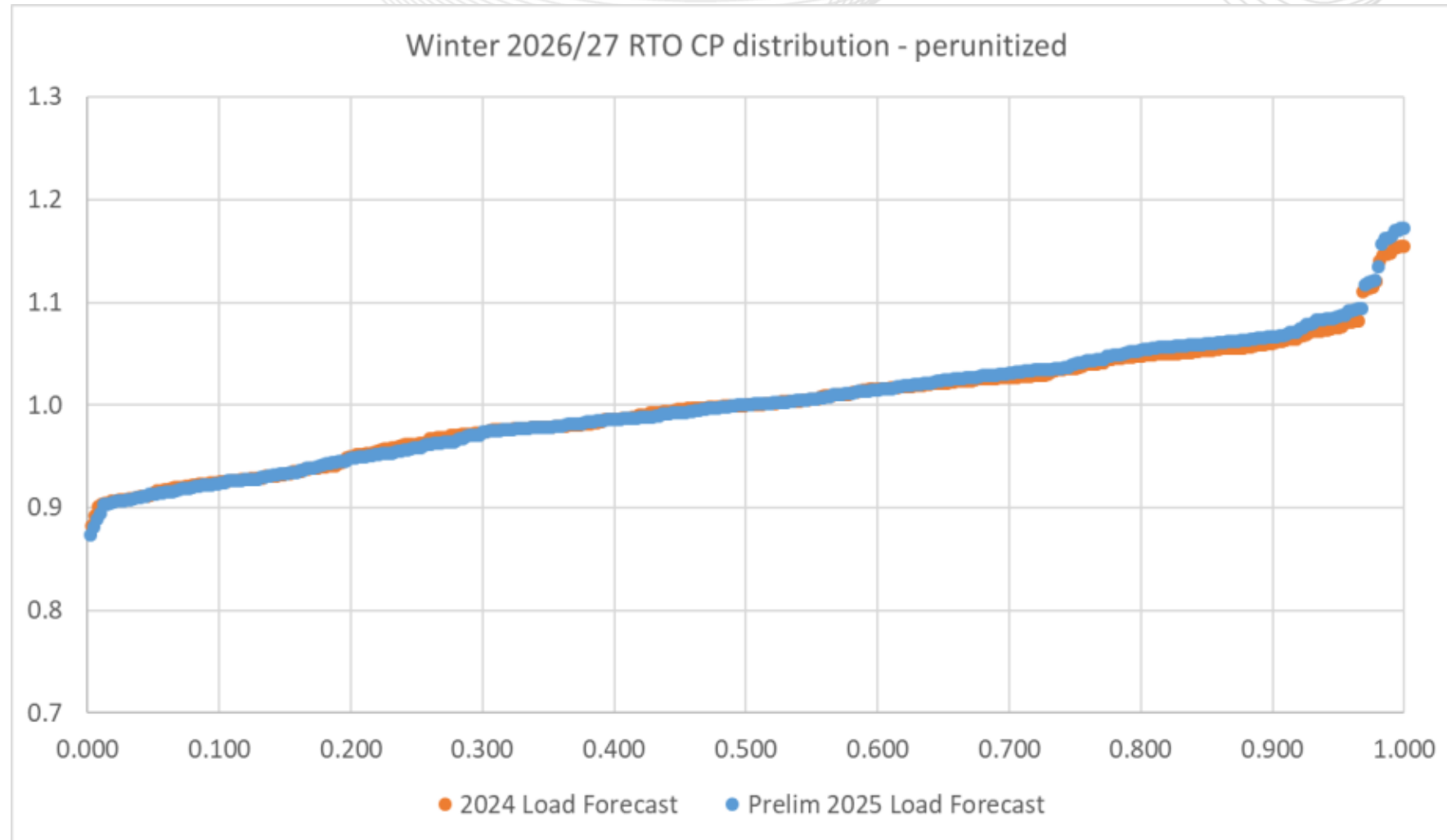
Winter Forecast Flow – Additions and Subtractions



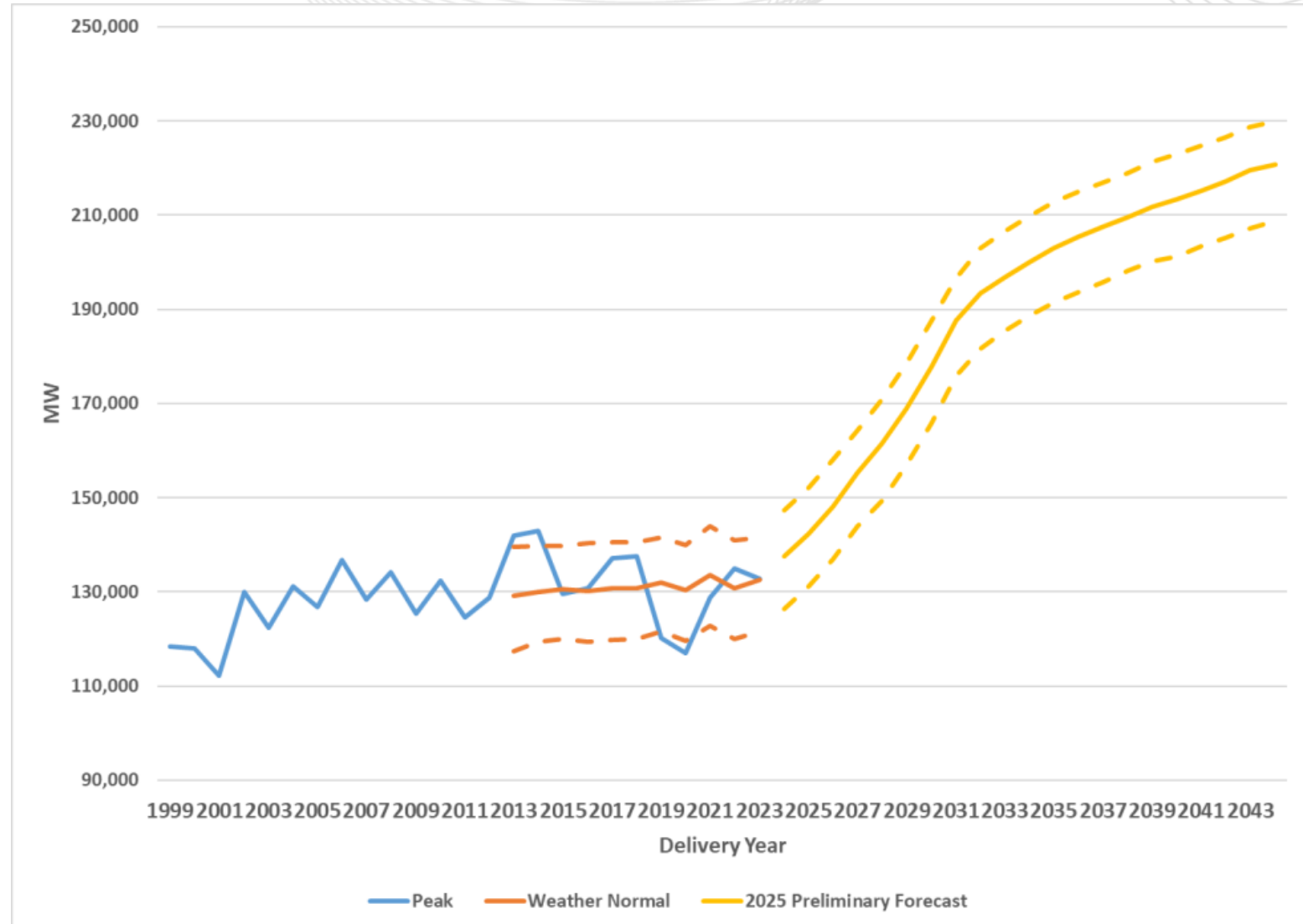


2026/27 Winter Peak Distribution Comparison

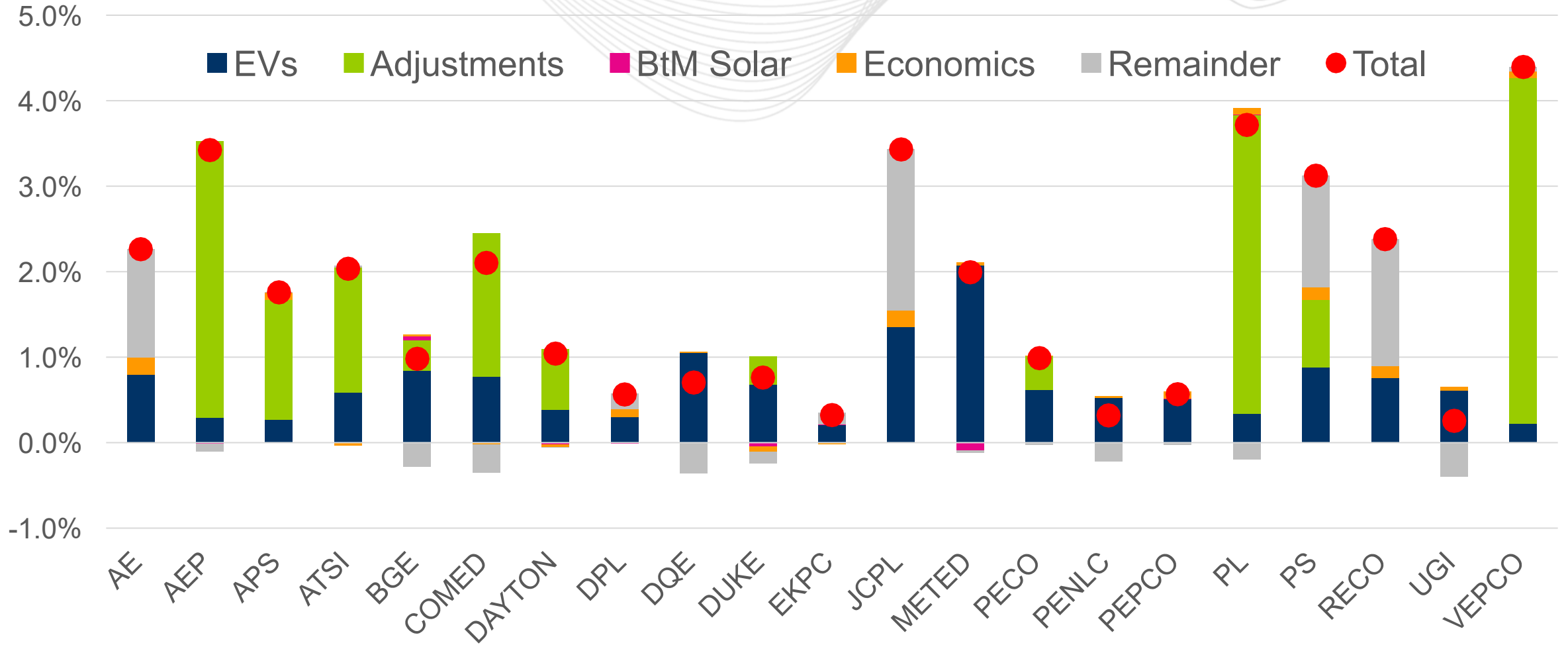
50/50 Forecast = 1.0



2024 Preliminary Winter Forecast w/ 10th and 90th Percentile Weather Bands



Winter Peak Average Annual Growth (2025-2040)



- Review with Planning Committee (1/7/2025)
- Internally review/finalize data
- Publish final report in mid January
 - Accompanying spreadsheets
 - Model Details Spreadsheets
 - End-Use Indices
 - Weather Variables
 - Statistical Appendix
 - Large Load Adjustments
 - Load Report Supplement

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2025 Preliminary Load Forecast



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**PROTECT THE
POWER GRID
THINK BEFORE
YOU CLICK!**



Be alert to
malicious
phishing emails.

Report suspicious email activity to PJM.
(610) 666-2244 / it_ops_ctr_shift@pjm.com

