System Operations Report

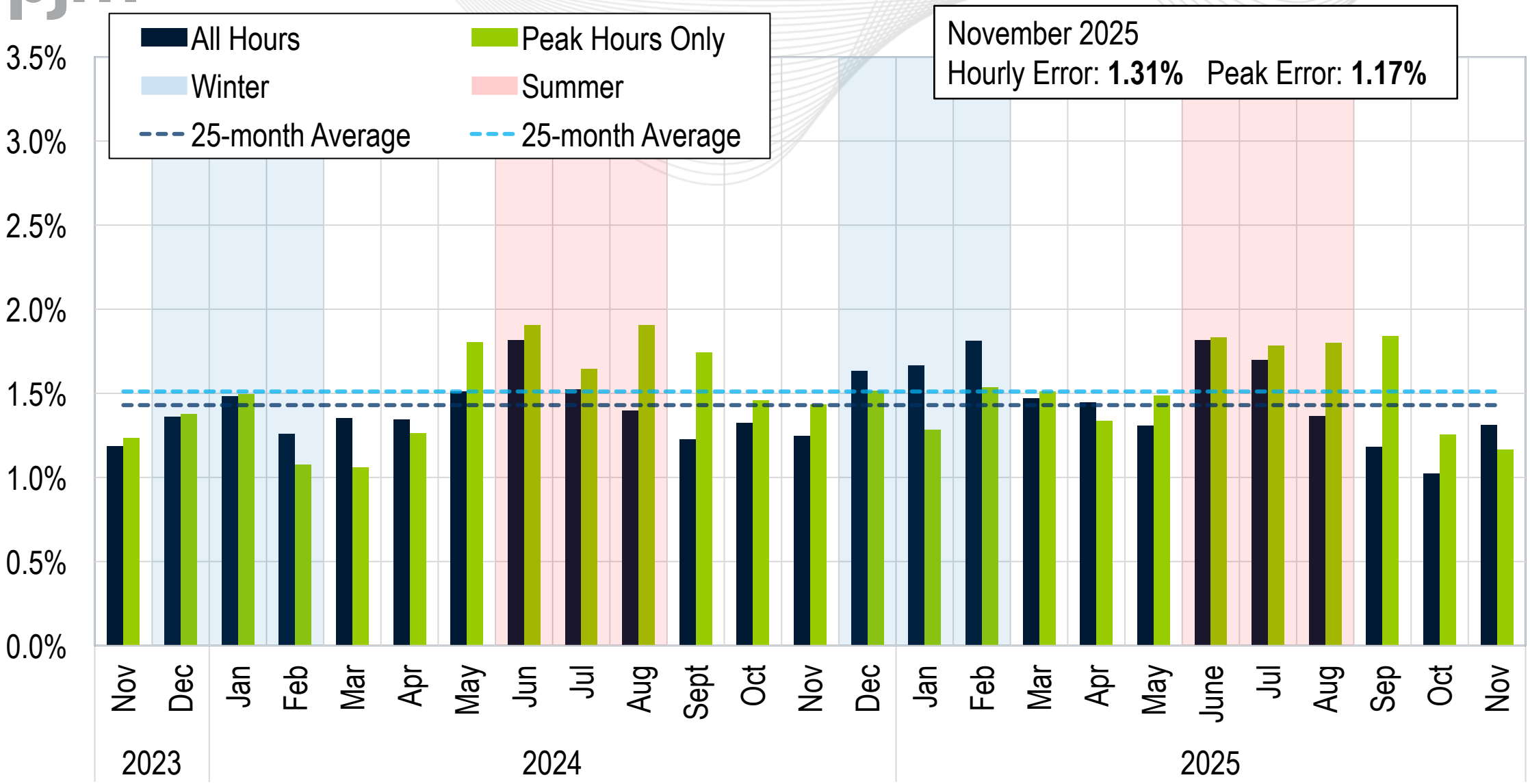
Marcus Smith, Lead Engineer – Markets Coordination

David Kimmel, Sr. Engineer II – Performance Compliance

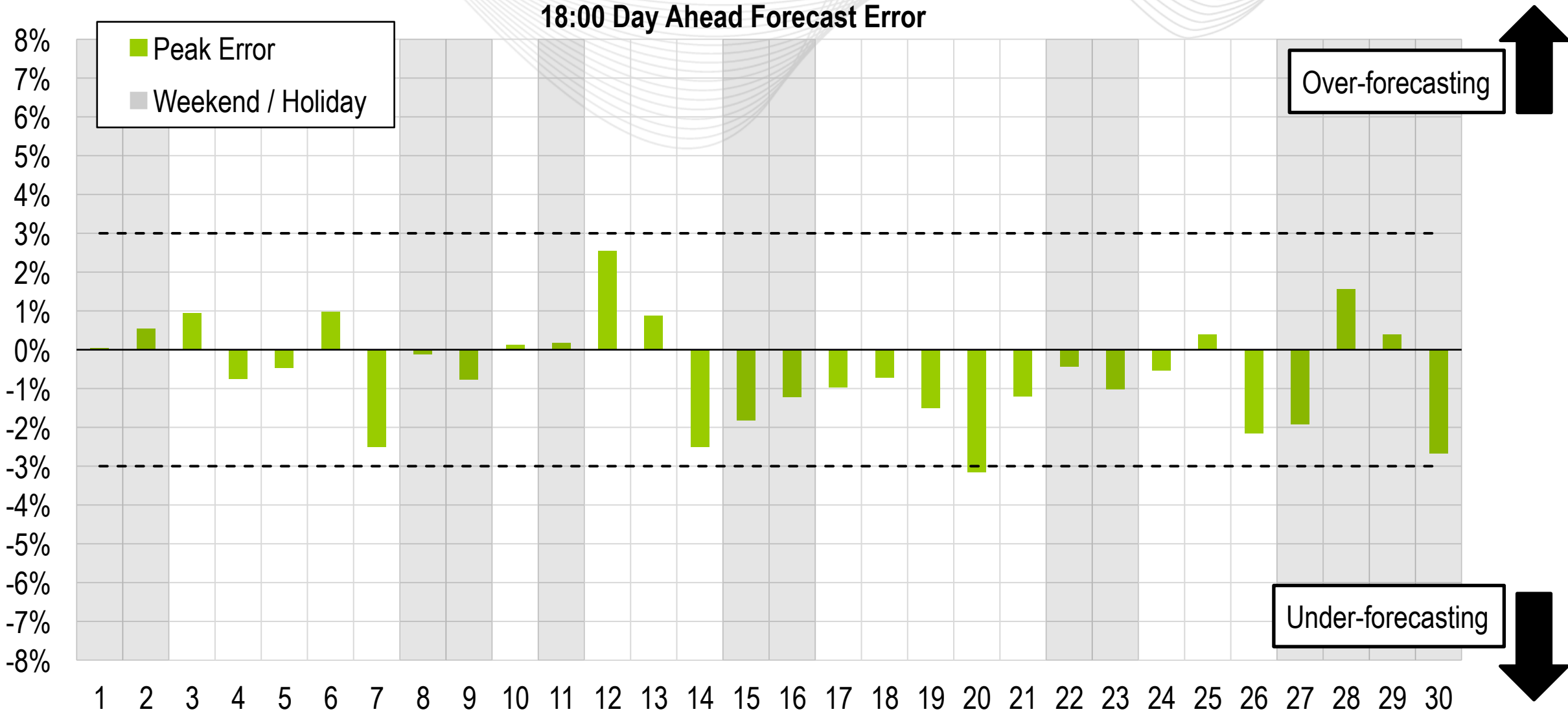
Operating Committee

December 4th, 2025

Average Load Forecast Error



Daily Peak Forecast Error (Nov.)

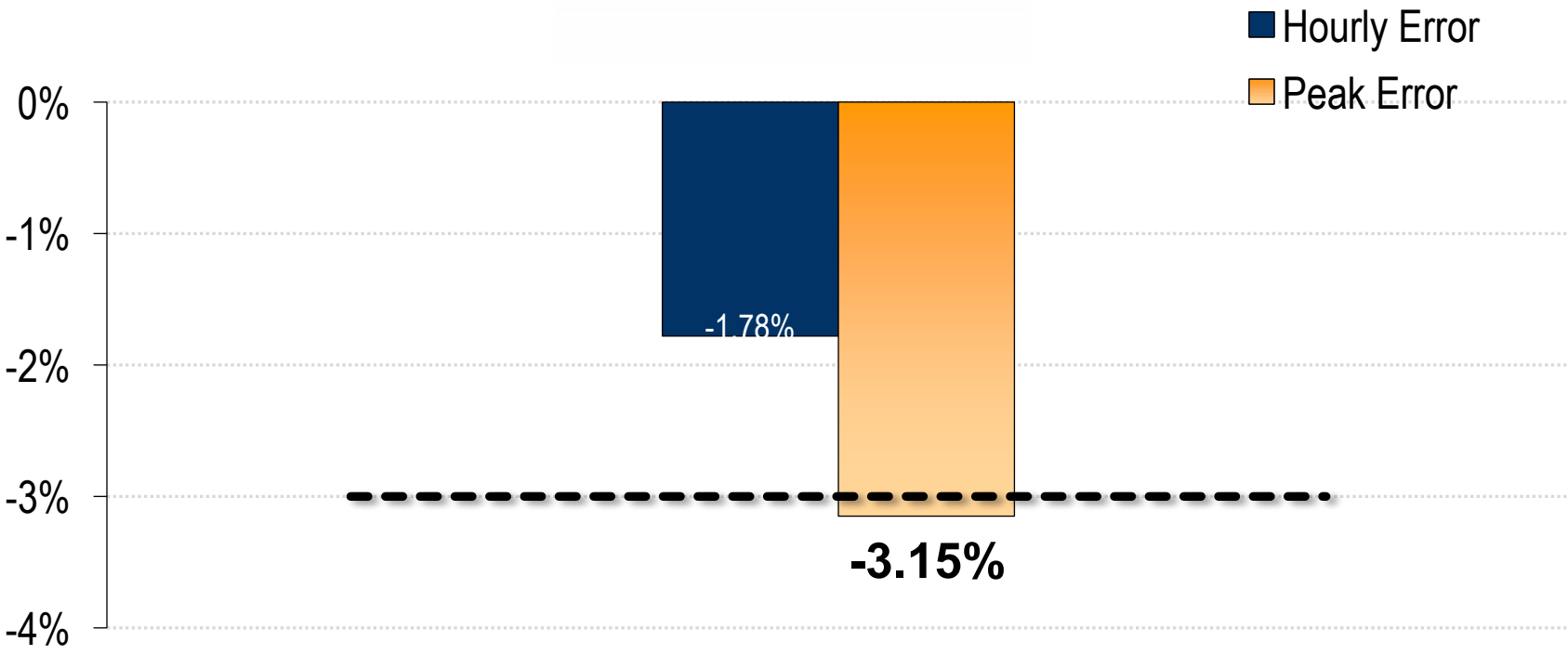


Days Exceeding 3% Forecast Error at Peak Hour

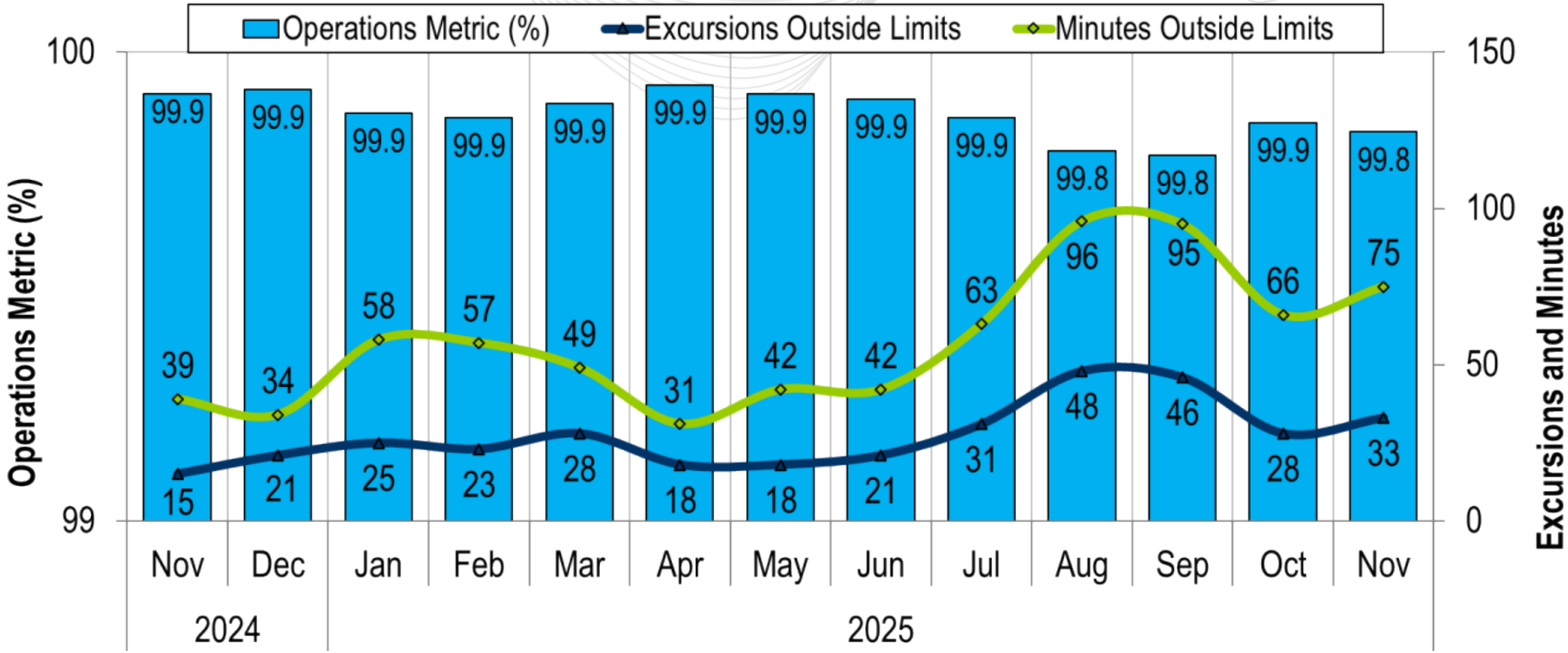
Under-forecasting

Nov. 20

Temperatures came in much cooler than forecasted across the footprint, leading to high loads.



Monthly BAAL Performance Score



PJM's BAAL performance has exceeded the goal of 99% for each month in 2024 and 2025.

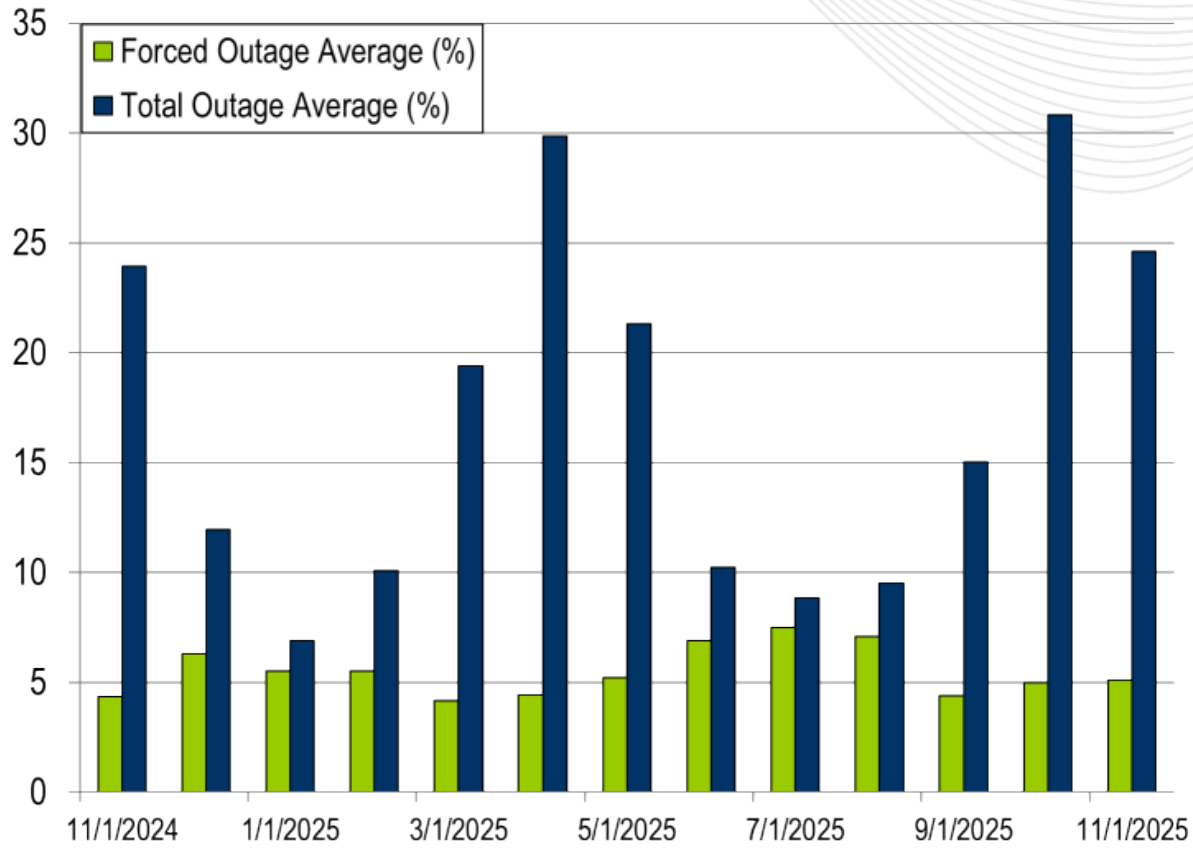
Operational Summary

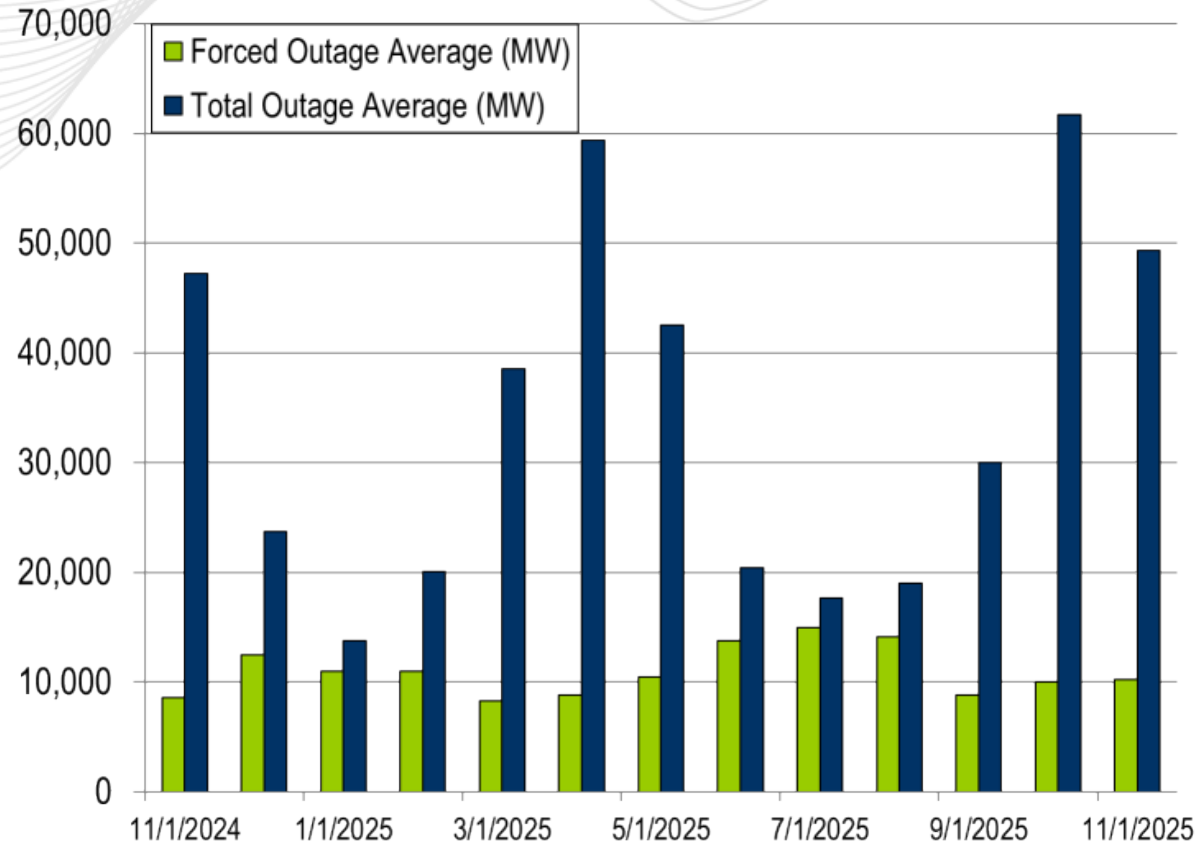
- The following Emergency Procedures occurred:
  - 3 Spin Events
  - 3 Shared Reserve Events
  - 2 Geomagnetic Disturbance Warnings
  - 14 Post Contingency Local Load Relief Warnings

Shortage Case Approvals

- 13 Shortage Cases Approved
- The approved Shortage Cases occurred on:
  - 11/16/2025:
    - 1 shortage case approved for the 17:45 interval
    - Factors: Operators approved these cases based on system conditions and need for MW. Software issue caused operators not to be informed these were shortage cases.
  - 11/17/2025:
    - 4 shortage cases approved for the 17:10, 17:15, 17:20, and 17:25 intervals
    - Factors: See 11/16/2025 Factors.
  - 11/18/2025:
    - 8 shortage cases approved for the 06:40, 06:45, 06:50, 06:55, 06:59, 07:10, 07:15, and 07:20 intervals
    - Factors: Binding on several constraints while solar was ramping up.

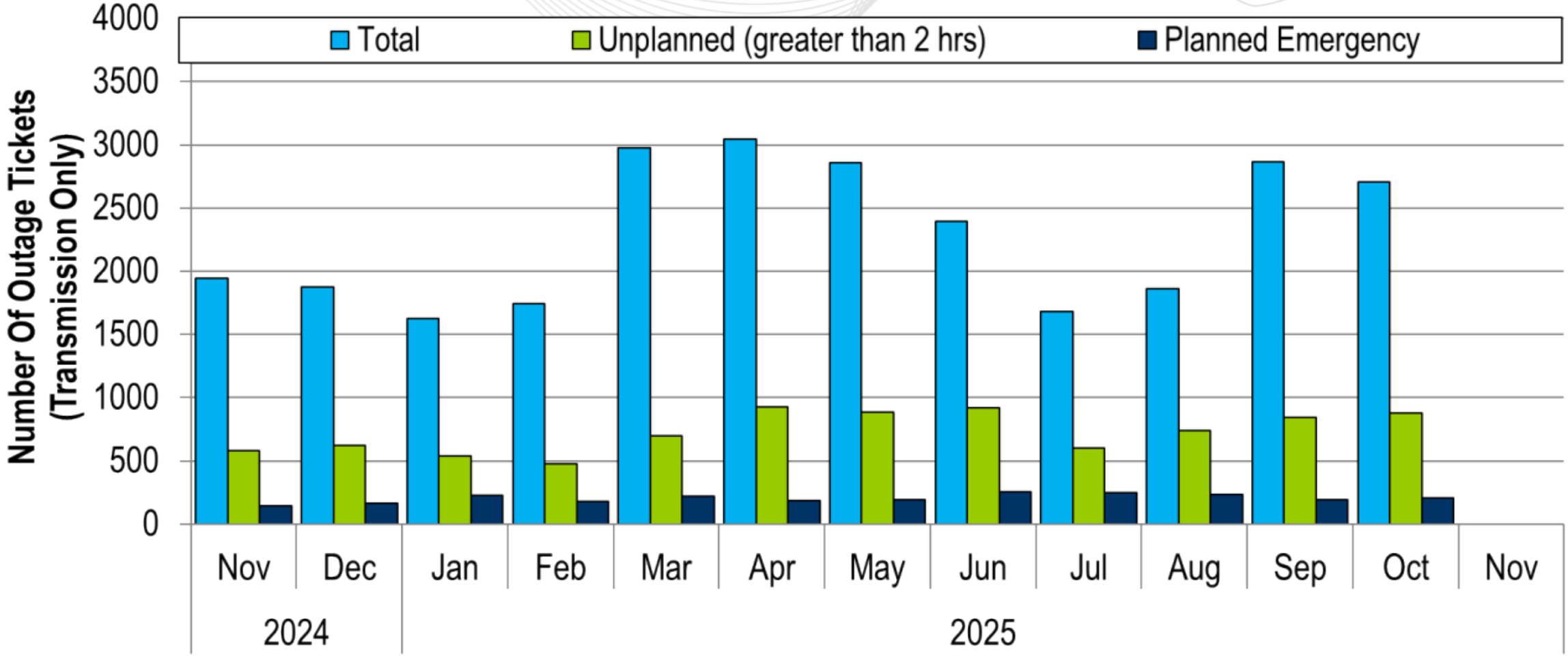
RTO Generation Outage Rate - Monthly





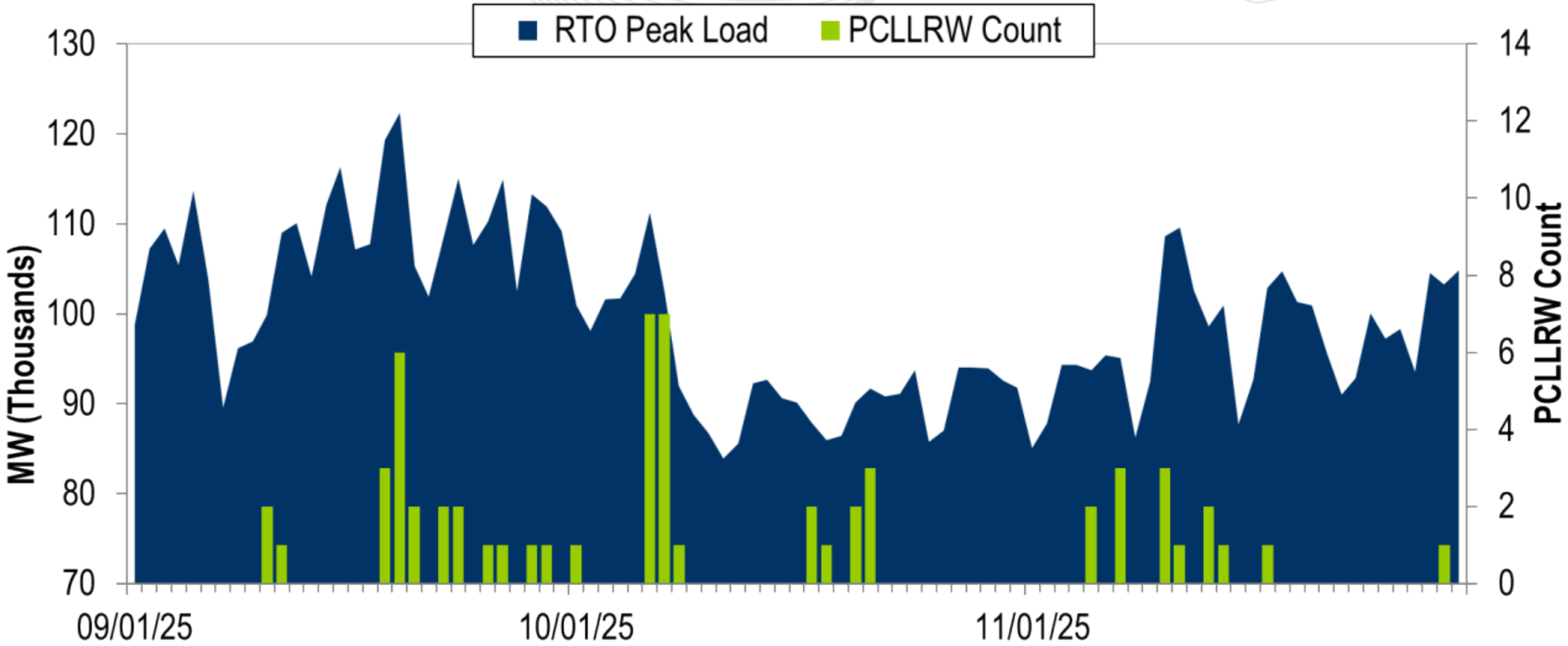
The 13-month average forced outage rate is 5.51% or 10,967 MW.
The 13-month average total outage rate is 17.13% or 34,127 MW.

2024-2025 Planned Emergency, Unplanned, and Total Outages by Ticket (Transmission Only)



Note: “Unplanned Outages" include tripped facilities. One tripping event may involve multiple facilities.

PCLLRW Count Vs. Peak Load – Daily Values For 3 Months



Spin Response

Event	1			2			3		
Date	11/02/25			11/06/25			11/11/25		
Start Time	14:46:00			22:40:00			10:04:49		
End Time	14:52:00			22:44:00			10:15:06		
Duration	00:06:00			00:04:00			00:10:17		
Region	RTO			RTO			RTO		
Resource Type	Gen	DR	Total	Gen	DR	Total	Gen	DR	Total
Assigned (MW)	2004	593	2597	1822	730	2553	2051	673	2724
Estimated Expected Response of Assigned Resources (MW)	1202	356	1558	729	292	1021	2051	673	2724
Actual Response of Assigned Resources (MW)	1150	542	1692	612	509	1121	1644	610	2254
Output Increase of Resources without Assignment (MW)	1800	0	1800	1369	0	1369	2197	0	2197
Percent Response To Assignment (%)	57%	91%	65%	34%	70%	44%	80%	91%	83%
Percent Response To Estimated Expected Response (%)	96%	152%	109%	84%	174%	110%	80%	91%	83%
Penalty (MW)	0	0	0	0	0	0	407	63	469

Event Counted Toward Qualifying Events	Qualifying Reason	Individual Percent Response To Assignment (%)	Average Percent Response To Assignment (%)
11/11/25 10:04:49	Event > 10 Minutes, Response > 75%	83.0%	83.0%

Contact

Load Forecast Report

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Appendix

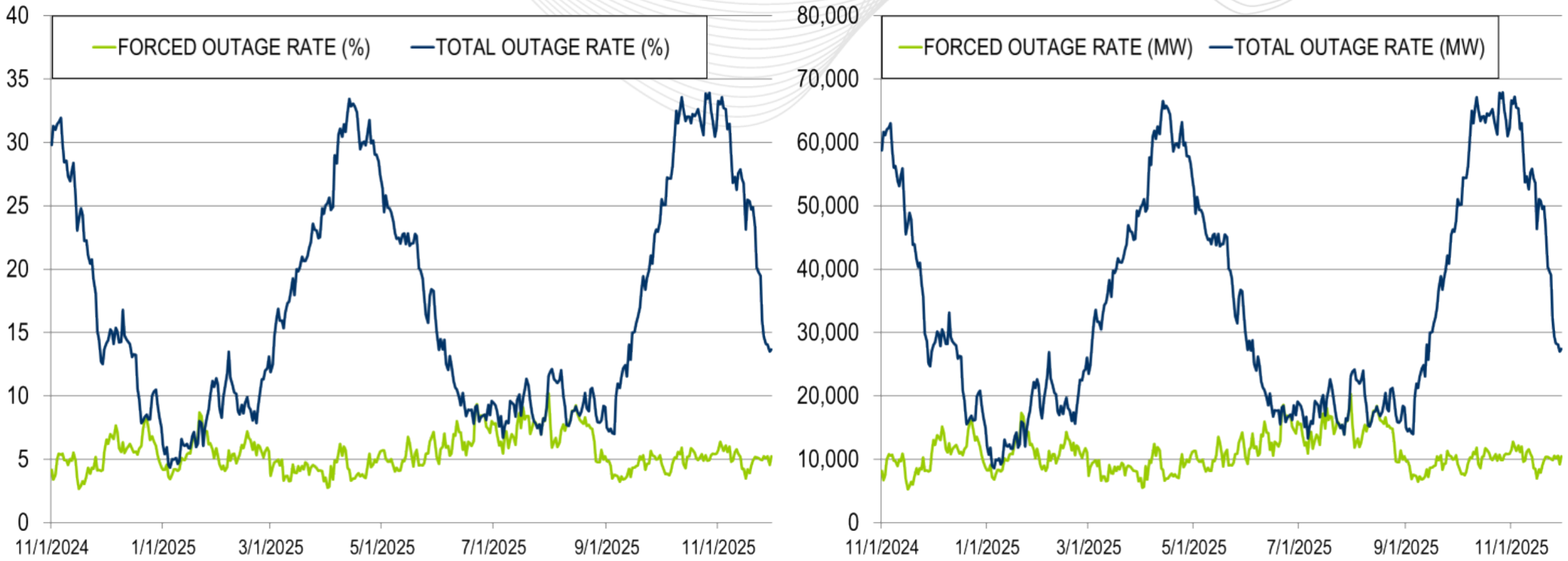
Balancing Authority ACE Limit - Performance Measure

Goal Measurement: Balancing Authority ACE Limit (BAAL)

- The purpose of the new BAAL standard is to maintain interconnection frequency within a predefined frequency profile under all conditions (normal and abnormal), to prevent frequency-related instability, unplanned tripping of load or generation, or uncontrolled separation or cascading outages that adversely impact the reliability of the interconnection. NERC requires each balancing authority demonstrate real-time monitoring of ACE and interconnection frequency against associated limits and shall balance its resources and demands in real time so that its Reporting ACE does not exceed the BAAL ($BAAL_{LOW}$ or $BAAL_{HIGH}$) for a continuous time period greater than 30 minutes for each event.

- PJM directly measures the total number of BAAL excursions in minutes compared to the total number of minutes within a month. PJM has set a target value for this performance goal at 99% on a daily and monthly basis. In addition, current NERC rules limit the recovery period to no more than 30 minutes for a single event.

RTO Generation Outage Rate - Daily



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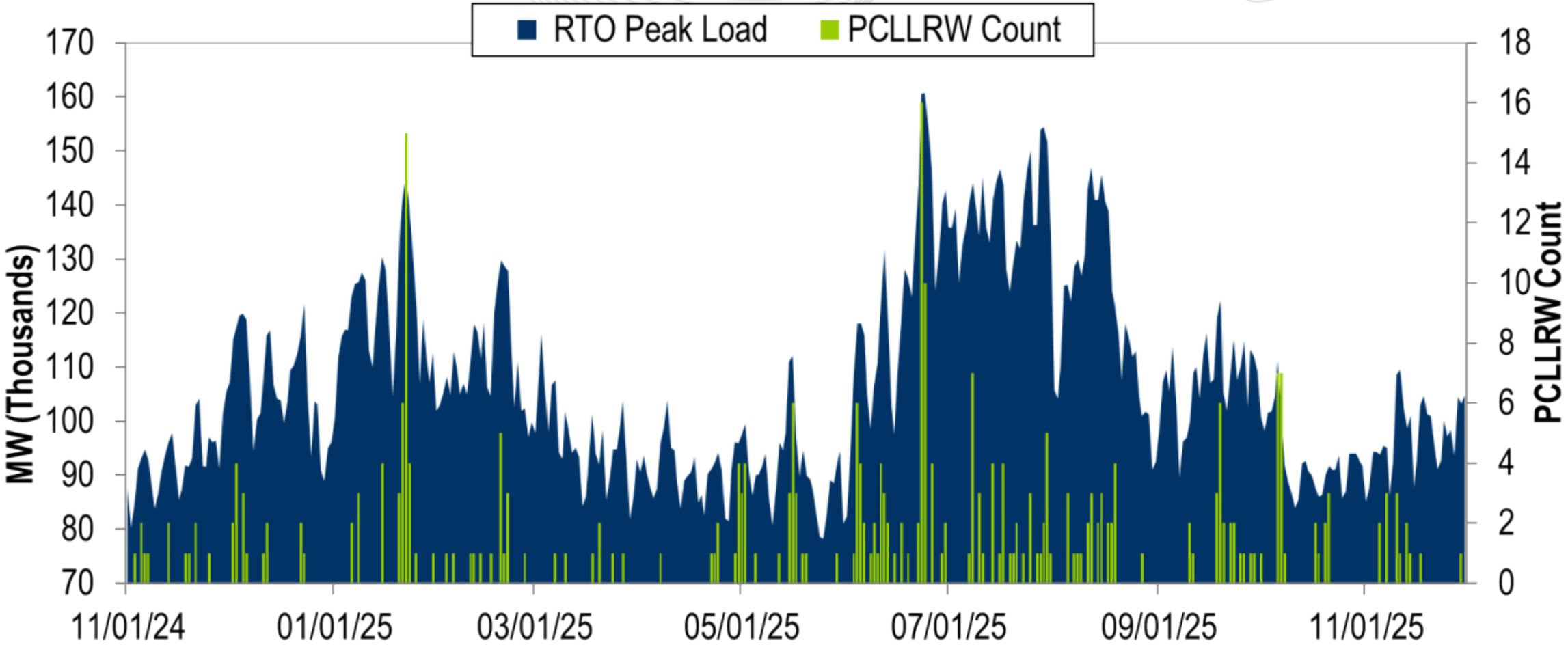
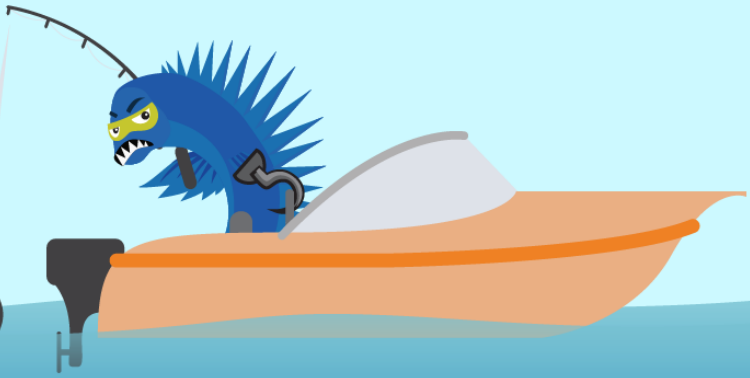
PCLLRW Count Vs. Peak Load – Daily Values For 13 Months



PROTECT THE POWER GRID

THINK BEFORE YOU CLICK!

pjm



BE ALERT TO MALICIOUS PHISHING EMAILS

Report suspicious email activity to PJM.

Call (610) 666-2244 or email it_ops_ctr_shift@pjm.com