

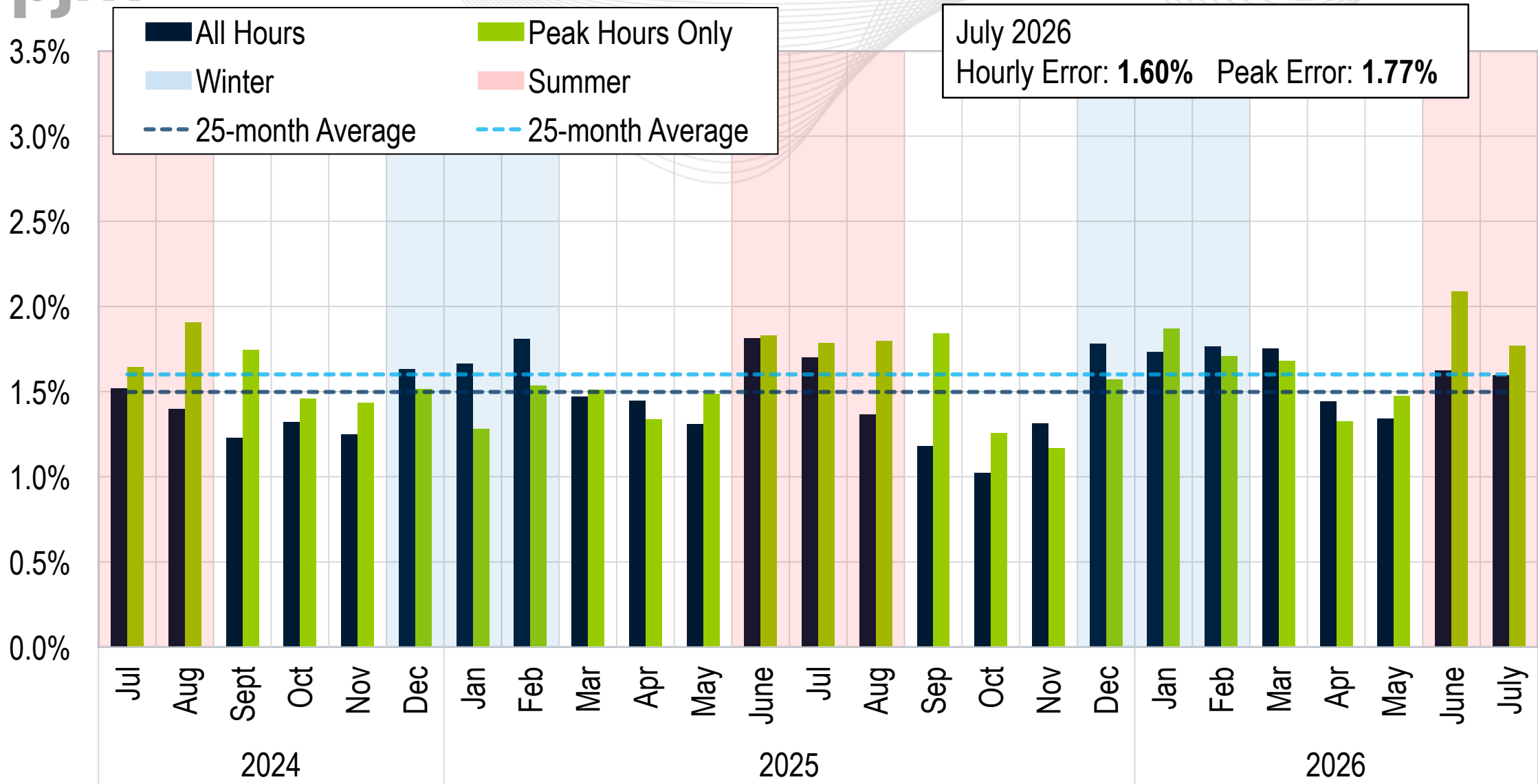
System Operations Report

Tim Smoker, Sr. Engineer II –
Operations Uncertainty & Risk
David Kimmel, Sr. Engineer II –
Performance Compliance
Member Committee Webinar
August 24, 2026

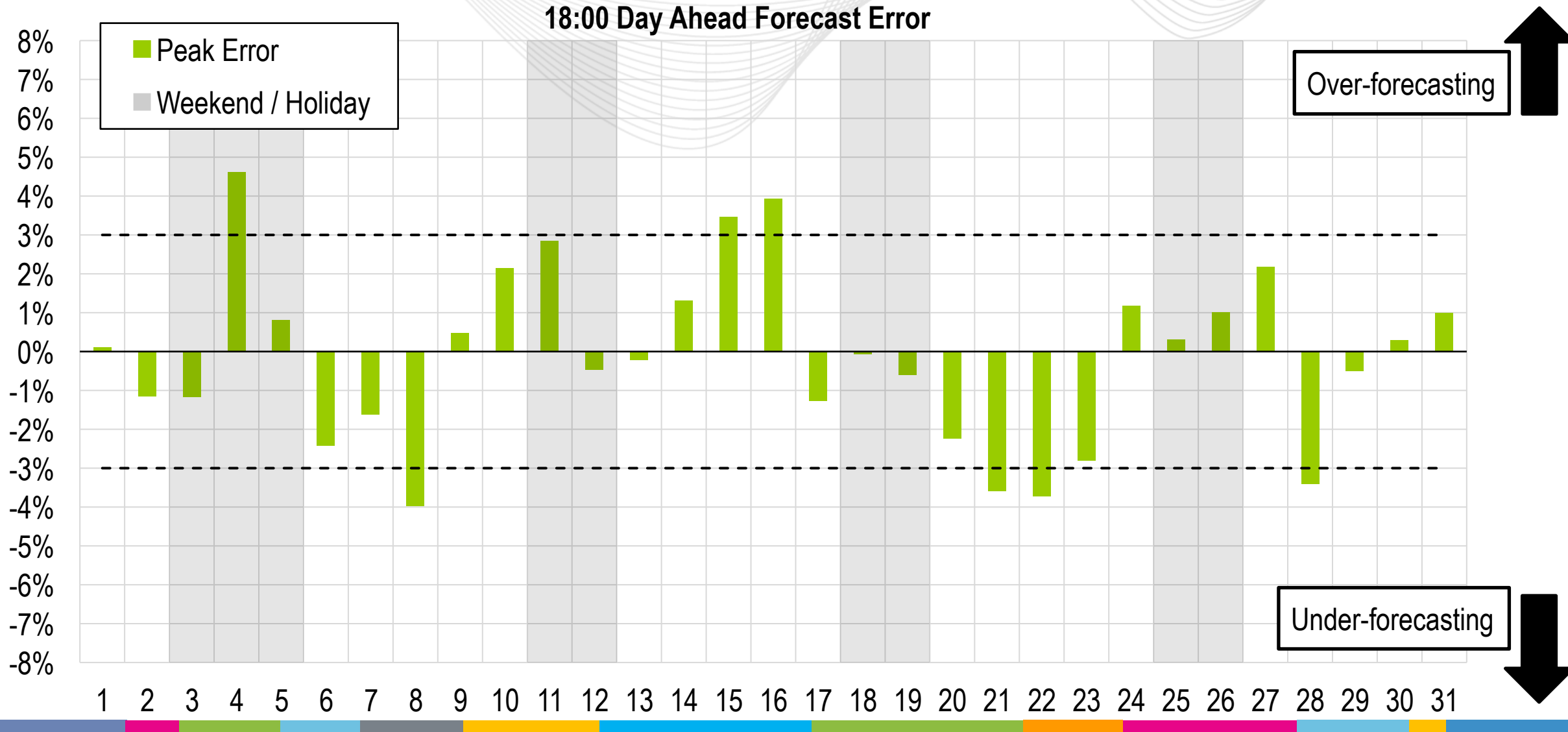
Disclaimer: While materials are current at the time of publishing, applicable requirements may change. PJM Governing Documents control.



Average Load Forecast Error



Daily Peak Forecast Error (July)



Days Exceeding 3% Forecast Error at Peak Hour

Over-forecasting

July 4

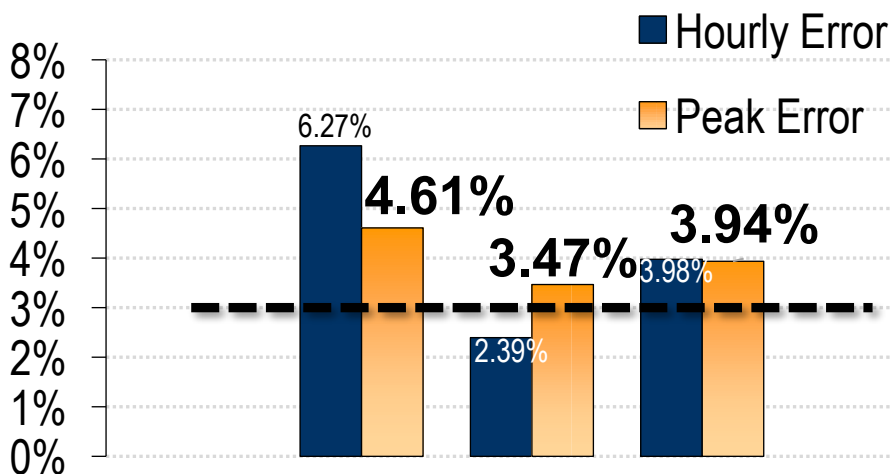
Weather was significantly cooler and rainier than forecast in the West, leading to decreased load.

July 15

Cooler temperatures accompanied by smoky weather conditions led to decreased load.

July 16

Cooler temperatures accompanied by smoky weather conditions led to decreased load.



Under-forecasting

July 8

Temperatures were hotter than forecast across the footprint, leading to increased load.

July 21

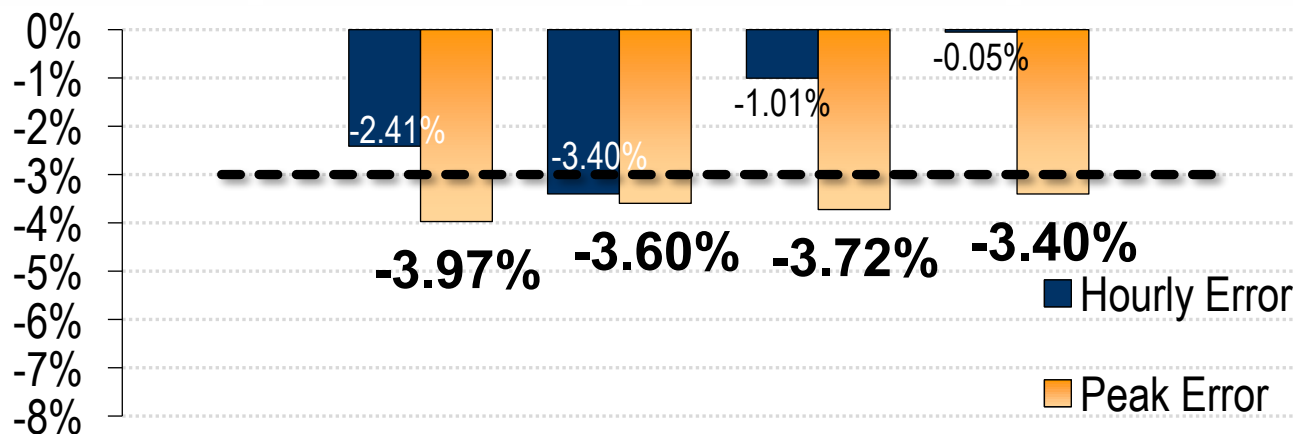
Warmer-than-forecast temperatures resulted in elevated load, and thunderstorms caused the load peak to occur earlier than forecast.

July 22

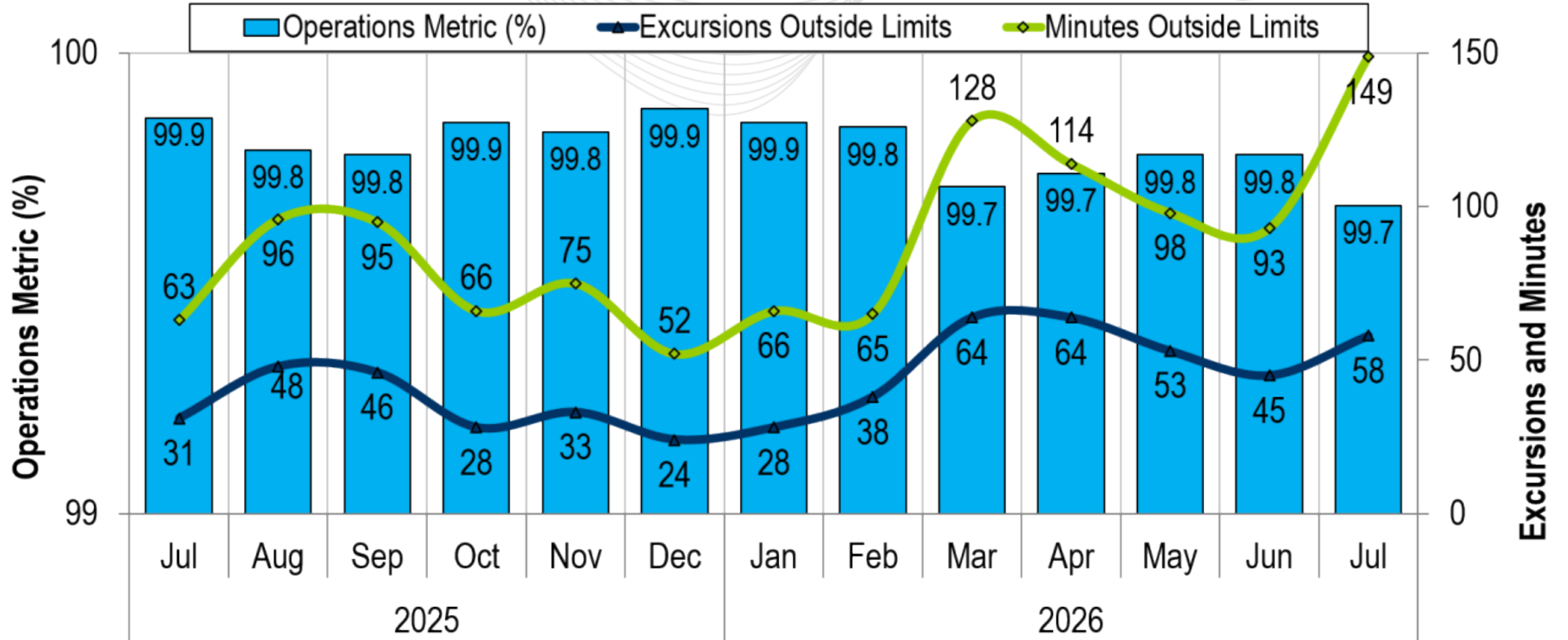
Temperatures were hotter than forecast across the footprint, leading to increased load.

July 28

Temperatures were hotter than forecast in the East, leading to increased load.



Monthly BAAL Performance Score



PJM's BAAL performance has exceeded the goal of 99% for each month in 2025 and 2026.

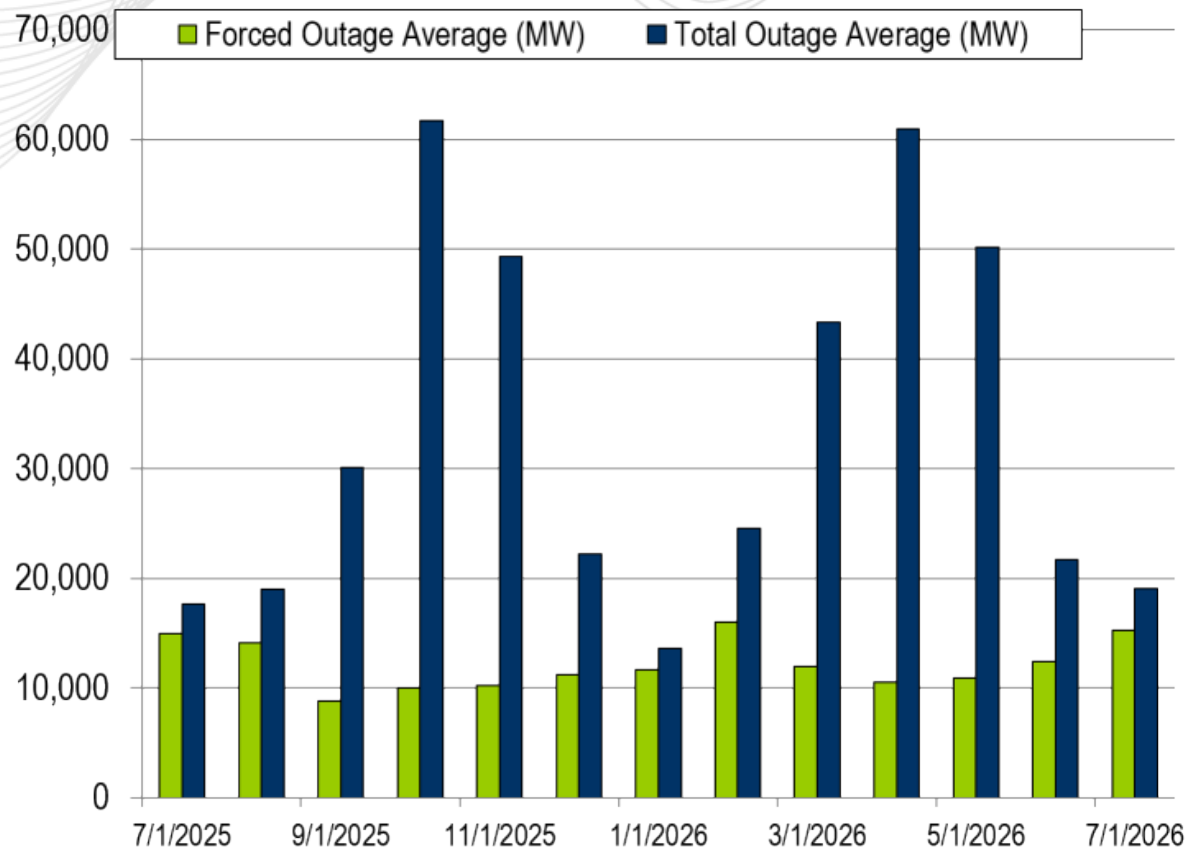
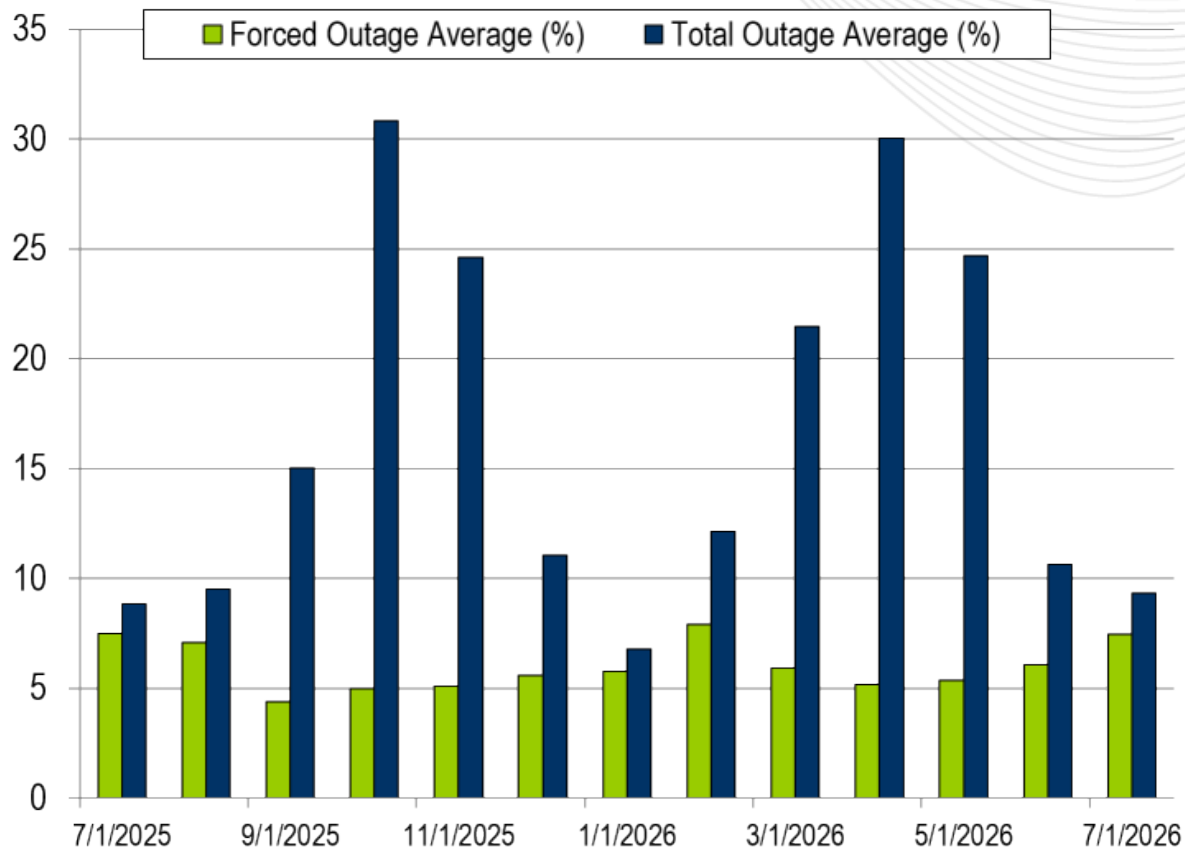
- The following Emergency Procedures occurred:
 - 3 Spin Events
 - 6 Shared Reserve Events
 - 6 Maximum Generation Emergency/Load Management Alerts
 - 2 Emergency Load Management Reduction Actions
 - 6 Pre-Emergency Load Management Reduction Actions
 - 2 Maximum Generation Emergency Action
 - 4 Hot Weather Alerts
 - 2 Geomagnetic Disturbance Warnings
 - 104 Post Contingency Local Load Relief Warnings

- The following Emergency Procedures occurred:
 - 6 Low Voltage Alerts
 - 5 Heavy Load Voltage Schedule Warnings
 - 2 Heavy Load Voltage Schedule Actions
 - 1 Deploy All Resources Action
 - 2 Emergency Use of Back-Up Generator Warnings
 - 5 NERC EEA Level 1
 - 2 NERC EEA Level 2

- 37 Shortage Cases Approved
- The approved Shortage Cases occurred on:
 - 07/01/2026:
 - 13 shortage cases approved for the 19:59, 20:05 – 20:55, and 21:05 intervals
 - Factors: Large number of constraints and solar began dropping out faster than anticipated
 - 07/02/2026:
 - 4 shortage case approved for the 11:45 – 11:55 intervals
 - Factors: Unit trips prompted shortage until dispatch was able to recover.
 - 07/05/2026:
 - 5 shortage cases approved for the 17:40 – 17:55 intervals
 - Factors: Primary reserve shortage, tight for resources and ramp. Also lost around 2400 MW of solar in 25 minutes.

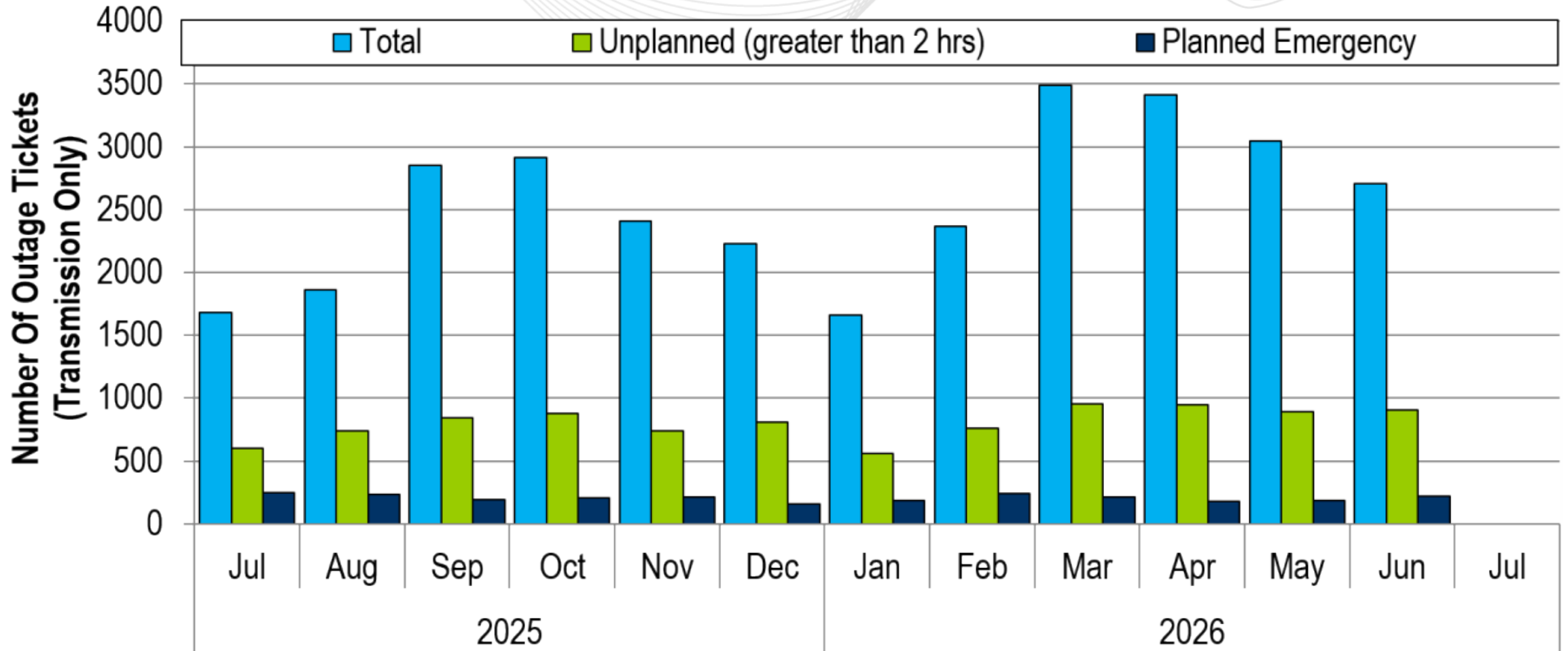
- 37 Shortage Cases Approved
- The approved Shortage Cases occurred on:
 - 07/08/2026:
 - 5 shortage cases approved for the 18:45 – 19:05 intervals
 - Factors: Lost about 1000+ MW of solar earlier than forecasted and had 1000 MW ramp out at 19:00
 - 07/15/2026:
 - 10 shortage case approved for the 19:45 – 20:30 intervals
 - Factors: Shortage cases approved alongside 500 MWs of non-firm exports due to lack of generation, then 900 MW of ramp out at 20:00

RTO Generation Outage Rate - Monthly



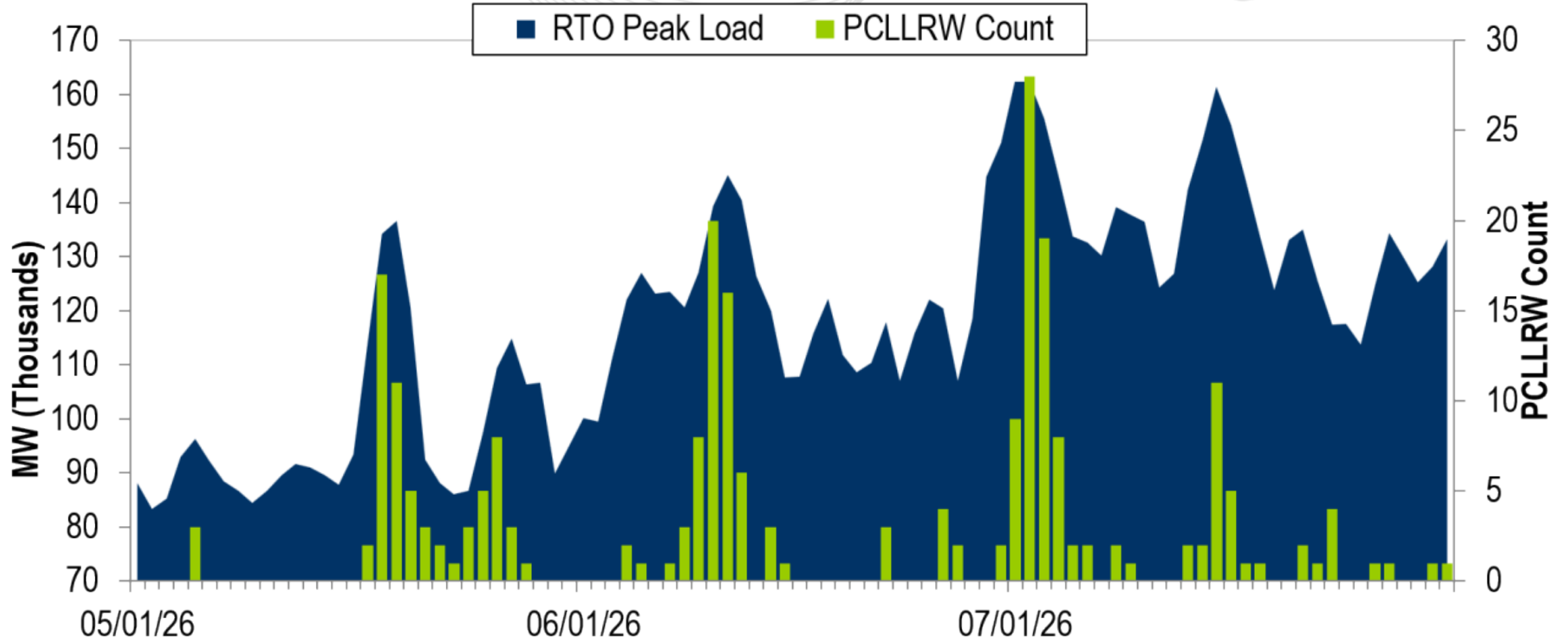
The 13-month average forced outage rate is 6.03% or 12,144 MW.
The 13-month average total outage rate is 16.55% or 33,347 MW.

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



Event	1			2			3		
Date	07/21/26			07/22/26			07/28/26		
Start Time	17:32:15			10:12:25			14:25:40		
End Time	17:40:14			10:19:13			14:29:42		
Duration	00:07:59			00:06:48			00:04:02		
Region	RTO			RTO			RTO		
Resource Type	Gen	DR	Total	Gen	DR	Total	Gen	DR	Total
Assignment (MW)	2098	397	2494	2924	204	3128	1949	416	2364
Estimated Expected Response (MW)	1675	317	1991	1988	139	2127	786	168	954
Response From Units With Assignment (MW)	1553	276	1829	2035	118	2153	729	331	1060
Percent Response To Assignment (%)	74%	70%	73%	70%	58%	69%	37%	80%	45%
Percent Response To Estimated Expected Response (%)	93%	87%	92%	102%	85%	101%	93%	198%	111%
Penalty (MW)	0	0	0	0	0	0	0	0	0

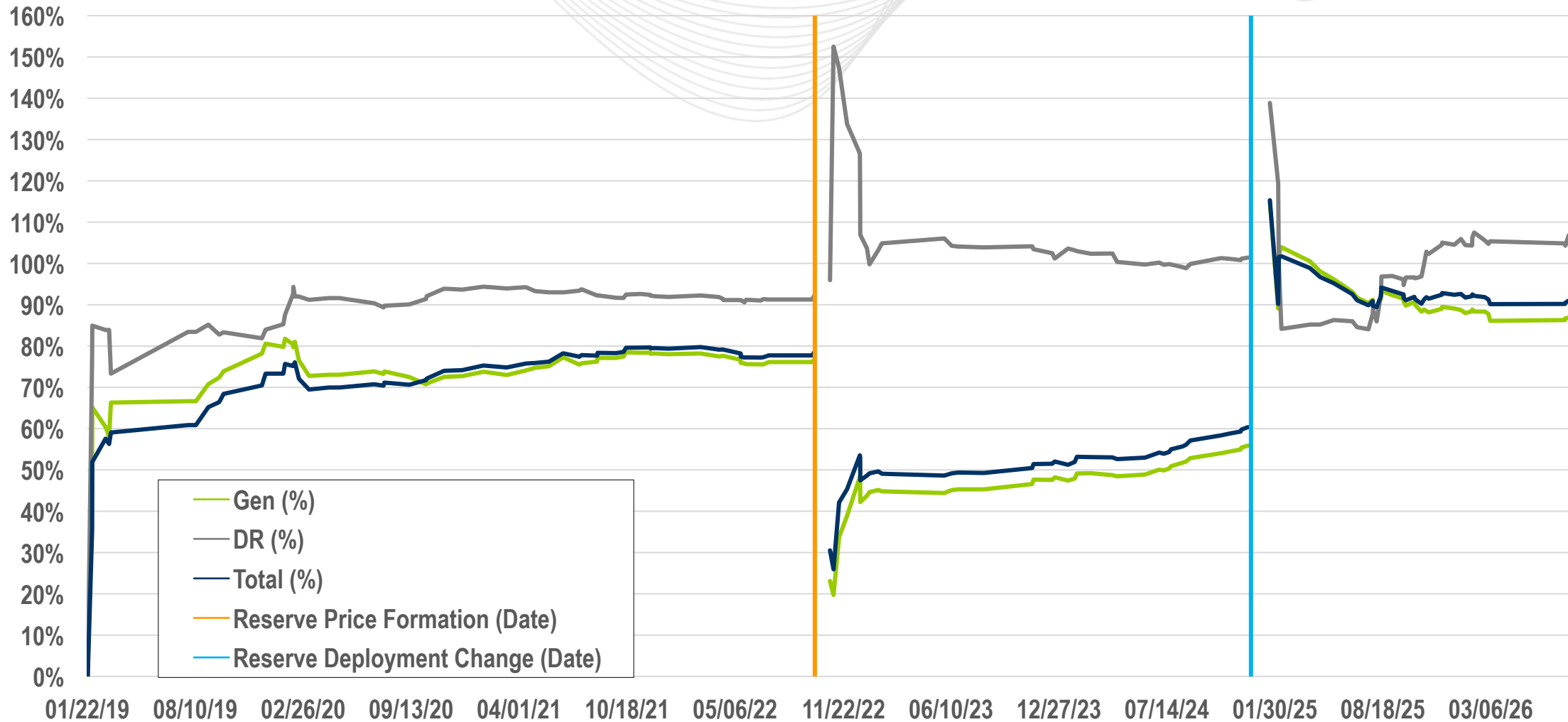
Event Counted Toward Qualifying Events	Qualifying Reason	Individual Percent Response To Assignment (%)	Average Percent Response To Assignment (%)
03/01/26 19:29:03	≥10 Minutes	71.0%	71.0%



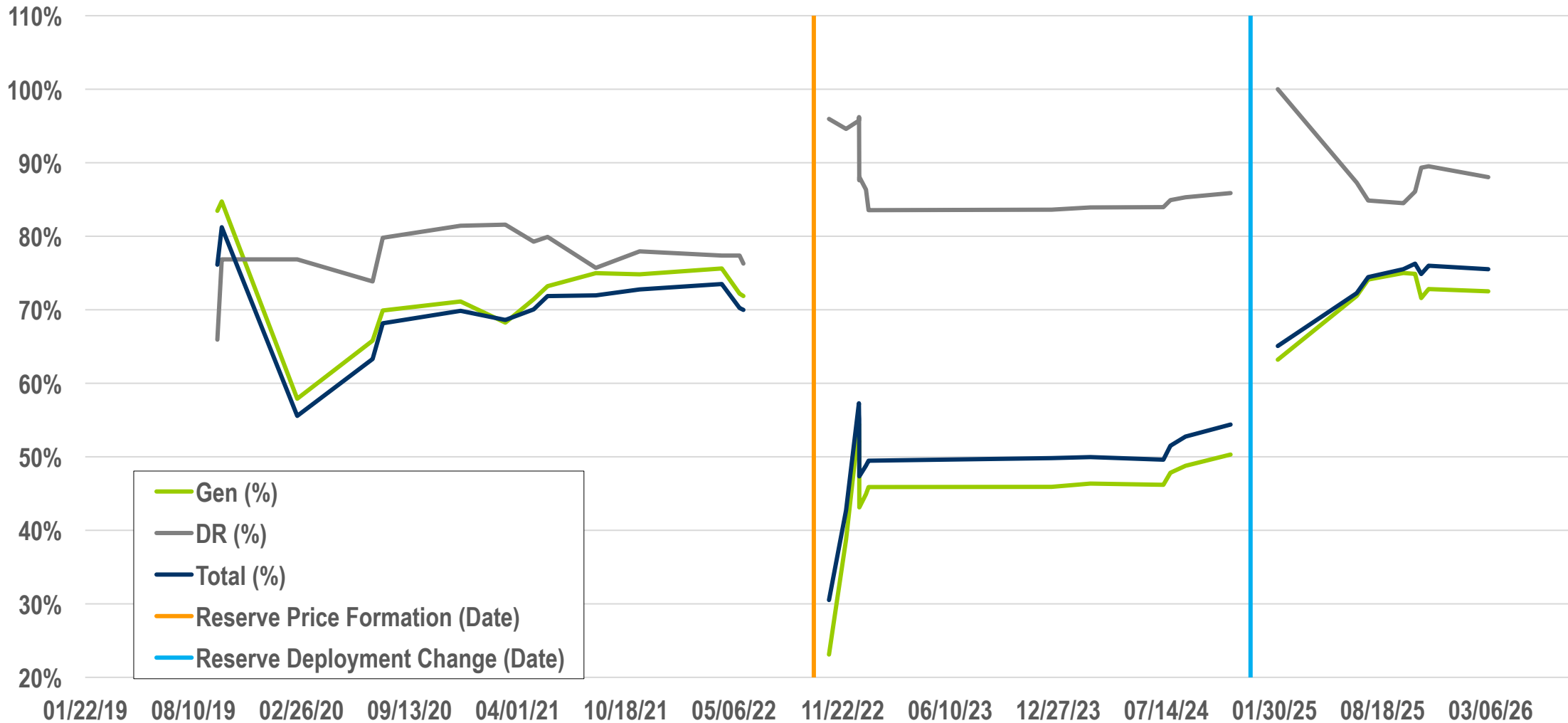
Synchronized Reserve Historical Changes

- Reserve Price Formation (RPF)
 - Implemented on October 1, 2022
 - Consolidated Synchronized Reserve Tier 1 and Tier 2
- Increase of Synchronized Reserve Requirement to 130%
 - Implemented on May 2023
 - In response to Synchronized Reserve performance following RPF and Winter Storm Elliott
- Reserve Deployment Changes
 - Implemented on December 17, 2024
 - Automatically added the Synchronized Reserve assignment to the unit's basepoint
 - PJM dispatch can deploy less than 100%
- Procedure/rules created for changing the Synchronized Reserve Requirement
 - Implemented on April 1, 2025
 - Retroactive starting on January 1, 2025

All Events: Running Average Synchronized Reserve Response To Estimated Expected Response



10+ Minute Events: Running Average Synchronized Reserve Response To Assignment



Load Forecast Report

Presenter/SME:

Tim Smoker,
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System Operations Report

Presenter:

David Kimmel,
David.Kimmel@pjm.com

SME:

Ross Kelly,
Ross.Kelly@pjm.com

A green speech bubble containing a white question mark, positioned above a blue speech bubble with three horizontal lines, indicating a question or contact point.

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Member Hotline

(610) 666 – 8980

(866) 400 – 8980

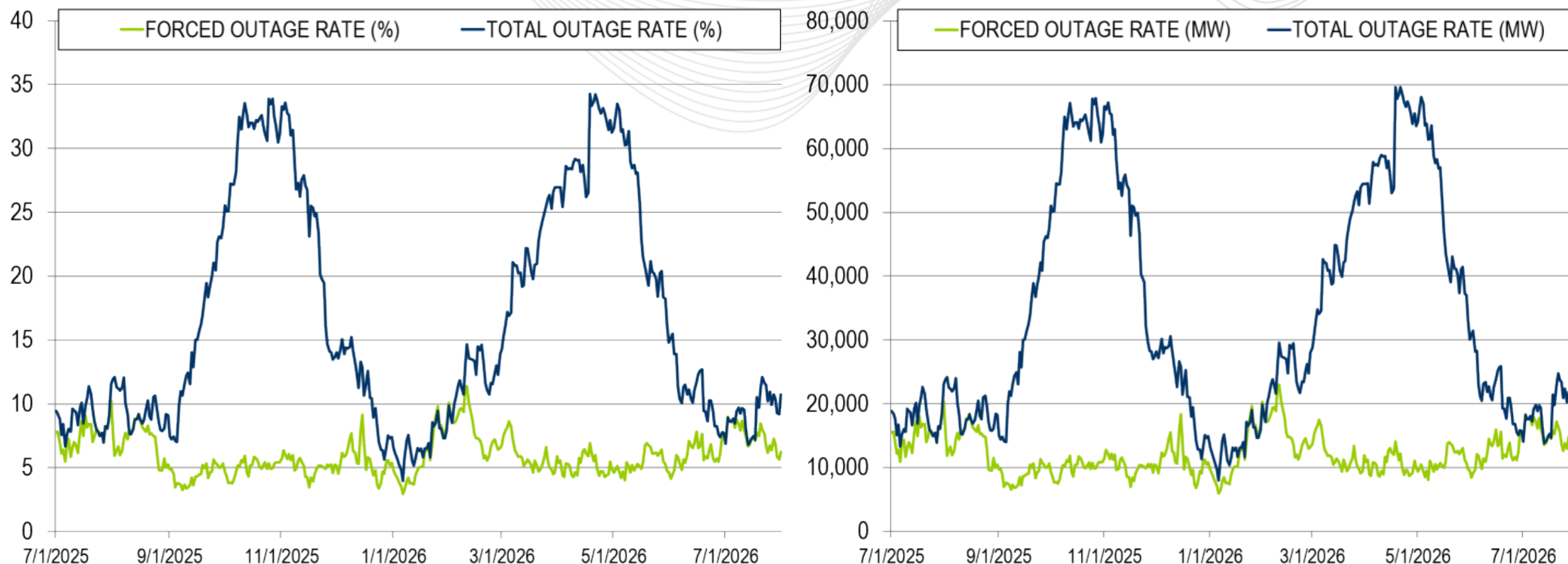
custsvc@pjm.com

Appendix

Goal Measurement: Balancing Authority ACE Limit (BAAL)

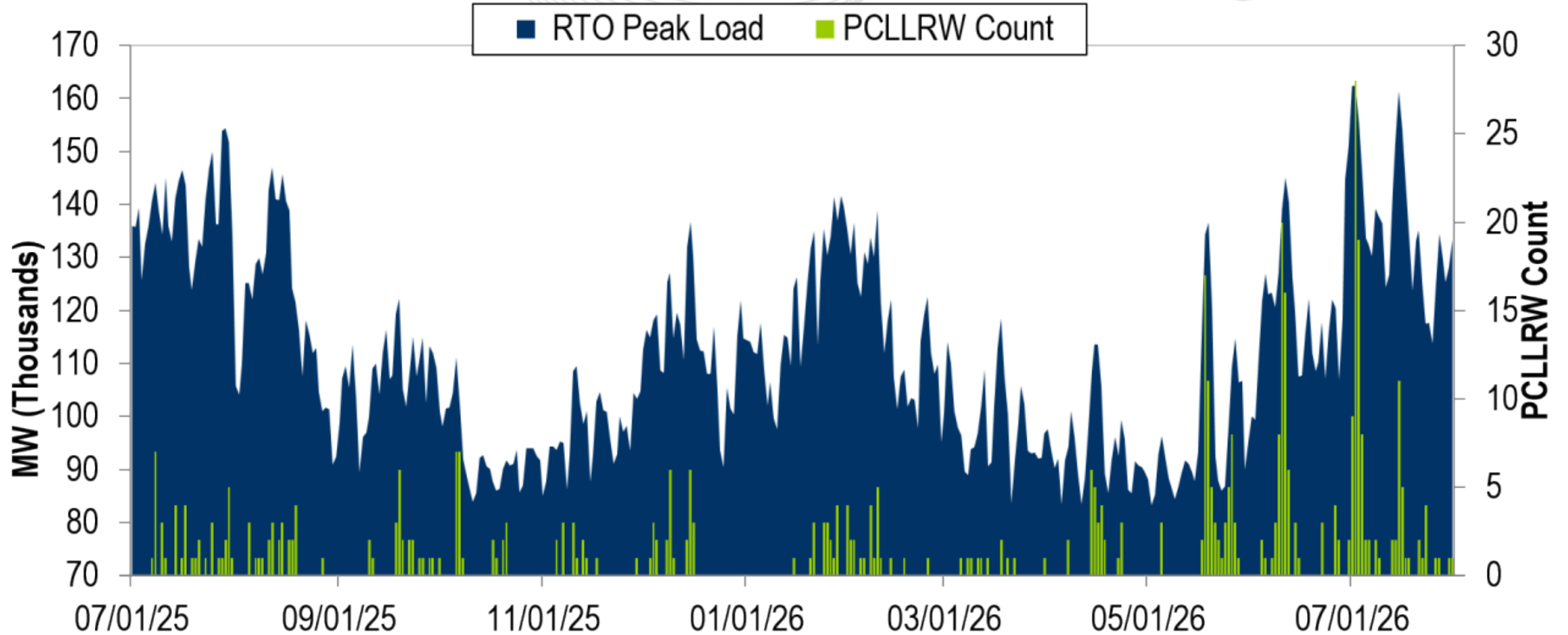
- The purpose of the new BAAL standard is to maintain interconnection frequency within a predefined frequency profile under all conditions (normal and abnormal), to prevent frequency-related instability, unplanned tripping of load or generation, or uncontrolled separation or cascading outages that adversely 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



The 13-month average forced outage rate is 6.03% or 12,144 MW.
The 13-month average total outage rate is 16.55% or 33,347 MW.

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

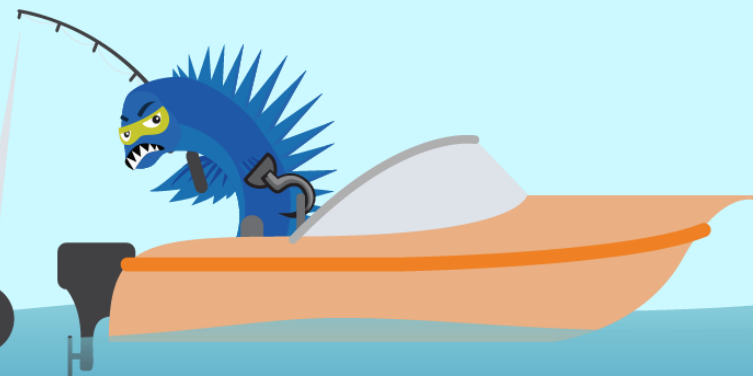


**PROTECT THE
POWER GRID**

**THINK BEFORE
YOU CLICK!**



**BE ALERT TO
MALICIOUS PHISHING
EMAILS**



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