

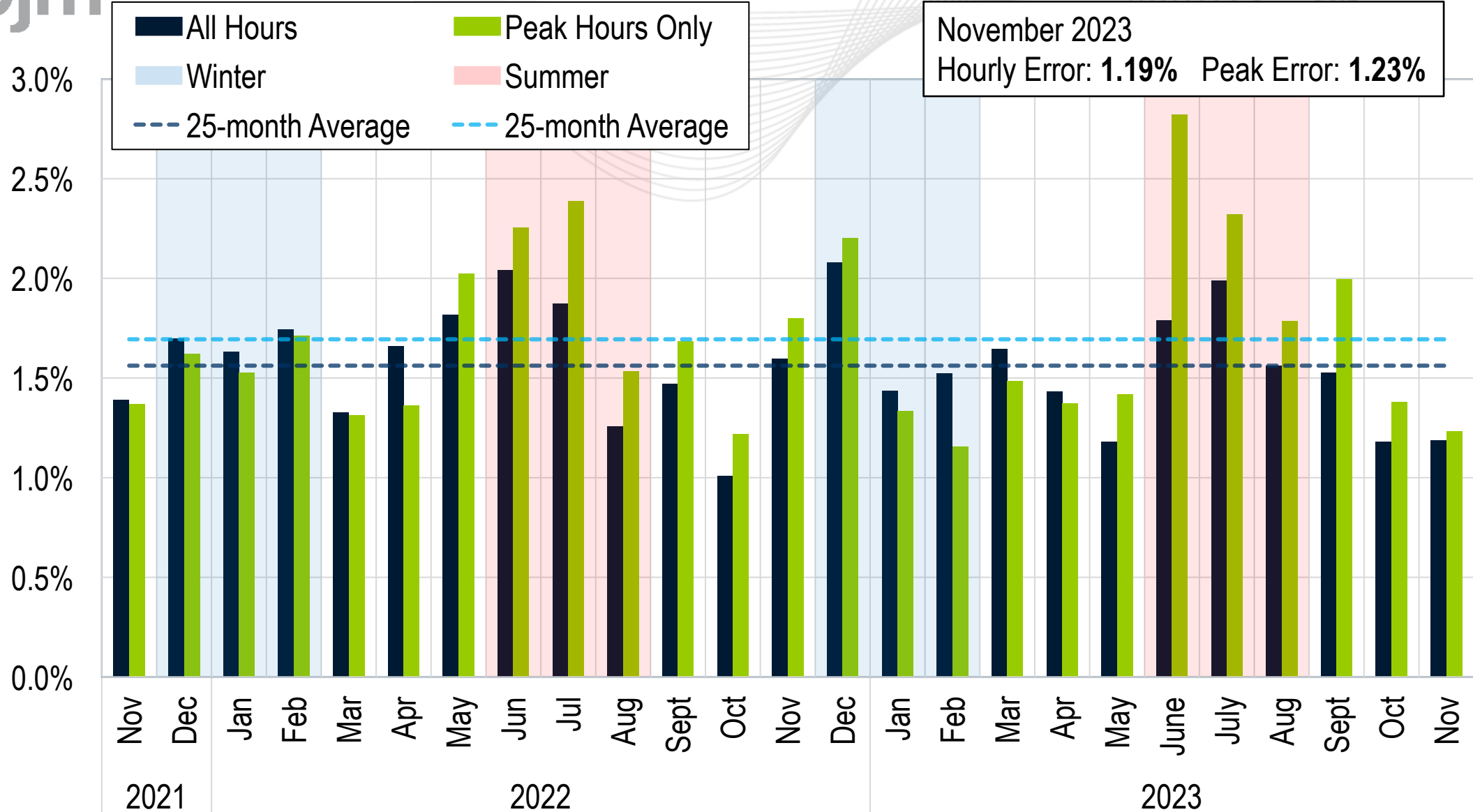


System Operations Report

Hong Chen
Principal Engineer, Markets Coordination
MC Webinar
December 18th, 2023

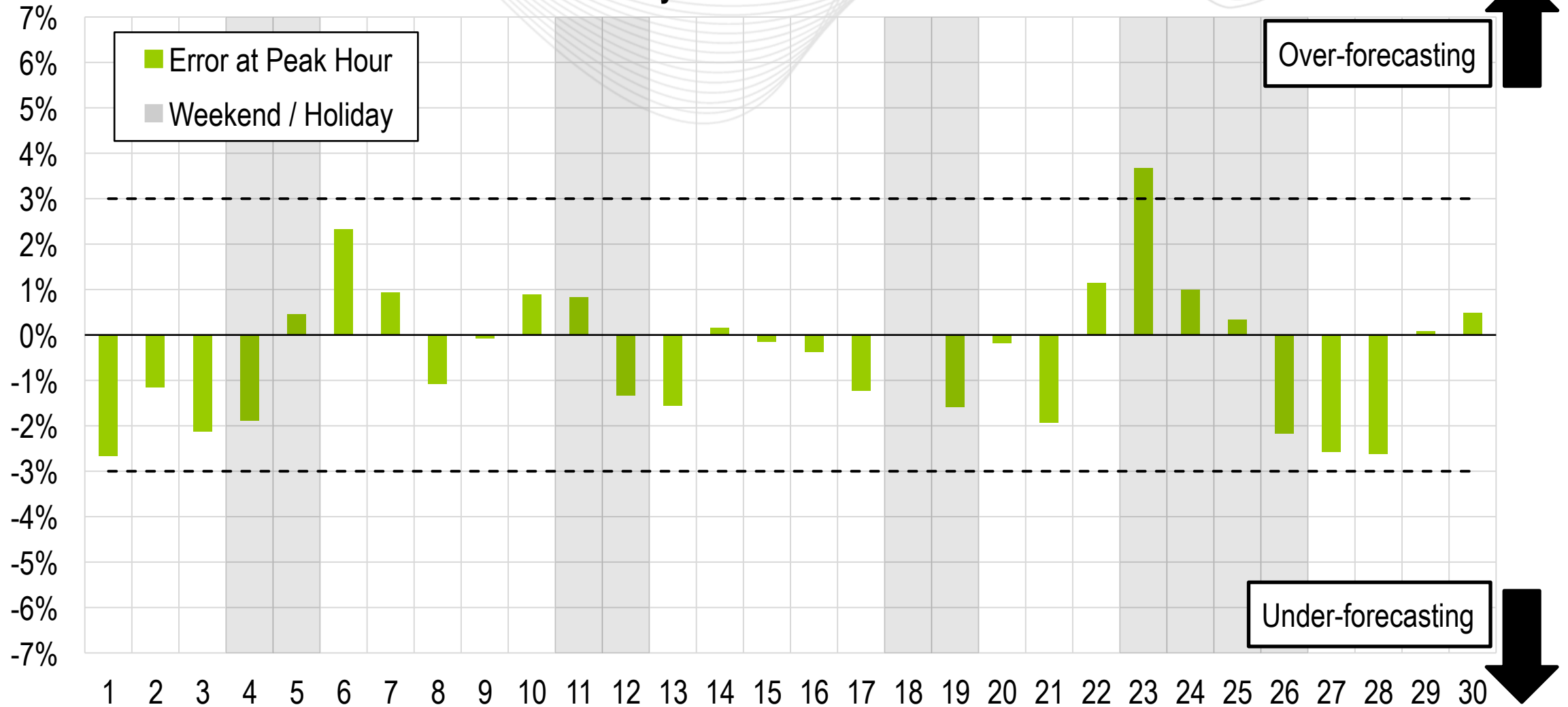


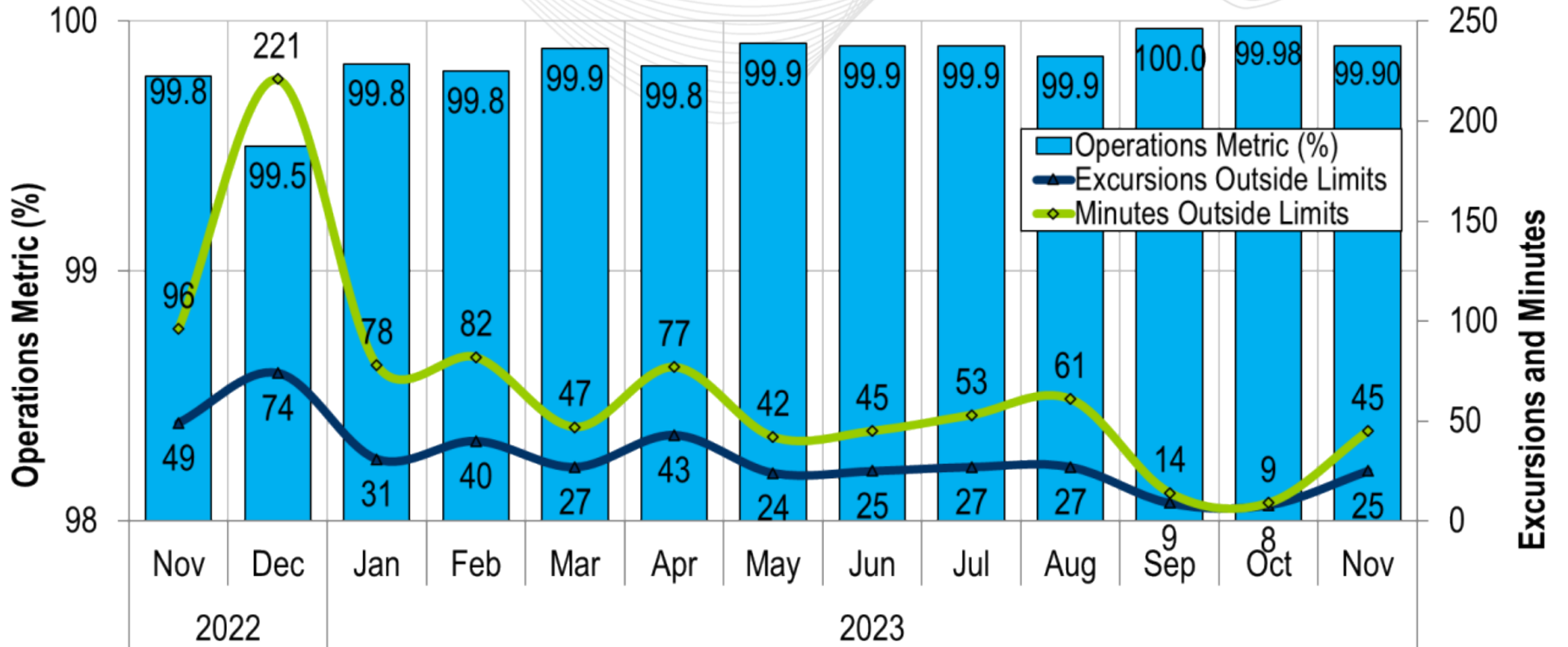
Average Load Forecast Error



Daily Peak Forecast Error (November)

18:00 Day Ahead Forecast Error

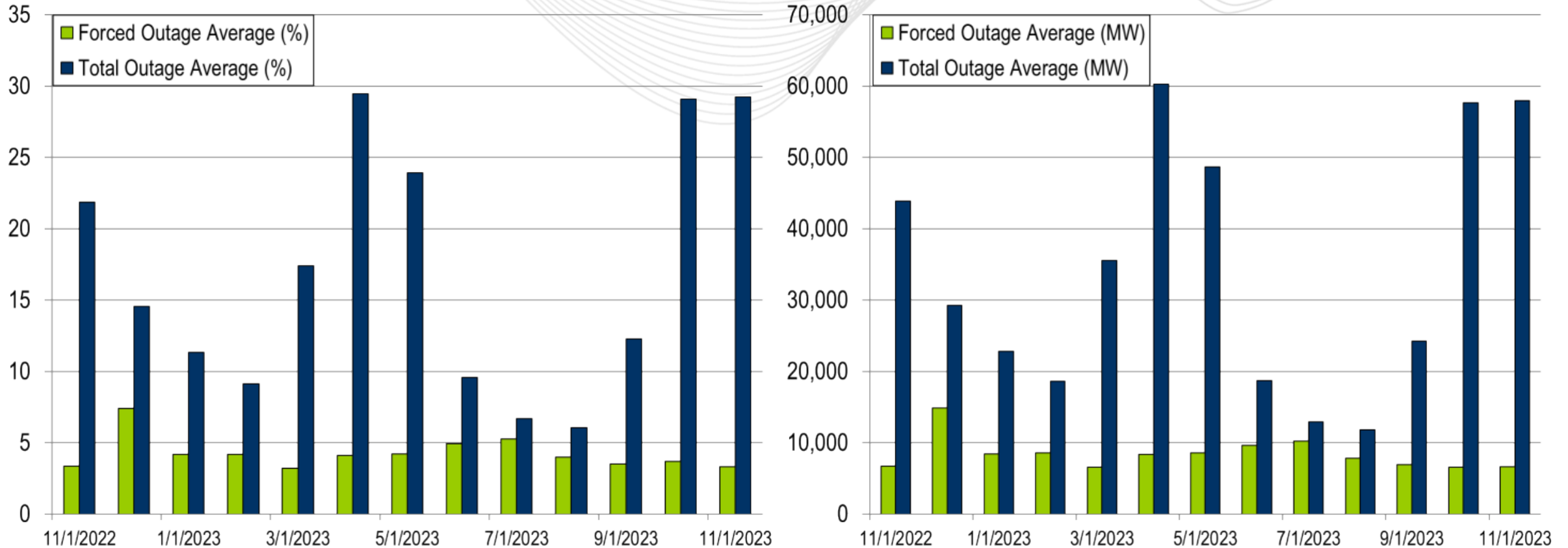




PJM's BAAL performance has exceeded the goal of 99% for each month in 2022 and 2023.

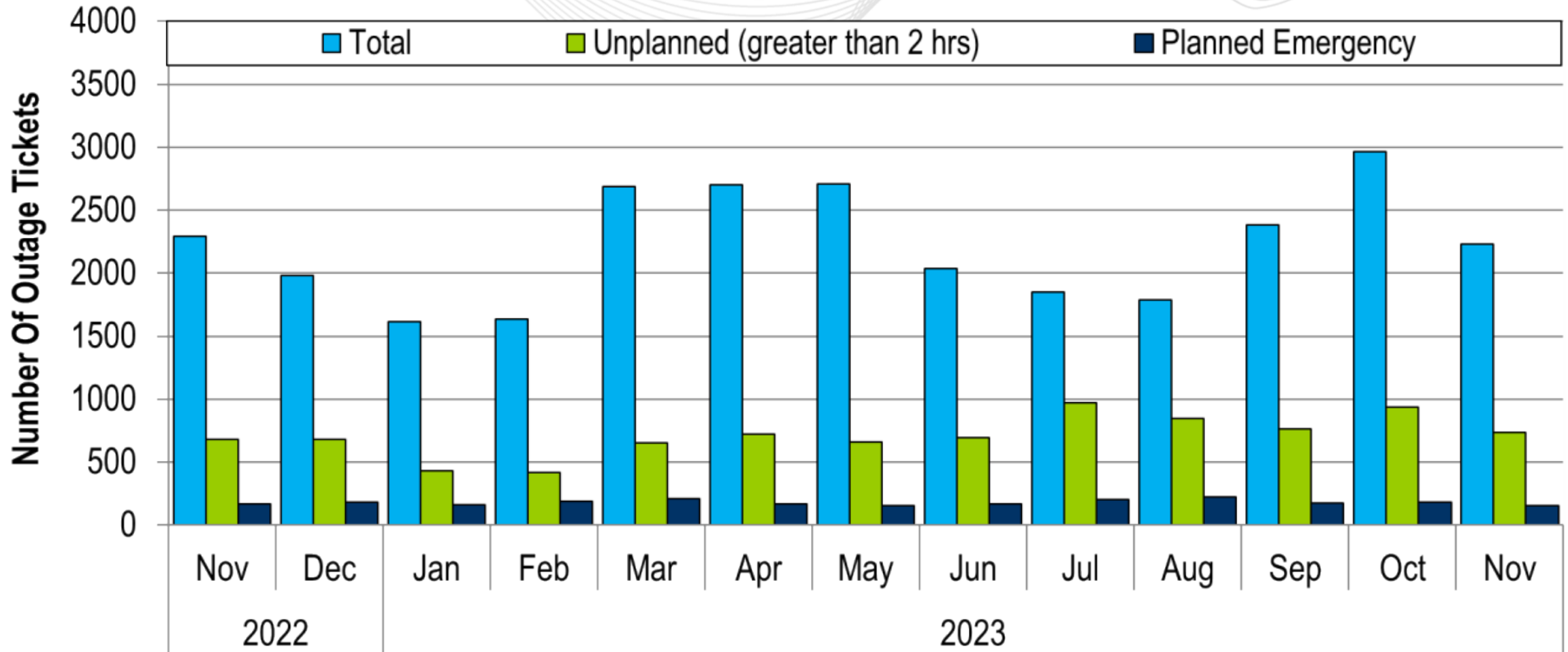
- 1 Shared Reserve event
- 2 Spin Events
- The following Emergency Procedures occurred:
 - 1 Geomagnetic Disturbance Warning
 - 2 High System Voltage Actions
 - 25 Post Contingency Local Load Relief Warnings (PCLLRWs)

- No Shortage Case Approvals for the month of November 2023



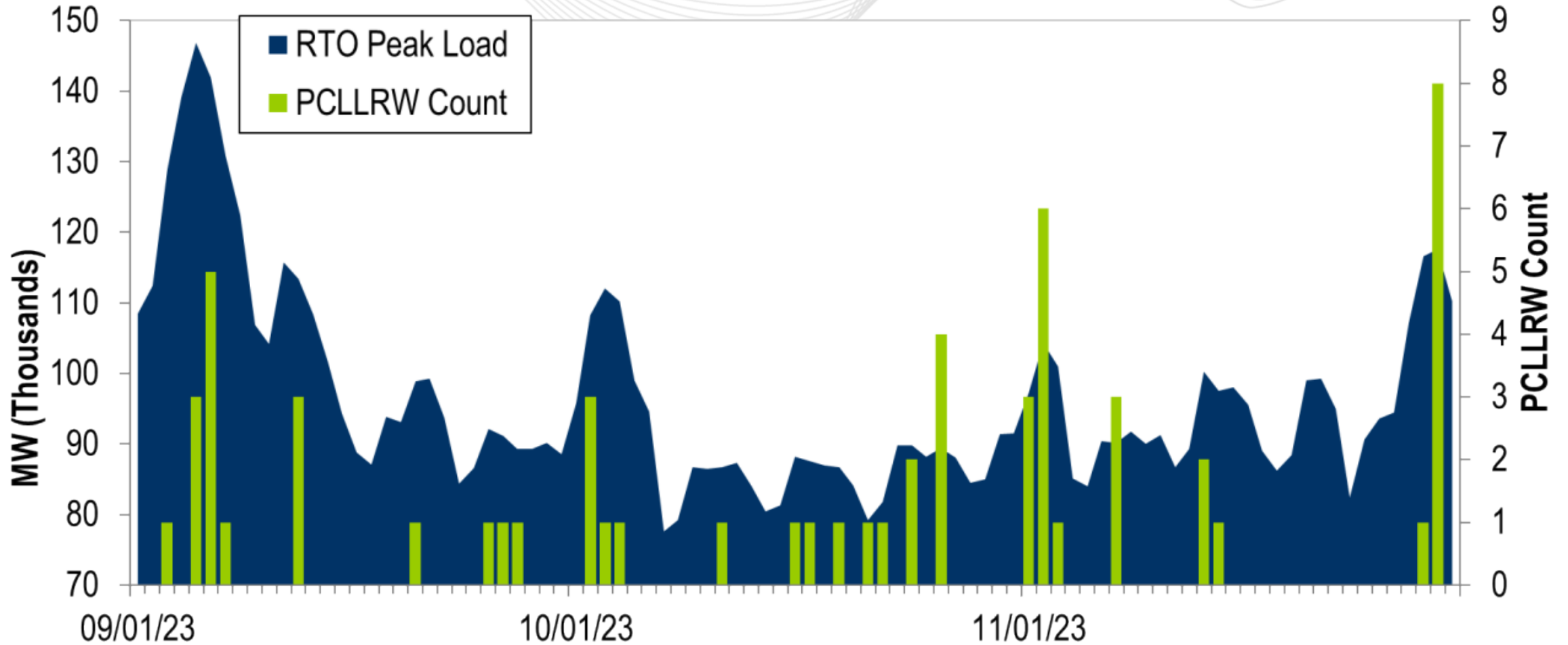
The 13-month average forced outage rate is 4.27% or 8,524 MW.
 The 13-month average total outage rate is 16.30% or 32,702 MW.

2022-2023 Planned Emergency, Unplanned, and Total Outages by Ticket



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

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



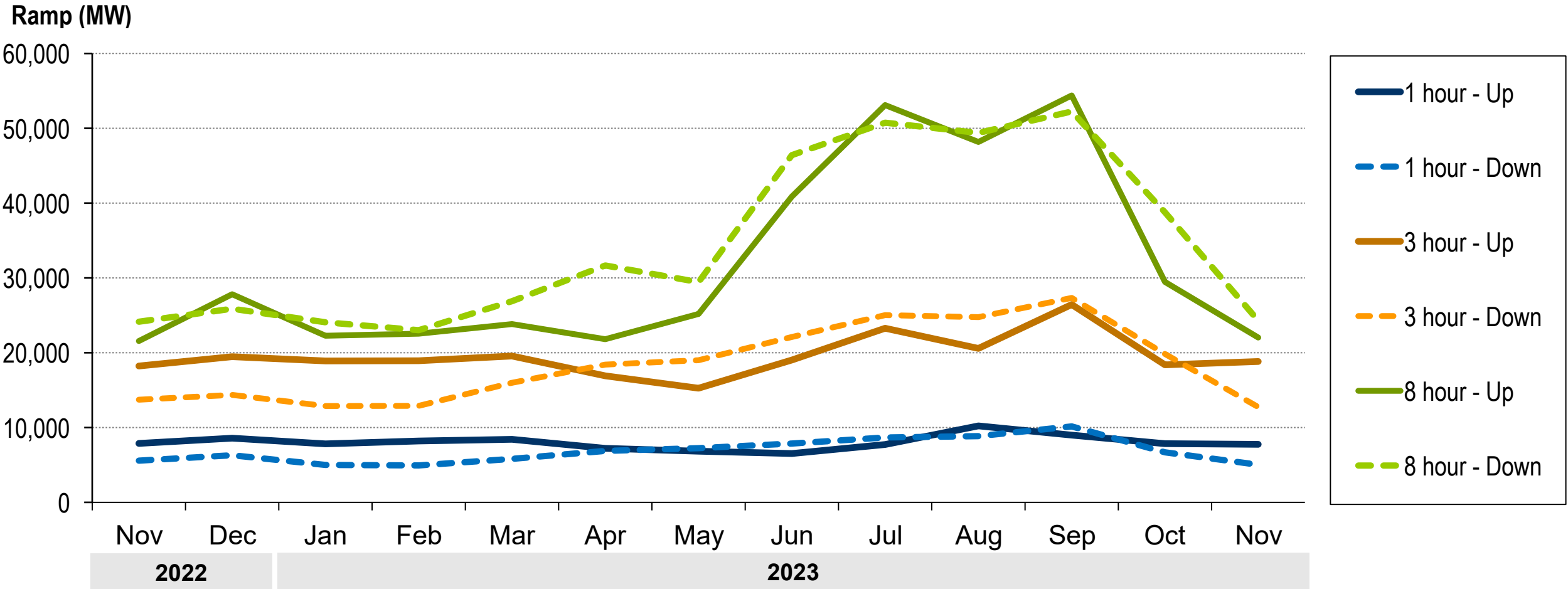
Event	Date	Start Time	End Time	Duration	Region	Assigned (MW)	Response (MW)	Penalty (MW)
1	11/07/23	16:19:01	16:24:23	00:05:22	RTO	2086.7	2086.7	0.0
2	11/10/23	01:21:36	01:29:40	00:08:04	RTO	1954.1	1954.1	0.0



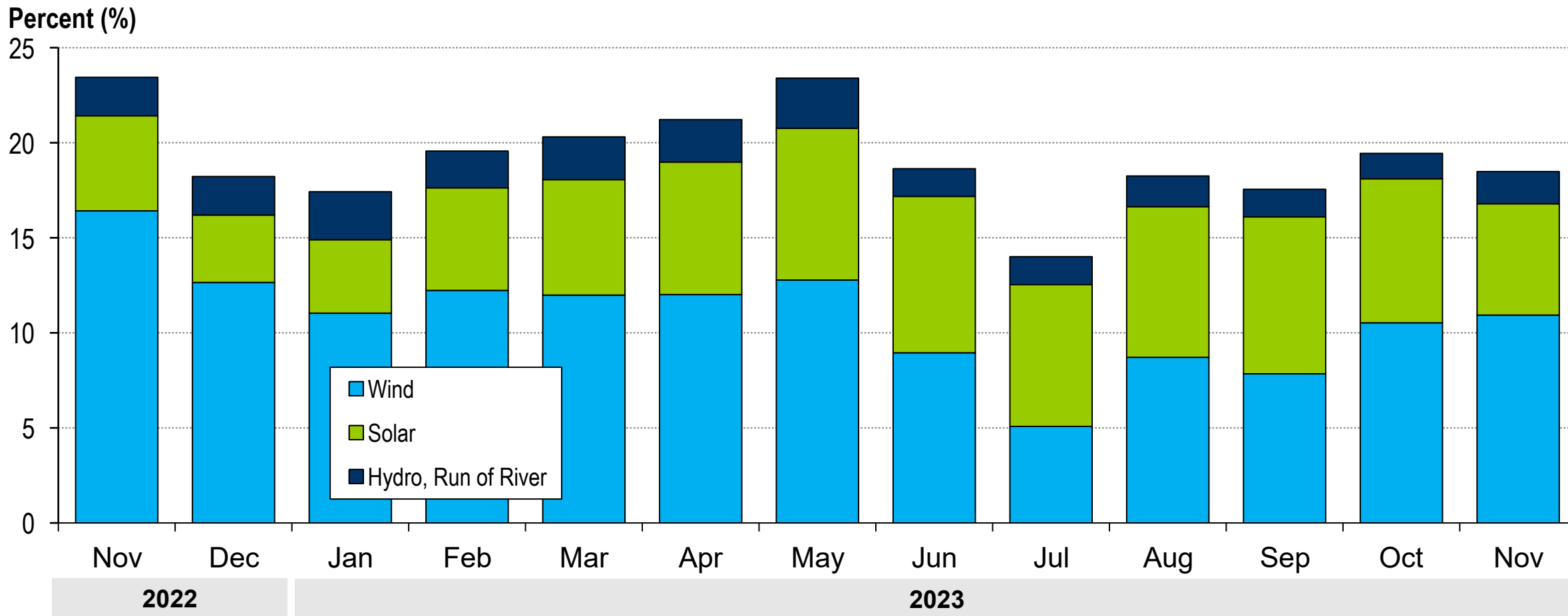
Operational Flexibility Metrics

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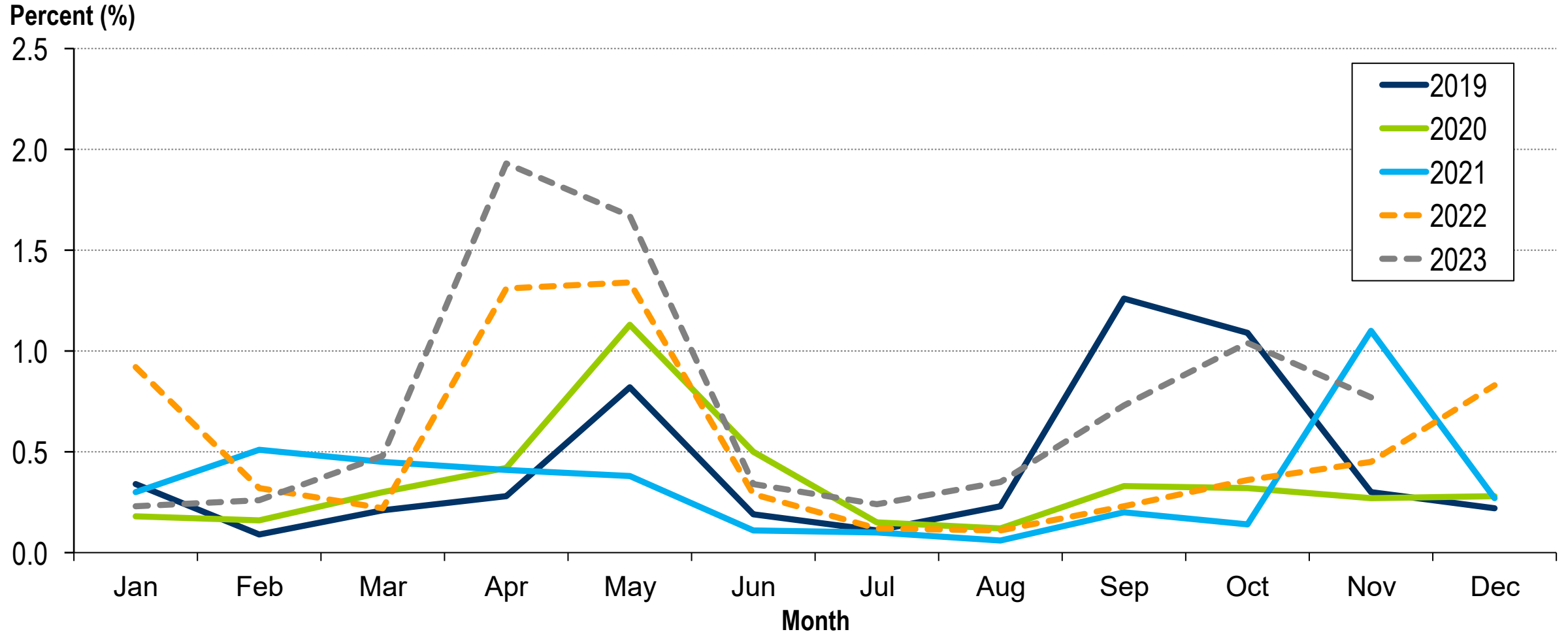
1) Monthly Maximum Net Load Ramp



2) Hourly Maximum Percent of Load Served by Renewables

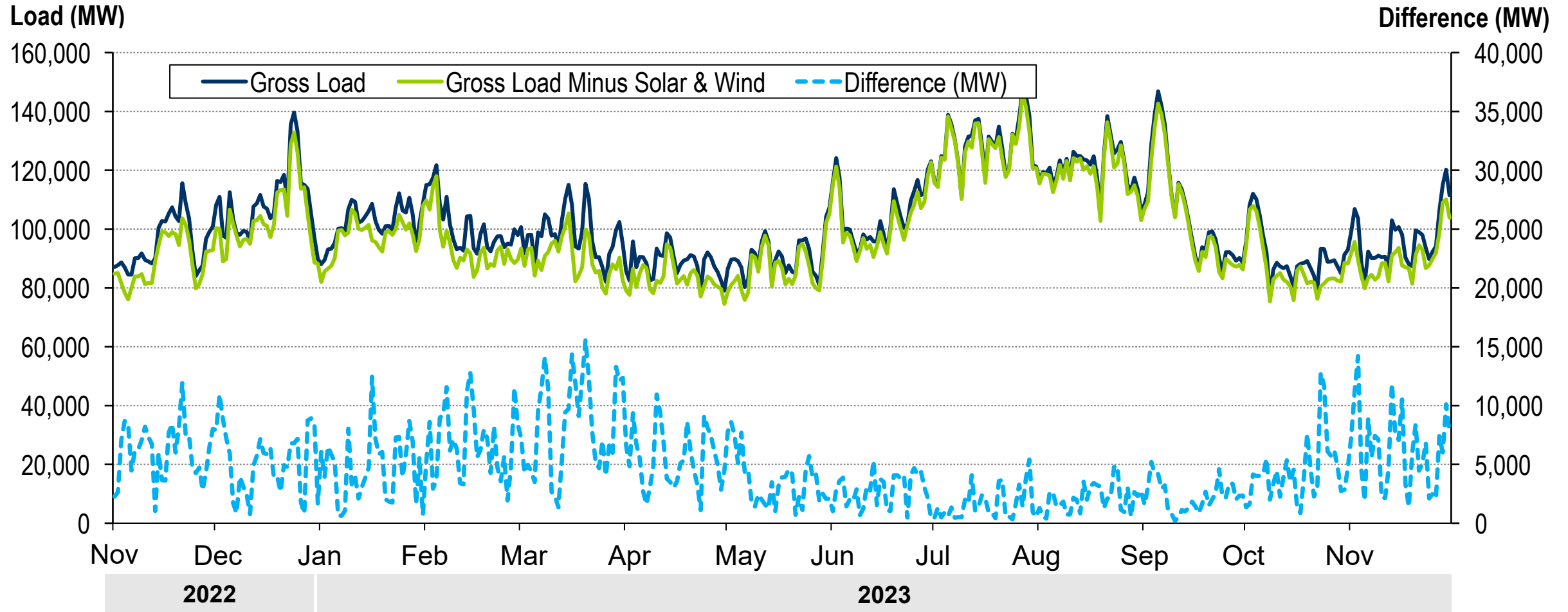


3) Monthly Percent of Negative Pricing Interval-Busses

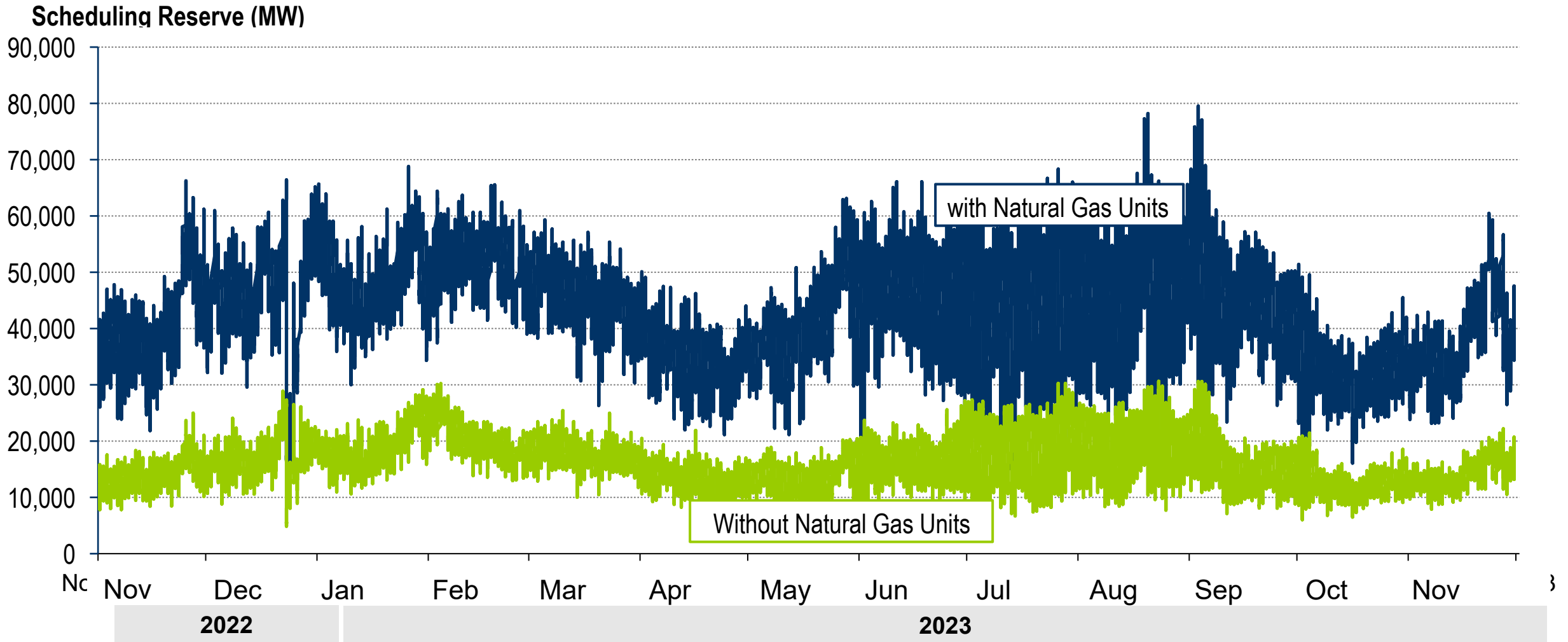




4) Daily Peak Gross Load and Gross Load Minus Solar & Wind

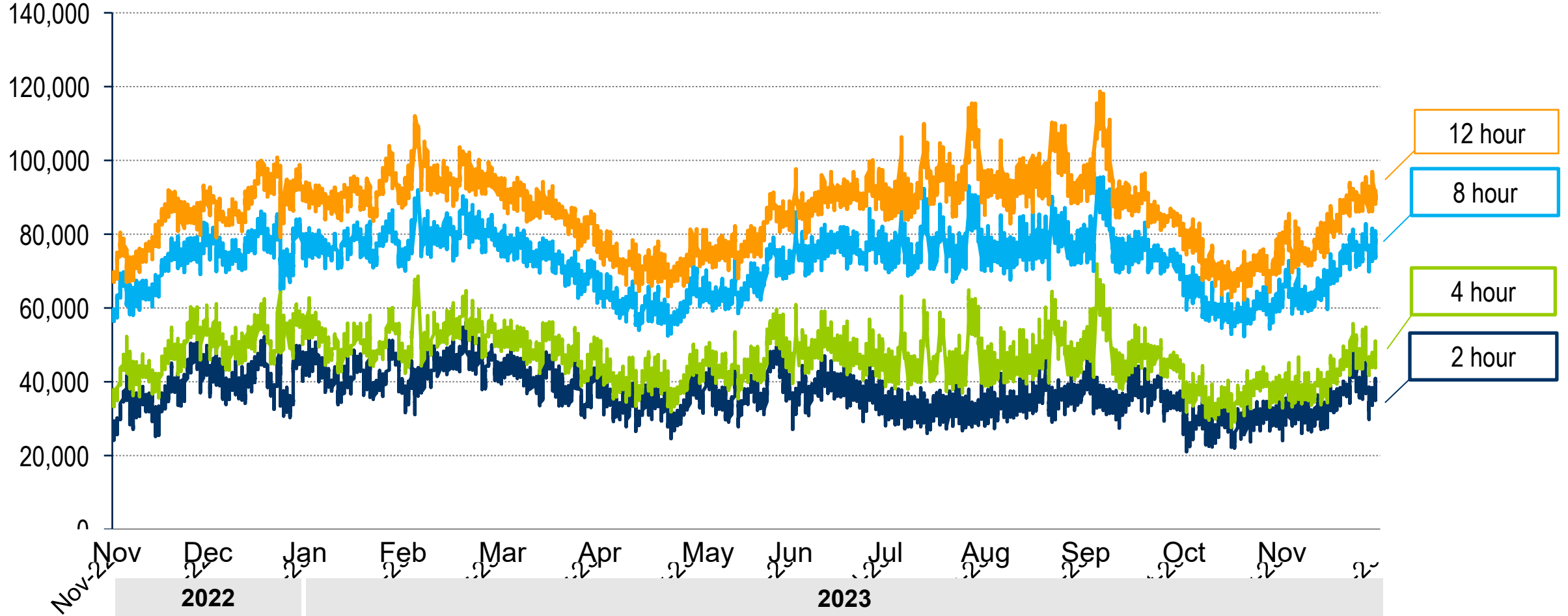


- Measure of offline/unscheduled generation that is capable of being scheduled and coming online in a future interval
- For each hourly interval, calculated potential generator scheduling reserve available in a 2-hour-forward horizon.
- Measured at an RTO level



- Measure of currently online generation that can shut down and return in a forward horizon
 - Complement to scheduling reserve
- For each hourly interval, calculated potential generator cycling reserve available in 2-hour, 4-hour, 8-hour and 12-hour-forward horizons.
- Measured at an RTO level

Cycling Reserve (MW)



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System Operations Report



Member Hotline

(610) 666 – 8980

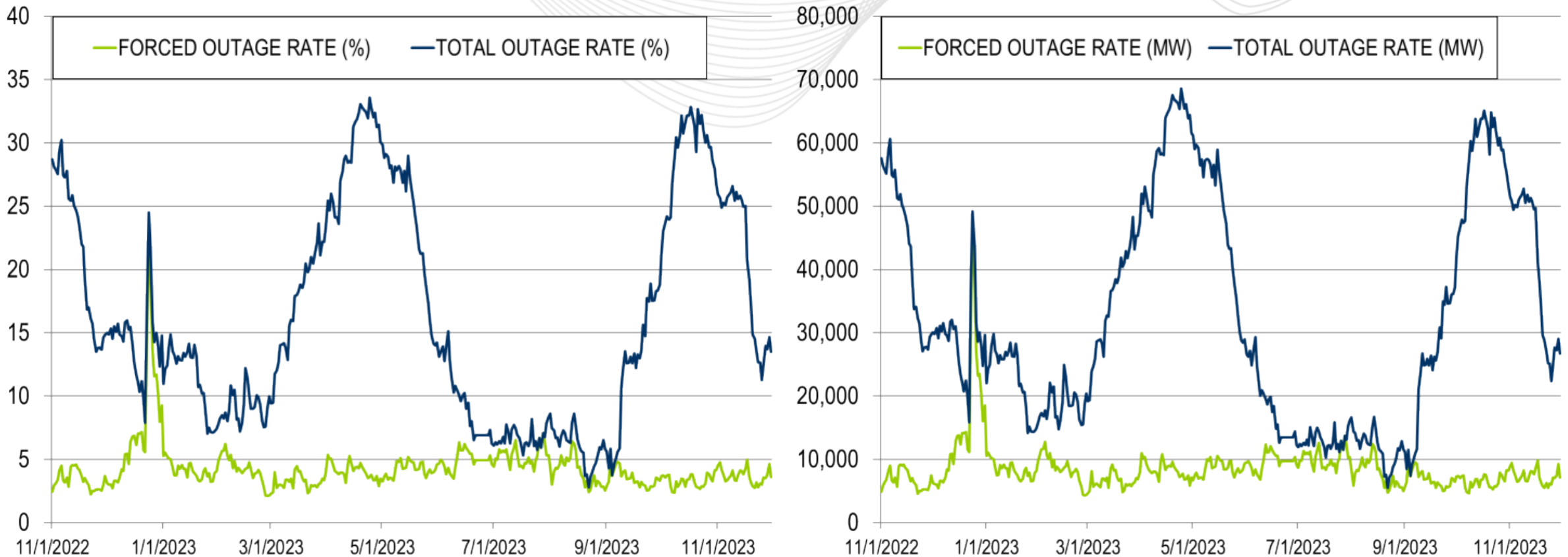
(866) 400 – 8980

custsvc@pjm.com

Appendix

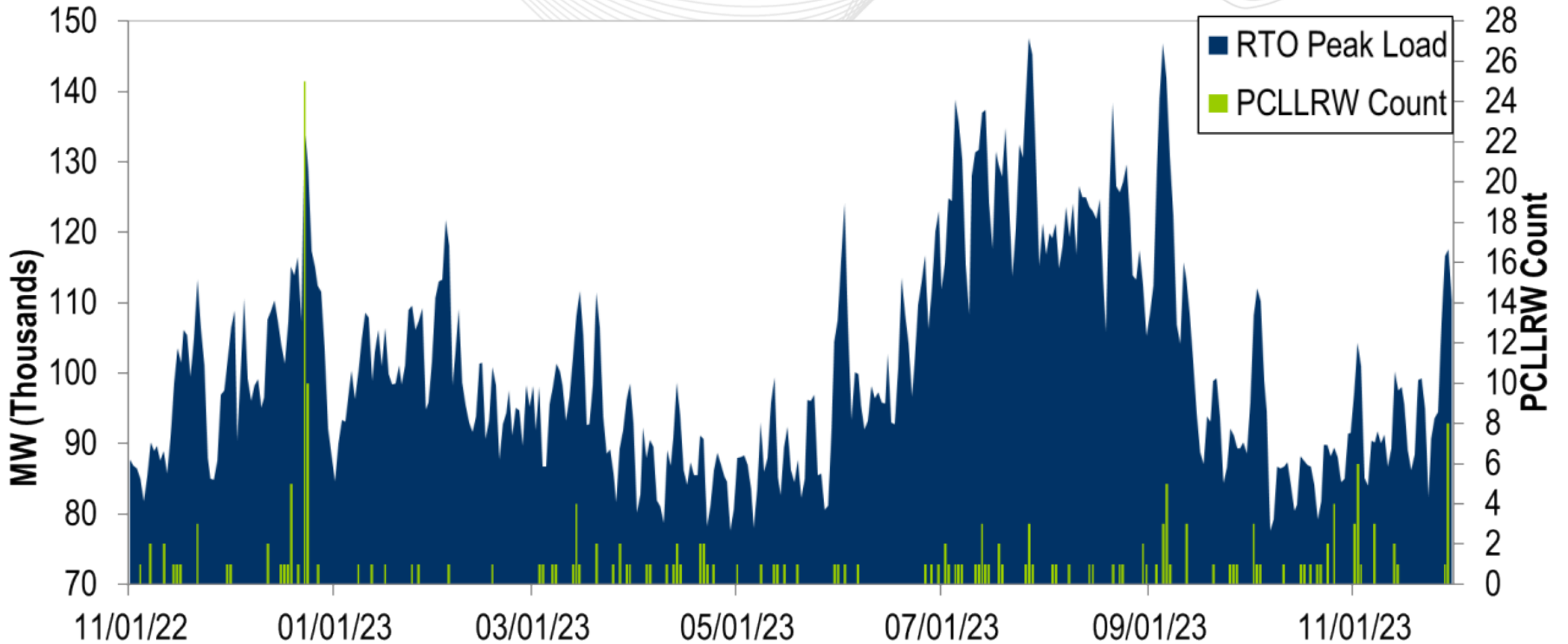
Goal Measurement: Balancing Authority ACE Limit (BAAL)

- 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.



The 13-month average forced outage rate is 4.27% or 8,524 MW.
 The 13-month average total outage rate is 16.30% or 32,702 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.
(610) 666-2244 / it_ops_ctr_shift@pjm.com

