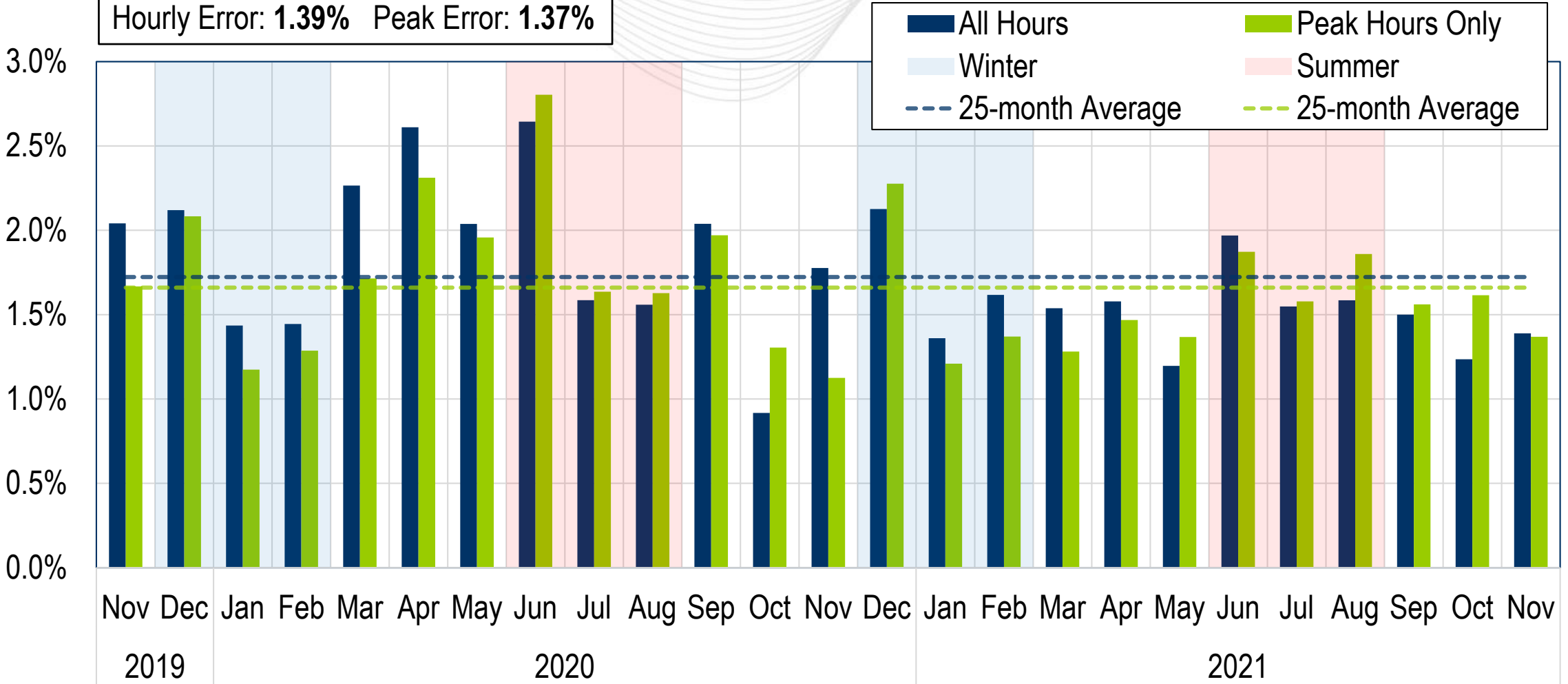




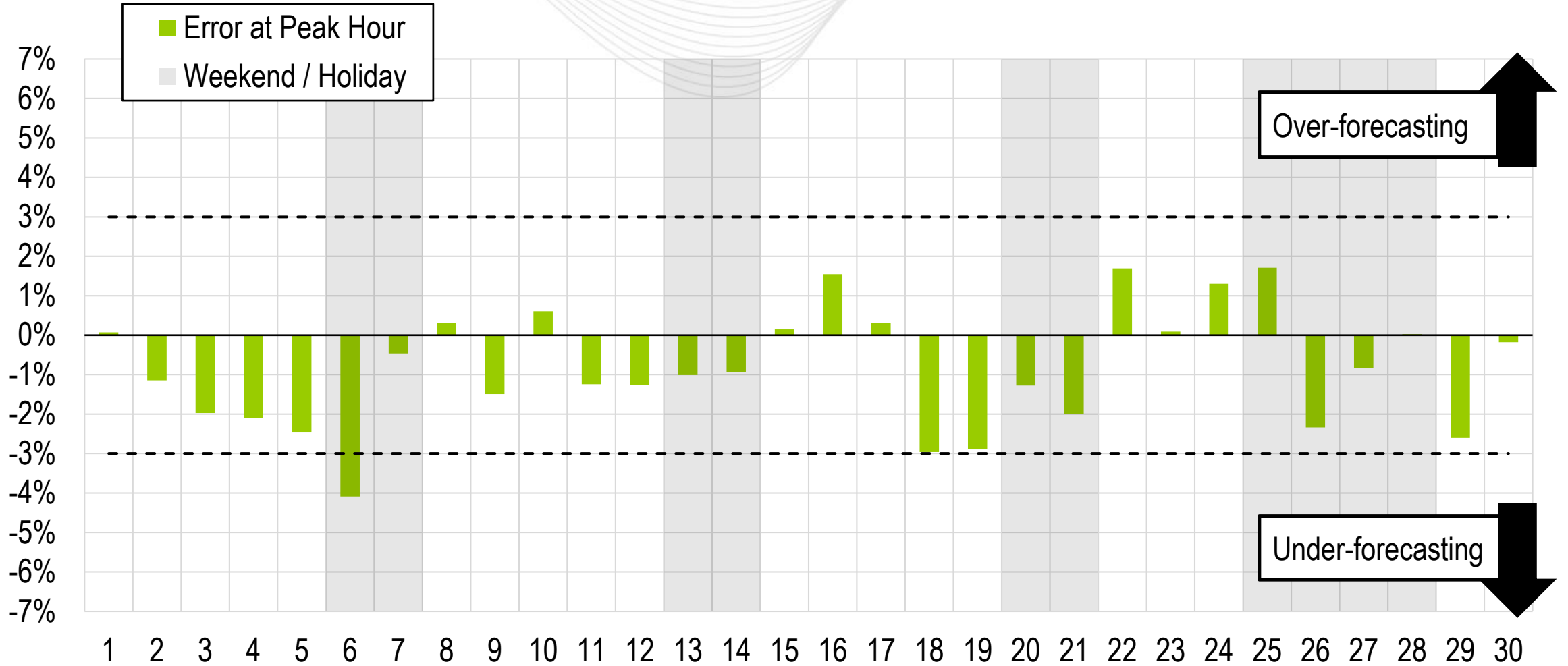
System Operations Report

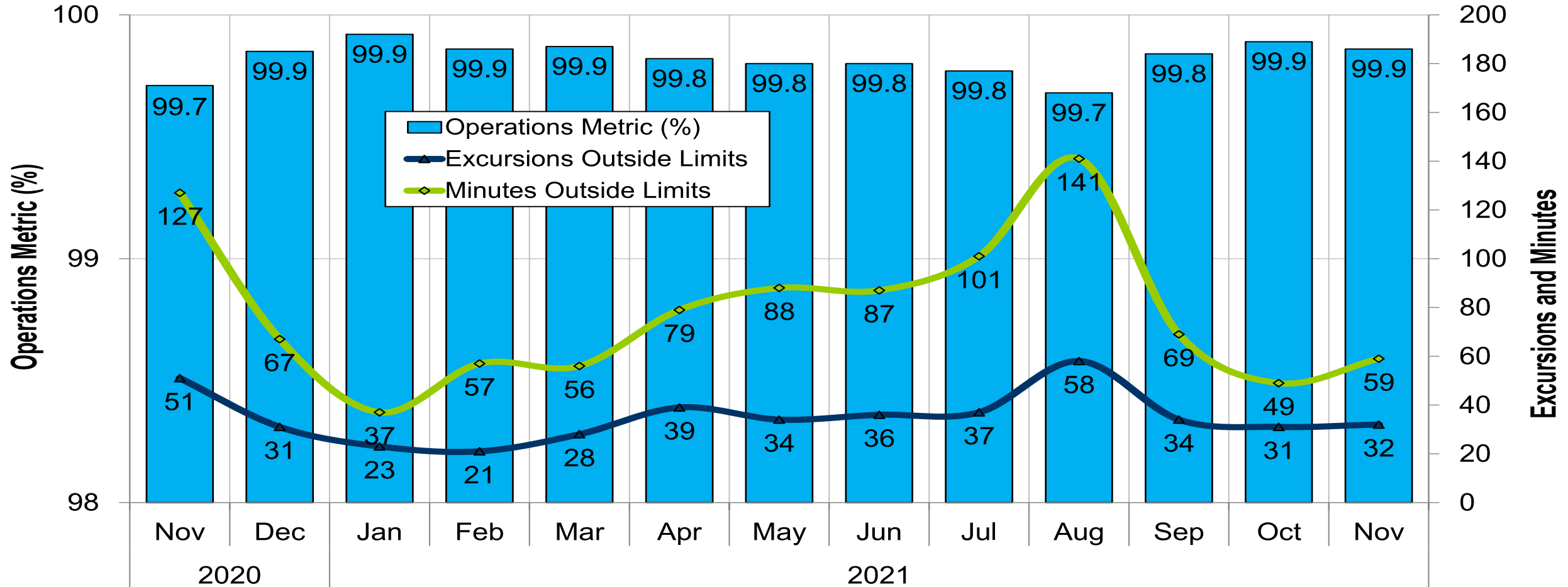
Hong Chen
Senior Lead Engineer, Markets Coordination
MC Webinar
December 13, 2021

November 2021
 Hourly Error: **1.39%** Peak Error: **1.37%**



Daily Peak Forecast Error (November)

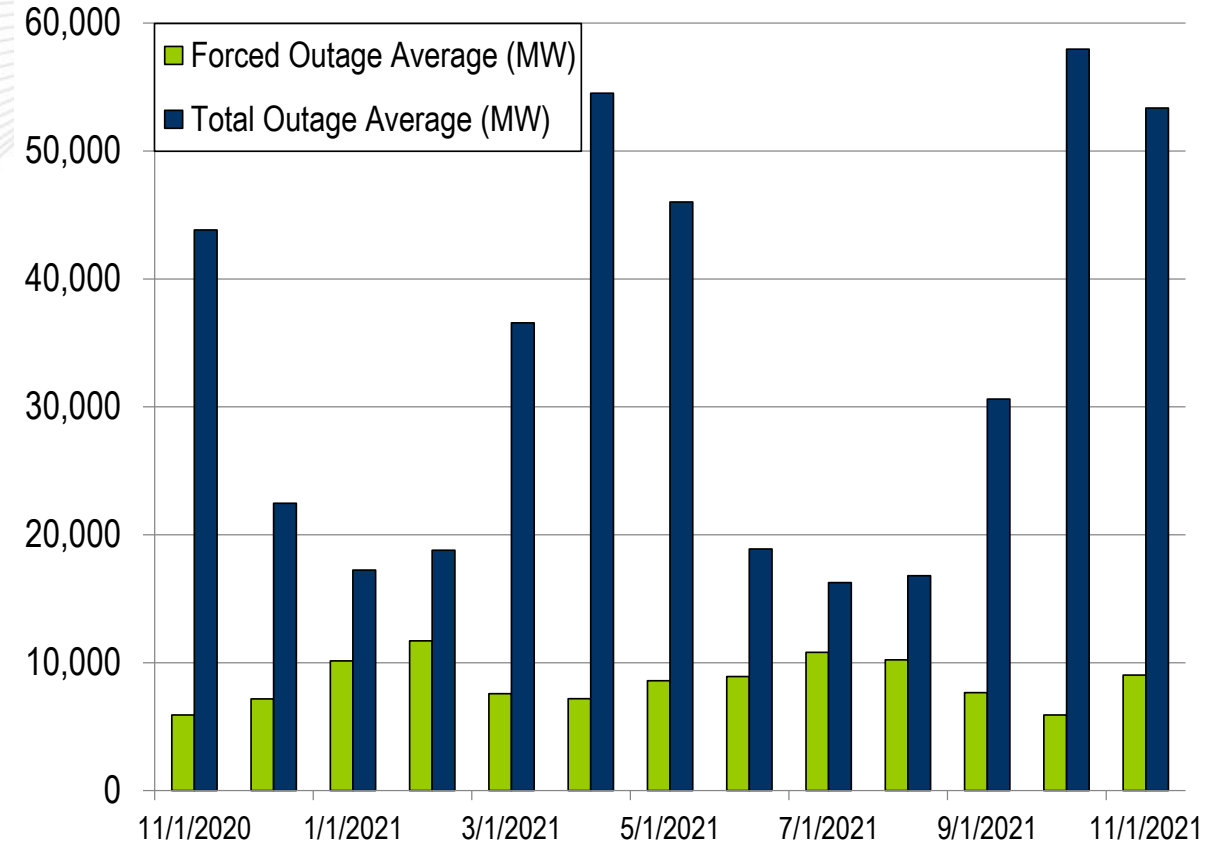
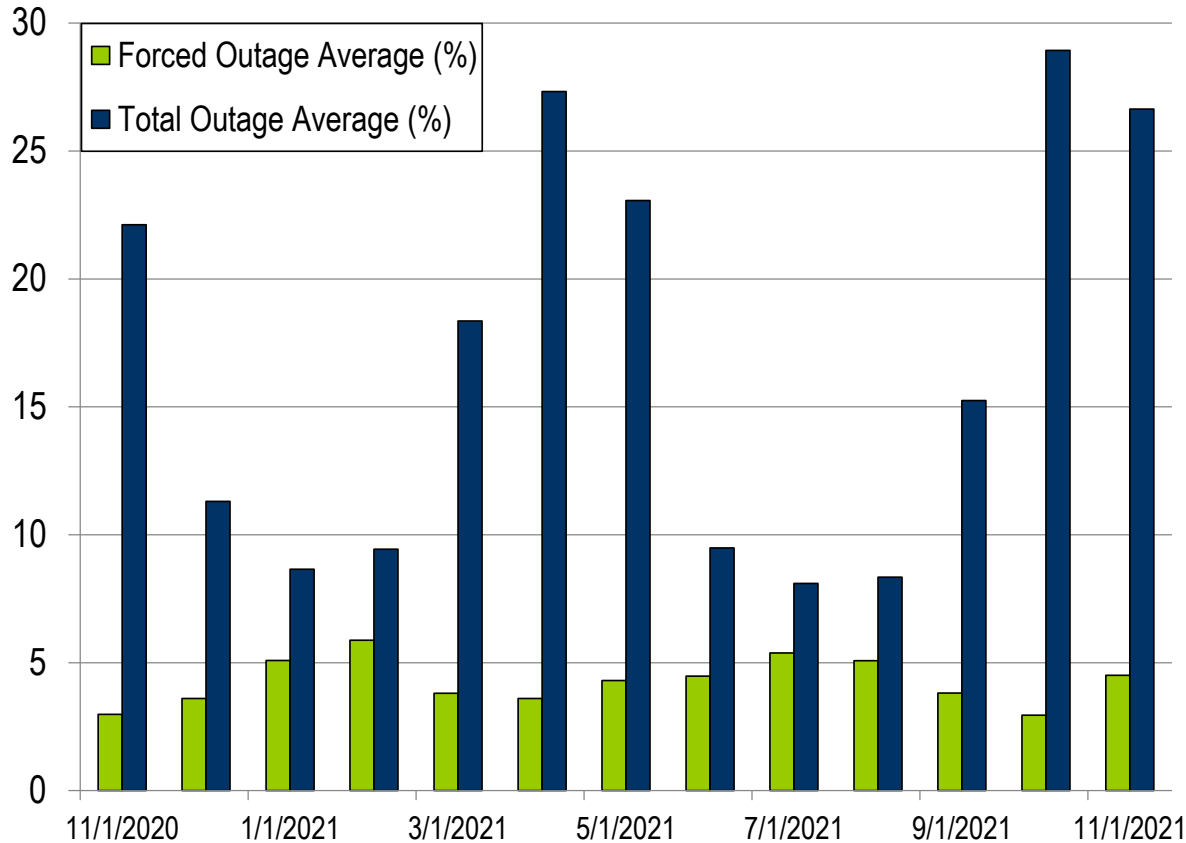




PJM's BAAL performance has exceeded the goal of 99% for each month in 2021.

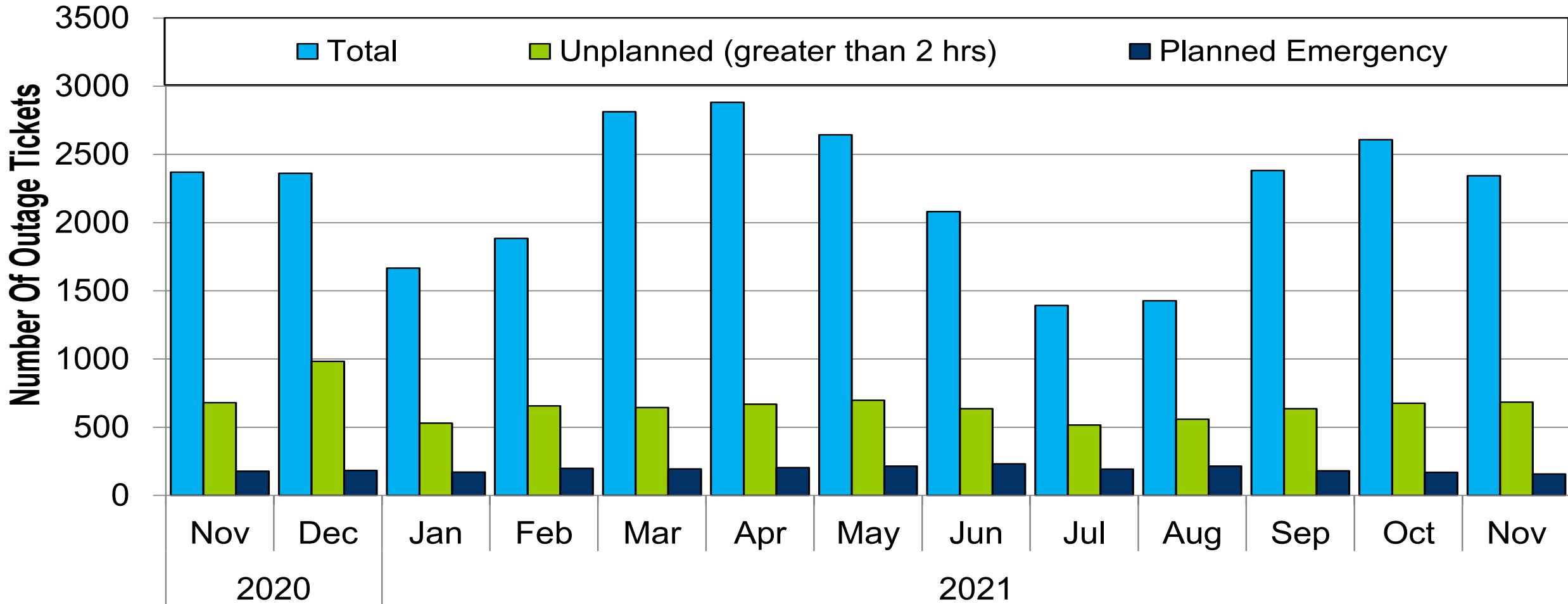
- Three spinning events
- One reserve sharing events with the Northeast Power Coordinating Council (NPCC)
- The following Emergency Procedures occurred:
 - 17 Post-Contingency Local Load Relief Warnings (PCLLRW)
 - 1 Geomagnetic Disturbance Warning
 - 3 Shortage Cases Approved

- 3 Shortage Cases Approved
- The approved Shortage Cases occurred on:
 - 11/12/21:
 - 1 Shortage Case for 17:25
 - 1 Shortage Case for 17:30
 - 1 Shortage Case for 17:35
 - Two large units tripped headed into the peak



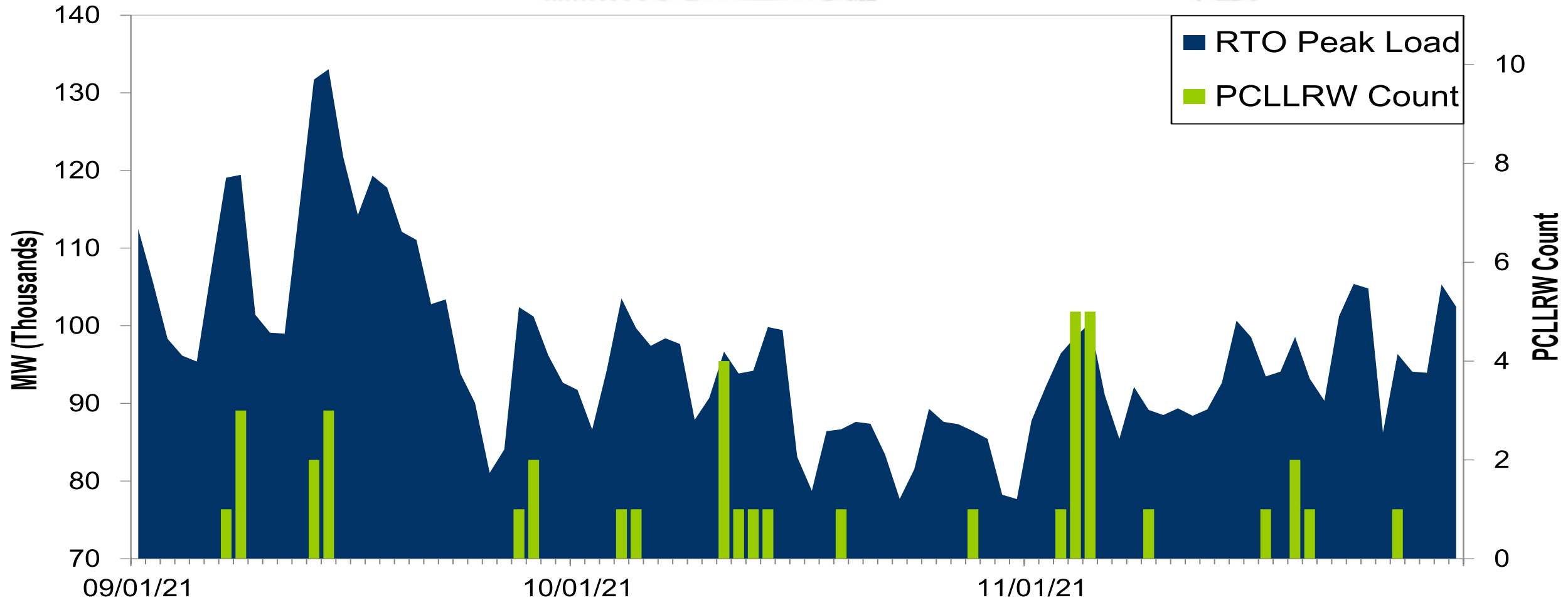
The 13-month average forced outage rate is 4.26% or 8,509 MW.
 The 13-month average total outage rate is 16.70% or 33,358 MW.

2020-2021 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	Tier 1 Estimate (MW)	Tier 1 Response (MW)
1	11/12/21	17:25:18	17:37:23	00:12:05	RTO	510.0	606.7
2	11/30/21	09:40:24	09:49:57	00:09:33	RTO	899.2	678.3
3	11/30/21	12:56:47	13:05:13	00:08:26	RTO	948.6	452.3

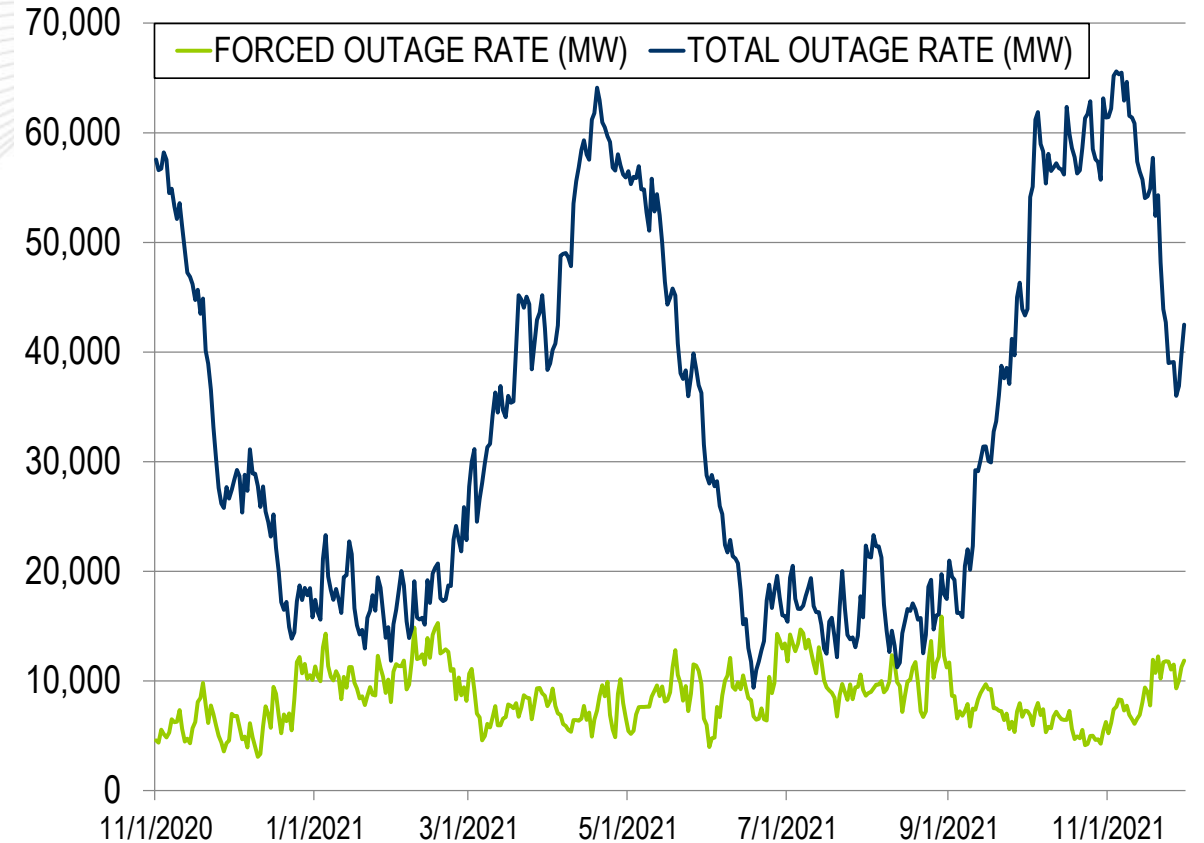
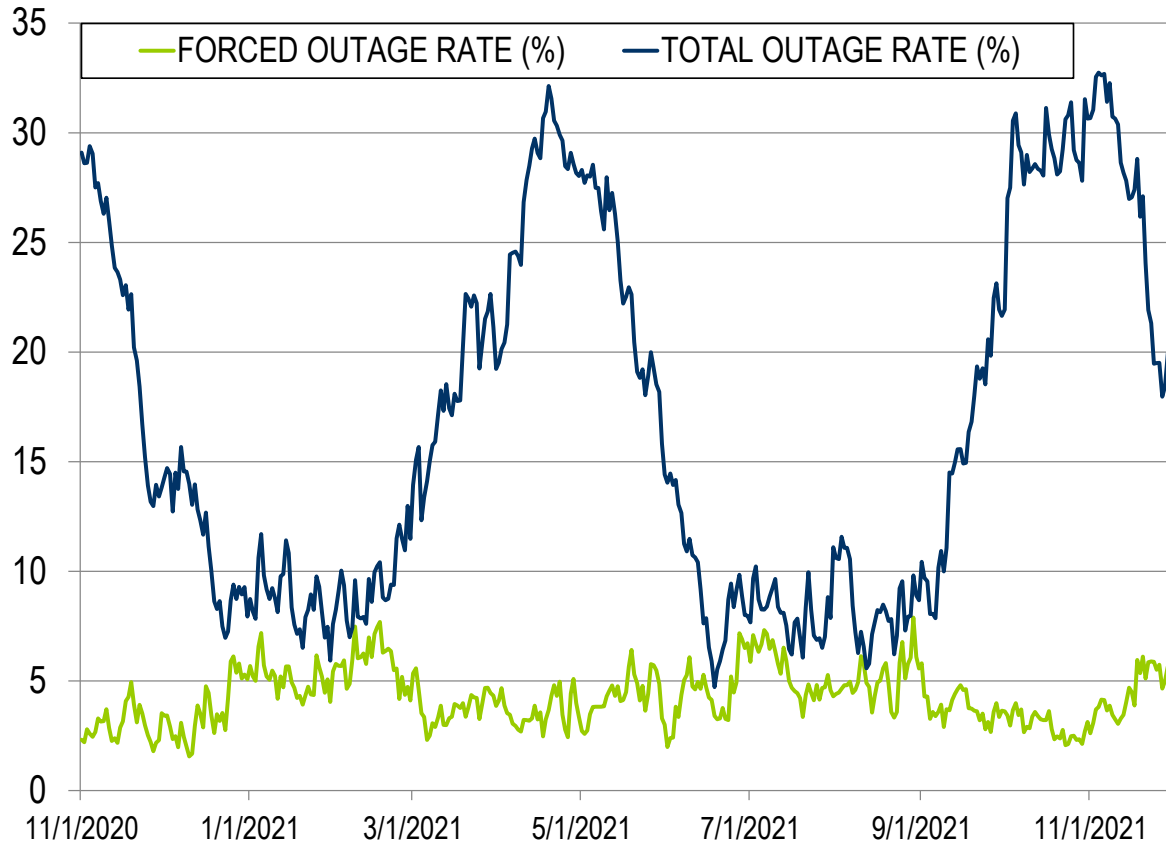
Event	Date	Start Time	End Time	Duration	Region	Tier 2 Assigned (MW)	Tier 2 Response (MW)	Tier 2 Penalty (MW)
1	11/12/21	17:25:18	17:37:23	00:12:05	RTO	890.7	714.6	176.1
2	11/30/21	09:40:24	09:49:57	00:09:33	RTO	958.2	958.2	0.0
3	11/30/21	12:56:47	13:05:13	00:08:26	RTO	856.4	856.4	0.0

*Tier 2 Response is equal to Tier 2 Assigned for events with duration less than ten minutes

Appendix

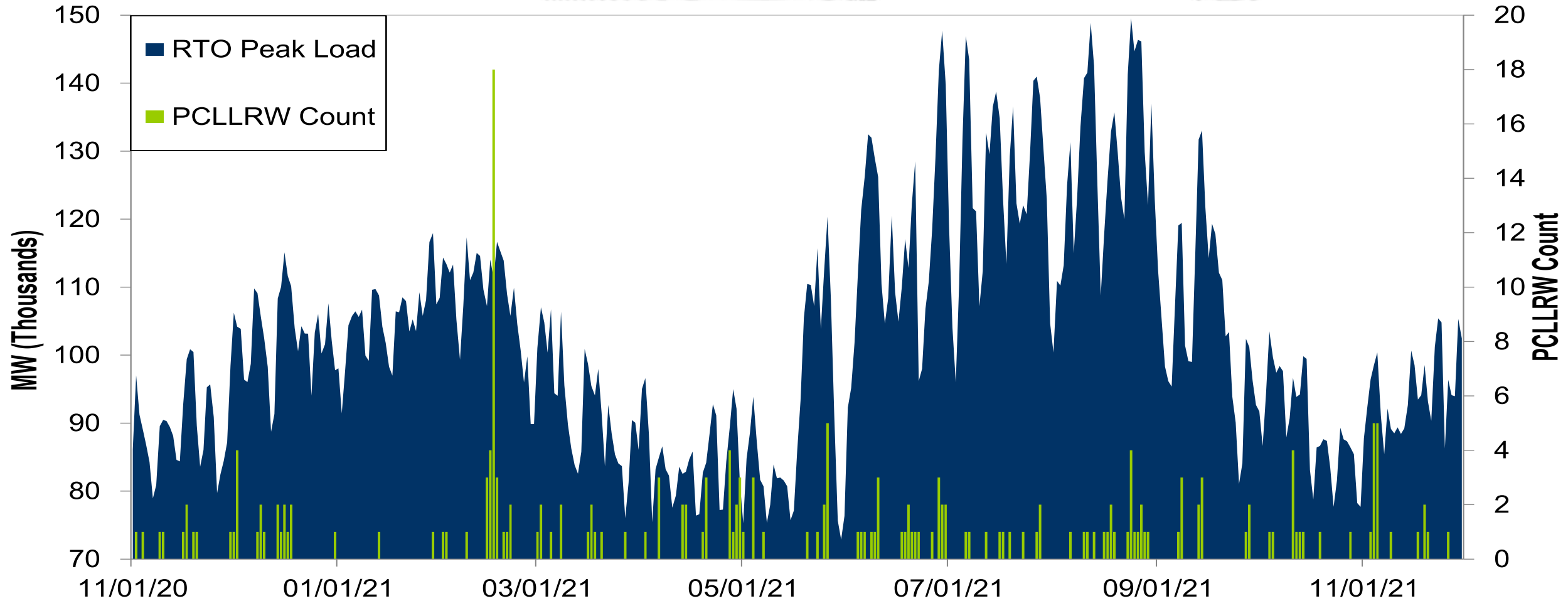
Goal Measurement: Balancing Authority ACE Limit (BAAL)

- 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 4.26% or 8,509 MW.
 The 13-month average total outage rate is 16.70% or 33,358 MW.

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



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System Operations Report



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