

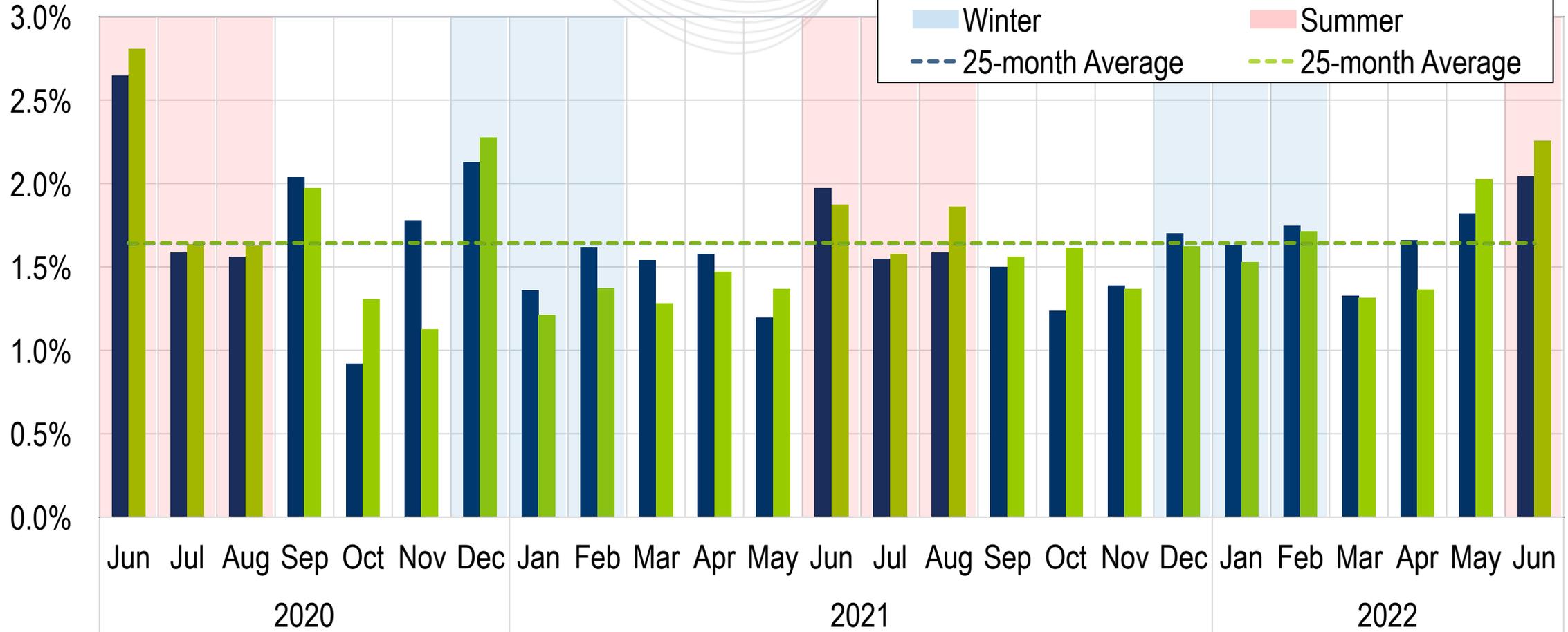


System Operations Report

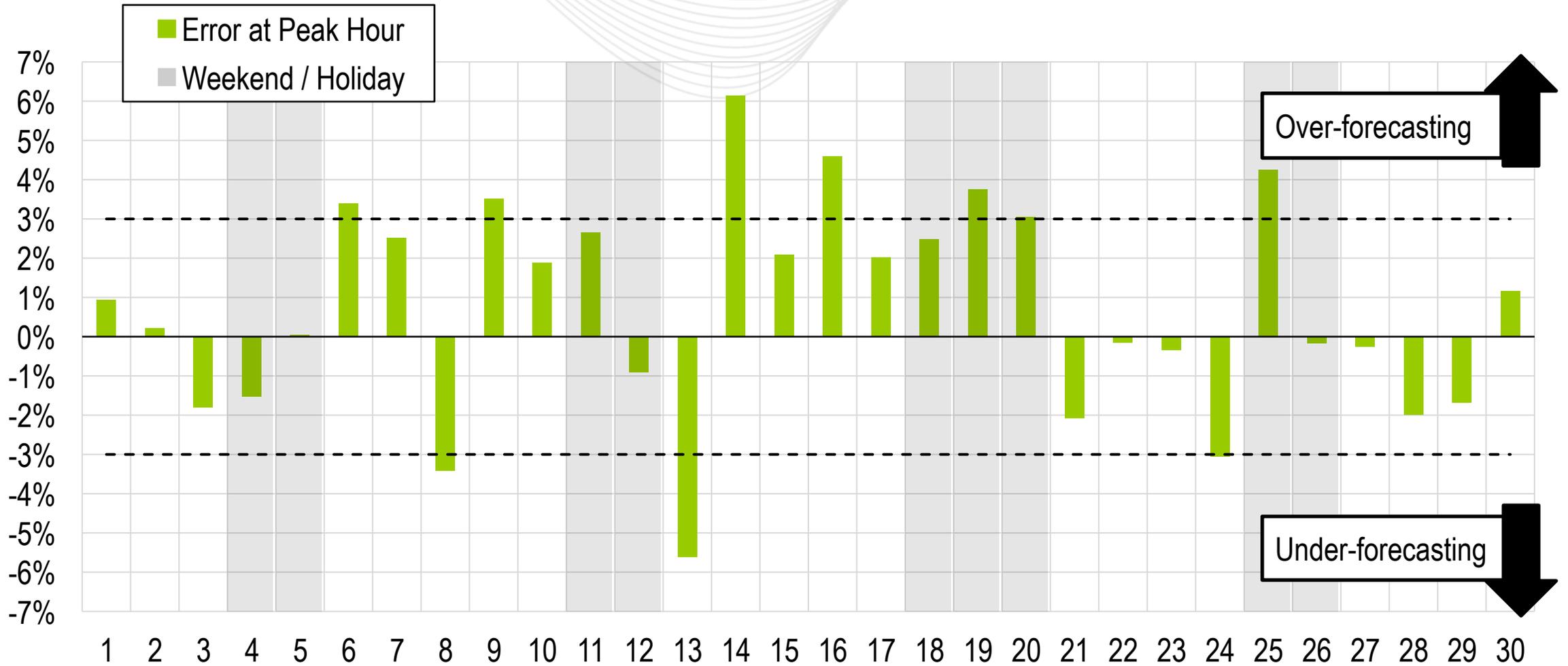
George Chu
Lead Engineer, Markets Coordination
MC Webinar
July 25th, 2022

June 2022
 Hourly Error: **2.04%** Peak Error: **2.26%**

■ All Hours ■ Peak Hours Only
■ Winter ■ Summer
- - - 25-month Average - - - 25-month Average



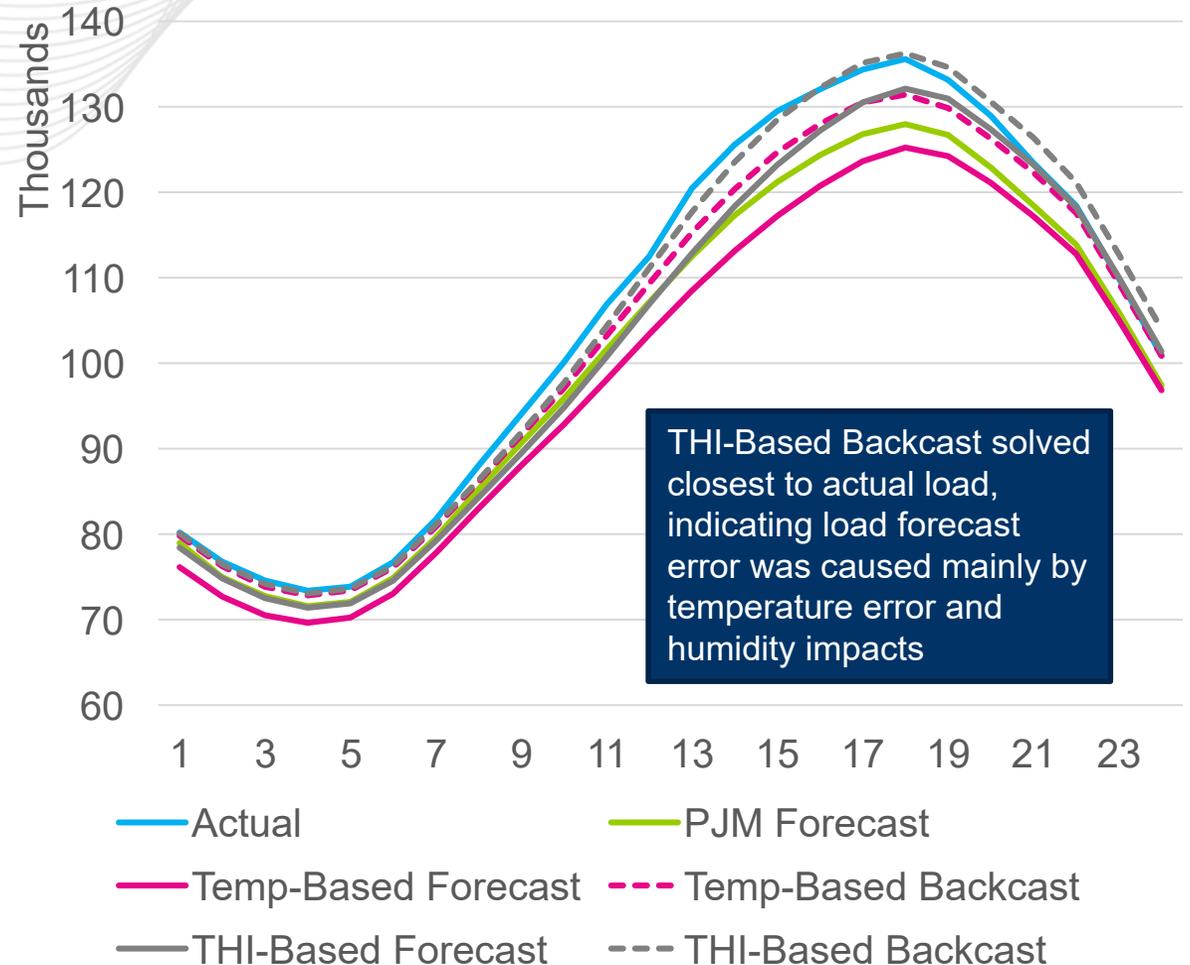
Daily Peak Forecast Error (June)



Load Forecast Error – Monday, June 13, 2022

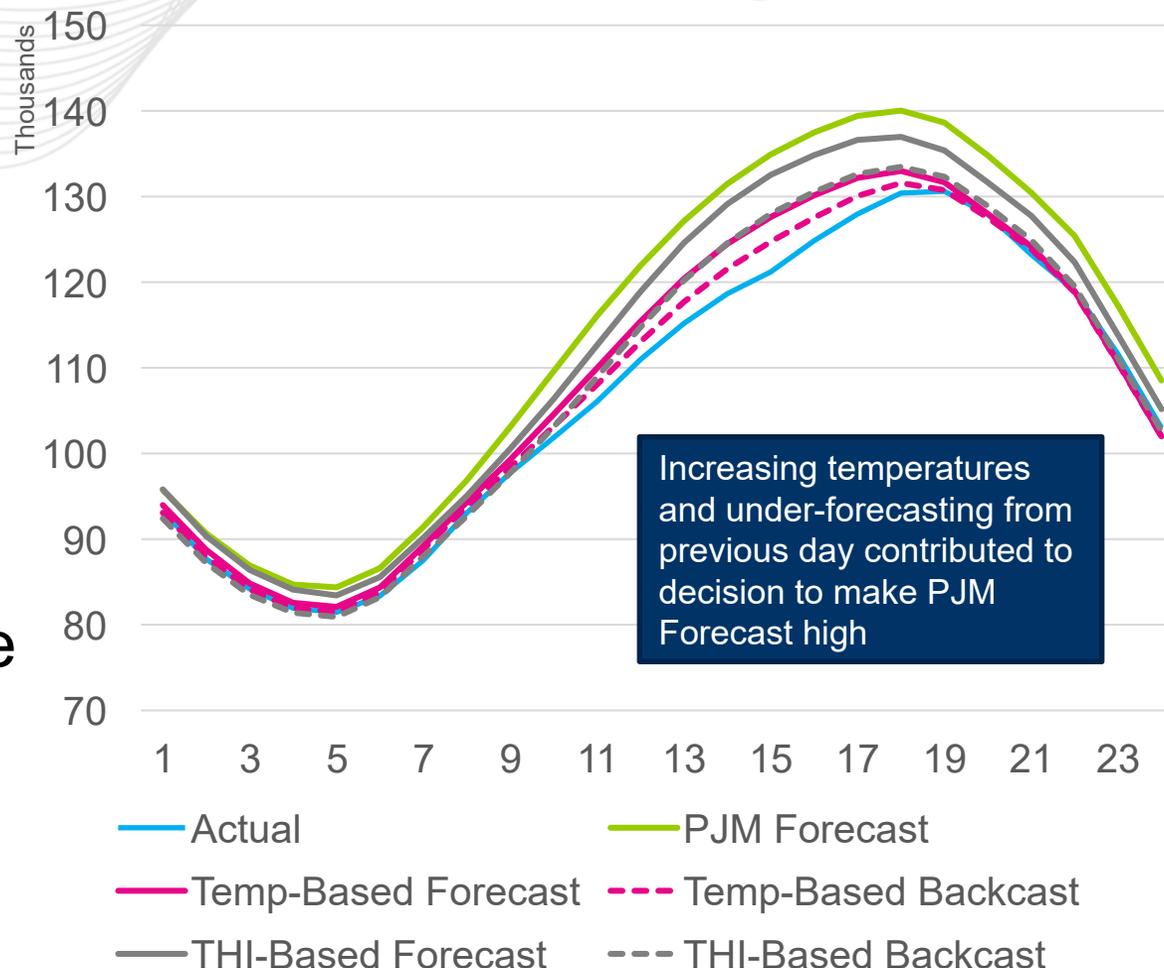
- Significant, widespread under-forecasting of temperatures throughout entire RTO
- First occurrence of extremely high heat indices this year
- Drastic increase in temperature and load from previous day (Sunday)
- Storms, which would have lowered load, did not materialize until after the load peak

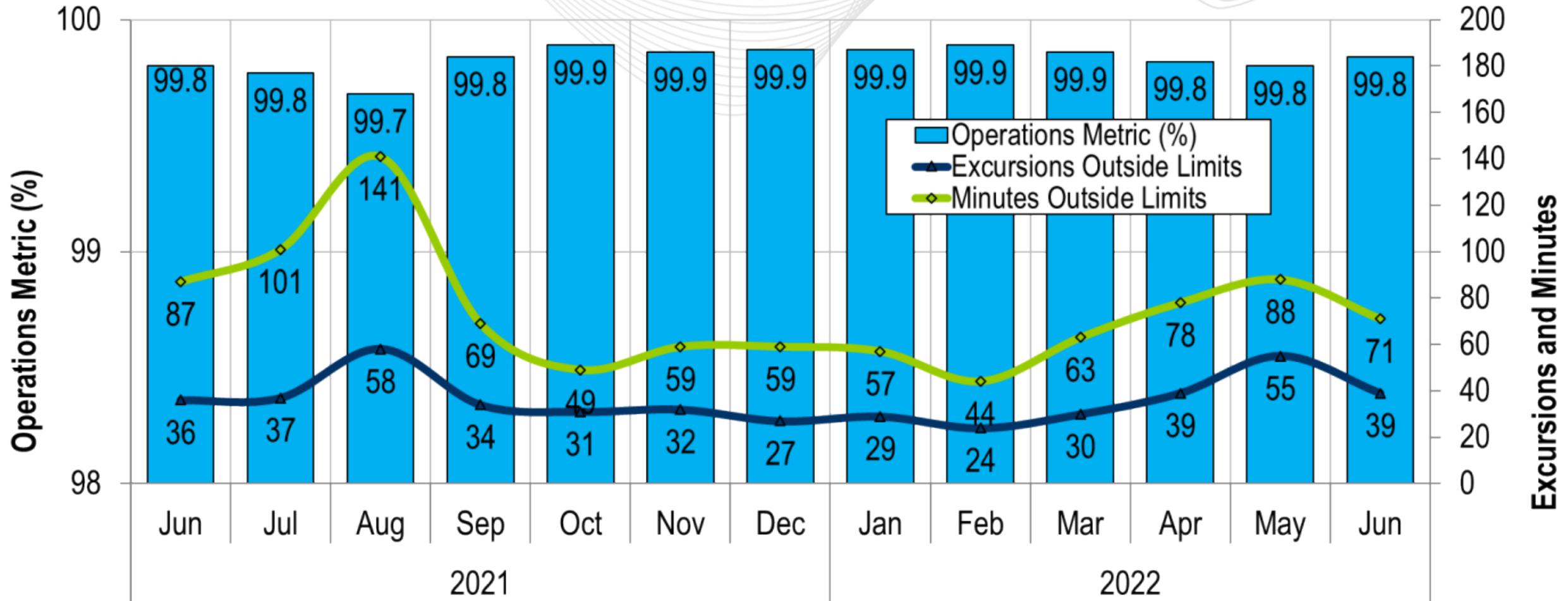
Day-Ahead Load Forecasts for 6/13



Day-Ahead Load Forecasts for 6/14

- High load forecast initially
 - Heat expected to intensify in the west
 - Storms expected, but location uncertain
 - Under-forecasting previous day
- Over-forecasting of temperatures, significant in some zones due to storm activity
- Ongoing customer outages from severe weather the night before





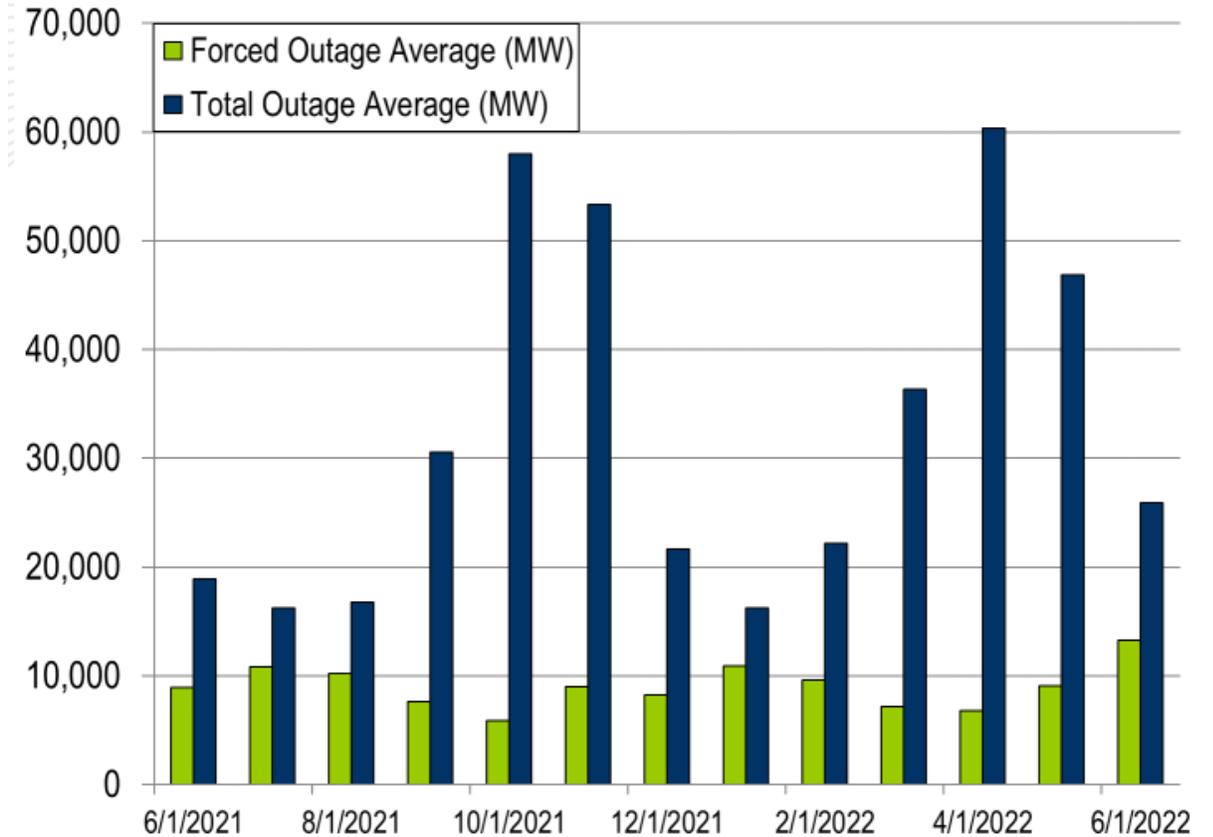
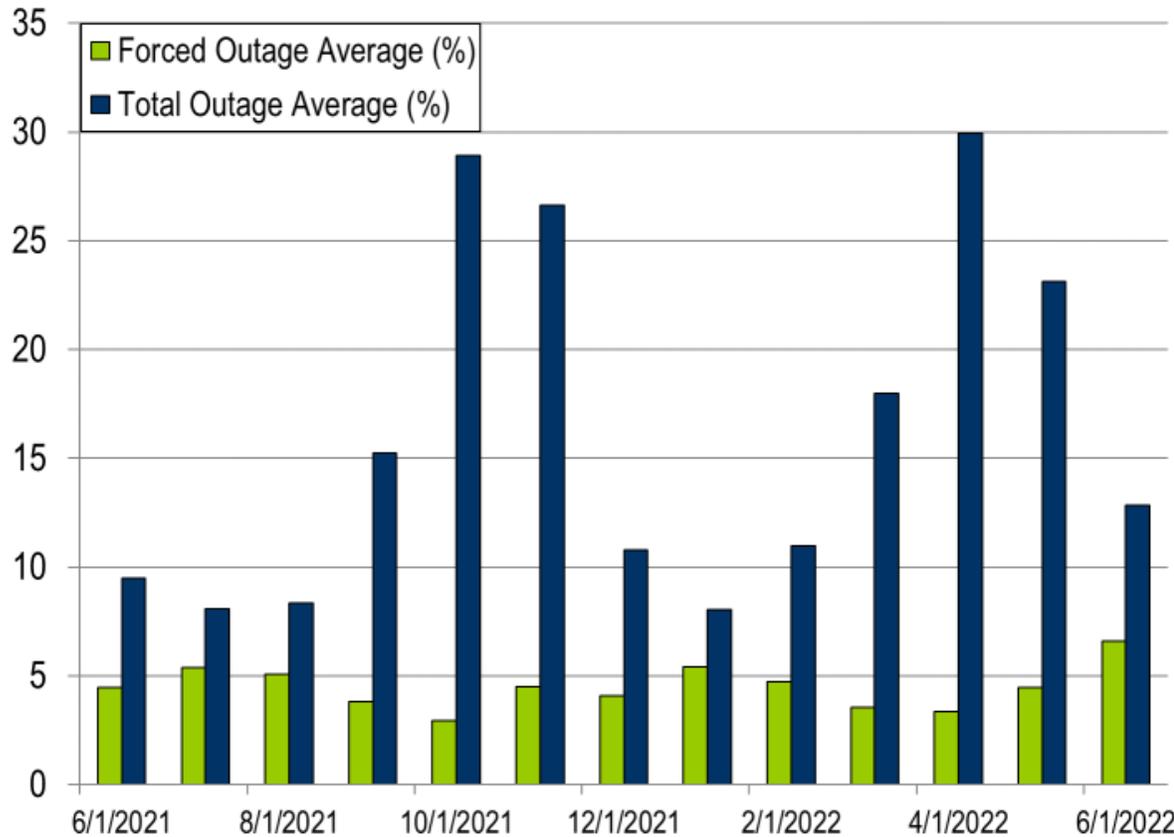
PJM's BAAL performance has exceeded the goal of 99% for each month in 2022.

- Two spinning events
- One reserve sharing event with the Northeast Power Coordinating Council (NPCC)
- The following Emergency Procedures occurred:
 - 59 Post-Contingency Local Load Relief Warnings (PCLLRW)
 - 11 Hot Weather Alerts
 - 1 Maximum Generation Emergency Alert
 - 3 Emergency Load Management Reduction Actions
 - 6 Load Shed Directives
 - 1 NERC EEA Level 1
 - 3 NERC EEA Level 2

- 35 Shortage Cases Approved
- The approved Shortage Cases occurred on:
 - 06/27/22:
 - 2 Shortage Cases for 17:10 and 17:15 intervals
 - Unit trip
 - 06/29/22:
 - 1 Shortage Case for 16:35 interval
 - Load coming in higher than forecasted
 - Unit ramping down

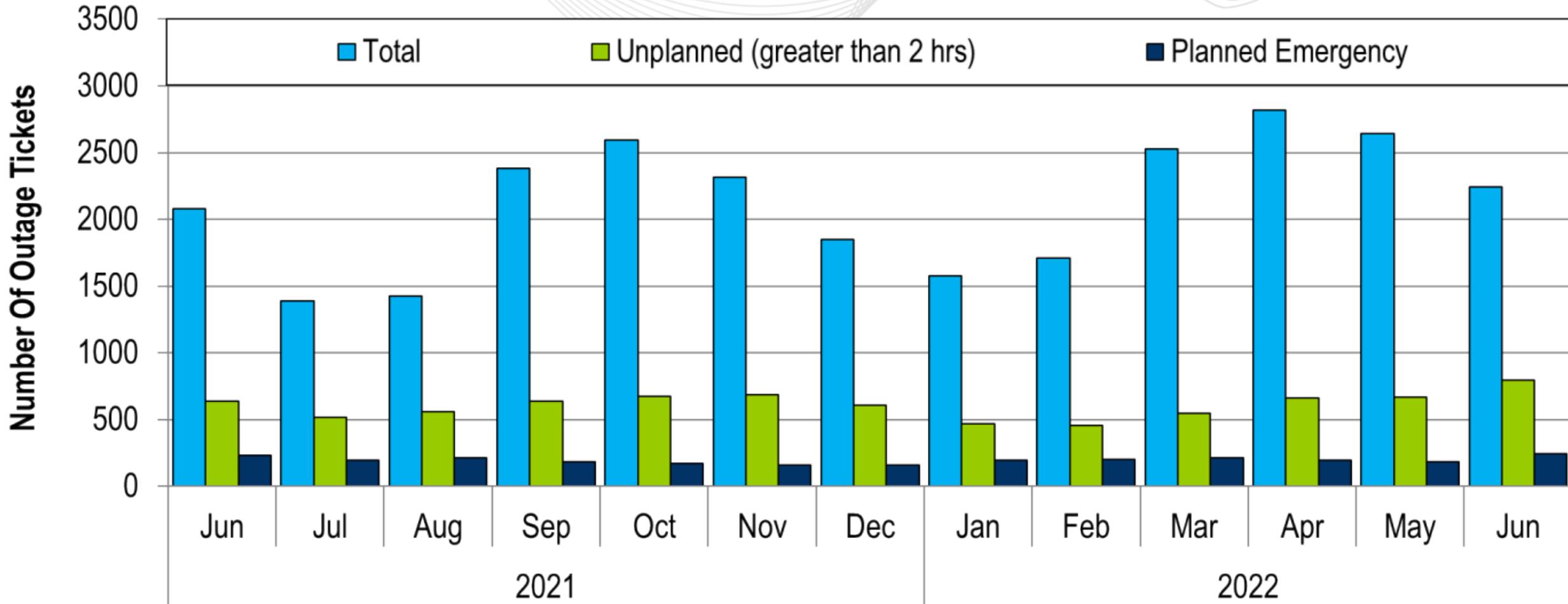
- 35 Shortage Intervals approved by Dispatch
 - Between 14:55 and 18:05
- All intervals reviewed and validated during LMP Verification on June 14

Number of Intervals	Reserve Penalty Factors	Factors
22	MAD & RTO – Primary	<ul style="list-style-type: none"> • Under-forecasting during peak hours • Unit trip during peak hours
8	MAD & RTO – Primary and Sync	
3	MAD – Primary / RTO Primary & Sync	
2	RTO Primary	



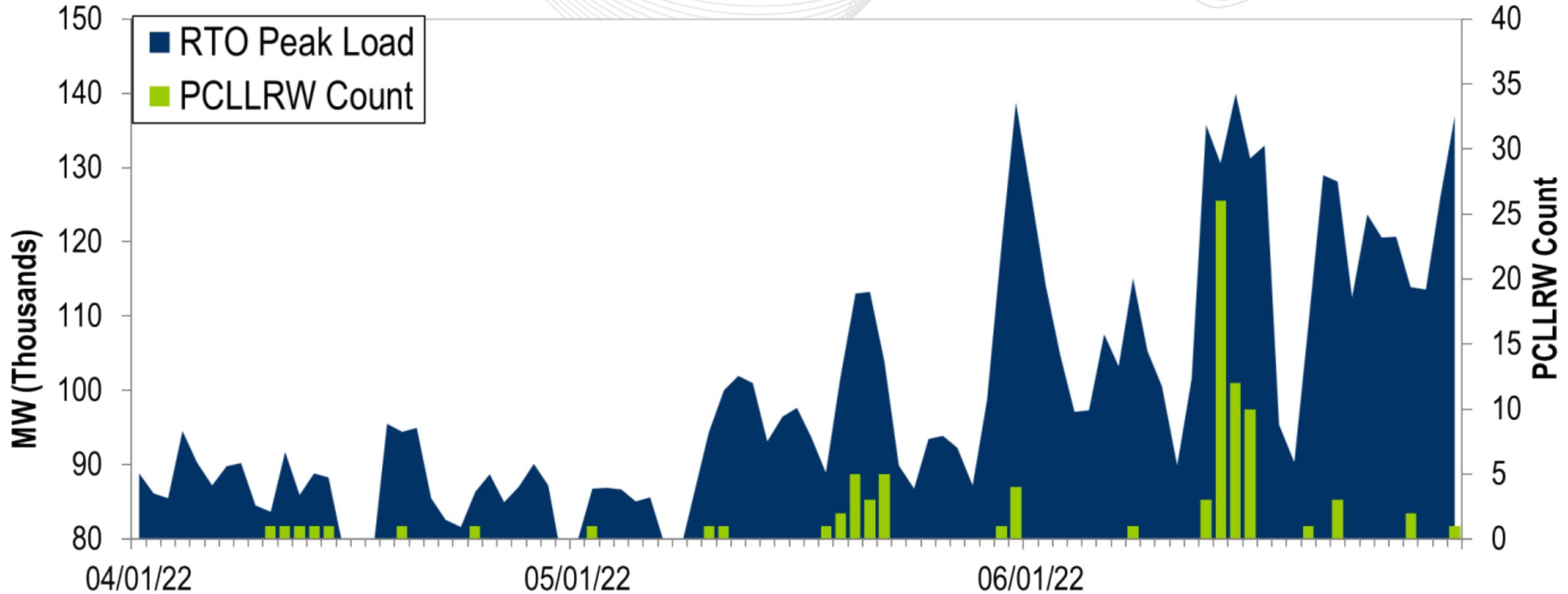
The 13-month average forced outage rate is 4.50% or 9,043 MW.
 The 13-month average total outage rate is 16.20% or 32,581 MW.

2021-2022 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	06/22/22	15:06:33	15:13:45	00:07:12	RTO	658.8	305.5
2	06/27/22	17:01:40	17:10:43	00:09:03	RTO	516.7	595.5

Event	Date	Start Time	End Time	Duration	Region	Tier 2 Assigned (MW)	Tier 2 Response (MW)	Tier 2 Penalty (MW)
1	06/22/22	15:06:33	15:13:45	00:07:12	RTO	1121.2	1121.2	0.0
2	06/27/22	17:01:40	17:10:43	00:09:03	RTO	1267.7	1267.7	0.0

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

Presenter:
George Chu,
George.Chu@pjm.com

SME:
Ross Kelly,
Ross.Kelly@pjm.com

System Operations Report



Member Hotline

(610) 666 – 8980

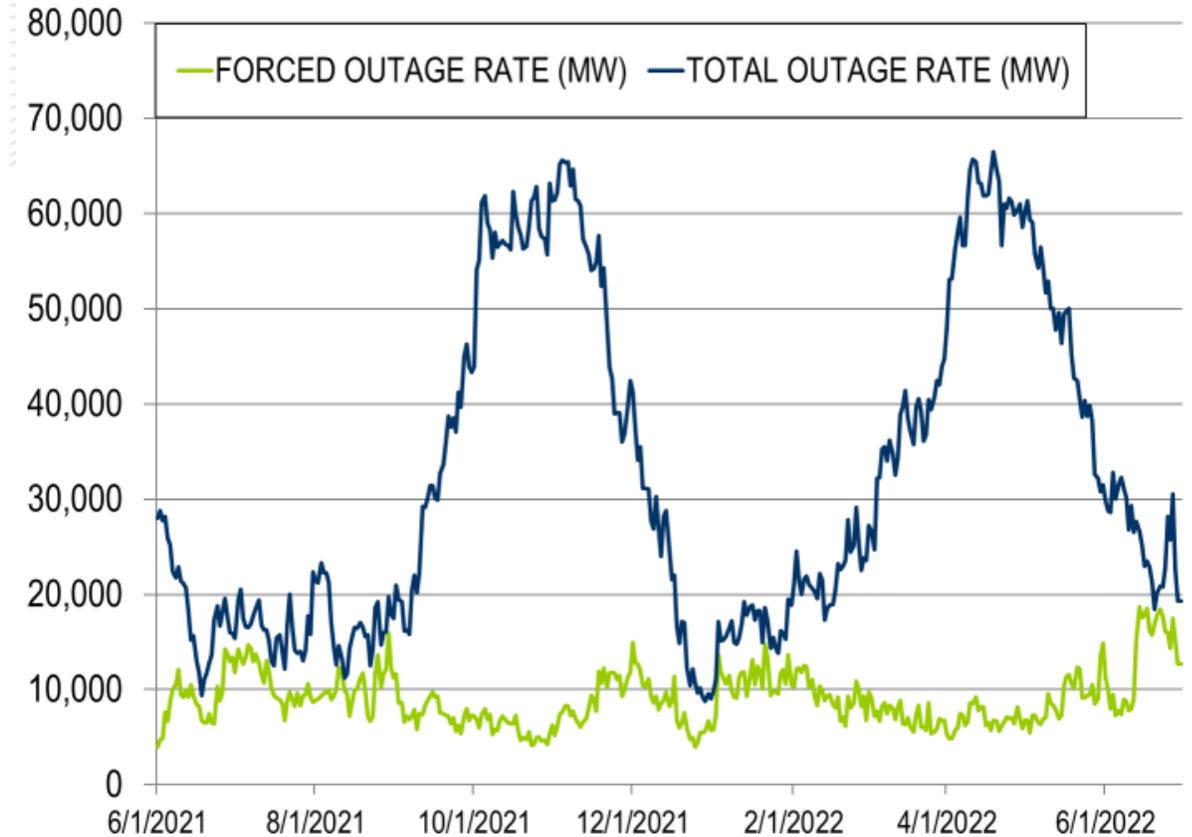
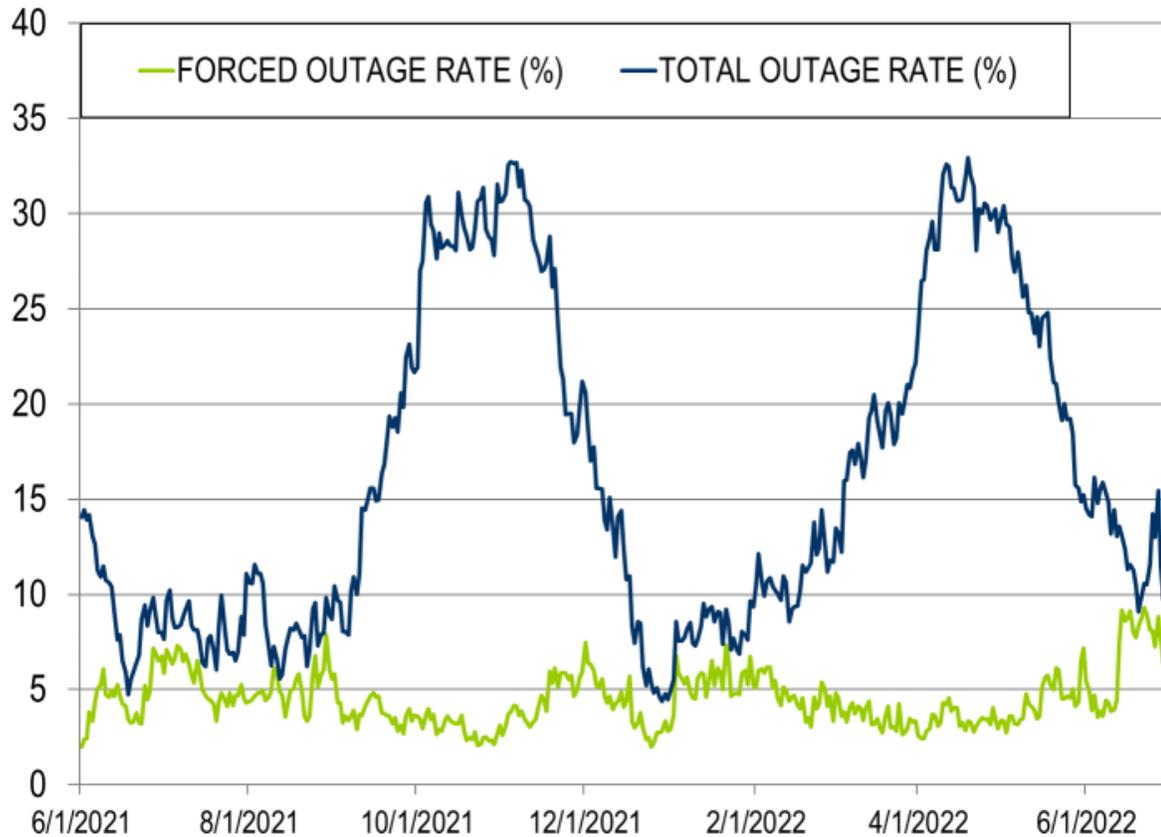
(866) 400 – 8980

custsvc@pjm.com

Appendix

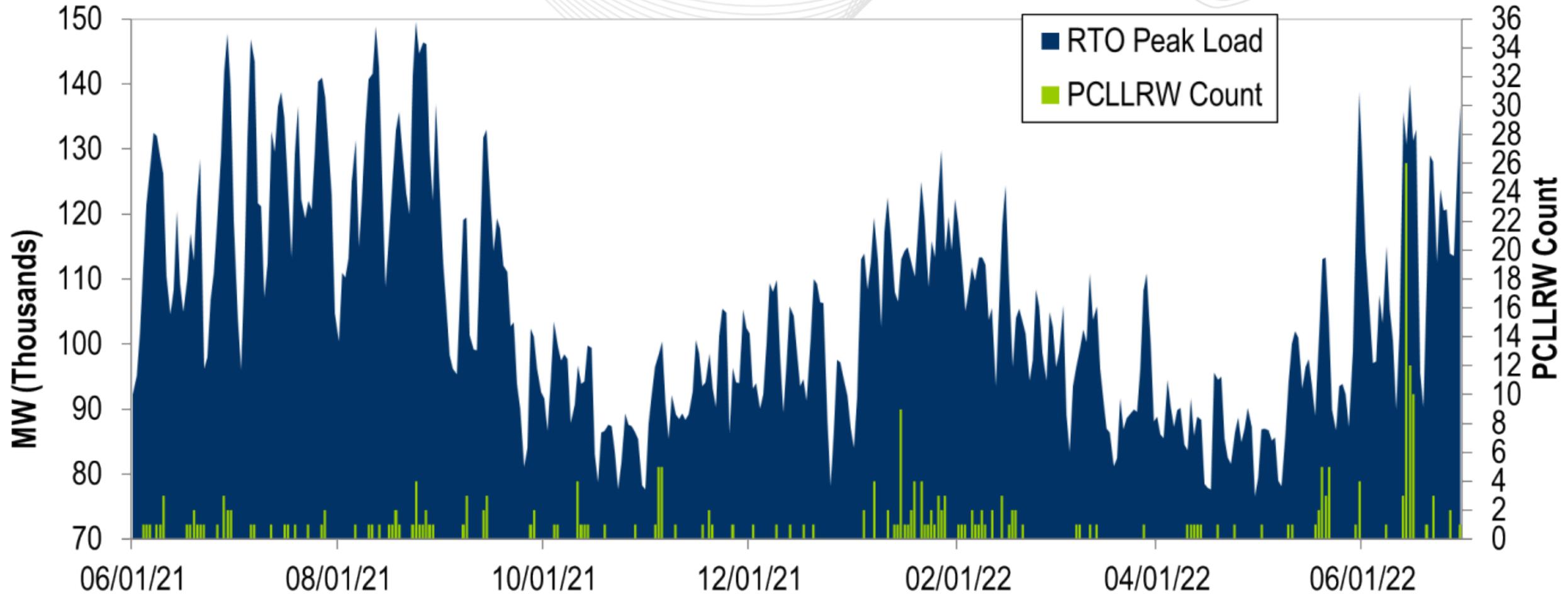
Goal Measurement: Balancing Authority ACE Limit (BAAL)

- 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 4.50% or 9,043 MW.
 The 13-month average total outage rate is 16.20% or 32,581 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

