



# June 13 – June 16 Operational Review

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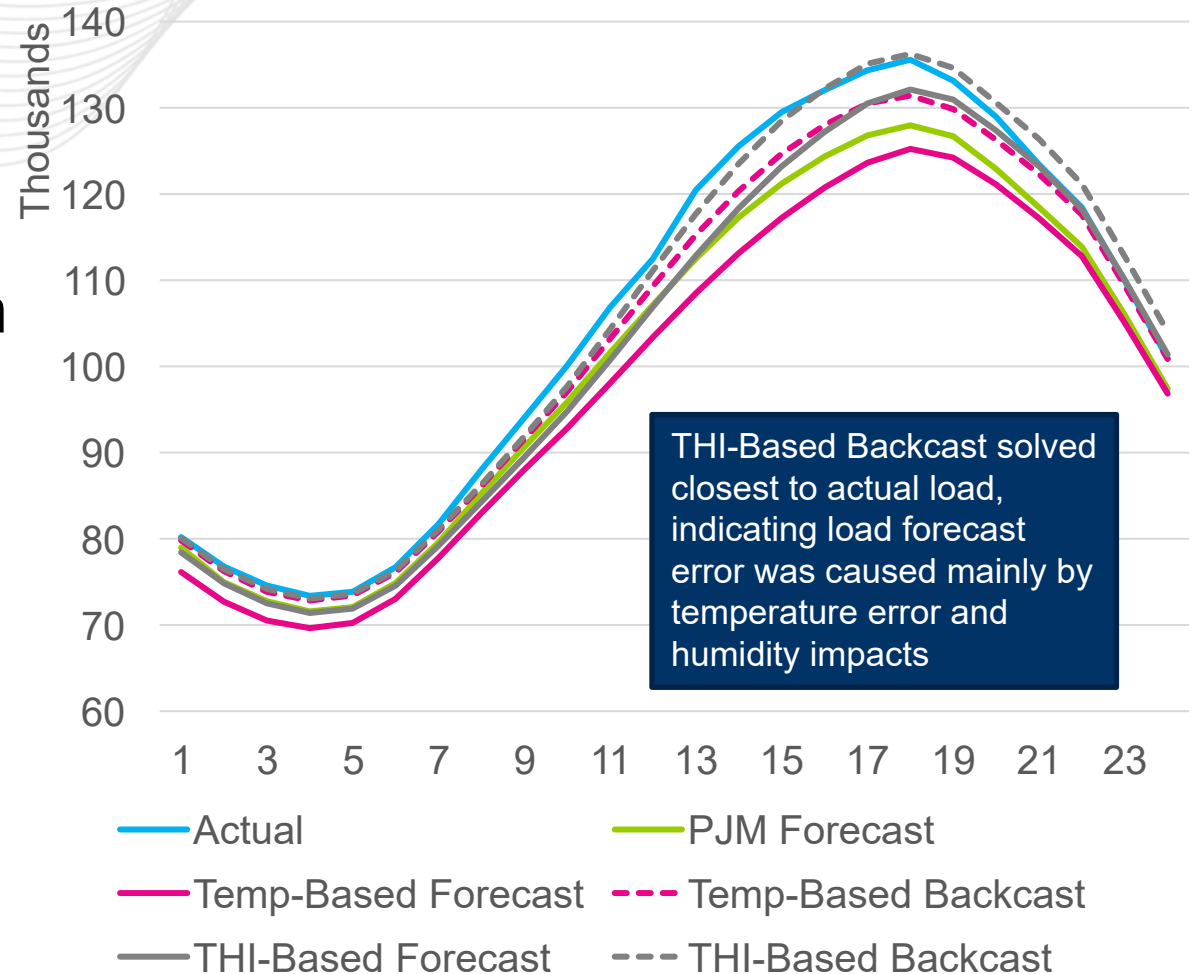
# Monday, June 13 Shortage Intervals

## Monday, June 13, 2022

- Load forecast: 127,965 MW (Actual peak: approximately 136 GW)
- Day-ahead reserves covered
- Hot Weather Alert for EKPC
- Expected to run approximately 16 GW in CTs
- During the operating day
  - Valley load approximately 1,800 MW higher than forecast
  - Actual load by noon was approximately 8,000 MW higher than forecast
  - Generation losses of approximately 1,150 MW
  - Peach Bottom – Conastone 500 kV constraint and actual overload
    - PJM initiated Transmission Loading Relief procedures (i.e., issued a TLR) with adjacent areas
  - Multiple shortage cases approved

- 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



- 35 Shortage Intervals approved by Dispatch
  - Between 1455 and 1805
- All intervals reviewed and validated during LMP Verification on June 14

Number of Intervals	Reserve Penalty Factors
22	MAD & RTO - Primary
8	MAD & RTO – Primary and Sync
3	MAD – Primary / RTO Primary & Sync
2	RTO Primary



# Tuesday – Thursday, June 14–16

## Severe Storm/Electricity Interruptions in AEP

- Tornadoes/severe storms moved through the western part of the RTO beginning Monday, June 13, impacting dozens of bulk electric system facilities
- Hot Weather Alert for western area of PJM

Time	Event
13:00 – 14:00	Seven 138 kV facilities in the AEP zone tripped
	Actual load on several facilities <b>above</b> load dump rating
14:02 – 14:35	PJM issued several load shed directives to AEP to alleviate local thermal overloads created by the additional outages
	This action initiated the Performance Assessment Interval (PAI)
	Contingency switching was used where possible to manage thermal loading
15:50	Pre-Emergency and Emergency Load Management Reduction Action for the Marion area of AEP
	Multiple N-5 potential cascade overloads
19:21	PJM issued an additional load shed directive to mitigate a potential N-5 cascading outage for the Beatty – Bolton 138 kV line

Hot Weather Alert for the western part of PJM

Time	Event
02:58	Load shed directive from Tuesday canceled
	Several lines that had tripped the previous day were returned to service in the early morning hours
~10:30 – 10:40	Three 138 kV lines in AEP tripped
10:41	PJM issued a load shed directive to relieve overload on Gahanna – Hap Cremean 138 kV line
~10:42	Gahanna – Hap Cremean 138 kV line tripped
	This action initiated the Performance Assessment Interval (PAI)



Contingency switching where possible to manage thermal loading

Time	Event
10:42	HyattCS to Hayden 345 kV line recalled on Tuesday and was put back in service
10:50	Pre-Emergency and Emergency Load Management Reduction Action for the Marion area of AEP called
11:40	Load shed directive issued to mitigate a potential N-5 cascading outage for the Kenney – Roberts 138 kV line
22:25	Several lines returned to service and load decreased enough
	All load shed directives ended
	Performance Assessment Interval ends

- Hot Weather Alert for the western part of the RTO

Time	Event
~10:36	Corridor to Blendon 138 kV line (that had tripped the previous day) tripped
	Sufficient generation was available to control the constraint

- Contingency switching where possible to manage thermal loading
- As load continued to increase, several post-contingency local load relief warnings were issued (no generation or switching available)

Time	Event
~12:18	Corridor to Morse 138 kV line tripped
12:30	Pre-Emergency and Emergency Load Management Reduction Action for the Marion area of AEP called
	This action initiated the Performance Assessment Interval (PAI)
14:22	Bexley – St. Clair 138 kV line returned to service
16:31	Morse – Spring Rd – Genoa 138 kV line returned to service
17:00	Pre-Emergency and Emergency Load Management Reduction Action for the Marion area of AEP canceled
	Performance Assessment Interval ends

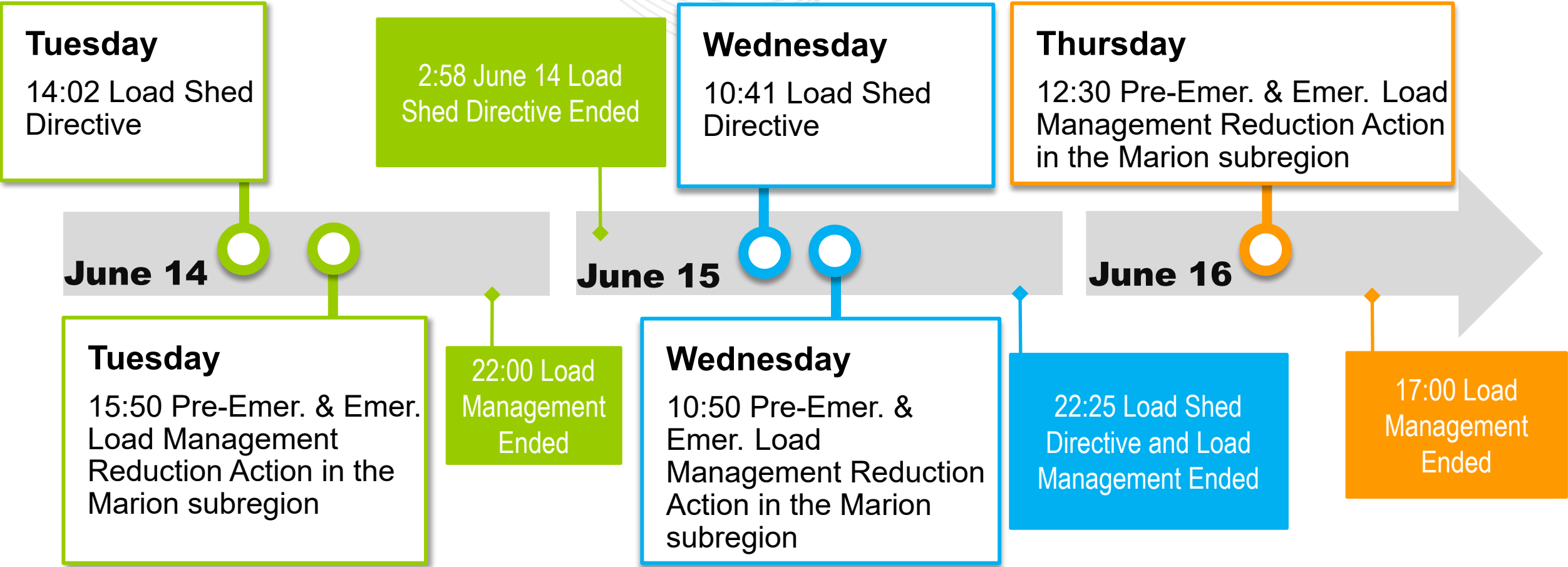


# Load Management/ Performance Assessment Intervals

Zone identified by PJM System Operations based on the area impacted by transmission outages and subsequent emergency procedures

- Demand Response did not set LMP
- Price set by worst contingency in PJM SCED
  - Bound at Transmission Constraint Penalty Factor
- $\approx$ 100 MW Demand Response called and compensated to reduce load

# Performance Assessment Interval (PAI) Timeline



## **Preliminary balancing ratios will not be posted**

- There were a small number of generation owners with Capacity Resources located within the area of the various localized Emergency Actions issued on all three days
  - The quantity of generation owners falls below the thresholds specified in PJM's confidentiality rules detailed in [Manual 33](#)