

Q&A for October 2, 2019 Performance Assessment Interval (PAI) Event

Version: 1

Q1 The PJM Now App and Emergency Procedures indicated that the PAI began at noon but the email notification stated that it began at 1400. Which one is correct?

A1 The PAI began at 14:00 in all four zones when the Pre-Emergency Load Management was requested to be offline. The PAI was triggered by the deployment of Pre-Emergency Load Management that was notified at least 2 hours prior to the full implementation of the load reductions. The amount of lead time (advanced notification) to fully implement the load reductions is based on the tariff requirements. The PAI concluded for the BGE, PEP, and DOM zones at 15:45 and for the AEP zone at 16:00. PJM will update the PJM Now App and the Emergency Procedures tool to more effectively communicate when a PAI is in effect.

Q2 Why did the Pre-Emergency Load Management trigger a PAI but not set price?

A2 The Pre-Emergency Load Management Reduction Action is a PJM tariff-dictated trigger for a PAI. The Load Management resources are deployed when PJM expects to be short on reserves in the future. Since system conditions changed, the Load Management resources were not marginal and therefore did not set price. There is no rule that load management resources must be marginal when dispatched, regardless of whether they triggered a PAI or not.

Q3 Is there a minimum dispatch duration for Pre-Emergency Load Management?

A3 The minimum dispatch duration is 1 hour regardless of lead time.

Q4 How much load reduction was available in each of the Pre-Emergency Load Management categories – 30, 60 and 120 minute lead times?

A4 For the AEP, BGE, DOM and PEPCO zones, there was 728 MW of 120-minute, 43 MW of 60-minute, and 888 MW of 30-minute reported as available by the Curtailment Service Providers. Only Capacity Performance (CP) DR was obligated to respond since the event was outside the Base DR compliance period of June to September. The following committed amounts of CP DR were obligated to respond: 23.3 MW in AEP, 0.2 MW in BGE, 0 MW in DOM, and 1.9 MW in PEPCO.

Q5 How was the Load Management modeled in the Real-Time Security Constrained Economic (RT SCED) dispatch engine and Locational Pricing Calculator (LPC)?

A5 The Load Management was modeled at each of the four zones and was eligible to set price in real-time for energy or any active transmission constraint.

Q6 Was Base Demand Response required to respond during the PAI since it was outside the compliance period between June and September?

A6 Base Demand Response was not required to respond since it was outside the compliance period but was encouraged to respond if it was available and is eligible for Bonus payment.

Q7 If a unit was not called to come online during the PAI but was in one of the PAI zones, will it be assessed non-performance charges?

A7 Notification is given that all generators in the applicable region should be on-line when instructed by PJM. Prior to coming online, generators are required to notify PJM. Generators that are not able to meet the PJM dispatch instructions during the applicable times of this procedure or are not given a PJM dispatch instruction solely because of their operating parameters or the submission of a market-based offer higher than its cost-based offer and therefore do not run, may be assessed a Non-Performance Charge.

Q8 How does a member receive ICCP notifications of a PAI?

A8 ICCP PAI message is a secondary source for the Emergency Action communication for members. All Call and Emergency Procedures will continue to be the primary source for communicating Emergency Actions to members. Members had to opt in by sending an email to PJMTelemetrySupport@pjm.com to be set up to receive the signal.

Q9 How does DR receive notification of a Load Management event?

A9 The primary method is electronic/web service notification from DR Hub. Each CSP is obligated to poll DR Hub once per minute 24 hours a day/7 days a week to receive dispatch instructions for any registrations. The secondary method is the Emergency Procedure postings and the tertiary method is All-Call.

Q10 How much economic demand response activity was there on October 1?

A10 Economic demand response dispatched across PJM estimated 16MW maximum load reduction.

Q11 Why did PJM call the 120-minute lead time Load Management instead of the 60-minute or 30-minute lead time?

A11 PJM normal protocol is to deploy the 120-minute lead time resources before the 60- or 30-minute lead time resources in case system conditions deteriorate and because they are less expensive. This allows PJM to reserve the shorter and more expensive lead time resources for later deployment. PJM will typically deploy the 30-minute DR resources first if there is an unforeseen problem such as a unit tripping offline and 120-minute lead time resources take too long to address the immediate issue. The energy price caps are higher for shorter lead time resources: 120-minute lead time resources = \$1,100, 60-minute lead time resource = \$1,425, 30-minute lead time resources = \$1,849.

Q12 I am a Base Capacity Resource that was not required to respond to the PAI but did. Am I guaranteed a Bonus Payment?

A12 Not necessarily. Only if Non-Performance Charges are assessed and collected can Bonus dollars be credited to over-performing resources. Bonus payments are assigned a share of the collected Non-Performance Charge revenues based on the ratio of an individual resource's Bonus Performance quantity to the total Bonus Performance quantity (from all resources) for the same Performance Assessment Interval.

Q13 How would energy price formation had been different if instead of calling DR, PJM had dispatched inflexible generators with similar characteristics (2 hour start time, 1 hour min run time, EcoMin=EcoMax=650 MW, offer = \$1100/MWh)

A13 Pricing outcomes would have been no different if an inflexible generator with the same characteristics as the Load Management was dispatched. The economic minimum of the Load Management is fully relaxed in the Real-Time Security Constrained Economic Dispatch (RT SCED) engine. This ensures that if any amount of the Load Management was needed it will set price.

Q14 PJM called two separate actions triggering PAI events on 10/2. Action 102663 calling for pre-emergency load management action in the DOM zone and Action 102664 that called for Pre-Emergency Load Management Reduction Action in the AEP, BGE, and Pepco zones. Why were these actions called separately by PJM? Were the reliability issues not common to all four zones?

A14 Actions 102663 and 102664 were not separate events. The Emergency Procedures application groups events with similar characteristics to minimize the amount of postings. These actions were logged separately in the Emergency Procedures application because DOM does not have any Capacity Performance (CP) Demand Response therefore it was processed as being different from the AEP, BGE, and Pepco action.

Q15 The Dominion Zone had zero MWs of 120-minute lead time CP Demand Response available. As such, why did PJM call Pre-Emergency Load Management in this zone?

A15 The Pre-Emergency Load Management Reduction Action was for both CP and Base Demand Response. Even though it was outside the compliance period for Base Demand Response, PJM anticipated some response from the DOM Base Demand Response. The DOM zone was selected since it would help with both the capacity issues that were anticipated over the peak hours of the day and the transmission constraints PJM was expecting.

Q16 Once PJM calls an action that triggers a PAI event for a future time period, can PJM cancel the PAI event? As an example, on Oct 2nd, PJM called 120-minute lead time Pre-Emergency Load Management at 12:00 triggering a PAI event beginning at 14:00. Can PJM cancel the actual PAI event prior to 14:00 if it no longer is forecasting reliability concerns?

A16 PJM generally honors the lead time and down time of a resource when calling it on or off. However, if PJM determined it no longer needed the Load Management prior to the effective time, PJM could end the Pre-Emergency Load Management Reduction Event which would also avoid the PAI. In this situation, the Demand Response would not get measured for compliance but could be eligible for a one hour emergency energy settlement since there is a one hour minimum dispatch duration.

Q17 What were the outage rates by fuel type on October 2?

10/2/2019		12:00	13:00	14:00	15:00	16:00	17:00	18:00
Coal	Planned Outage Rate	17.10%	17.10%	17.10%	17.10%	17.10%	17.10%	17.10%
	Maintenance Outage Rate	4.76%	4.76%	4.76%	4.80%	4.76%	4.76%	4.76%
	Forced Outage Rate	10.76%	10.88%	11.17%	10.83%	11.28%	10.92%	11.17%
Gas	Planned Outage Rate	8.78%	8.78%	8.78%	8.78%	8.78%	8.78%	8.78%
	Maintenance Outage Rate	3.88%	3.88%	3.78%	3.78%	3.78%	3.78%	3.78%
	Forced Outage Rate	8.38%	8.58%	7.18%	6.74%	6.99%	7.03%	6.57%
Hydro	Planned Outage Rate	19.56%	19.56%	19.56%	19.11%	19.11%	19.11%	19.11%
	Maintenance Outage Rate	7.56%	7.56%	7.56%	7.56%	7.56%	7.56%	7.56%
	Forced Outage Rate	1.33%	1.33%	1.33%	1.33%	1.33%	1.33%	1.33%
Nuclear	Planned Outage Rate	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%
	Maintenance Outage Rate	4.70%	4.70%	4.70%	4.70%	4.70%	4.70%	4.70%
	Forced Outage Rate	2.53%	2.53%	2.28%	2.28%	2.28%	2.28%	2.28%
Other	Planned Outage Rate	5.39%	5.39%	5.39%	5.39%	5.39%	5.39%	5.39%
	Maintenance Outage Rate	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%
	Forced Outage Rate	11.17%	12.17%	8.71%	8.33%	8.32%	8.30%	8.30%
Solar	Planned Outage Rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Maintenance Outage Rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Forced Outage Rate	2.54%	2.54%	2.54%	2.54%	2.54%	2.54%	2.54%
Wind	Planned Outage Rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Maintenance Outage Rate	4.94%	4.94%	4.87%	4.87%	4.72%	4.72%	4.72%
	Forced Outage Rate	8.84%	8.84%	8.84%	8.84%	8.84%	8.84%	8.84%

A17

The following questions are addressed in the paper presented at the November Operating Committee meeting

- Q1** Can PJM provide more information on the inputs and modeling process that will be used in its load backcast analysis?
- Q2** Can PJM explain the negative price outcomes on October 2 in the western part of the footprint, specifically in AEP?
- Q3** Why didn't the Pre-Emergency Load Management that was called set price?
- Q4** Were the non-firm exports that were curtailed capacity-backed transactions?
- Q5** At what time did PJM start curtailing the non-firm exports?
- Q6** Can PJM address the pricing outcomes on October 1 and 2?
- Q7** Can PJM share how much generation was on a scheduled or forced outage?
- Q8** What was the hourly load forecast progression and hourly temperature progression leading into the October 2 event?
- Q9** Can PJM explain what caused the decision to call the 120-minute lead time Pre-Emergency Load Management Reduction Action?
- Q10** How much load was exposed to real-time prices on October 2?
- Q11** Can PJM explain the actions it took days and hours prior to the October 2 operating day to prepare for the expected hot weather?
- Q12** How many of the MWs from the generators that failed to start the morning of 10/2 were Capacity Performance MWs?

Q13 Were the number of failures to start a driving factor for calling the Pre-Emergency Load Management Reduction Action?

Q14 Can PJM explain how the Day Ahead Scheduling Reserve (DASR) requirement was procured and provide additional information on the RT reserves? Did PJM increase the reserve requirement?