



Markets Gateway Sandbox Virtual Session Regulation Redesign Phase 1

June 20, 2025

PJM has made all efforts possible to accurately document all information in this presentation. The information seen here does not supersede the PJM Operating Agreement or the PJM Tariff or any pending FERC Filings or Orders.

Effective October 1, 2025 several aspects to the PJM Regulation Market will change

Result of Regulation Market Design Senior Task Force

The intent of this virtual session is to:

Walk through the Markets Gateway changes resulting from the Regulation Redesign Phase 1

Create opportunity for the Regulation Market Participants to share their sandbox testing experiences and ask clarifying questions

If time permits, entertain other general questions relating to the Phase 1 only





Regulation Redesign – Implementation Phases and Timeline

**FERC Approval on
June 14, 2024**

Clean order accepting
Regulation Market
Reform 205 filing

**Phase 1
Go-Live**
Oct. 1, 2025

**Phase 2
Go-Live**
Oct. 1, 2026

2024

2025

2026

Phase 1 Summary of Changes

#	Design Components	Summary Description
1	Signals and Products	Change from two signals (RegA and RegD) bidirectional to one signal bidirectional that all resources that are assigned Regulation in a given market interval will follow.
2	Requirement MW	Changes to better reflect operational needs, with consideration both to historic and future system conditions
3	Performance Scoring	Change from accuracy, delay and precision to precision only.
4	Offer and Clearing Timing	Eliminate “cost increase in VOM” except for Reg-only resources, change from hour clearing and commitment to 30-minute clearing and commitment.
5	Opportunity Cost Calculation Reform	<ol style="list-style-type: none"> 1. Use the schedule the resource is running for energy or else the cheaper of available schedule for offline. 2. Use tracking desired MW at LMP ramp rate limited. 3. Use the area between LMP and the energy schedule the resource is running on.
6	Settlement	<p>For the eligible resources, Settlement will calculate the shoulder interval opportunity cost for two five-minute ramp-in intervals before the resource Regulation operation and two five-minute ramp-out intervals following the resource Regulation operation (currently, three intervals ramp-in and three intervals ramp-out).</p> <p>Also, Settlement will update the calculation for the Regulation Mileage Credit (currently Performance Credit) such that the mileage ratio is equal to [Real-Time Regulation Mileage/Historic Regulation Mileage]</p>



Regulation Redesign Phase 1 - Markets Gateway Changes

1. Consolidates two signals (RegA and RegD) bi-directional to one signal (Reg or RegA) bi-directional will eliminate RegD Offers;
2. Removes the Variable Operation and Maintenance (VOM) component from the Regulation Offers except for the Regulation only (non-energy) resources;
3. Changes the Regulation Performance Offer to Mileage Offer
4. Updates the lockout time for the Regulation Offers, self-schedule, and availability status
5. While Regulation clearing and commitment changes to every 30-minutes, the inflexible reserve clearing and commitment remain at every 60 minutes.



Markets Gateway Summary of Changes

#	Markets Gateway Screen	Summary Description
1	Demand Response > Regulation Market > Offers / Updates Generator > Regulation Market > Offers / Updates	On Offer page, removed column ' Reg Type ' for A/D On Update page, merged, deleted and relocated columns;
2	Demand Response > Regulation Market > Offers Generator > Regulation Market > Offers	Changed Performance Offer Price to Mileage Offer Price Changed Performance Offer Cost to Mileage Offer Cost
3	Generator > Regulation Market > Offers	Removed VOM except for regulation-only resources
4	Demand Response > Regulation Market > Updates Generator > Regulation Market > Updates	Changed Performance Offer Price to Mileage Offer Price Changed Performance Offer Cost to Mileage Offer Cost
5	Demand Response > Regulation Market > Availability Updates Generator > Regulation Market > Availability Updates	New screen to indicate availability status and self-schedule on a 30-minute granularity
6	Demand Response > Market Results > Regulation Award Generator > Market Results > Regulation Award	Changed Regulation Award page from hourly granularity to 30-minutes, deleted RegD columns
7	Public > Market Results Ancillary > Regulation Results	Changed Regulation Award page from hourly granularity to 30-minutes

Offer Type	Markets Gateway Location	Deadline to Update
Daily Offer	Demand Response > Regulation Market > Offers Generator > Regulation Market > Offers	End of Rebid Period (14:15) the day before the Operating Day
Hourly Updates	Demand Response > Regulation Markets > Updates Generator > Regulation Market > Updates	35 Minutes Prior to the Operating Hour*
30 Min Availability (Regulation only)	Demand Response > Regulation Market > Availability Updates Generator > Regulation Market > Availability Updates	35 Minutes Prior to the Operating Interval

*Note: Hourly Regulation Capability Offer Price/Cost and Hourly Regulation Mileage Offer Price/Cost can only be updated intraday for resources that are opted in to Intraday Offers (IDO). If opted out of IDO, they may still be submitted prior to 14:15 the day before the Operating Day



Impact to Regulation Offers and Status

Parameter	Pre-Reg Redesign Opt Out / IDO	Reg Redesign Opt Out of IDO	Reg Redesign IDO
Offer Price Granularity	Hourly	Hourly	Hourly
Offer Price Update Deadline	1415 Day Before / 65 minutes prior to Operating Hour	1415 Day Before	35 minutes prior to Operating Hour
Offer MW Granularity	Hourly	Hourly	Hourly
Offer MW Update Deadline	1415 Day Before / 65 minutes prior to Operating Hour	1415 Day Before	35 minutes prior to Operating Hour
Status/Self-schedule Granularity	Hourly	Interval	Interval
Status/Self-schedule Update Deadline	65 minutes prior to Operating Hour	35 minutes prior to Target Interval Ending	35 minutes prior to Target Interval Ending



Changes to Offer Price & Offer MW

Market Day: 6/12/2025

Portfolio: [Dropdown] Location: [Dropdown]

Offers Updates Availability Updates

Hour	Reg. Min. MW	Reg. Max. MW	Reg. MW	Reg. Capability Offer Price	Reg. Mileage Offer Price	Reg. Capability Offer Cost	Reg. Mileage Offer Cost	Reg. Min. Offer MW
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

4:09 PM 6/12/2025

Market Day: 6/12/2025

Portfolio: [Dropdown] Location: [Dropdown]

Offers Updates Availability Updates

Hour	Reg. Min. MW	Reg. Max. MW	Reg. MW	Reg. Capability Offer Price	Reg. Mileage Offer Price	Reg. Capability Offer Cost	Reg. Mileage Offer Cost	Reg. Min. Offer MW
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

4:25 PM 6/12/2025

Offer Price & Offer MW are updateable at 16:09 for HE 18

Offer Price & Offer MW are not updateable by 16:25 for HE 18

Takeaway: Offer Price and Offer MW lockout 35 min before the *operating hour*



Changes to Self-schedule & Availability Status

The screenshot shows the PJM Markets Gateway interface. The 'Market Day' is set to 6/12/2025. The 'Regulation Market' is selected in the left sidebar. The 'Availability Updates' tab is active. The table shows the following data:

Interval	Reg Availability
13:30	Available
14:00	Available
14:30	Available
15:00	Available
15:30	Available
16:00	Available
16:30	Available
17:00	Available
17:30	Available
18:00	Not Available
18:30	Self Scheduled
19:00	Available
19:30	Available
20:00	Available
20:30	Available
21:00	Available
21:30	Available
22:00	Available
22:30	Available
23:00	Available
23:30	Available
24:00	Available

The status bar at the bottom indicates the time is 4:17 PM on 6/12/2025.

Self-schedule & Availability Status are updateable at 16:17 for IE 17:30

The screenshot shows the PJM Markets Gateway interface. The 'Market Day' is set to 6/12/2025. The 'Regulation Market' is selected in the left sidebar. The 'Availability Updates' tab is active. The table shows the following data:

Interval	Reg Availability
13:30	Available
14:00	Available
14:30	Available
15:00	Available
15:30	Available
16:00	Available
16:30	Available
17:00	Available
17:30	Available
18:00	Available
18:30	Available
19:00	Available
19:30	Available
20:00	Available
20:30	Available
21:00	Available
21:30	Available
22:00	Available
22:30	Available
23:00	Available
23:30	Available
24:00	Available

The status bar at the bottom indicates the time is 4:25 PM on 6/12/2025.

Self-schedule & Availability Status are not updateable at 16:25 for IE 17:30

Takeaway: Self-schedule and Availability Status lockout 35 min before the *operating interval*



Impact to Regulation Results and Other Parameters

Parameter	Today	Reg Redesign
Regulation Award	Hourly	30 minutes
Performance Score	Hourly	30 minutes
RegTPS Result & Reg Offer Price Used	Hourly	30 minutes
Historical Regulation Mileage	Daily	Daily



Changes to the Market Result Pages

My Tools ▼ Market Day 6/12/2025 PJM Interconnection (OLALEM) | Sign Out Contact | Help

pjm Markets Gateway

Portfolio

Refresh

DA Energy Award **Regulation Award** DA Synchronized Reserve Award RT Synchronized Reserve Award DA Secondary Reserve Award RT Secondary Reserve Award

Interval	Location	Reg Offer MW	Self-Schedule MW	Reg Awarded MW	TPS Result	Reg Offer Price Used	Performance Score
Show all	Show All	Show all	Show all	Show all	Show all	Show all	Show all
16:30		0.0	0.0	0.0	PASS	0.00	
17:00		9.0	0.0	9.0	PASS	0.00	
17:00		0.0	0.0	0.0	PASS	0.00	
17:30		8.9	0.0	8.9	PASS	0.00	

Opportunity Cost Calculator
Parameter Limits
Price Responsive Demand
Pseudo Tie Transaction
Public
Messages
Reports
Pricing Nodes
Market Results Energy
Market Results Ancillary
System Utilities
Up-To-Transaction
Virtual

Regulation Results DA Synchronized Reserve Results RT Synchronized Reserve Results DA Primary Reserve Results RT Primary Reserve Results DA 30 Min

MOSAIC >> 2025-06-12

Interval	Requirement	Reg. Self Scheduled Effective MW	Reg. Procured Effective MW	Total	Deficiency	RTO Average Performance Score	Reg. Mileage	
Show all	Show all	Show all	Show all	Show all	Show all	Show all	Show all	
11:30		750.0	1.2	748.8	750.0	0.0	0.2538	6.2
12:00		750.0	1.2	748.8	750.0	0.0	0.249	6.2
12:30		750.0	1.2	748.8	750.0	0.0	0.2665	6.2
13:00		750.0	1.2	748.8	750.0	0.0	0.3034	6.2
13:30		750.0	1.2	748.8	750.0	0.0	0.3325	6.2
14:00		750.0	1.2	748.8	750.0	0.0	0.3481	6.2



No Impact to Generation Reserve Offers

Parameter	Today Opt Out / IDO	Reg Redesign
Offer Price Granularity	Hourly	No Change
Offer Price Update Deadline	1415 Day Before / 65 minutes prior to Operating Hour	
Offer MW Granularity	Hourly	
Offer MW Update Deadline	1415 Day Before / 65 minutes prior to Operating Hour	
Hourly Availability Update Deadline	Hourly	

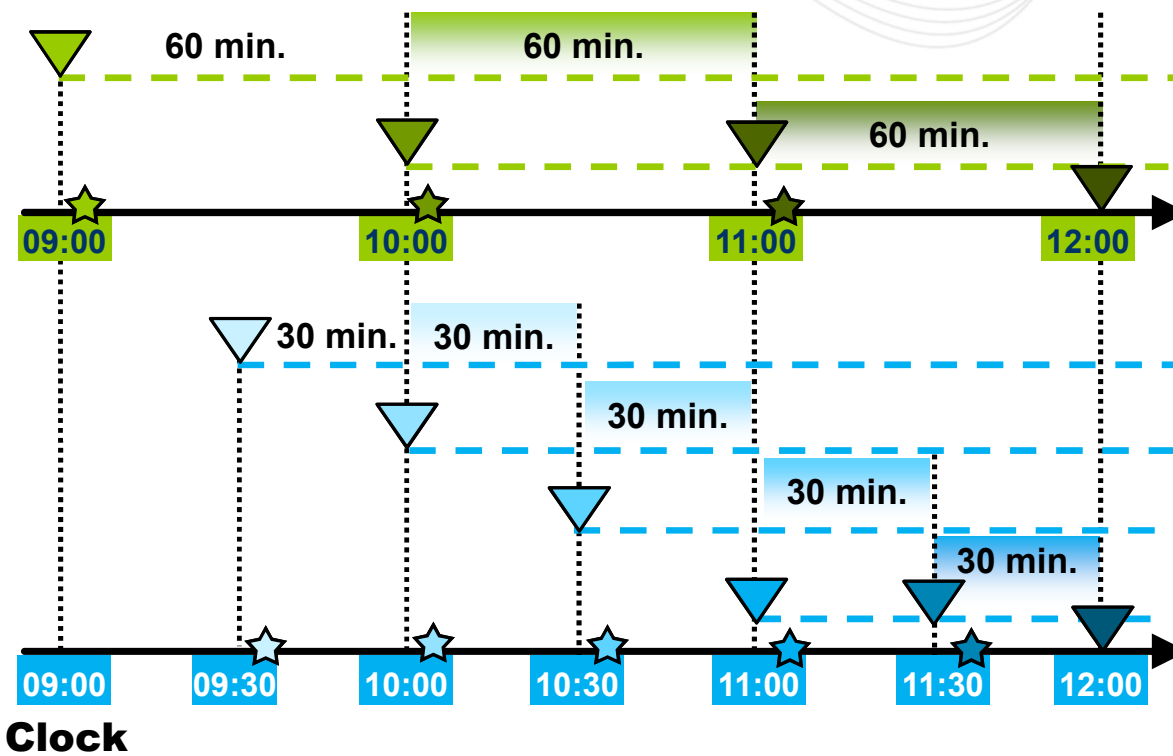


No Impact to Demand Response Reserve Offers

Parameter	Today	Reg Redesign
Offer Price Granularity	Hourly	No Change
Offer Price Update Deadline	65 minutes prior to Operating Hour	
Offer MW Granularity	Hourly	
Offer MW Update Deadline	65 minutes prior to Operating Hour	

Regulation Clearing and Commitment in ASO – Phase 1 & 2

Move to a 30-Minute Clearing Time and Commitment Duration



STATUS QUO

- **60 minutes** prior to target time
- Looks ahead 60 minutes beyond target time

PHASE 1 & 2

- **30 minutes** prior to target time
- Looks ahead 30 minutes beyond target time

Legend

- ▽ Case execution time
- ☆ Case approval
- Service provided

Current ASO

8:55	9:00	9:55	10:00	11:00	12:00
Reg Offer Price and Availability Status Lockout for HE 11	ASO Case Execution Time for HE 11		Inflexible Reserve Commitment for 60 min (10:00 – 11:00)		
			Regulation Commitment for 60 min. (10:00 – 11:00)		
Cases run once an hour, 60 min ahead of the operating time and 60 min commitment duration		Reg Offer Price and Availability Status Lockout for HE 12	ASO Case Execution Time for HE12	Inflexible Reserve Commitment for 60 min. (11:00 – 12:00)	
				Regulation Commitment for 60 min (11:00 – 12:00)	

Offers lockout 65 min before the operating hour

HE = Hour ending

New ASO Input Lockout and Solution Target Times

New ASO (Reg Redesign)

9:25	9:30	9:55	10:00	10:25	10:30	10:55	11:00	11:30	12:00
Reg Offer Price Lockout for HE 11	ASO 00 Case Execution for IE 10:30 (HE11)	Reg Self-schedule & Availability Status Lockout for IE 11:00	Inflexible Reserve Commitment for 60 min. (10:00 - 11:00)				Inflexible Reserve Commitment for 60 min (11:00 - 12:00)		
Reg Self-schedule & Availability Status Lockout for IE 10:30			Regulation Commitment for 30 min. (10:00 - 10:30)		Regulation Commitment for 30 min. (10:30 - 11:00)		Regulation Commitment for 30 min. (11:00 - 11:30)	Regulation Commitment for 30 min. (11:30 - 12:00)	
			ASO 30 Case Execution Time for IE 11:00	Reg Self-schedule & Availability Status Lockout for IE 11:30	ASO 00 Case Execution for IE 11:30 (HE12)	Reg Self-schedule & Availability Status Lockout for IE12:00	ASO 30 Case Execution for IE12:00		
				Reg Offer Price Lockout for HE 12					

Cases run twice an hour – hh:00 and hh:30,
30 min ahead of the operating time, 30 min
commitment duration for Regulation, and 60 min

Cases run twice an hour – hh:00 and hh:30,
30 min ahead of the operating time, 30 min
commitment duration for Regulation, and 60 min
commitment duration for inflexible Reserves

HE = Hour ending | **IE** = Interval ending

Offer Price and MW lockout 35 min before the *operating hour*, self-schedule and availability status lockout 35 min before the *operating interval*;



Sample ASO Case Execution, Posting and Target Intervals

Cases	Execution Time	Products Types	Markets Gateway Posting Deadline	Target Time (Begin)
ASO 00	9:30	Regulation & Reserves	9:50	10:00
ASO 30	10:00	Regulation Only	10:20	10:30
ASO 00	10:30	Regulation & Reserves	10:50	11:00
ASO 30	11:00	Regulation Only	11:20	11:30

- Regulation and Reserves results notification of at least 10 minutes before the operating time
- If ASO 30 is missed, All-Call must go out by **hh:20** to extend the last **Regulation assignment**;
- If **ASO 00** is missed, All-Call must go out by **hh:50** to extend the last **Regulation and Inflexible Reserve assignment**



Posted Technical Documents for Markets Gateway Changes

The following documents have been posted on the Markets Gateway documents page under a new section called **Regulation Redesign**:

[PJM.com > Markets & Operations > PJM Tools > Markets Gateway](#)

1. PJM External Interface Specification Guide
2. XSD Schema



Posted Documents for Phase 1 Changes

The following documents have been posted on the Ancillary Services page under a new section called **Regulation Redesign**:

[PJM.com > Markets & Operations > Ancillary Services >](#)

1. Regulation Effective MW Requirement Definition (2025-2026) - PDF
2. Regulation Cost-Based Offer Validation Phase I - XLS
3. Self-Administered Regulation Test - XLS
4. 40-Minute Performance Score Template - XLSM
5. XML Schema - XSD
6. PJM External Interface Specification Guide - PDF
7. Regulation Redesign Phase 1 FAQ - PDF



Phase 1 Upcoming Milestones and Tentative Timeline

No. Milestone

Timeline

1	RegD resources conversion testing begins	June 2025
2	Markets Gateway Train (Sandbox) Opens for Testing	June 13, 2025
3	Markets Gateway Sandbox Virtual Session	June 20, 2025
4	State & Member Training – Markets 201 Day 3	June 26, 2025
5	All related manuals first read (Phase 1): M11, M12, M15, M28	July 2025
6	All related manuals endorsement (Phase 1): M11, M12, M15, M28	August 2025 (September if needed)
7	Special education session	August 12 / September 5, 2025
8	Regulation Redesign Phase 1 market opens	Sept. 25, 2025
9	Regulation Redesign Phase 1 go-live (cutover)	Oct. 1, 2025, at 00:00

No.	Inquiry	Email Contact
1	To request a Regulation test	RegulationTesting@pjm.com
2	Regulation telemetry – signal setup or conversion	PJMTelemetrySupport@pjm.com
3	Regulation Redesign questions	RegulationDesign@pjm.com
4	Communication to PJM Member Relations	custsvc@pjm.com

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Be alert to
malicious
phishing emails.

Report suspicious email activity to PJM.
(610) 666-2244 / it_ops_ctr_shift@pjm.com





Data Miner 2 Summary of Changes

#	Data Miner 2 Feed Location	Summary Description
1	Ancillary Services > Real-Time Ancillary Service Market Results	Update 'Regulation Performance Clearing Price' to 'Regulation Mileage Clearing Price', Remove 'REGD MW' column
2	Ancillary Services > Regulation Market Data	Change from hourly granularity to 30-minute, Remove RegD related columns, Update RegA related columns to just Reg
3	Ancillary Services > Regulation Prices	Update 'Performance Clearing Price' to 'Mileage Clearing Price', Remove Marginal Benefits Factor column
4	Ancillary Services > PJM Regulation Zone Preliminary Billing Data	Update 'Regulation Market Performance Clearing Price' to 'Regulation Market Mileage Clearing Price', Update 'Total PJM Regulation Market Performance Clearing Price Credits' to 'Total PJM Regulation Market Mileage Clearing Price Credits'
5	Locational Marginal Prices > Real-Time Ancillary Service Five-Minute LMPs	Update 'RTO Regulation Performance' in Ancillary Service column to 'RTO Regulation Mileage'
6	Locational Marginal Prices > Real-Time Ancillary Service Hourly LMPs	Update 'RTO Regulation Performance' in Ancillary Service column to 'RTO Regulation Mileage'



Appendix: Markets Gateway Screenshots



Offers

Updates

Availability Updates

	Hour	Reg. MW	Reg. Min. MW	Reg. Max. MW	Spilling	Reduced Ramp Rate (%)	Min. Offer MW	Reg. Capability Offer Price	Reg. Mileage Offer Price	Reg. Capability Offer Cost	Reg. Mileage Offer Cost
	1				-	0					
	2				-	0					
	3				-	0					
	4				-	0					
	5				-	0					
	6				-	0					
	7				-	0					
	8				-	0					
	9				-	0					



Demand Response > Regulation Market > Offers / Updates

Offers Updates Availability Updates

REG MW: 1000 MW Reg Min MW: 1000 MW Reg Max MW: 1000 MW

<input type="checkbox"/>	Location	Area	Offer MW	Capability Offer Price	Mileage Offer Price	Capability Offer Cost	Mileage Offer Cost	Reg Min. MW	Reg Max. MW	Min. Offer MW	Availability	Self Scheduled	Rolling Avg Performance Score
	REG MW: 1000 MW Reg Min MW: 1000 MW Reg Max MW: 1000 MW	PJM_RTO									Available	-	

Offers Updates Availability Updates

REG MW: 1000 MW Reg Min MW: 1000 MW Reg Max MW: 1000 MW

Reg MW: Reg Min MW: Reg Max MW:

<input type="checkbox"/>	Hour	Reg. Min. MW	Reg. Max. MW	Reg. MW	Reg. Capability Offer Price	Reg. Mileage Offer Price	Reg. Capability Offer Cost	Reg. Mileage Offer Cost	Reg. Min. Offer MW
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								