Regulation Redesign
Phase 1 Implementation

Special Session of the

Market Implementation Committee

September 5, 2025

Disclaimer

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.

Regulation Redesign – Phase Implementation and Timeline

FERC Approval on June 14, 2024

Clean order accepting our Regulation Market Reform 205 filing

Phase 1 Go-Live
Oct. 1, 2025

Phase 2 Go-Live
Oct. 1, 2026

Overview

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

Result of Regulation Market Design Senior Task Force

The intent of this special session is to:

- Refresh understanding of new terminology and concepts.
- Ensure awareness of business rule changes and impacts.
- Create opportunity for clarifying questions.

Informing manual language is not part of this session – they are being presented already at the applicable stakeholder committee meetings.

Agenda

Aug. 12

High-Level Summary of Changes

Signal and Telemetry Changes

Performance Metrics

Testing, performance scoring, mileage, de-assignment

Markets Gateway

Data Miners

Sept. 12

Regulation Market Business Rules Changes

Offer data and clearing timing and Opportunity Cost calculation reform

Regulation Settlement

FAQ/Q&A

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**	1. Use the schedule the resource is running for energy or else the cheaper of available schedule for offline. 2. Use tracking desired megawatt at LMP ramp rate limited. 3. Use the area between LMP and the energy schedule the resource is running on.
6	**Settlement**	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). 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).

Phase 1 Upcoming Milestones and Timeline

No.	Milestone	Timeline
1	RegD resources conversion testing begins	June 2025
2	All related manuals endorsement (Phase 1): M11, M12, M15, M28	August 2025 (September if needed)
3	Special education session	Aug. 12/Sept. 5, 2025
4	Markets Gateway Train (Sandbox) testing (continues)	September 2025
5	Regulation Redesign Phase 1 market opens	Sept. 24, 2025
6	Regulation Redesign Phase 1 go-live (cutover)	Oct. 1, 2025, at 00:00

Posted Documents for Phase 1 Changes

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

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

PJM.com > Markets & Operations > Ancillary Services >

Email Contacts

Inquiry	Email Contact
To request a Regulation test	RegulationTesting@pjm.com
Regulation telemetry – signal setup or conversion	PJMTelemetrySupport@pjm.com
Regulation redesign questions	RegulationDesign@pjm.com
Communication to PJM Member Relations	custsvc@pjm.com

Regulation Market & Operation

Regulation Offers – Cost and Price

	REGULATION OFFER	
	Cost *Up to limits described in M11, Section 3.2.4 and Manual 15, Section 2.8*	**Price** *Up to 100 $/MWH as described in M11, Section 3.2.4*
Capability ($/MW)	Reservation Cost for MW, which includes the Fuel Cost increase and $12 Margin Adder	The price to reserve MWs for regulation
Mileage ($/ΔMW)	Is the incremental cost of MW movement, which includes Cost Increase due to Heat Rate Increase during non-steady state operation and Cost Increase in VOM for Reg-only resources	The price to provide regulation movement

- The $/ΔMW will be multiplied by the signal mileage in ΔMW/MW to convert to ($/MW)
- Participant supplies PJM with Mileage Offer, Capability Offer, and MW Offer

Cost-Based Offer Updates

Effective **Oct. 1, 2025**, only the non-energy Regulation resource may include VOM in its offer.

ACTION ITEM: PJM will require that all the affected Regulation resources submit new offer prices in accordance with the new rules effective Oct. 1, 2025.

Refer to Manual 15, Section 2.8, Regulation Service, redline for more details.

Offer Parameter Deadlines

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)	Demand Response > Regulation Market > Availability Updates Generator > Regulation Market > Availability Updates	35 Minutes Prior to the Operating Period

**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	Today 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	65 minutes prior to Operating Hour	35 minutes prior to Operating Hour	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	35 minutes prior to Target Interval

Impact to Regulation Results and Other Related Parameters in Markets Gateway

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

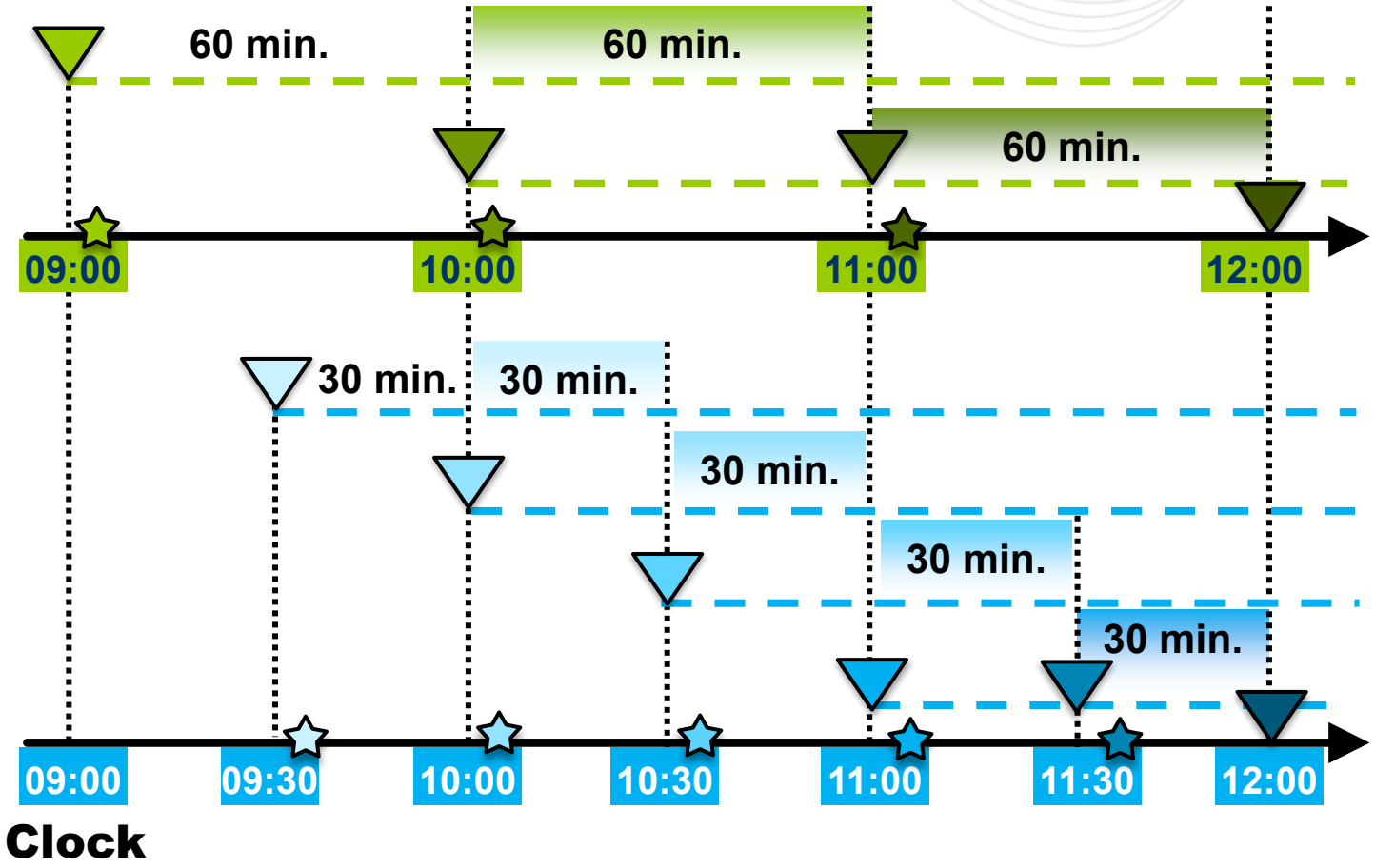
* - values for the interval ending :30 and :00 will be posted about 15 minutes after the operating hour.

Offer Parameter Deadline Examples

Case	Execution Time	Reg Offer MW or $ Update Deadline	Availability Status or Self-Schedule Update Deadline	Operating Interval	Operating Hour
ASO 00	9:30	9:25	9:25	10:00	10:00
ASO 30	10:00	9:25	9:55	10:30	10:00
ASO 00	10:30	10:25	10:25	11:00	11:00
ASO 30	11:00	10:25	10:55	11:30	11:00

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

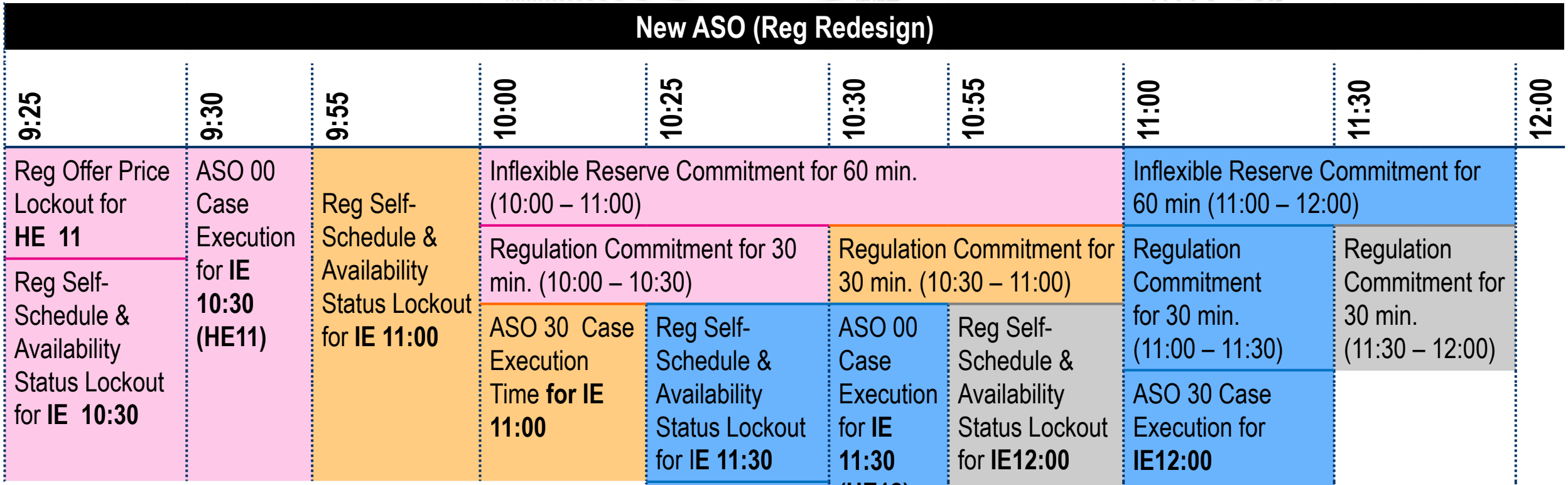
PHASE 1 & 2

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

Legend

- Case execution time
- Case approval
- Service provided

New ASO Input Lockout and Solution Target Times



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	Product 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.***

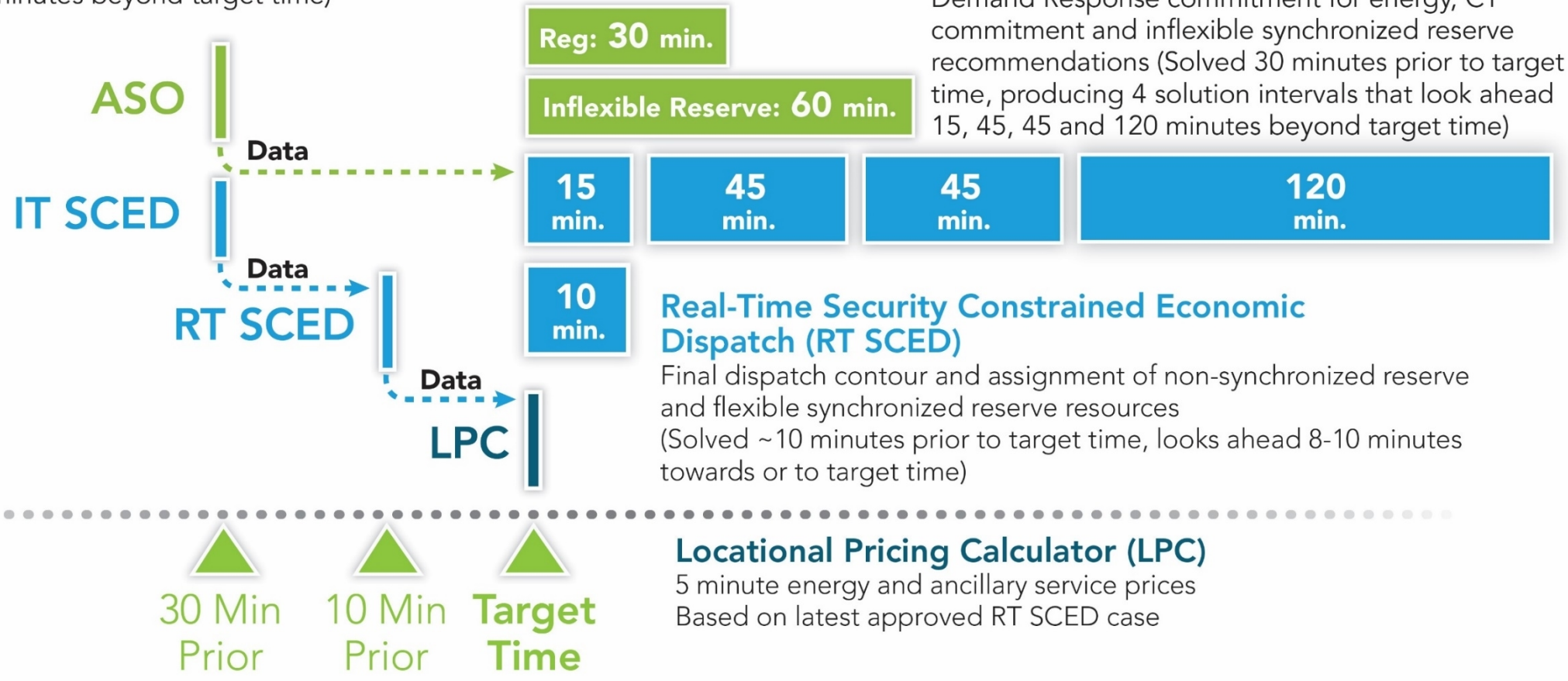
Market Clearing, Commitment, Dispatching and Pricing Engines

Ancillary Services Optimizer (ASO)

Clearing and assignment of regulation and inflexible reserve resources (Solved 30 minutes prior to target time, looks ahead 30 minutes beyond target time)

Intermediate-Term Security Constrained Economic Dispatch (IT SCED)

Demand Trajectory, generator loading strategy, Demand Response commitment for energy, CT commitment and inflexible synchronized reserve recommendations (Solved 30 minutes prior to target time, producing 4 solution intervals that look ahead 15, 45, 45 and 120 minutes beyond target time)



Real-Time Security Constrained Economic Dispatch (RT SCED)

Final dispatch contour and assignment of non-synchronized reserve and flexible synchronized reserve resources
(Solved ~10 minutes prior to target time, looks ahead 8-10 minutes towards or to target time)

Locational Pricing Calculator (LPC)

5 minute energy and ancillary service prices
Based on latest approved RT SCED case

Regulation De-Assignment

Self de-assignment results in **zero** score for the remainder of the commitment period.

PJM dispatcher de-assignment **does not impact performance score.** For a PJM dispatcher de-assignment, the historic performance score will be used in the remainder of the period the resource is de-assigned.

Lost Opportunity Cost Reforms

Energy Schedule Used for LOC:

- **For online resources,** the schedule on which the resource is committed and running for energy
- **For offline resources,** the cheapest of the price-based or cost-based available energy schedules

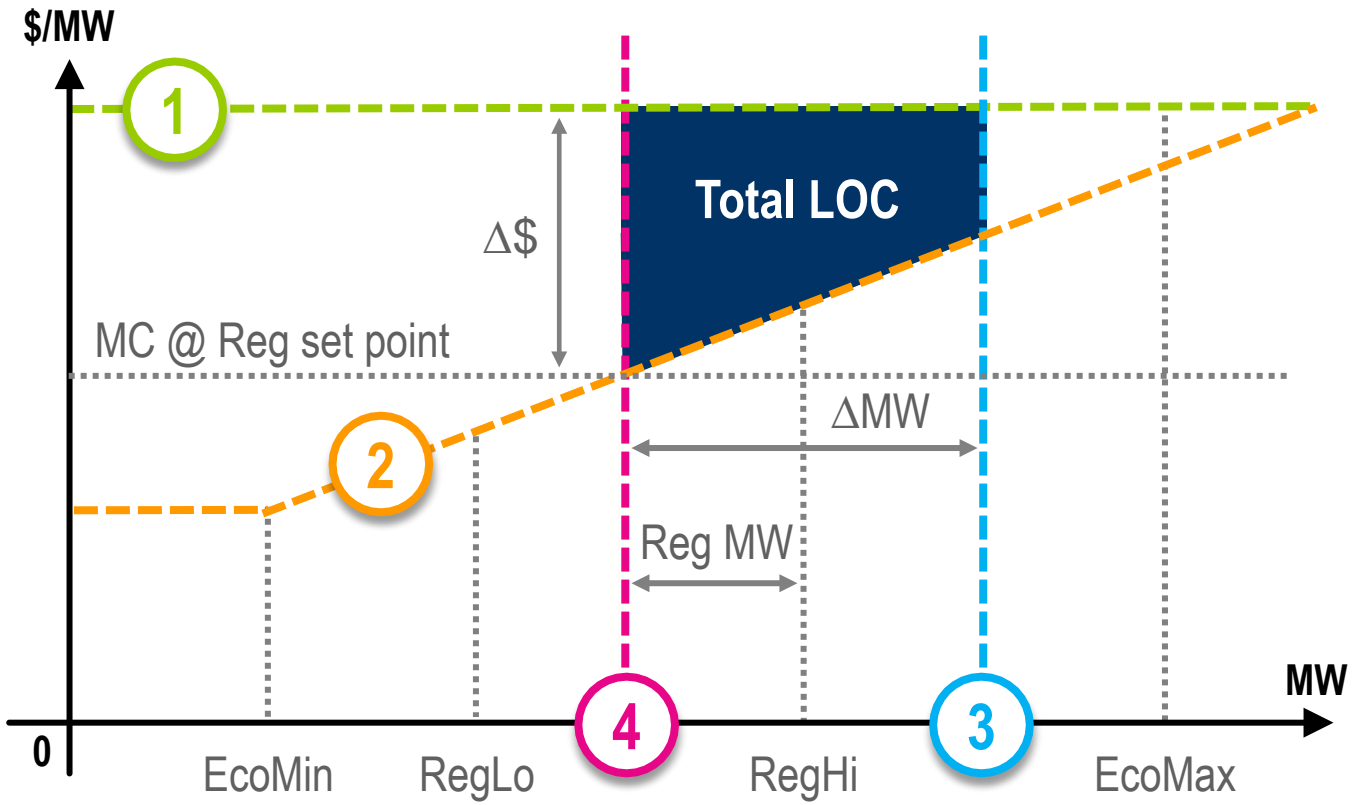
Calculation of LOC Using:

Status Quo: The desired MW at LMP – is not ramp limited and based on the initial MW of the unit

- Generally, overvalues LOC

New: Tracking desired MW at LMP ramp limited – incorporates consecutive market conditions to create the profile that a unit should have achieved if it had been following each dispatch signal based on its ramp rates

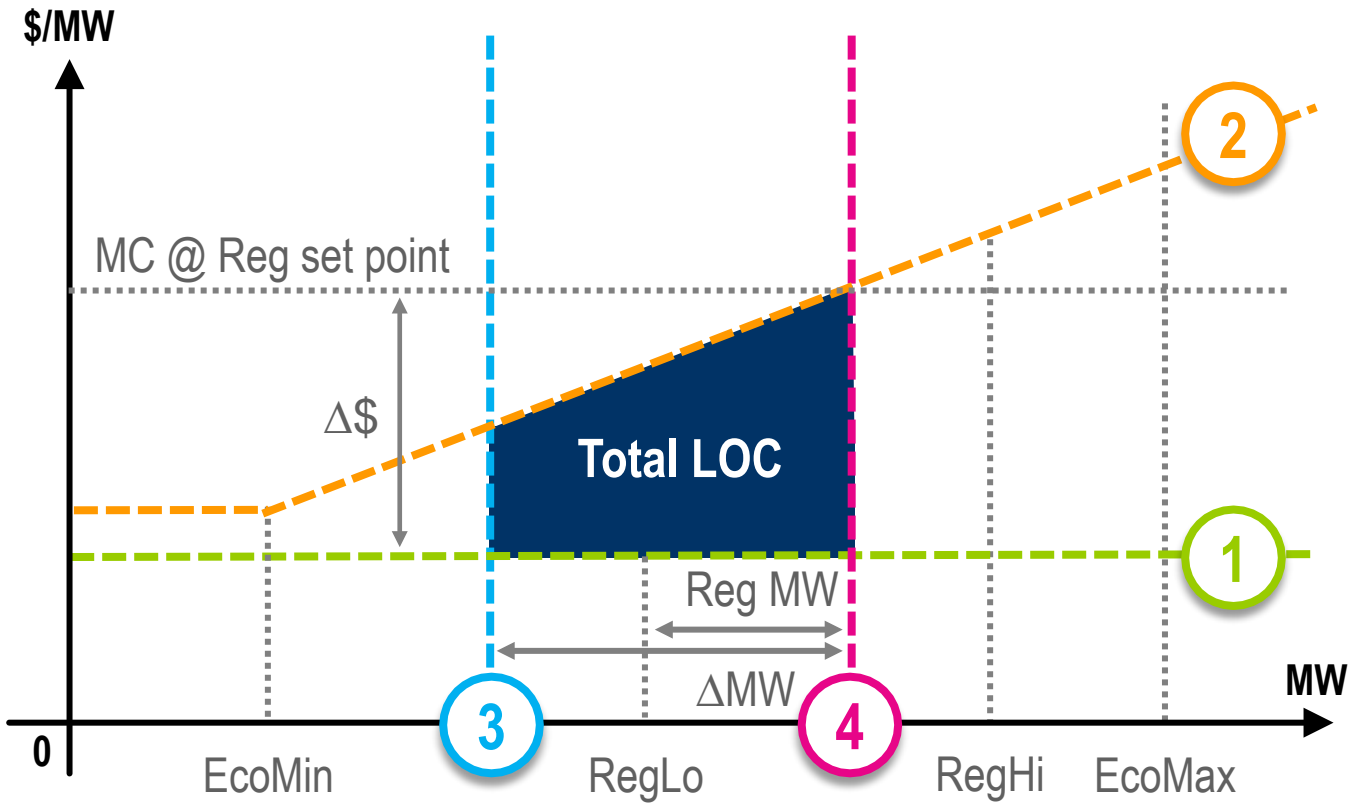
Lost Opportunity Cost – Unit Held Down Uneconomically



Total LOC Formulation ($) area bounded by:

1. The LMP
2. The resource's energy final offer
3. The generation resource's tracking ramp-rate limited expected output level if it had been dispatched in economic merit order
4. The generation resource's regulation set point

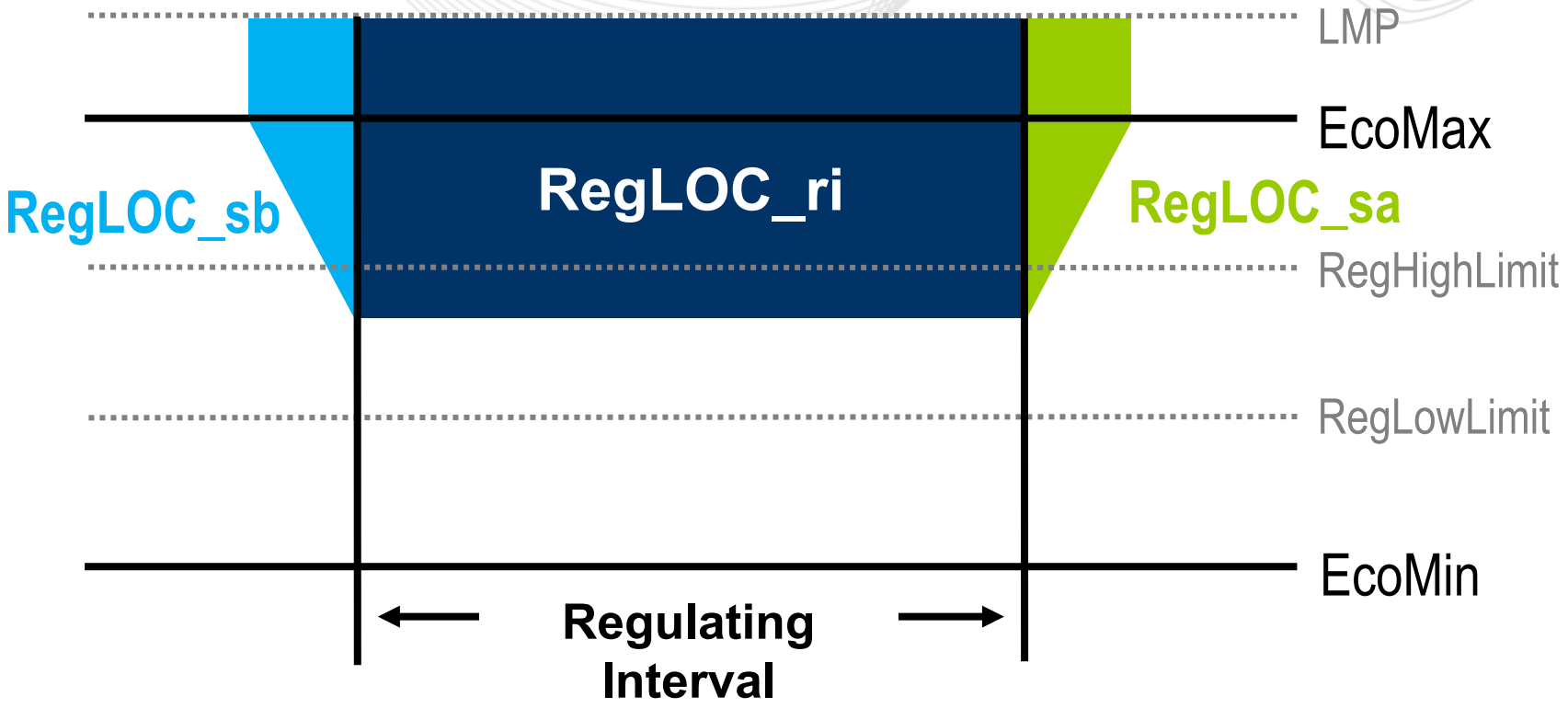
Lost Opportunity Cost – Unit Raised Uneconomically (Uplift)



Total LOC Formulation ($) area bounded by:

1. The LMP
2. The resource's energy final offer
3. The generation resource's tracking ramp-rate limited expected output level if it had been dispatched in economic merit order
4. The generation resource's regulation set point

Shoulder Interval RegLOC



sb: shoulder before the regulation commitment interval

ri: regulation interval – resource regulation commitment interval

sa: shoulder after the regulation commitment interval (calculated in Settlement)

Hydro LOC Calculation in Regulation Clearing, Pricing and Settlement

Hydro Type & Condition	Energy Schedule	RegLOC
Pump Storage & Run-Off River	Scheduled MW > 0	Max[LMP – ED, 0]
	Scheduled MW <= 0	Max[ED – LMP, 0]
Spill Condition	RegLOC = Max[LMP, 0]	

LMP

- LMP at the hydro unit pnode
- Forecasted value is used in the regulation clearing in ASO.
- Actual value is used in the real-time 5-minute pricing in LPC and Settlement.

ED

- The average of LMPs at the hydro unit pnode for the appropriate on-peak or off-peak period excluding those hours during which all available units at the hydro plant were operating
- Day-ahead LMPs are used to calculate ED in the regulation clearing and in the real-time pricing.
- Real-time LMPs after-the-fact are used in Settlement.

Tracking Ramp Limited Desired MW at LMP

In order to account for how well a dispatchable unit followed dispatch during an entire commitment (run) period, **PJM will develop a metric that incorporates consecutive market interval conditions.**

- Tracking Ramp Limited Desired MW at LMP will incorporate consecutive market conditions to create the profile that units should have achieved if they had followed each dispatch signal based on their ramp rates.

- This metric will calculate continuously from when a unit comes online, using its ramp rates, energy schedule and independent of the initial MW at each interval.

Tracking Ramp Limited Desired MW @ LMP
Equation for RegLOC Calculation Only

Generically, the new metric is calculated as:

$$D_t = D_{t-1} +/- Ramp_t$$

D =
Desired MW

t = Calculation interval

When t-1 = 0,
D = Last Target MW

Ramp = Increase/decrease in output based on market conditions

The ramp will be calculated using the dispatch-run LMPs solved in every RTSCED case and the ramp rates submitted by the units.

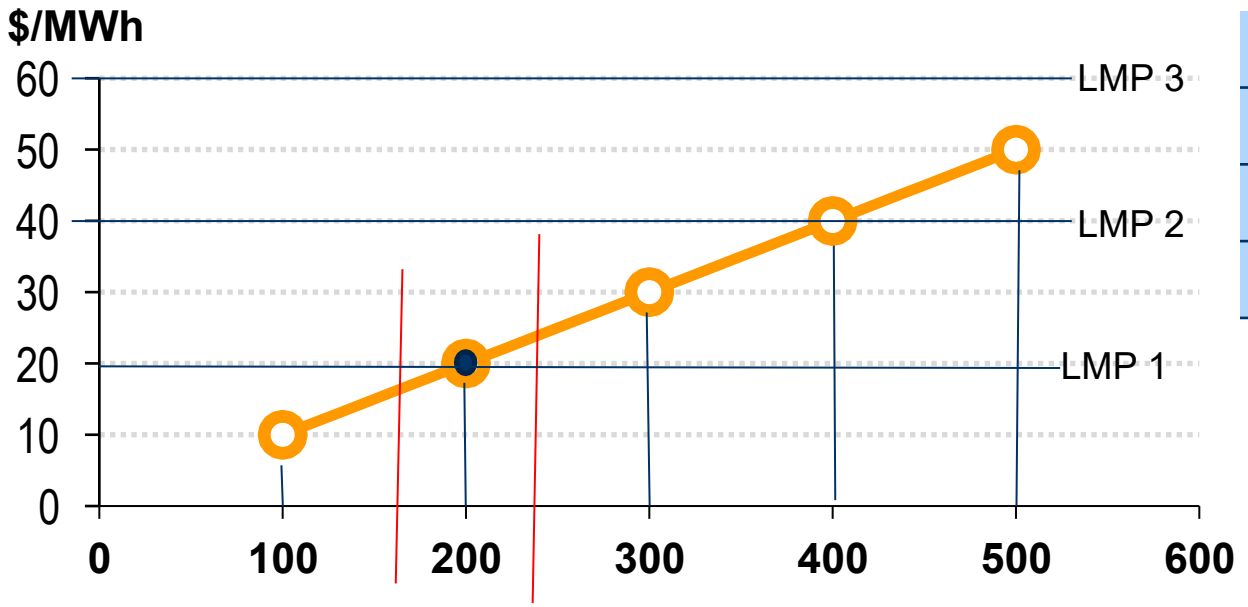
The Tracking Ramp Limited Desired MW at LMP approach

1. Will be used for Regulation Lost Opportunity Cost (RegLOC) calculation **ONLY** for the purpose of Regulation pricing in LPC

2. Is **NOT** meant to replace SCED logic or how units are being dispatch

LMP Desired MW

LMP Desired MW – MW level on the incremental offer curve where the Dispatch Run LMP intersects the offer curve; not a ramp-limited value



Consecutive Intervals	1	2	3
Initial MW (MW)	200	200	200
LMP ($/MWh)	20	40	60
Desired MW at LMP (DML), (MW)	200	400	600
Delta MW LOC for DML (MW)	0	200	400

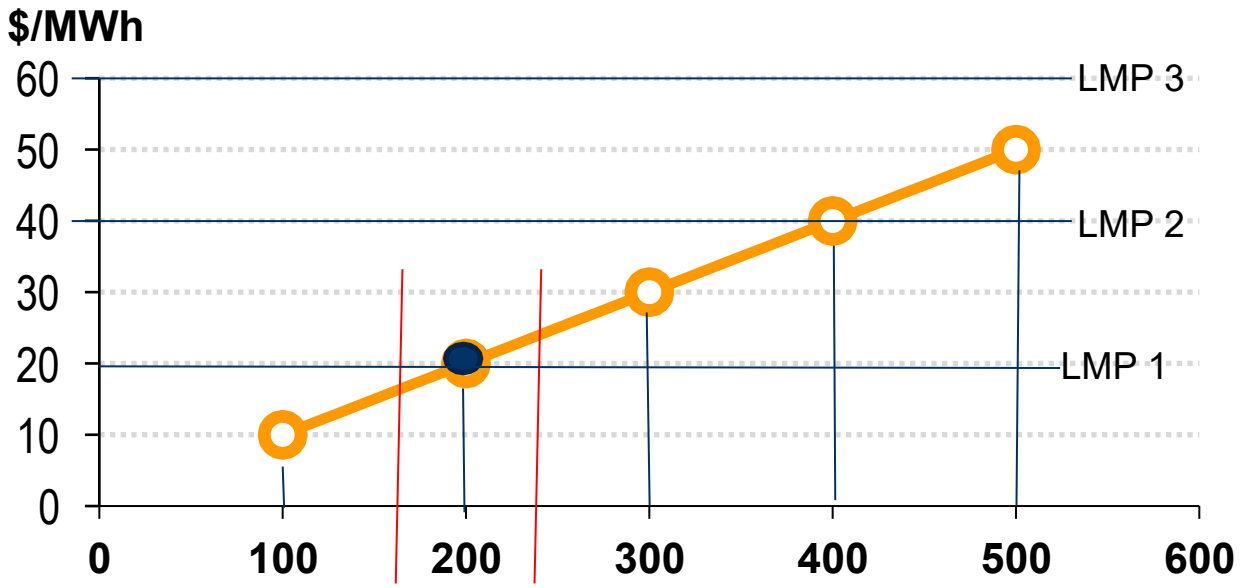
Reg = 20 MW	**RegLo =** 180, **RegHi =** 220	**Ramp** 10 MW/Min	**Reg set point** 200 MW

Key Takeaways:

1. LMP Desired MW exaggerates unit's capability and over-values the RegLOC.
2. It uses initial MW as the reference point; does not account for unit not following dispatch.

LMP Desired MW Ramp Limited

LMP Desired MW Ramp Limited – The MW value that the unit should have achieved between Dispatch Signals or RT SCED case approvals



Consecutive Intervals	1	2	3
Initial MW (MW)	200	200	200
LMP ($/MWh)	20	40	60
Desired MW at LMP Ramp Limited (DMLRL), (MW)	200	250	250
Delta MW LOC for DML (MW)	0	50	50

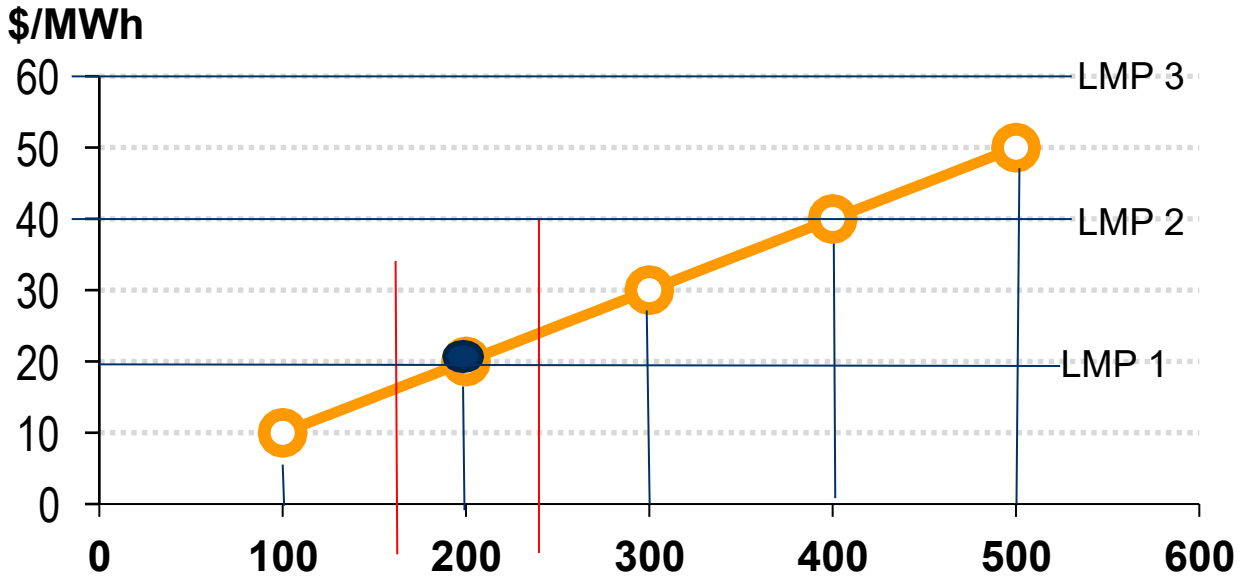
Reg = 20 MW	**RegLo =** 180, **RegHi =** 220	**Ramp** 10 MW/Min	**Reg set point** 200 MW

Key Takeaways:

1. LMP Desired MW ramp limited accurately captures the unit's capability but at times undervalues the RegLOC (see interval 3).
2. Delta MW LOC = DMLRL – Initial MW; this approach does not account for where the unit would have been over time. It does not capture the consecutive market conditions.

Tracking Ramp Limited Desired MW at LMP

Tracking Ramp Limited Desired MW at LMP – New metric that measures how closely a resource is following dispatch over time by considering ramping limitations and LMP



Consecutive Intervals	1	2	3
Energy Previous Target MW	200	200	250
AS Initial MW	200	200	200
LMP ($/MWh)	20	40	60
Tracking Ramp Limited Desired MW at LMP (TRLD), (MW)	200	250	300
Delta MW LOC for DML (MW)	0	50	100

Reg = 20 MW	**RegLo =** 180, **RegHi =** 220	**Ramp** 10 MW/Min	**Reg set point** 200 MW

Key Takeaways:

1. Tracking Ramp Limited Desired MW accurately captures the unit's capability and more realistic RegLOC.
2. Delta MW LOC = TRLD – AS Initial MW
3. Additional data point allow to capture the consecutive market conditions, hence more accurate RegLOC

Regulation-Adjusted Offers for Clearing and Pricing

Adjusted Regulation Capability Cost ($)

$$\frac{\left(\text{Capability Offer}\ \left(\frac{\$}{MW}\right)\right)}{\left(\text{Historic Performance Score}\right)} * \left(\text{Capability}\ (MW)\right)$$

Adjusted Regulation Mileage Cost ($)

$$\frac{\left(\text{Mileage Offer}\ \left(\frac{\$}{\Delta MW}\right)\right)}{\left(\text{Historic Performance Score}\right)} * \left(\text{Historic Mileage of RTO Regulation Signal}\ \left(\frac{\Delta MW}{MW}\right)\right) * \left(\text{Capability}\ (MW)\right)$$

Adjusted Lost Opportunity Cost ($)

$$\frac{\left(\text{Estimated Lost Opportunity Cost}\ \left(\frac{\$}{MW}\right)\right)}{\left(\text{Historic Performance Score}\right)} * \left(\text{Capability}\ (MW)\right)$$

Adjusted Total Cost ($)

$$\left(\text{Adjusted Regulation Capability Cost}\ (\$)\right) + \left(\text{Adjusted Lost Opportunity Cost}\ (\$)\right) + \left(\text{Adjusted Regulation Mileage Cost}\ (\$)\right)$$

Capability Component

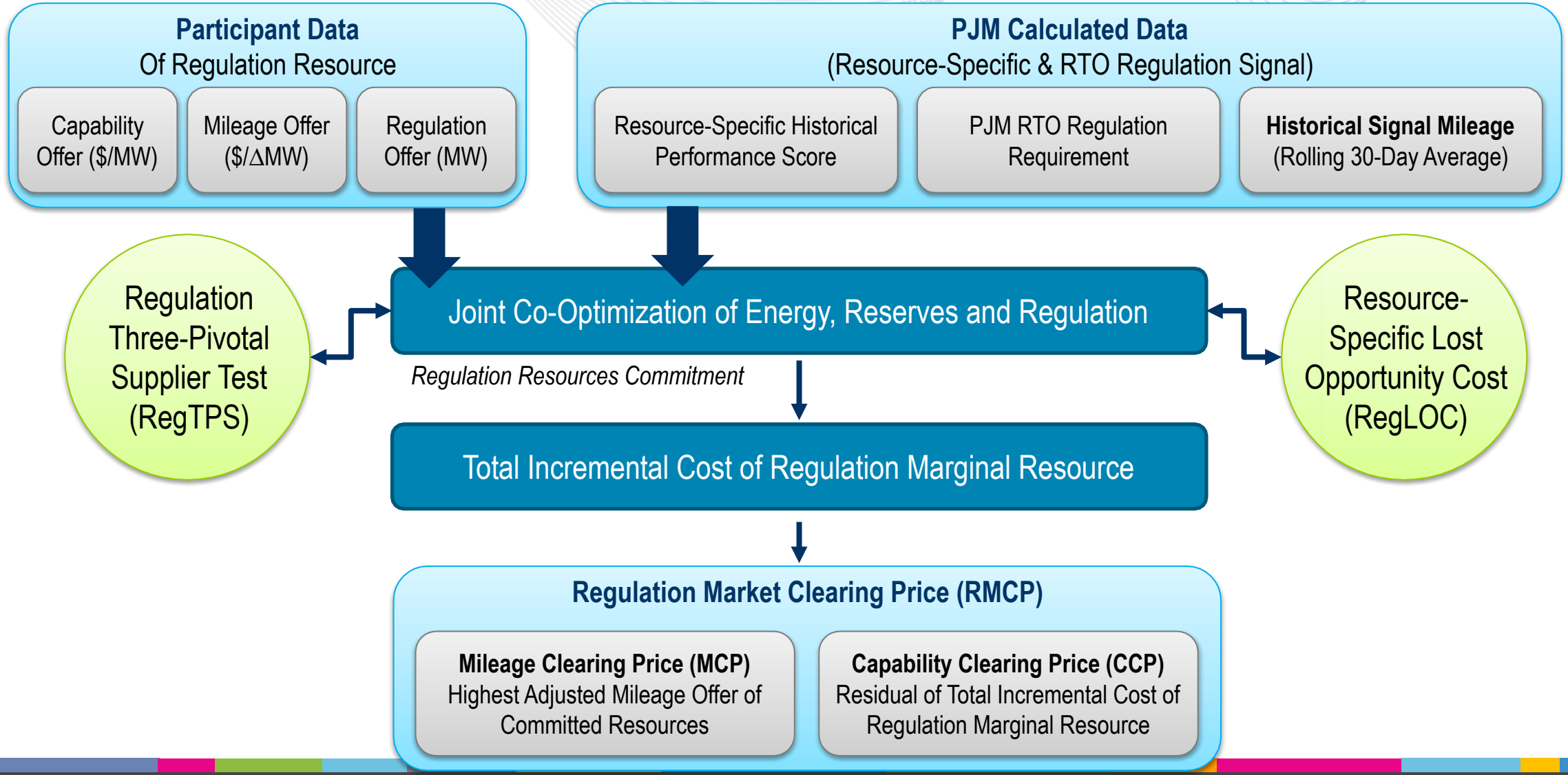
Mileage Component

Regulation Effective MW

$$\text{Regulation Capability MW} \times \text{Historic Performance Score}$$

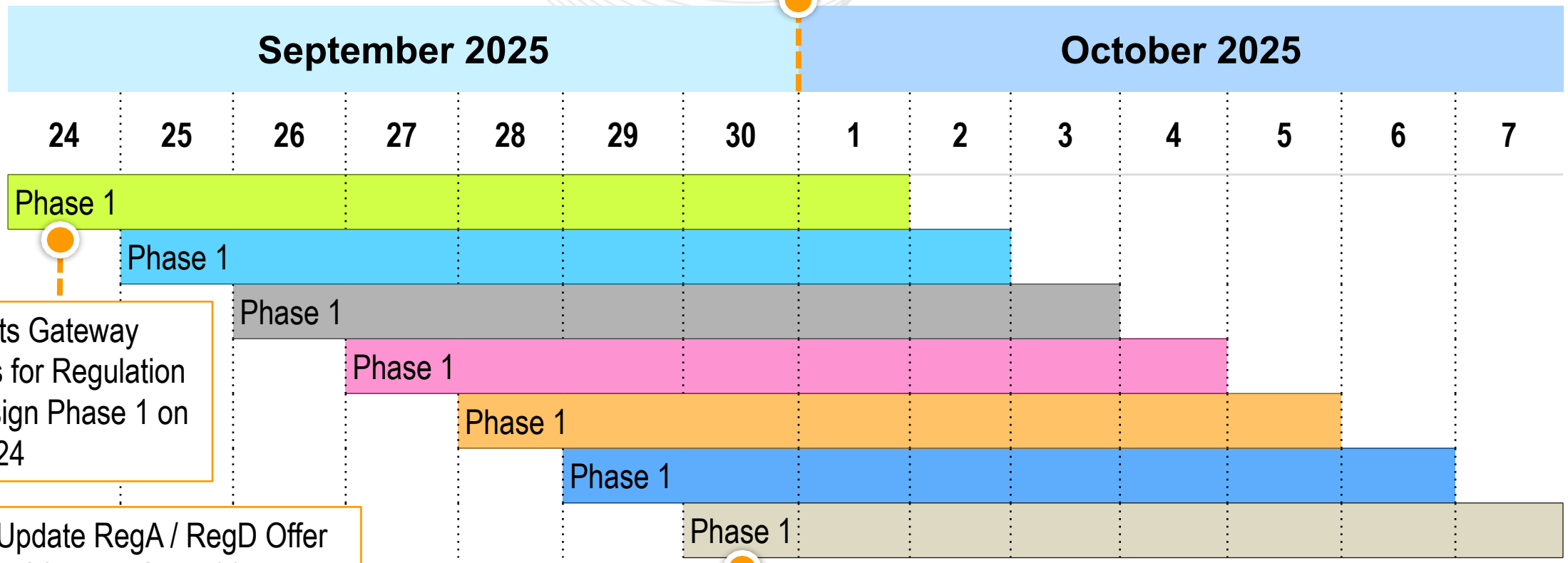
- **Historical Performance Score –** Average of last 100 hours of resource's performance scores
- **Historical Mileage –** 30 days of average PJM regulation control signal mileage

Regulation Market Clearing Process



Markets Gateway Opens on Sept. 24 for Phase 1 Go-Live

All Offer Data for RegA / RegD terminate at 00:00 on Oct. 1

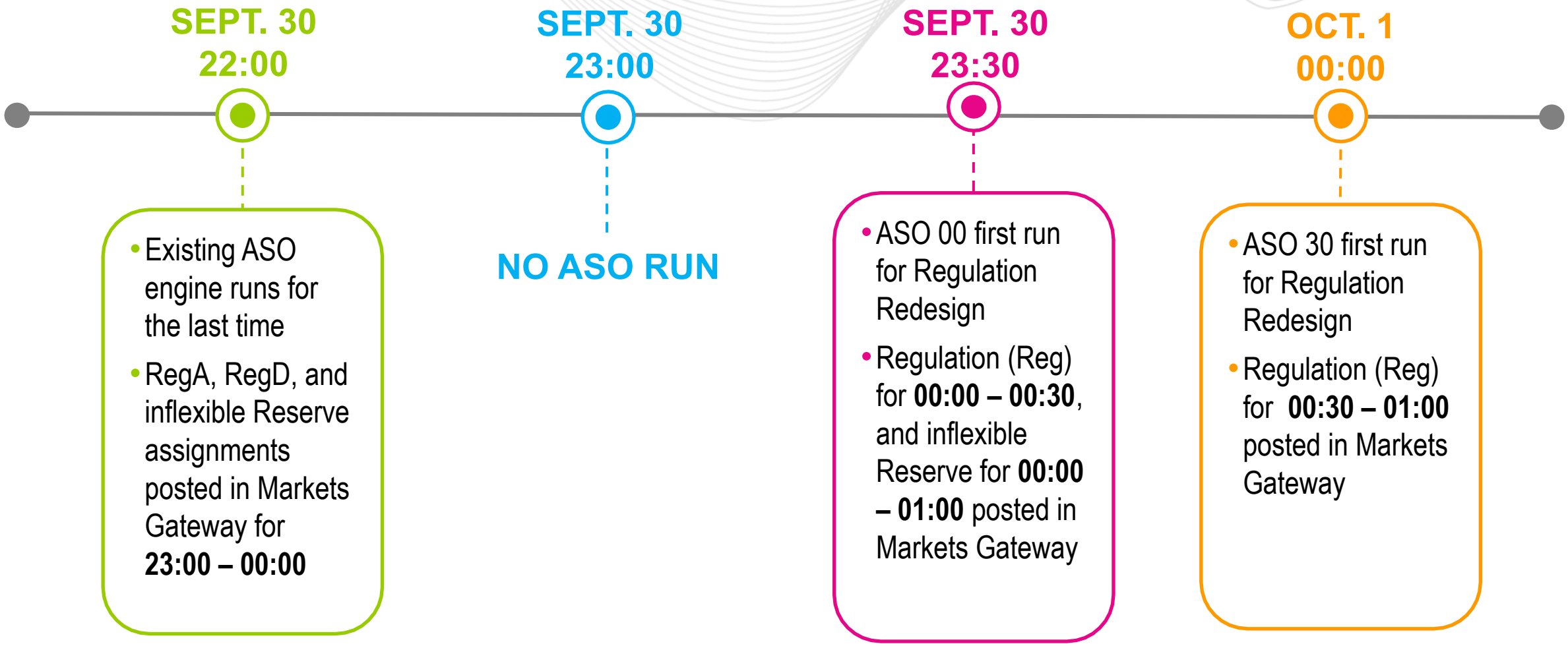


Markets Gateway Opens for Regulation Redesign Phase 1 on Sept. 24

Enter/Update RegA / RegD Offer Data till 21:55 on Sept. 30

Key Takeaway To continue to participate (uninterrupted) in the Regulation Market, offer data must be submitted between Sept. 24 and Sept. 30.

Cutover Night – Sept. 30/Oct. 1



Regulation Settlements

Agenda

1. Regulation Clearing Price Credits
2. Regulation Lost Opportunity Cost Credits
3. Regulation Charges
4. MSRS Reports
5. Phase 1 Settlements Information

Phase 1 Regulation Clearing Price Credits (BLI 2340)

Regulation Market Capability Clearing Price Credit

$$\text{Regulation MW} \times \text{Actual Performance Score} \times \frac{\text{RMCCP}}{12}$$

If 5-minute performance score < 0.25, credit = $0

Regulation Market Mileage Clearing Price Credit

$$\text{Regulation MW} \times \text{Actual Performance Score} \times \frac{\text{Actual Mileage}}{\text{Daily Historic Mileage}} \times \frac{\text{RMMCP}}{12}$$

Phase 1 changes

- Single bidirectional mileage ratio using actual and historic mileage replaces Reg A and Reg D signal mileage ratios.
- New Mileage Clearing Price and Credit terminology replaces Performance Clearing Price and Credit.

Phase 1 Regulation Lost Opportunity Cost Credits (BLI 2340)

If a pool-scheduled resource is not compensated for its offer plus any opportunity costs via the clearing prices, a resource receives a Lost Opportunity Cost Credit.

$$\text{Lost Opportunity Cost Credit} = \frac{\text{(Regulation Offer + Intra Commitment Opportunity Cost + Shoulder Opportunity Cost)}}{12} - \text{Regulation Clearing Price Credits}$$

If 5-minute performance score < 0.25, credit = $0

Phase 1 changes

- Benefits factor is no longer used to adjust the opportunity cost.
- Shoulder opportunity cost calculation impacts

Phase 1 Shoulder Opportunity Cost

	Status Quo	Phase 1 changes
Shoulder Intervals Before *(Ramp In Intervals)*	Costs incurred in **3 shoulder intervals** preceding initial regulating **hour** if unit moves uneconomically into its regulating band to comply with next **hour's** regulation assignment	• Calculated for **2 shoulder intervals** to align with SCED 10-minute look ahead • Calculated based on **30-minute** commitment periods instead of **hour** • Uses Tracking Ramp Limited Desired MW instead of LMP Desired (not ramp limited)
Regulation Commitment Intervals	Cost for each five-minute interval during regulating commitment period from reducing or raising unit's output uneconomically for purpose of providing regulation	
Shoulder Intervals After *(Ramp Out Intervals)*	Costs incurred in **3 shoulder intervals** following final **hour** of regulation assignment if unit moves from uneconomic regulation set point back to economic dispatch set point	

Phase 1 Shoulder Opportunity Cost Eligibility

Eligibility Requirements

Ramp-in shoulder intervals: Regulation assignment starts at the top of the hour (HH:00 - HH:05), or the Regulation assignment starts at the bottom of the hour (HH:30 - HH:35).

Ramp-out shoulder intervals: Regulation assignment ends at the top of the following hour (HH:55 - HHnext:00), or the Regulation assignment ends at the bottom of the hour (HH:25 - HH:30).

Regulation assignment is pool scheduled only

CTs, Diesels, Hybrids, Solar, Wind, Storage/ESR, Nuclear, and Hydro **are NOT eligible**

Resource is:

- Not regulating in the shoulder five-minute intervals
- Online and generating in the shoulder five-minute intervals

Tracking Ramp Rate Limited Desired from the shoulder interval is not already within regulation limits.

Shoulder Opportunity Costs: Forgone Profit

Opportunity cost equals the forgone profit when the resource is moving to a

Regulation set point that is less than the Tracking Ramp Limited Desired MW (ramp-in)	**OR**	Tracking Ramp Limited Desired MW that is greater than the Regulation set point (ramp-out)

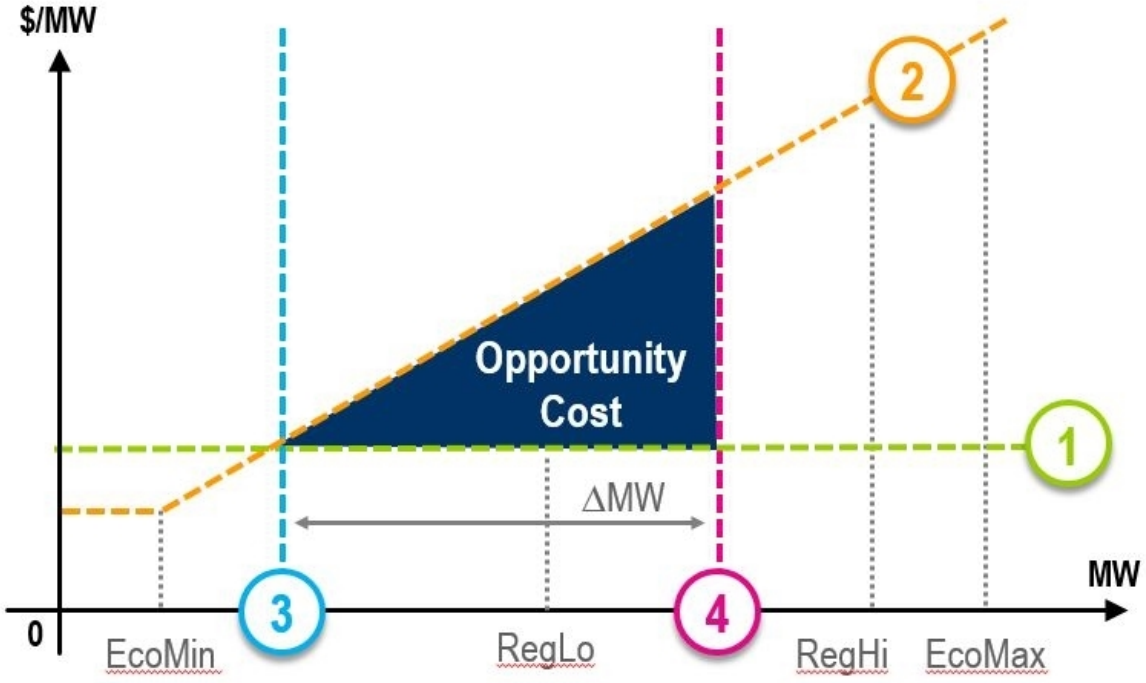
Total shoulder opportunity cost ($) area bounded by:

1. The RT LMP from shoulder intervals
2. The final offer from shoulder interval
3. The tracking ramp limited desired MW level if it had been dispatched in economic merit order in shoulder intervals
4. The regulation set point for first or last interval of regulation assignment.

Shoulder Opportunity Costs: Make Whole

Opportunity cost equals a make whole amount when the resource is moving to a

Regulation set point that is greater than the Tracking Ramp Limited Desired MW (ramp-in)	**OR**	Tracking Ramp Limited Desired MW that is less than the Regulation set point (ramp-out)



Total shoulder opportunity cost ($) area bounded by:

1. The RT LMP from shoulder intervals
2. The final offer from shoulder interval
3. The tracking ramp limited desired MW level if it had been dispatched in economic merit order in shoulder intervals
4. The regulation set point for first or last interval of regulation assignment.

Regulation Charge (BLI 1340)

RMCCP Charge and RMMCP Charge

- LSEs, or other Regulation buyers, are charged hourly obligation ratio share of total hourly RMCCP credits and RMMCP credits.
- Hourly Regulation obligations equal the real-time load ratio share of total amount of Regulation supplied, excluding mileage ratio component, by PJM that hour, adjusted for any bilateral Regulation transactions.

Lost Opportunity Cost Charge

- Net Regulation Purchasers are charged hourly purchase ratio share of total hourly Lost Opportunity Cost Credits.
- Hourly Regulation Purchase is the Hourly Regulation Obligation less any self-scheduled Regulation MW.

Phase 1 changes

Only change is terminology: New Mileage Clearing Price and Charge terminology replaces Performance Clearing Price and Charge.

MSRS Reports

MSRS Report	Phase 1 Impact
Regulation Credits	Archived as of Oct. 1, 2025
Load Response Regulation Credits	Archived as of Oct. 1, 2025
Regulation Market Credits	New Report
Regulation Market Lost Opportunity Cost Credits	New Report
Hydro Peak Period Average LMP Details	New Report
Regulation Summary	Existing Report – column names changing
Generation Credit Summary	Existing Report – column names changing
Generation Portfolio Credit Summary	Existing Report – column names changing

Regulation Market Credits (New)

Displays the Regulation Market Clearing Price Credit calculation details for Generation Resources and Load Response Registrations

The following columns will appear in the body of the report:

Online and CSV Column Name	XML Column Name	Column Number	Data Type
Customer ID	CUSTOMER_ID	4000.01	INTEGER
Customer Code	CUSTOMER_CODE	4000.02	VARCHAR2(6)
EPT Interval Ending	EPT_INTERVAL_ENDING	4001.4	VARCHAR2(40) mm/dd/yyyy HH24:MM format (Displays first interval of the day as hour 0 minute 05 and last interval of the day as hour 24 minute 00)
GMT Interval Ending	GMT_INTERVAL_ENDING	4001.41	VARCHAR2(40) mm/dd/yyyy HH24:MM format (Displays first interval of the day in relation to EPT interval as hour 04 minute 05 or hour 05 minute 05 (EDT/EST depending) and last interval of the day as hour 04 minute 00 of the next day or hour 05 minute 00 of the next day (EDT/EST depending))
Market Resource ID	MRKT_RESRC_ID	4001.16	NUMBER(15,0)
Market Resource Name	MRKT_RESRC_NAME	4001.17	VARCHAR2(75)
Market Resource Type	MRKT_RESRC_TYPE	4001.18	VARCHAR2(10) See possible values below
Resource Ownership Share	RESRC_OWN_SHARE	4001.19	NUMBER
Regulation Product Type	REG_PRODUCT_TYPE	4001.38	VARCHAR(30) See possible values below
PJM-Assigned Reg MW	PJM_ASSIGNED_REG_MW	2340.63	NUMBER
Self-Scheduled Reg MW	SELF_SCHEDULED_REG_MW	2340.64	NUMBER
Actual Mileage	ACTUAL_MILEAGE	2340.57	NUMBER
Historic Mileage	HISTORICAL_MILEAGE	2340.58	NUMBER
Mileage Ratio	MILEAGE_RATIO	2340.46	NUMBER
Performance Score	PERF_SCORE	2340.35	NUMBER
RMCCP ($/MWh)	RMCCP	3001.44	NUMBER
RMMCP ($/MWh)	RMMCP	3001.64	NUMBER
RMCCP Credit ($)	RMCCP_CREDIT	2340.36	NUMBER
RMMCP Credit ($)	RMMCP_CREDIT	2340.48	NUMBER
Total Regulation Clearing Price Credits ($)	TOT_RMCP_CREDIT	2340.49	NUMBER
Version	VERSION	4000.07	VARCHAR2(12)

Market Resource Types: GEN or LOADRESP
Regulation Product Type: Regulation

Regulation Market Lost Opportunity Cost Credits (New)

Displays Regulation Market Lost Opportunity Cost Credit calculation details for Generation Resources and Load Response Registrations

The following columns will appear in the body of the report:

Online and CSV Column Name	XML Column Name	Column Number	Data Type
Customer ID	CUSTOMER_ID	4000.01	INTEGER
Customer Code	CUSTOMER_SHORT	4000.02	VARCHAR2(6)
EPT Interval Ending	EPT_INTERVAL_ENDING	4001.4	VARCHAR2(40) mm/dd/yyyy HH24:MM format (Displays first interval of the day as hour 0 minute 05 and last interval of the day as hour 24 minute 00)
GMT Interval Ending	GMT_INTERVAL_ENDING	4001.41	VARCHAR2(40) mm/dd/yyyy HH24:MM format (Displays first interval of the day in relation to EPT interval as hour 04 minute 05 or hour 05 minute 05 (EDT/EST depending) and last interval of the day as hour 04 minute 00 of the next day or hour 05 minute 00 of the next day (EDT/EST depending))
Market Resource Id	MRKT_RESRC_ID	4001.16	NUMBER(15,0)
Market Resource Name	MRKT_RESRC_NAME	4001.17	VARCHAR2(75)
Market Resource Type	MRKT_RESRC_TYPE	4001.18	VARCHAR2(10) See possible values below
Resource Ownership Share	RESRC_OWN_SHARE	4001.19	NUMBER
PJM-Assigned Reg MW	PJM_ASSIGNED_REG_MW	2340.63	NUMBER
Performance Score	PERF_SCORE	2340.35	NUMBER
Bias Factor	BIAS_FACTOR	2340.2	NUMBER
Hydro Spill Indicator	HYDRO_SPILL_INDICATOR	4000.67	VARCHAR2(1) See possible values below
Reg Offer Price ($/MWh)	REG_OFFER_PRICE	2340.21	NUMBER
RT LMP Used ($/MWh)	RT_LMP_USED	2340.61	NUMBER
Hydro Average LMP ($/MWh)	HYDRO_AVG_LMP	2340.62	NUMBER
Reg Offer Amount ($)	REG_OFFER_AMT	2340.22	NUMBER
Ramp-In Regulation Opportunity Cost ($)	RAMP_IN_REG_OPP_COST	2340.38	NUMBER
Intra-Commitment Regulation Opportunity Cost ($)	COMMITMENT_REG_OPP_COST	2340.59	NUMBER
Ramp-Out Regulation Opportunity Cost ($)	RAMP_OUT_REG_OPP_COST	2340.4	NUMBER
Regulation Opportunity Cost ($)	REG_OPPORTUNITY_COST	2340.6	NUMBER
Total Regulation Clearing Price Credits ($)	TOT_REG_RMCP_CR	2340.67	NUMBER
Regulation Lost Opportunity Cost Credit ($)	REG_LOC_CREDIT	2340.24	NUMBER
Version	VERSION	4000.07	VARCHAR2(12)

Market Resource Types: GEN or LOADRESP

Hydro Spill Indicator: Y or N

Hydro Peak Period Average LMP Details (New)

- New report providing on-peak and off-peak average LMP calculation details for hydro units
- Calculation is not changing due to the regulation redesign project.
- The on-peak and off-peak average LMP is used to calculate regulation opportunity costs and reserve market opportunity costs.
- The plant availability indicator will only be displayed if the customer account has ownership for all the Hydro units in the plant.

The following columns will appear in the body of the report:

Online and CSV Column Name	XML Column Name	Column Number
Customer ID	CUSTOMER_ID	4000.01
Customer Code	CUSTOMER_SHORT	4000.02
EPT Hour Ending	EPT_HOUR_ENDING	4000.05
GMT Hour Ending	GMT_HOUR_ENDING	4000.06
Unit ID	UNIT_ID	4000.63
Unit Name	UNIT_NAME	4000.64
Plant Id	PLANT_ID	4000.71
RT Generation MW	RT_GEN_MW	3000.33
RT Unit Status	RT_UNIT_STATUS	4000.16
Positive MW Threshold	POS_MW_THRESHOLD	4001.75
Negative MW Threshold	NEG_MW_THRESHOLD	4001.76
On Peak Indicator	ON_PEAK_IND	4000.7
RT Generator LMP ($/MWh)	RT_GENERATOR_LMP	3000.25
Available Unit Offline Indicator	AVAIL_UNIT_OFFLINE_IND	4000.73
Plant Availability Indicator	PLANT_AVAIL_IND	4000.76
Version	VERSION	4000.07

Existing Reports – Column Name Changes

Regulation Summary	
Total PJM RMPCP Credits	**Total PJM RMMCP Credits**
RMPCP Charge	**RMMCP Charge**
RMPCP Credit	**RMMCP Credit**
Generator Credit Summary and Generator Portfolio Credit Summary	
Reg RMPCP Credit	**Reg RMMCP Credit**

Column numbers will not change.

Regulation Summary (Existing)

- Displays Regulation Charges calculation details and total Regulation Credits
- Highlighted items reflect column name update.

Customer ID	CUSTOMER_ID	4000.01	INTEGER
Customer Code	CUSTOMER_CODE	4000.02	VARCHAR2(6)
EPT Hour Ending	EPT_HOUR_ENDING	4000.05	VARCHAR2(40) mm/dd/yyyy HH24 format (Displays first hour of the day as hour 1 and last hour of the day as hour 24)
GMT Hour Ending	GMT_HOUR_ENDING	4000.06	VARCHAR2(40) mm/dd/yyyy HH24 format (Displays first hour of the day as hour 1 and last hour of the day as hour 00 of the following day)
Total Assigned Reg (MWh)	TOTAL_ASSIGNED_REG	1340.18	NUMBER(22,3)
RT Load (MWh)	RT_LOAD	1340.19	NUMBER
Total PJM RT Load (MWh)	TOTAL_REG_PJM_RT_LOAD	1340.20	NUMBER
Reg Obligation (MWh)	REG_OBLIGATION	1340.11	NUMBER(22,3)
Bilateral Reg Sales (MWh)	BILATERAL_REG_SALES	1340.12	NUMBER
Bilateral Reg Purchases (MWh)	BILATERAL_REG_PURCHASES	1340.13	NUMBER
Adjusted Reg Obligation (MWh)	ADJUSTED_REG_OBLIGATION	1340.14	NUMBER(22,3)
Total PJM Adjusted Reg Obligation (MWh)	TOTAL_ADJ_REG_OBLIGATION	1340.22	NUMBER(22,3)
Total PJM RMCCP Credits ($)	TOT_PJM_RMCCP_CR	1340.24	NUMBER(10,2)
Total PJM RMMCP Credits ($)	TOT_PJM_RMMCP_CR	1340.25	NUMBER(10,2)
RMCCP Charge ($)	REG_RMCCP_CH	1340.03	NUMBER(22,2)
RMMCP Charge ($)	REG_RMMCP_CH	1340.04	NUMBER(22,2)
PJM-Assigned Reg (MWh)	PJM_ASSIGNED_REG	2340.13	NUMBER(22,3)
Self-Scheduled Reg (MWh)	SELF_SCHEDULED_REG	2340.14	NUMBER(22,3)
Reg Purchases (MWh)	REG_PURCHASE	1340.15	NUMBER(22,3)
Total PJM Reg Purchase (MWh)	TOTAL_PJM_REG_PURCHASE	1340.16	NUMBER(22,3)
Total PJM Reg Lost Opportunity Credit ($)	TOTAL_PJM_REG_LOC_CREDIT	1340.17	NUMBER(22,2)
Reg Lost Opportunity Cost Charge ($)	REG_LOC_CHARGE	1340.02	NUMBER(22,2)
RMCCP Credit ($)	RMCCP_CREDIT	2340.32	NUMBER(22,2)
RMMCP Credit ($)	RMMCP_CREDIT	2340.33	NUMBER(22,2)
Reg Lost Opportunity Cost Credit ($)	REG_LOC_CREDIT	2340.16	NUMBER(22,2)
Version	VERSION	4000.07	VARCHAR2(12)

Generator Credit Summary (Existing)

- Displays daily ancillary service credits by unit
- Highlighted item reflects column name update.

DA Operating Reserve Generator Credit ($)	DA_OPRES_GENERATOR_CREDIT	2370.11	NUMBER(22,2)
Bal Operating Reserve Generator Credit ($)	BAL_OPRES_GENERATOR_CREDIT	2375.11	NUMBER(22,2)
Bal Operating Reserve Startup Cancellation Credit ($)	BAL_OPRES_STARTUP_CANCELLATION_CREDIT	2375.12	NUMBER(22,2)
Bal Operating Reserve Lost Opportunity Cost Credit ($)	BAL_OPRES_ LOC_CREDIT	2375.13	NUMBER(22,2)
Dispatch Differential LOC Credit ($)	DISPATCH_DIFF_LOC_CR	2375.26	NUMBER(22,2)
Synchronous Condensing Credit ($)	SYNCH_COND_CREDIT	2377.11	NUMBER(22,2)
Synchronous Condensing Lost Opportunity Cost Credit ($)	SYNCH_COND_LOC_CREDIT	2377.12	NUMBER(22,2)
Reactive Services Generator Credit ($)	REACTIVE_SERVICE_GENERATOR_CREDIT	2378.11	NUMBER(22,2)
Reactive Services Lost Opportunity Cost Credit ($)	REACTIVE_SERVICE_LOC_CREDIT	2378.12	NUMBER(22,2)
Reactive Services Condensing Credit ($)	REACTIVE_SERVICE_COND_CREDIT	2378.13	NUMBER(22,2)
Reactive Services Condensing Lost Opportunity Cost Credit ($)	REACTIVE_SERVICE_COND_LOC_CREDIT	2378.14	NUMBER(22,2)
Reg RMCCP Credit ($)	REG_RMCCP_CR	2340.30	NUMBER(22,2)
Reg RMMCP Credit ($)	REG_RMMCP_CR	2340.31	NUMBER(22,2)
Reg Lost Opportunity Cost Credit ($)	REG_LOC_CREDIT	2340.12	NUMBER(22,2)
DA SRMCP Credit ($)	DA_SRMCP_CR	2366.13	NUMBER(22,2)
Bal SRMCP Credit ($)	BAL_SRMCP_CR	2360.56	NUMBER(22,2)
Synch Reserve Lost Opportunity Cost Credit ($)	SYNC_RES_LOC_CR	2360.61	NUMBER(22,2)
DA NSRMCP Credit ($)	DA_NSRMCP_CR	2368.13	NUMBER(22,2)
Bal NSRMCP Credit ($)	BAL_NSRMCP_CR	2362.26	NUMBER(22,2)
Non-Synch Reserve Lost Opportunity Cost Credit ($)	NSR_LOC_CR	2362.29	NUMBER(22,2)
DA SECRMCP Credit ($)	DA_SECRMCP_CR	2367.13	NUMBER(22,2)
Bal SECRMCP Credit ($)	BAL_SECRMCP_CR	2361.15	NUMBER(22,2)
Sec Reserve Lost Opportunity Cost Credit ($)	SEC_RES_LOC_CR	2361.19	NUMBER(22,2)
Version	VERSION	4000.07	VARCHAR2(12)

Generator Portfolio Credit Summary (Existing)

- Displays daily ancillary service credits by customer account
- Highlighted item reflects column name update.

Generator Credit ($)		2370.01	
DA Operating Reserve Transaction Credit ($)	DA_OPRES_TRANSACTION_CREDIT	2370.02	NUMBER(22,2)
Bal Operating Reserve Generator Credit ($)	BAL_OPRES_GENERATOR_CREDIT	2375.01	NUMBER(22,2)
Bal Operating Reserve Startup Cancellation Credit($)	BAL_OPRES_CANCEL_CREDIT	2375.02	NUMBER(22,2)
Bal Operating Reserve Lost Opportunity Cost Credit ($)	BAL_OPRES_LOC_CREDIT	2375.03	NUMBER(22,2)
Bal Operating Reserve Transaction Credit ($)	BAL_OPRES_TRANSACTION_CREDIT	2375.04	NUMBER(22,2)
Dispatch Differential LOC Credit ($)	DISPATCH_DIFF_LOC_CR	2375.06	NUMBER(22,2)
Synchronous Condensing Credit ($)	SYNC_COND_CREDIT	2377.01	NUMBER(22,2)
Synchronous Condensing Lost Opportunity Cost Credit ($)	SYNC_COND_LOC_CREDIT	2377.02	NUMBER(22,2)
Reactive Services Generator Credit ($)	REACTIVE_SERVICES_GENERATOR_CREDIT	2378.01	NUMBER(22,2)
Reactive Services Lost Opportunity Cost Credit ($)	REACTIVE_SERVICES_LOC_CREDIT	2378.02	NUMBER(22,2)
Reactive Services Condensing Credit ($)	REACTIVE_SERVICES_COND_CREDIT	2378.03	NUMBER(22,2)
Reactive Services Condensing Lost Opportunity Cost Credit ($)	REACTIVE_SERVICES_COND_LOC_CREDIT	2378.04	NUMBER(22,2)
Reg RMCCP Credit ($)	REG_RMCCP_CREDIT	2340.03	NUMBER(22,2)
Reg RMMCP Credit ($)	REG_RMMCP_CREDIT	2340.04	NUMBER(22,2)
Reg Lost Opportunity Cost Credit ($)	REG_LOC_CREDIT	2340.02	NUMBER(22,2)
DA SRMCP Credit ($)	DA_SRMCP_CR	2366.01	NUMBER(22,2)
Bal SRMCP Credit ($)	BAL_SRMCP_CR	2360.01	NUMBER(22,2)
Synch Reserve Lost Opportunity Cost Credit ($)	SYNC_RES_LOC_CR	2360.02	NUMBER(22,2)
DA NSRMCP Credit ($)	DA_NSRMCP_CR	2368.01	NUMBER(22,2)

Additional PJM.com documentation updates

The following PJM.com MSRS Reports Documentation updates will occur during the week of Sept. 22, 2025.

Existing Regulation Credits and Load Response Regulation Credits report documentation files will be archived under the new Regulation Market Credits report.

MSRS Report dictionary and report documentation files will be updated to include the column name changes on the Regulation Summary, Generator Credit Summary and Generator Portfolio Credit Summary reports.

Regulation settlement details can be found in Manual 28, Section 4.

Phase 1 Settlements Information

MSRS Report Documentation

Available on the MSRS Reports Documentation page of pjm.com

MSRS Training Environment

Available for Market Participant Testing

Go-Live Information

MSRS Report changes effective
Oct. 1, 2025

October 2025 bill issued on
Nov. 7, 2025
(1st invoice containing Regulation Phase 1 changes)

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MIC Special Education Session

– Regulation Redesign Phase 1

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