

Market Efficiency Update

Nic Dumitriu, Manager Market Simulation Transmission Expansion Advisory Committee June 5, 2025



2024/25 Market Efficiency Window 1





- <u>2024/25 Long-Term Market Efficiency Window 1</u> opened on April 11, 2025 and will close on June 10, 2025 at 5 PM EST.
- The Market Efficiency Base Case, Sensitivity Scenarios, and Congestion Drivers for the window are posted on <u>Market Efficiency secure page</u>.
 - <u>FAQ Document posted on PJM Competitive Planning Process page.</u>
- For additional details regarding congestion drivers selection process see <u>Market Efficiency</u> <u>update at March TEAC</u>.

2024/25 Market Efficiency	Window – Congestion Drivers
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Congestion Driver	Area	Туре	Comment
Museville-Smith Mountain 138 kV	AEP	Line	Historical congestion. Congestion increases driven by increased load forecast.
West Point-Lanexa 115 kV	DOM	Line	Congestion driven by the renewable buildup.
Garrett-Garrett Tap 115 kV	PN-APS	Line	Congestion driven by the renewable buildup.



2025 Market Efficiency Timeline





2025 Annual Acceleration Analysis of RTEP Reliability Projects



PJM OA – Annual Acceleration Analysis Process

1.5.7 Development of Economic-based Enhancements or Expansions.

(b) Following PJM Board consideration of the assumptions, the Office of the Interconnection shall perform a market efficiency analysis to compare the costs and benefits of:

- (i) <u>accelerating</u> reliability-based enhancements or expansions already included in the Regional Transmission Plan that if accelerated also could relieve one or more economic constraints;
- (ii) <u>modifying</u> reliability-based enhancements or expansions already included in the Regional Transmission Plan that as modified would relieve one or more economic constraints; and
- (iii) adding new enhancements or expansions that could relieve one or more economic constraints, but for which no reliability-based need has been identified. Economic constraints include, but are not limited to, constraints that cause:
 - (1) significant historical gross congestion;
 - (2) pro-ration of Stage 1B ARR requests as described in the Operating Agreement, Schedule 1, section 7.4.2(c); or
 - (3) significant simulated congestion as forecasted in the market efficiency analysis.

The timeline for the market efficiency analysis and comparison of the costs and benefits for items in the Operating Agreement, Schedule 6, section 1.5.7(b)(i-iii) is described in the PJM Manuals.

(c) The process for conducting the market efficiency analysis described in subsection (b) above shall include the following:

 (ii)The Office of the Interconnection shall identify any planned reliability-based enhancements or expansions already included in the Regional Transmission Expansion Plan, which if <u>accelerated</u> would relieve such constraints, and present any such proposed reliability-based enhancements and expansions to be accelerated to the Transmission Expansion Advisory Committee for review and comment. The PJM Board, upon consideration of the advice of the Transmission Expansion Advisory Committee, thereafter shall consider and vote to approve any accelerations.



Congestion Impact of RTEP Enhancements (Comparison of AS-IS and RTEP Topology)



Acceleration Analysis Status

- Completed production cost simulations:
 - 2025 study year with AS-IS and RTEP Topology.
 - 2029 study year with RTEP Topology.

• Validated results with 2024/2025 historical congestion



Constraint ⁽¹⁾	Area	Туре	2025 Market Conditions ⁽²⁾ 2025 AS-IS Topology (\$M)	2025 Market Conditions ⁽²⁾ 2029 RTEP Topology (\$M)	2029 Market Conditions ⁽²⁾ 2029 RTEP Topology (\$M)
AP South Interface	PJM	Interface	147	0	40
Straban-Lincoln 115 kV	METED	Line	88	0	0
Messick RdRidgeley 138 kV	APS	Line	47	0	0
Charlottesville-Proffit Rd Del Pt 230 kV	DOM	Line	44	0	0
Goose Creek-Leghorn 345 kV	AMIL	Line	30	0	0
Haumesser Rd. (R)-W De Kalb Tap (R) 138 kV ⁽³⁾	CE	Line	29	1	15
Dumont-Stillwell 345 kV	AEP-NIPSO	Line	27	0	0
Northwest-Conastone 230 kV	BGE	Line	25	0	0
Safe Harbor-Graceton 230 kV	PPL-BGE	Line	24	0	0
Gore-Stonewall 138 kV	APS	Line	16	0	0
Roxbury-Aspen Road Solar 115 kV	PENELEC	Line	14	0	0
Olive-Univ. Pk. N. 345 kV	AEP-CE	Line	12	0	0
Saint John-Crete 345 kV	NIPSCO-CE	Line	11	0	0

1) Includes top 25 constraints with largest annual congestion increase.

2) 2025 and 2029 Market Conditions comprise of load, generation expansion, fuel forecasts and other fundamental assumptions at levels forecasted for year 2025 and 2029, respectively.
3) Further analysis needed for constraints close to the PJM/MISO border to evaluate the congestion impact of MISO Tranche 2.1 recently approved by the MISO Board.



Congestion Savings of RTEP Enhancements (cont.)

Constraint ⁽¹⁾	Area	Туре	2025 Market Conditions ⁽²⁾ 2025 AS-IS Topology (\$M)	2025 Market Conditions ⁽²⁾ 2029 RTEP Topology (\$M)	2029 Market Conditions ⁽²⁾ 2029 RTEP Topology (\$M)
Nottingham Reactor 230 kV	PECO	Reactor	10	0	0
Juniata TR 500/230 kV	PPL	XFMR	9	0	0
North Delphos-East Delphos 69 kV	AEP	Line	9	0	0
Clifford-Colleen 138 kV	AEP	Line	8	0	0
Remington CT-Marsh Run 230 kV	DOM	Line	4	0	0
Fork Union-Bremo 115 kV	DOM	Line	3	0	1
He Hubbell-Batesville 138 kV ⁽³⁾	HE-DUK-IN	Line	3	1	45
Chesterfield 1-Hopewell 230 kV	DOM	Line	2	0	0
Duff-Francisco 345 kV	DUK-IN	Line	2	0	0
Shade Gap-Aspen Road Solar 115 kV	PENELEC	Line	2	0	0
South Reading-Boonetown 230 kV	METED	Line	5	3	2
Spartan-Stafford 230 kV	DOM	Line	1	0	0

1) Includes top 25 constraints with largest annual congestion increase.

2) 2025 and 2029 Market Conditions comprise of load, generation expansion, fuel forecasts and other fundamental assumptions at levels forecasted for year 2025 and 2029, respectively.
3) Further analysis needed for constraints close to the PJM/MISO border to evaluate the congestion impact of MISO Tranche 2.1 recently approved by the MISO Board.

RTEP enhancements that are approved but not yet in service account for more than a **\$493 million**

reduction in congestion when comparing the 2025 simulations with the 2025 ASIS and 2029 RTEP topologies.



Annual Acceleration Process - Next Steps

- Identify reliability upgrades responsible for congestion reductions between the AS-IS and RTEP topology cases.
- Check the feasibility of accelerating schedules for the identified reliability upgrades.
- Results to be presented at future TEAC meetings.





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Revision History

• V1 – 6/2/2025 – Original slides posted.

