

Market Efficiency Update

Market Simulation

Transmission Expansion Advisory Committee

July 8, 2025

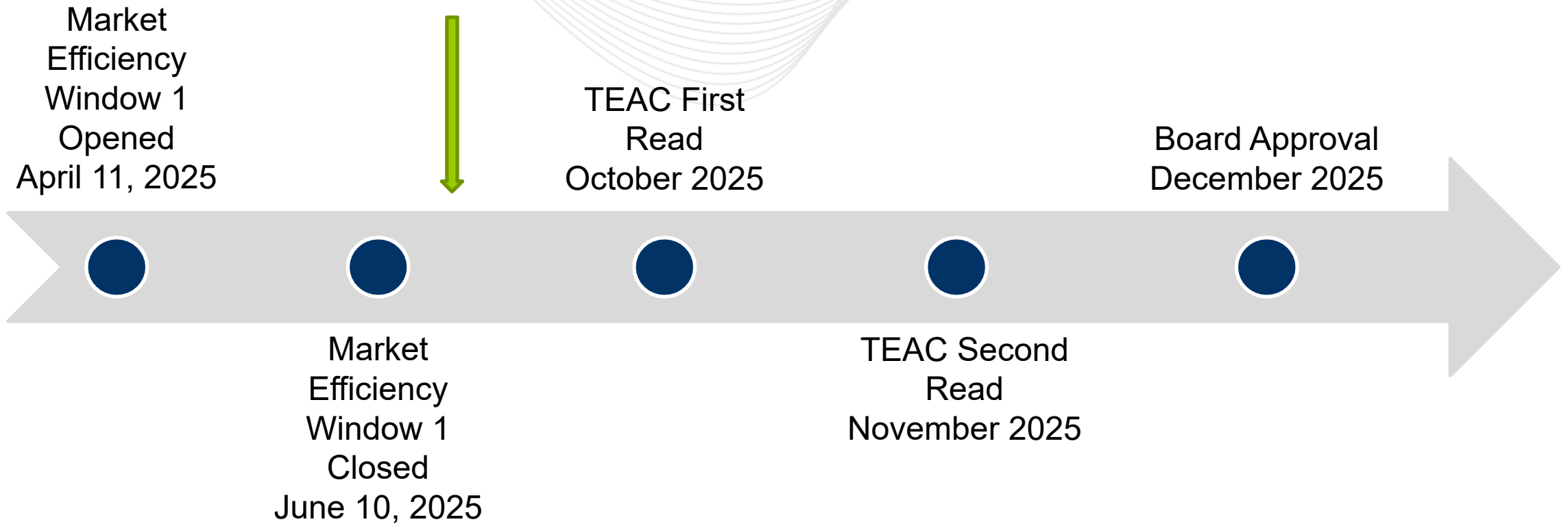
2024/25 Market Efficiency Window 1

- [2024/25 Long-Term Market Efficiency Window 1](#) opened on April 11, 2025.

Congestion Driver	Area	Type	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.

- Market Efficiency Base Case, Sensitivity Scenarios, and Congestion Drivers for the window are posted on [Market Efficiency secure page](#).
- [FAQ Document](#) posted on PJM Competitive Planning Process page.
- [2024/25 Long-Term Market Efficiency Window 1](#) closed on June 10, 2025.
 - Redacted versions of proposals are posted on the [Redacted Proposals page](#).

- 14 Proposals were received from 5 entities:
 - Museville-Smith Mountain 138 kV: 6 proposals from 3 entities.
 - West Point-Lanexa 115 kV: 7 proposals from 1 entity.
 - Garrett-Garrett Tap 115 kV: 1 proposal from 1 entity.
- 3 Greenfield proposals with in-service year costs from \$270.1M to \$1.568B:
 - Proposal ID 717: 765 kV & 500 kV substations and transmission lines.
 - Proposal ID 993: 765/345 kV substation and 345 kV transmission lines in existing ROW.
 - Proposal ID 991: 765/500 kV substation and 765 kV transmission line.
- 9 Upgrade proposals including line rebuilds, reconstructing switching stations, sag studies, and substation equipment upgrades. In-service year costs from \$1.8M to \$131.6M.
- 2 Battery Energy Storage System (BESS) proposals with in-service year costs of \$83.9M and \$221.7M respectively.





2025 Annual Acceleration Analysis of RTEP Reliability Projects

- Scope: Determine which reliability upgrades, if any, have an economic benefit if accelerated or modified.
- Study Years: AS-IS and RTEP set of economic input assumptions used to study impacts of approved RTEP projects.
- Process:
 - Compare market congestion for AS-IS vs. RTEP topology.
 - Estimate economic impact of accelerating planned upgrades.

- 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.
- Identified reliability upgrades responsible for congestion reductions between the AS-IS and RTEP topology cases.

Congestion Savings of RTEP Enhancements

Constraint ⁽¹⁾	Area	Type	Simulated 2025 ⁽²⁾ Annual Congestion Savings ⁽³⁾ (\$M)	PJM RTEP Upgrade
AP South Interface	PJM	Interface	147	B4000: 2024W1 Regional Cluster
Straban-Lincoln 115 kV	METED	Line	88	B3800: Build new Hunterstown-Carroll 230 kV circuit
Messick Rd.-Ridgeley 138 kV	APS	Line	47	B3800: 2022W3 Western Cluster
Charlottesville-Proffit Rd Del Pt 230 kV	DOM	Line	44	B3800: Rebuild 230 kV line #2054
Haumesser Rd. (R)-W De Kalb Tap (R) 138 kV	CE	Line	28	B3811: Rebuild Haumesser Road to H-452 138 kV
Dumont-Stillwell 345 kV	AEP-NIPSO	Line	27	B3775: Dumont-Stillwell 345 kV sag study
Northwest-Conastone 230 kV	BGE	Line	25	B3771: Reconductor Northwest-Conastone 230 kV circuits
Safe Harbor-Graceton 230 kV	PPL-BGE	Line	24	B3800: 2022W3 Eastern Cluster
Gore-Stonewall 138 kV	APS	Line	16	B3800: 2022W3 Western Cluster
Roxbury-Aspen Road Solar 115 kV	PENELEC	Line	14	B3751, B3752: Rebuild Roxbury-Shade Gap 115 kV
Olive-Univ. Pk. N. 345 kV	AEP-CE	Line	12	B3775: Olive-University Park 345 kV sag study
Saint John-Crete 345 kV	NIPSCO-CE	Line	11	B3775: Reconductor/Rebuild Crete-St John 345 kV

1) Includes constraints with annual congestion decreases where responsible RTEP upgrades were identified.

2) 2025 Market Conditions comprise of load, generation expansion, fuel forecasts, and other fundamental assumptions at levels forecasted for year 2025.

3) Congestion Impact of RTEP Enhancements calculated by comparing market simulations with AS-IS vs. RTEP Topology.

- For additional congestion details see June TEAC [Market Efficiency Update](#).

Congestion Savings of RTEP Enhancements (cont.)

Constraint ⁽¹⁾	Area	Type	Simulated 2025 ⁽²⁾ Annual Congestion Savings ⁽³⁾ (\$M)	PJM RTEP Upgrade
Nottingham Reactor 230 kV	PECO	Reactor	10	B3800: 2022W3 Eastern Cluster
Juniata TR 500/230 kV	PPL	XFMR	9	B3664: Replace station equipment at Juniata 230 kV
North Delphos-East Delphos 69 kV	AEP	Line	9	B3346: Rebuild North Delphos-East Delphos-Elida Road
Clifford-Colleen 138 kV	AEP	Line	8	B4000: 2024W1 Regional Cluster
Remington CT-Marsh Run 230 kV	DOM	Line	4	B4000: 2024W1 Regional Cluster
Fork Union-Bremo 115 kV	DOM	Line	3	B4000: 2024W1 Regional Cluster
Chesterfield 1-Hopewell 230 kV	DOM	Line	2	B3694: Reconductor Hopewell-Chesterfield 230 kV
Shade Gap-Aspen Road Solar 115 kV	PENELEC	Line	2	B3751, B3752: Rebuild Roxbury-Shade Gap 115 kV
Spartan-Stafford 230 kV	DOM	Line	1	B3694: Rebuild Cranes Corner-Stafford 230 kV

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2) 2025 Market Conditions comprise of load, generation expansion, fuel forecasts, and other fundamental assumptions at levels forecasted for year 2025.

3) Congestion Impact of RTEP Enhancements calculated by comparing market simulations with AS-IS vs. RTEP Topology.

- For additional congestion details see June TEAC [Market Efficiency Update](#).

- Verify with designated entities the feasibility of accelerating the identified reliability upgrades.
- Determine:
 - Any other system impacts due to accelerated schedules of planned outages.
 - Any increased costs due to shortened timelines.
- Calculate B/C ratios for the identified candidates.
- Results to be presented at future TEAC meetings.

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- V1 – 7/2/2025 – Original slides posted.

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