



Market Efficiency Update

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PJM Market Simulation

Transmission Expansion Advisory Committee

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2022/23 Market Efficiency Cycle

- Posted [update](#) to the Market Efficiency Base Case (PROMOD 11.4 XML format).
- Currently analyzing the impact of the new PJM load forecast on potential congestion drivers.
- Special TEAC Session – Market Efficiency scheduled for January 27, 2023.
- The final Market Efficiency Base Case to be posted before the start of 2022/23 Long-Term Window.
- 2022/23 Long-Term Window will open once the congestion drivers are finalized.



Congestion Impact of 2022 Reliability Window 1 Upgrades

Constraint ²⁾	Congested Area	Type	2027 Annual Congestion ME Base Case <u>Before</u> 2022 Window 1 Upgrades	2027 Annual Congestion ME Base Case <u>After</u> 2022 Window 1 Upgrades	Comment
Black Oak-Bedington Interface		Inter	\$ 46,908,813	\$ 36,189,474	2022 Window 1 – Black Oak 500kV Voltage Drop
BC-PEPCO Interface		Inter	\$ 28,449,780	\$ 34,425,880	-
AP South Interface		Inter	\$ 7,895,826	\$ 13,809,395	-
AEP-DOM Interface		Inter	\$ 9,957,078	\$ 9,732,573	-
Safe Harbor-Graceton 230 kV	PPL-BGE	Line	\$ 22,363,925	\$ 35,917	Congestion relieved by 2022 Window 1 Upgrades
Messick Road to Morgan 138 kV	APS	Line	\$ 16,221,941	-	Congestion relieved by 2022 Window 1 Upgrades
Lincoln-Straban 138 kV	METED	Line	\$ 3,063,133	-	Congestion relieved by 2022 Window 1 Upgrades
Germantown-Straban 138 kV	METED	Line	\$ 2,639,941	-	Congestion relieved by 2022 Window 1 Upgrades
Yorkana-Brunner Island 230 kV	METED-PPL	Line	-	\$ 11,994,892	New congestion after 2022 Window 1 Upgrades
Five Forks-Rock Ridge 115 kV	BGE	Line	-	\$ 4,761,069	New congestion after 2022 Window 1 Upgrades
Graceton-Bagley 230 kV	BGE	Line	-	\$ 4,303,681	New congestion after 2022 Window 1 Upgrades
Face Rock 115/69 kV	PPL	XFMR	-	\$ 3,463,086	New congestion after 2022 Window 1 Upgrades
Hunterstown-Lincoln 115 kV	METED	Line	-	\$ 1,551,075	New congestion after 2022 Window 1 Upgrades
Smith Mountain-Museville 138 kV	AEP	Line	\$ 1,153,644	\$ 1,024,641	-

1) Preliminary results, not final congestion drivers. List of constraints and congested areas may change in the final base case.

2) Included only flowgates with hr bindings > 25 hrs. and annual simulated congestion > \$1 million.



Congestion Impact of 2022 Multi-Driver Window 1 Upgrades

Constraint ³⁾	Congested Area	Type	2027 Annual Congestion ME Base Case <u>Before</u> 2022 Multi-Driver Window 1 Upgrades	2027 Annual Congestion ME Base Case <u>After</u> 2022 Multi-Driver Window 1 Upgrades	Comment
Dumont-Stillwell 345 kV	AEP-NIPS	M2M	\$ 11,274,065	-	Congestion relieved by 2022 Multi-Driver Window 1 Upgrades
Olive-University Park 345 kV	AEP-CE	M2M	\$ 4,899,942	-	Congestion relieved by 2022 Multi-Driver Window 1 Upgrades
Olive-St John 345 kV	AEP-NIPSCO	Line	N/A	\$ 1,622,490	Shifted congestion after Multi-Driver Window 1 Upgrades

1) Preliminary results, not final congestion drivers. List of constraints and congested areas may change in the final base case.

2) Included only flowgates with hr bindings > 25 hrs. and annual simulated congestion > \$1 million.



PJM-MISO TMEP Study 2nd Review

- Historically binding (2020 + 2021) Market-to-Market flowgates
 - Focus on constraints with >\$1million congestion
- Initial list of [TMEP study candidates](#) posted at the April 25, 2022 IPSAC meeting.
- TMEP Criteria
 - Limited to historically binding M2M flowgates.
 - Projects must be in service by 3rd summer peak .
 - Projects capital cost < \$20 million.
 - Benefits based on average of past 2 years of historical congestion (Day Ahead + Balancing)
 - Four years worth of benefits must completely cover project’s installed capital cost
- Interregional cost allocation based on congestion relief in each RTO
 - Adjusted by M2M payments



ComEd: Baseline Powerton Sub 138kV Wave Trap

Process Stage: Recommended Solution

Reference: PJM/MISO JOA – Article 9 – Interregional TMEP Analysis

Assumptions: 2-year historical congestion (2020, 2021)

Analytical Framework: 2022 Coordinated System Plan Study

TMEP Candidate: Yes

Problem Statement: Greater than \$1 M of historical congestion identified on the Powerton-Towerline 138kV tie-line with MISO (Ameren)

Existing Facility Rating: SN/SE/WN/WE = 195 / 214 / 211 / 229

Proposed Facility Rating: SN/SE/WN/WE = 207 / 268 / 252 / 298

Proposed Solution:

b3760: At Powerton Substation (ComEd), replace most limiting facility, 800A wave trap with 2000A wave trap, on the Powerton-Towerline 138kV line terminal.

Cost/Benefit Analysis:

- **Estimated TMEP Cost:** \$0.2 M
- **Annual TMEP Congestion Benefit:** \$ 1.827 M/Year (2-Years Hist. Cong. Avg.)
- **Expected TMEP Future Congestion Relief:** \$ 7.31 M = 4 x \$ 1.827 M/Year (Sum of \$ 1.827 M annual congestion benefit over 4 years period after study year).

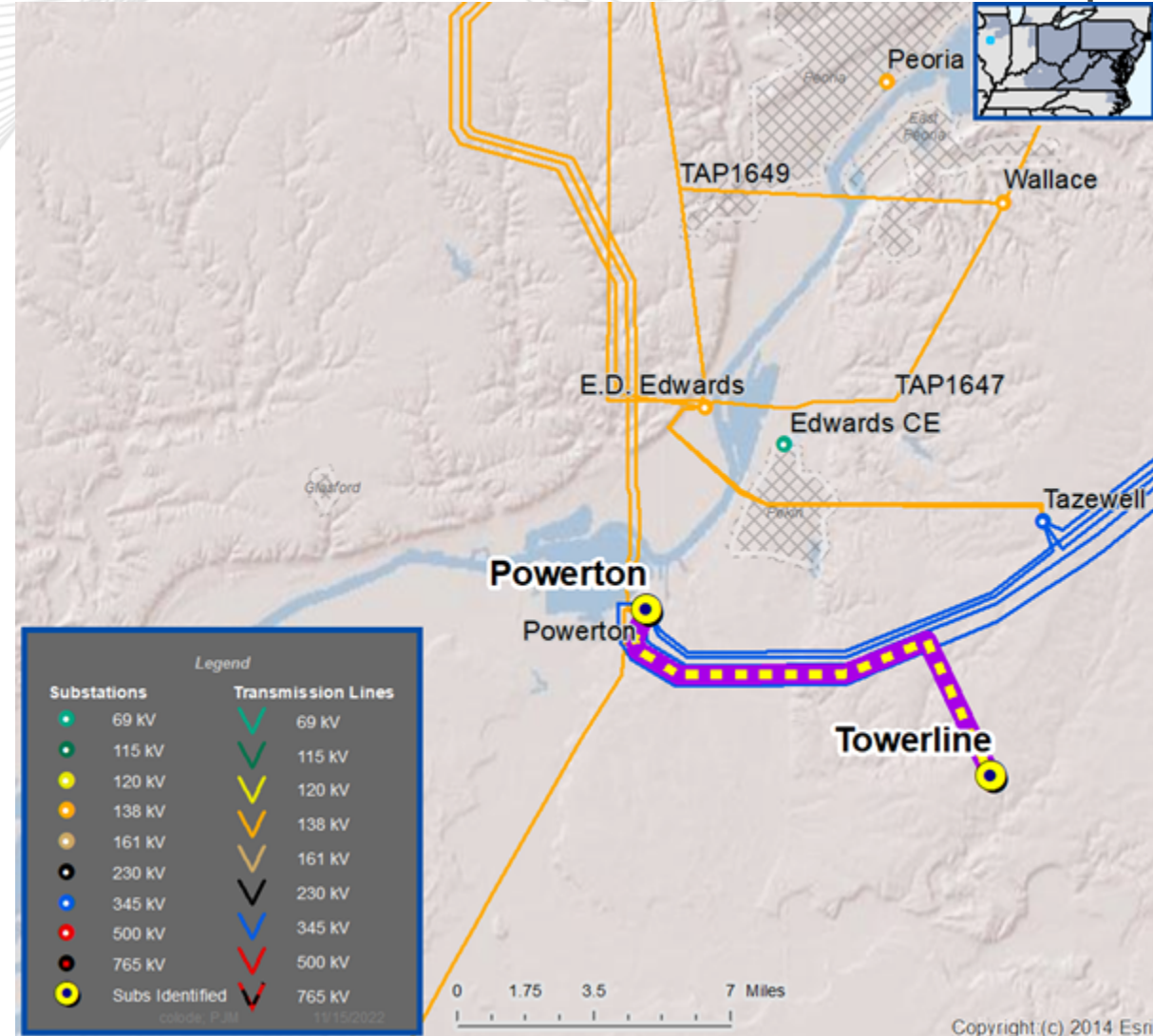
Criterion: TMEP Capital Cost < Expected TMEP Future Congestion Relief

$$\$0.2 \text{ M} < \$ 7.31 \text{ M}$$

Interregional Cost Allocation: PJM 71.62%, MISO 28.38%

Required In-Service: 6/1/2025

Previously Presented: 12/6/2022



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Market Efficiency Update



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- V1 – 1/6/2023 – Original slides posted

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