



Inter-regional Planning Update

Transmission Expansion Advisory Committee

October 11, 2018

- Assumptions, models, schedules – January TEAC
- Reliability analysis, results, proposal windows – 2018/2019
- Longer-term reliability and market efficiency window November 1, 2018
- Longer-term proposal analysis 2019

- <http://www.pjm.com/planning/interregional-planning.aspx>
 - Data exchanges
 - Reviews of regional needs and solutions
 - Determination of any more efficient or cost effective interregional transmission
 - Ongoing queue request coordination
 - Stakeholder reviews and input
 - PJM TEAC/PC
 - MISO IPSAC
 - NE Protocol IPSAC
 - Respective external neighbor regional processes

- PJM-MISO IPSAC - <http://www.pjm.com/committees-and-groups/stakeholder-meetings/ipsac-midwest.aspx>
 - October 5, 2018 IPSAC
 - Interregional 2016/17 congestion TMEP study results
 - Interregional MEP study – 2018/19
 - Regional studies in progress and on schedule
 - November 1 finalize PJM models, open for proposals (regional and interregional)
 - Cleanup revisions to JOA §9.3 and §9.4 posted with September PC materials

- NE Protocol IPSAC - <http://www.pjm.com/committees-and-groups/stakeholder-meetings/ipsac-ny-ne.aspx>
 - IPSAC completed regional issues and solutions review May 18, 2018 – NCSP posted
 - <http://www.pjm.com/-/media/committees-groups/stakeholder-meetings/ipsac/20170519/20170519-ipsac-planning-cycle.ashx>
 - Preparation for December 10, 2018 IPSAC Agenda
 - Review interregional process
 - Review regional plans and solutions
 - Review interconnection project coordination
 - Stakeholder input
- SERTP- regional process: www.southeasternrtp.com
 - biennial interregional review completed May 8, 2018 – Atlanta
 - Next biennial interregional review – spring 2020

- **TVA – LGE/KU JRCA update**
 - PJM and TVA have exchanged update suggestions including
 - Coordinated planning provisions consistent with the Order No. 1000 interregional process
 - Add more detail to existing coordinated planning provisions
 - Expand or clarify existing processes for coordination of Long Term Firm Transmission Service and Balancing Authority integrations
- **IESO study of MISO and NYISO interfaces**
 - In person meeting October 24, 2018
 - PJM monitoring and providing input as needed
 - Target completion Q4 2019
 - PJM objective is knowledge of projected interconnected operations

- EIPC support for NERC EI frequency response review is complete
- State of the Eastern Interconnection released by EC (posted with meeting materials)
- Production Cost Eastern Interconnection model
 - Consultant (ABB) nearing completion of engagement to resolve remaining modeling issues and complete EI-model
- NERC discussions for potential Agreement to establish EIPC as “designee” under reliability standard MOD-032-1
 - NERC notified EIPC further discussions on hold until 2019

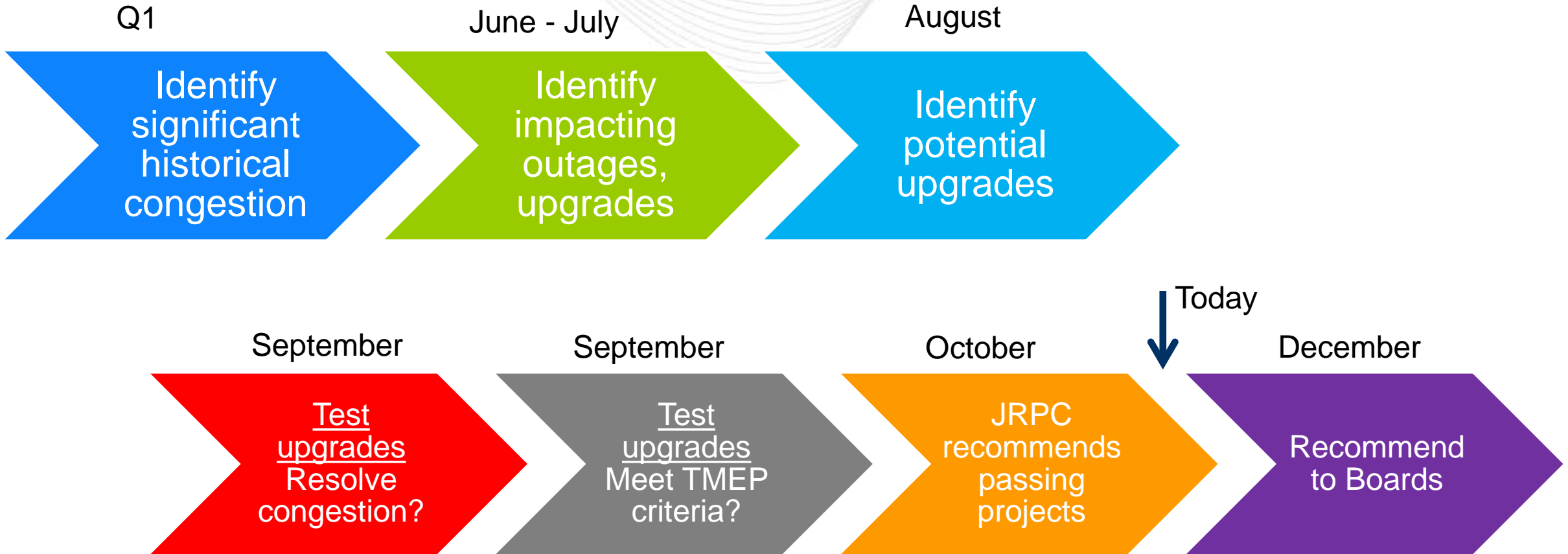


Interregional Targeted Market Efficiency Projects

Study Results

- Developed by the PJM/MISO IPSAC in 2016
- FERC accepted in October, 2017
- Five TMEPs approved by PJM & MISO Boards December 2017
- PJM & MISO conducted a second iteration in 2018
 - Full results discussed at October 5 PJM/MISO IPSAC

- Limited to historically binding M2M flowgates
- Projects must be in service by 3rd summer peak
- Projects over \$20 million not eligible (must go through MEP process)
- Benefits based on relieving average of past 2 years of historical congestion (Day Ahead + Balancing)
- Four years worth of benefits must completely cover project's installed capital cost
- Discount/inflation rate not necessary as all projects are near term
- Interregional cost allocation based on congestion relief in each RTO
 - Adjusted by M2M payments



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- M2M facilities with >\$1 million congestion (2016 + 2017)

33

- Addressed by planned system upgrade/changes

16

- Outage driven

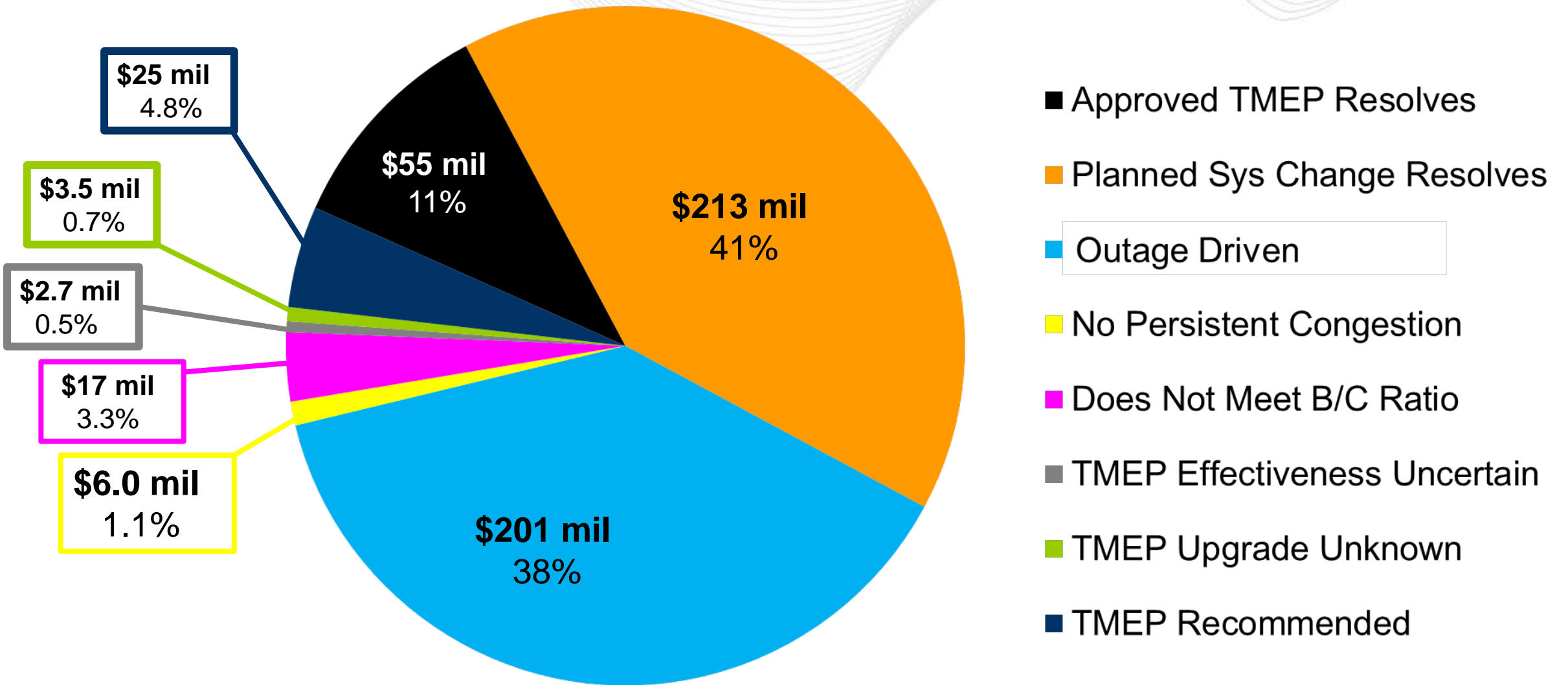
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- Don't meet TMEP Criteria

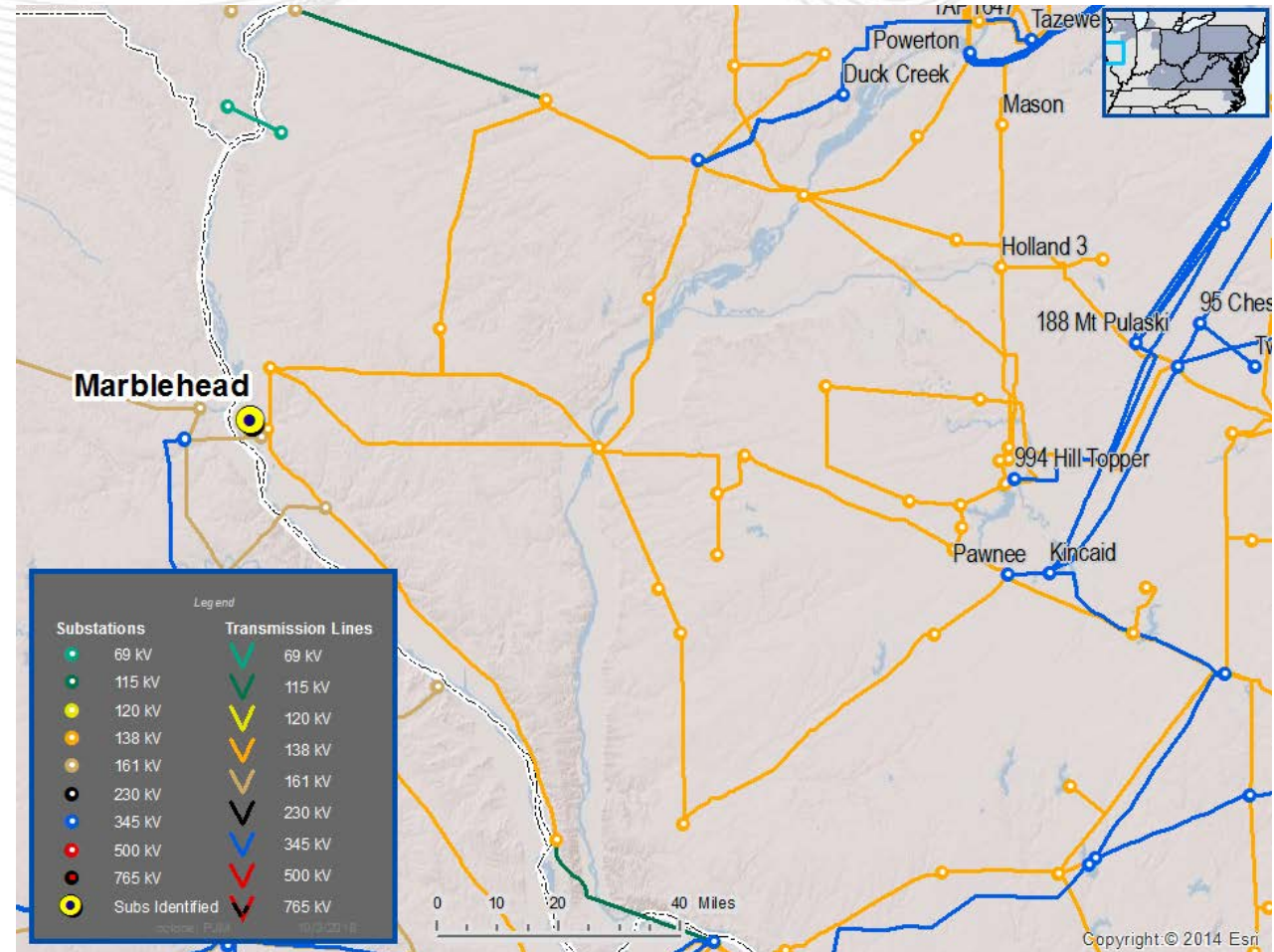
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- Recommended TMEPs

* See October 5 IPSAC for full details: <https://pjm.com/committees-and-groups/stakeholder-meetings/ipsac-midwest.aspx>



Flowgate ID(s): 23418
Historical Congestion: \$ 15.5 million
Ownership: AMIL
Outages Impacting: None Identified
Planned Upgrades: None Identified
Current Rating: 280/287/287/287
Upgrade Type: Terminal equipment
Upgrade Cost: \$ 175 k
Upgraded Rating: 300/300/300/300



	Base Case	Project Case
PROMOD Congestion	\$ 2.0 million	\$ 1.2 million

Congestion Moved to Downstream Flowgates: None identified

Analysis Results: Upgrade relieves 40% of congestion

TMEP Cost: \$ 175 k

TMEP Benefit: $\$ 7.75 * 4 \text{ years} * 40\% = \$ 12.4 \text{ million}$

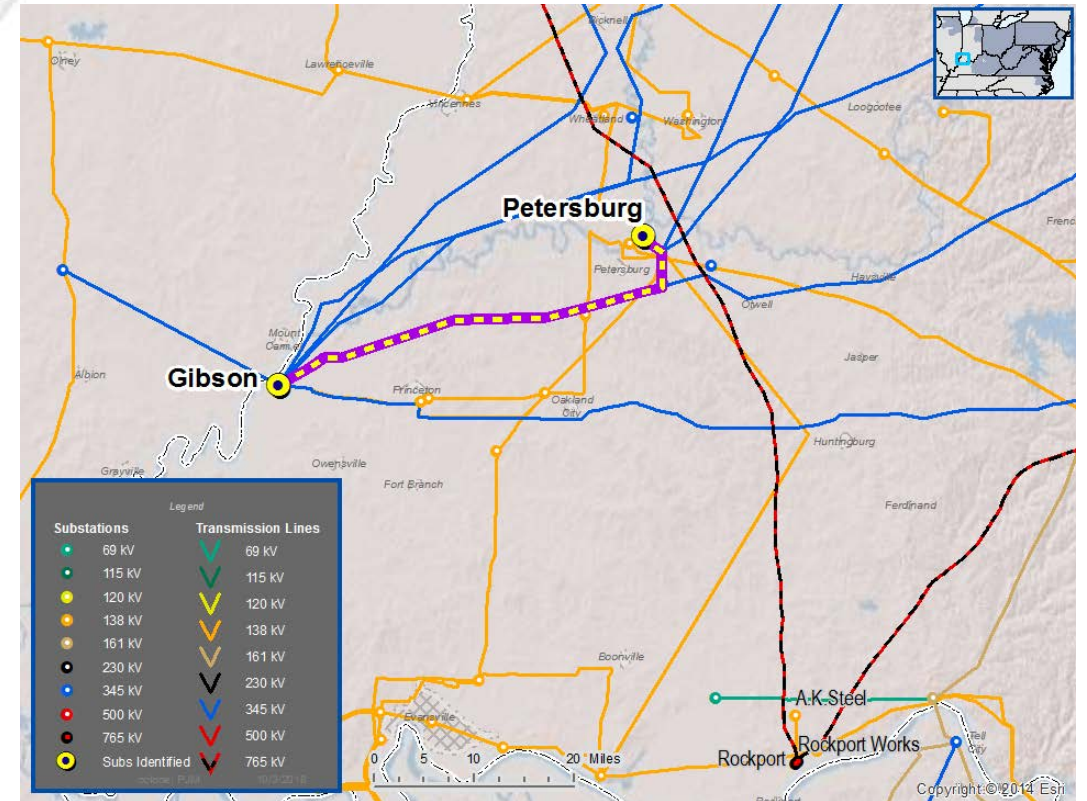
Conclusion: TMEP upgrade recommended



Marblehead 161/138 kV Interregional Benefit Split

	PJM	MISO
Congestion	\$0	\$15,498,782
M2M Payment	\$0	\$0
Benefit	\$0	\$15,498,782
Benefit Share	0%	100%

Flowgate ID(s): 2047, 21530, 22613
Historical Congestion: \$ 9.8 Million
Ownership: DEI – IPL tie
Outages Impacting: None Identified
Planned Upgrades: None Identified
Current Rating: 1195/1195/1195/1195
Upgrade Type: Substation equipment
Upgrade Cost: \$4.3 million
Upgraded Rating: 1374/1374/1798/1798 MVA



	Base Case	Project Case
PROMOD Congestion	\$ 21.6 million	\$ 0

Congestion Moved to Downstream Flowgates: None identified

Analysis Results: Upgrade resolves congestion

TMEP Cost: \$ 4.3 million

TMEP Benefit: \$ 19.5 million

Conclusion: TMEP upgrade recommended



Gibson - Petersburg 345 kV Interregional Benefit Split

	PJM	MISO
Congestion	\$283,099	\$9,473,739
M2M Payment	\$390,994	-\$390,994
Benefit	\$674,093	\$9,082,745
Benefit Share	7%	93%



Summary of Recommended TMEPs

Facility	Transmission Owner	TMEP Cost (Million \$)	TMEP Benefit (Million \$)	Benefit Allocation (%PJM/% MISO)
Marblehead 161/138 kV	AMIL	0.175	12.4	0 / 100
Gibson – Petersburg 345 kV	DEI - IPL	4.3	19.5	7 / 93

- V1 – 10/08/2018 – Original Version Posted to PJM.com