

FERC Technical Conference on MISO/PJM Seams

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Managing Director Transmission

Docket No. EL13-88-000
6/15/2015



Executive Summary

MISO and PJM customers continue to pay *unjust and unreasonable* rates from the chronic failure of the MISO/PJM interregional planning processes.

Seam formed in 2004, Complaint Filed in Sept. 2013, Now June 2015

1. Concurrent, deadline-based regional and interregional planning processes are needed.
2. One interregional test using interregional value drivers should be required instead of three disconnected tests (one interregional plus two regional).
3. One model should be used for interregionally-driven projects.
4. Persistent Market-to-Market payments are a valid metric for identifying opportunities for interregional projects.
5. Lower voltage projects that can deliver interregional benefits should be included, but with a “beneficiary pays”-based cost allocation.
6. A generator retirements process needs to be added to the Joint Operating Agreement, and the generation interconnection modeling needs to be fixed.

Session 1

TRANSMISSION PLANNING CYCLES

NIPSCO Electric Profile

- Wholly-owned affiliate of NiSource
- 457,000 Electric Customers in 21 Counties
- 3,400 MW Generating Capacity
 - Operates 6 Electric Generating Facilities (3 Coal, 1 Natural Gas, 2 Hydro)
- 2,800 Miles of Electric Transmission
 - Interconnect with 5 Major Utilities (3 MISO; 2 PJM)
 - Serves 2 Network Customers and Other Independent Power Producers
- Highly Interconnected with PJM
 - Low impedance path between PJM West (ComEd) and the rest of PJM

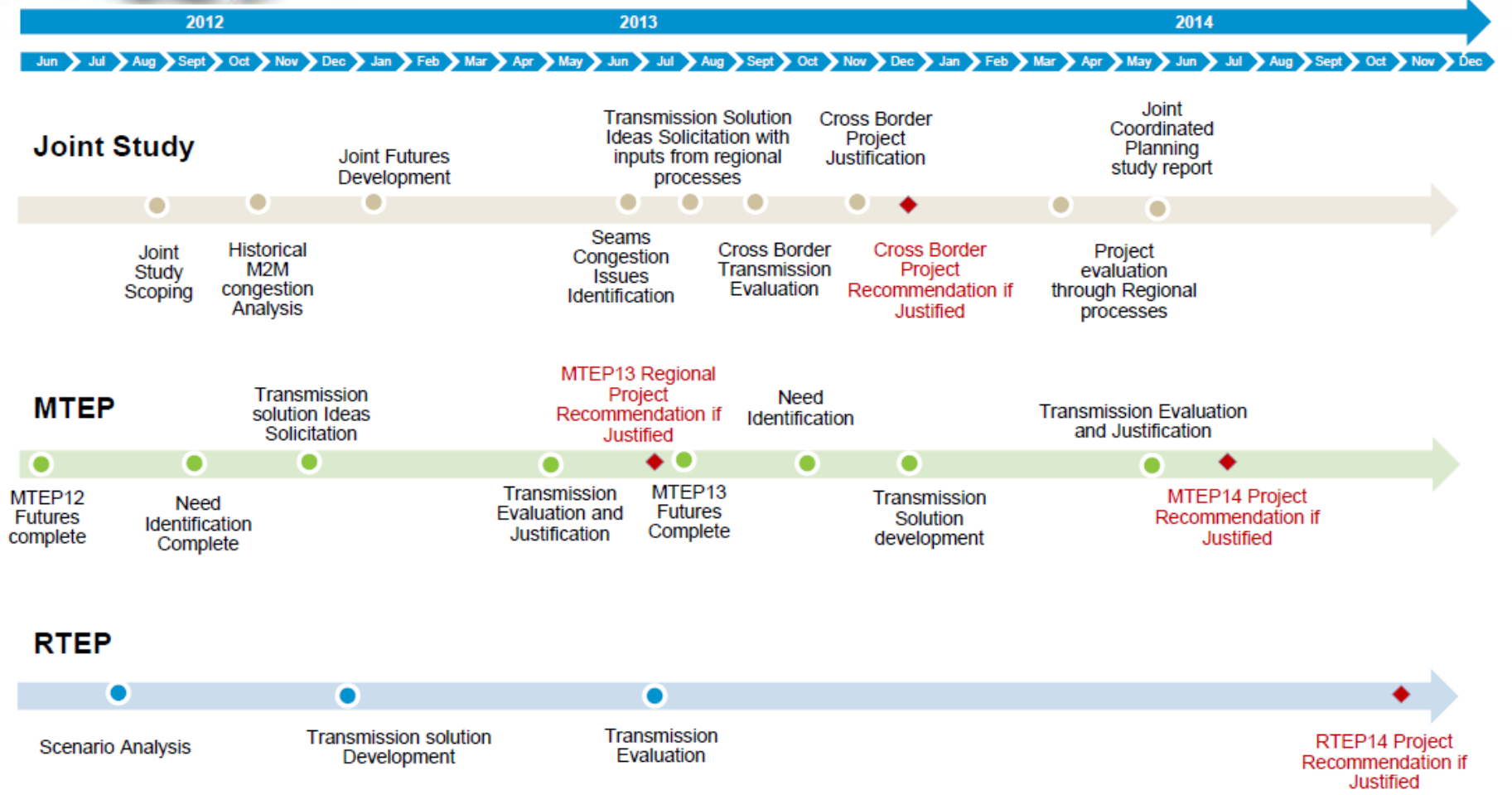


MISO/PJM – Transmission Planning Cycles

Key Shortfalls in Current JOA Process:

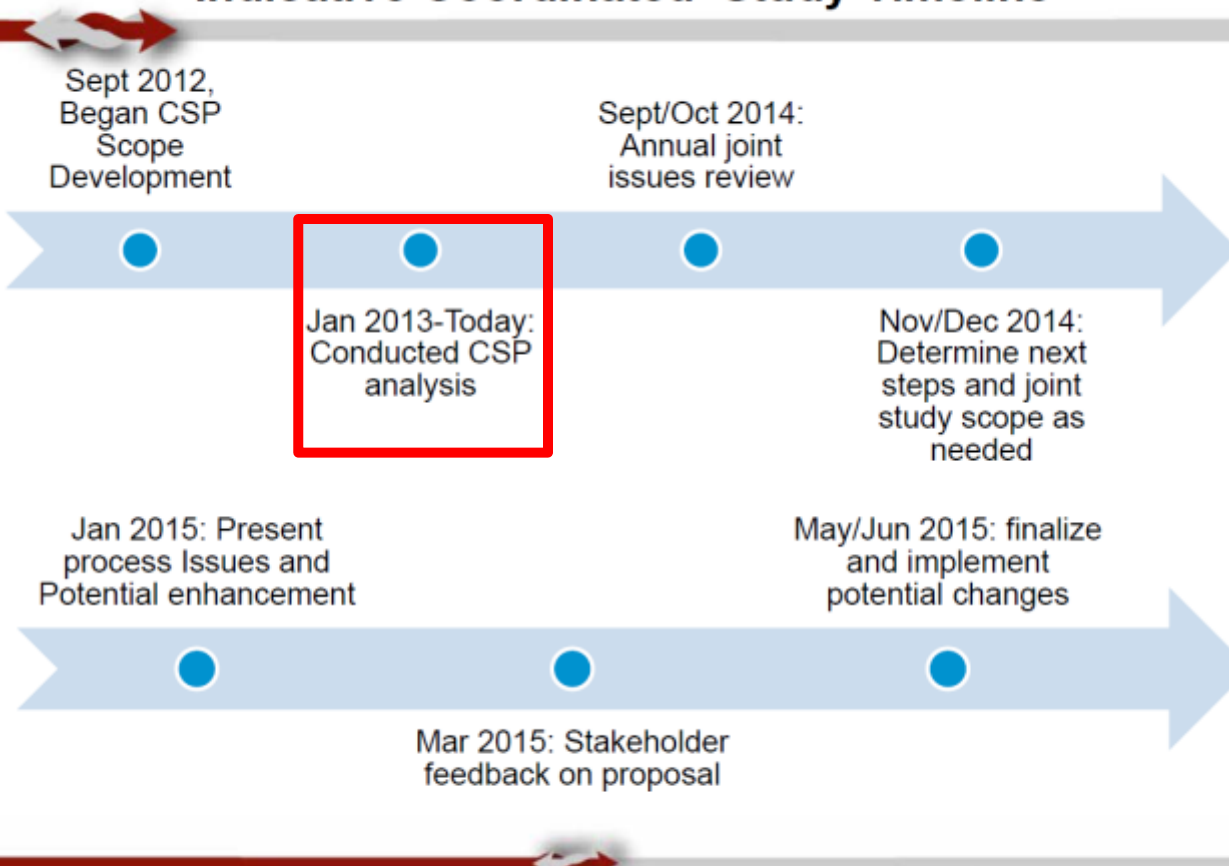
1. No Joint Operating Agreement (JOA) requirement to conduct an annual, jointly studied plan
2. No specified deadlines in the JOA for MISO and PJM to complete their analyses
3. Joint planning study process runs consecutive rather than concurrent with the regional processes

Indicative Detailed Study Process Timelines



Indicative Coordinated Study Timeline

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- Total IPSAC study timeline was 39 – 42 months
- No projects were produced
- Additional items post IPSAC
 - +13 months for MISO developer selection
- ~55 months (4.5 years) to get a project to execution phase
- The all in timeline for a new line could be ~ 10-12 years

MISO/PJM – Transmission Planning Cycles

- Reliability and Market Efficiency Studies
 - No defined timeline
 - Joint Coordinated System Plan study occurs if both MISO and PJM vote for the study in first year after the last joint study, or if one out of the two RTOs vote for a study years two and after
 - MISO and PJM are required to initiate the joint study 180 days after a successful vote
- Stand alone reliability analyses (e.g., “No harm” test)
 - Defined in the JOA as “Ad hoc study groups”
 - No deadlines

MISO/PJM – Transmission Planning Cycles

- Generation Interconnection Requests

- JOA contains study process with references to both MISO and PJM’s business practice manuals
- Joint deadlines are also contained in both business practice manuals

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* Source – PJM Manual 14a

Session 2

MODELING AND CRITERIA

MISO/PJM – Modeling & Criteria

Recommended Reforms:

1. One interregional test, not three
2. One model for reliability and separately for market efficiency
3. Value-driving metrics
 - Inclusion of known and quantifiable benefits like M2M payment reduction

MISO/PJM – Modeling & Criteria

- Status quo interregional process (3 tests) = 0 interregional projects
 - Over 10 years of experience under this approach
 - The IPSAC’s recent “quick hits” approach underscores the dysfunctionality of the current process
- Regional differences need to stay regional
 - Regional differences exist to address goals of that region (level of reliability criteria used, modeling assumptions, timing of analysis during planning cycle, etc.)
 - Merely sandwiching together two different regional processes would guarantee that interregionally-driven issues will be ignored
 - Interregional models and metrics should be driven by interregional value drivers

MISO/PJM – Modeling & Criteria

Monitored Facility	RTO Model & Study	PJM Flow (MVA)	MISO Flow (MVA)	% Facility Loading*
Schahfer – Burr Oak 345kV	MISO	216	295	26%
	PJM	1,001	204	73%
	Combo	1,001	295	79%
Crete – St. John 345kV	MISO	514	-151	16%
	PJM	1,485	-203	88%
	Combo	1,485	-151	92%
East Winamac – Monticello 138kV	MISO	148	138	85%
	PJM	37	49	27%
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* takes into account MISO Flow, PJM Flow, flows from others and losses

MISO/PJM – Modeling & Criteria

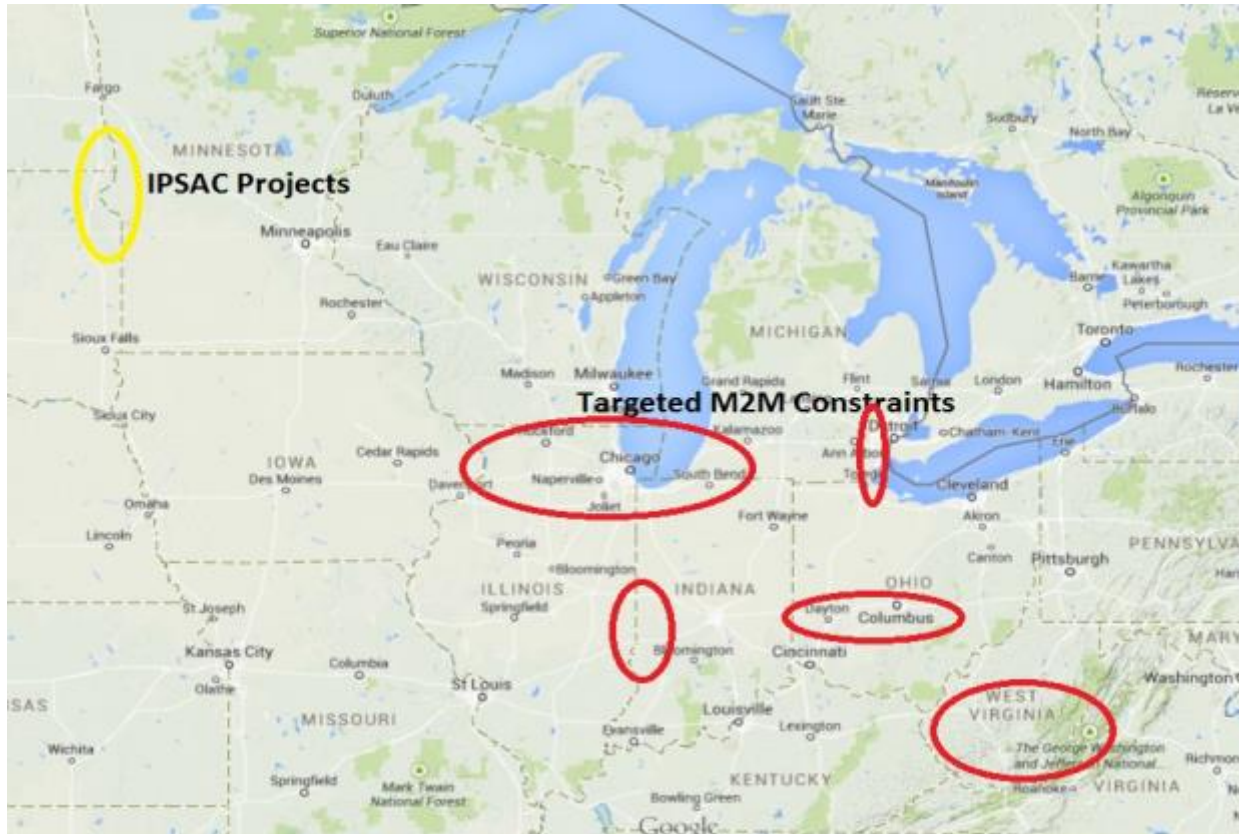
Regional to Regional Comparison				
		MISO MTEP15 Business As Usual 2024	PJM RTEP14 Base Case 2025	MW Difference (MTEP15-RTEP14)
PJM (Capacity Modeled [MW])	Total Wind	42,229	17,724	24,505
	Total CC	35,800	46,375	(10,575)
	Total CT	36,046	33,940	2,106
MISO (Capacity Modeled [MW])	Total Wind	18,822	19,718	(896)
	Total CC	34,347	27,190	7,157
	Total CT	33,002	33,120	(118)
Total Capacity Modeled [MW]		200,246	178,067	22,179

MISO and PJM Regional Model Differences

Regional to JOA R3 Future 1 Comparison				
MISO Regional (MTEP)		MISO MTEP15 Business As Usual 2024	JOA13 Future 1 2023	MW Difference (MTEP15-JOA13)
PJM (Capacity Modeled [MW])	Total Wind	42,229	22,404	19,825
	Total CC	35,800	42,342	(6,542)
	Total CT	36,046	39,639	(3,593)
MISO (Capacity Modeled [MW])	Total Wind	18,822	18,715	107
	Total CC	34,347	27,611	6,736
	Total CT	33,002	31,865	1,137
Total Capacity Modeled [MW]		200,246	182,576	17,670

MISO Regional Model vs. IPSAC Model

MISO/PJM – Modeling & Criteria

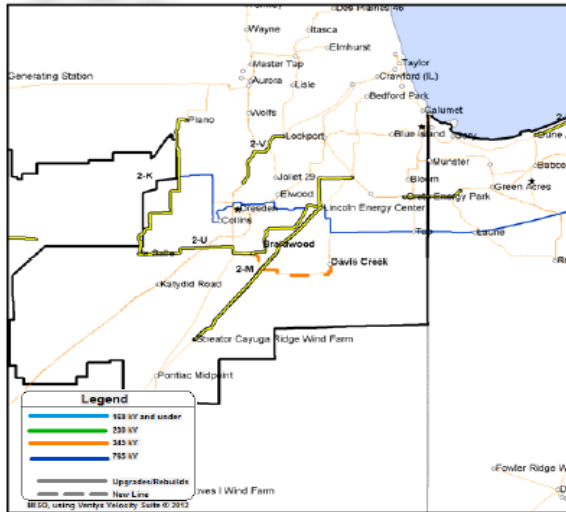


IPSAC Targeted Constraints (Red) vs. IPSAC Targeted Project (Yellow)

MISO/PJM – Modeling & Criteria

Ameren 3: Braidwood – Davis Creek 345kV

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- **Description:**
 - New Braidwood – Davis Creek 345kV line
- **Project Details:**
 - Proposed by: AMEREN
 - Expected ISD: 12/31/2018
 - Estimated Project Cost: \$52M
 - Mileage: 23 miles

• **Note: Project causes significant congestion on Davis xfmr. See updated project results.**

	COST (\$M)*	FUTURE 1 Benefit (\$M)*				FUTURE 2 Benefit (\$M)*				FUTURE 3 Benefit (\$M)*			
		APC	NLP	JOA	B/C	APC	NLP	JOA	B/C	APC	NLP	JOA	B/C
MISO		22.8	21.4	22.4		20.8	(124.2)	(22.7)		33.3	(15.5)	18.7	
PJM		(279.3)	3,146	748.5		(500.0)	3,010	553.2		(244)	2,531.6	588.7	
Tot (10yr NPV)	44.7	(256.5)	3,168	770.9	17.26	(479.2)	2,886	530.5	11.88	(210.7)	2,516.1	607.4	13.60

MISO/PJM – Modeling & Criteria



Congestion Results (cont.)

	Flowgate Congestion (MC-LaPorte)	30 M2M Constraint Congestion *	West PJM Congestion **	Indiana & Michigan MISO Congestion ***
Previously Presented Base Case	\$ 62,541,720	\$ 389,052,114	\$ 274,614,205	\$ 394,694,152
Base Case with Added Flowgates	\$ 62,522,584	\$ 389,150,243	\$ 274,750,480	\$ 394,882,109
Quick Hit Upgrade Case with Added Flowgates	\$ 0	\$ 342,813,057	\$ 216,011,392	\$ 441,102,288
Savings from Upgrade	\$ 62,522,584	\$ 46,337,186	\$ 58,739,088	\$ -46,220,179

* 30 M2M constraint congestion is the sum of congestion on the 30 flowgates identified for the Quick Hit analysis

** West PJM Congestion is the sum of congestion on flowgates with a monitored branch from bus in: AEP, COMED, FE, DAY, EKPC, or DEOK

*** Indian and Michigan MISO Congestion is the sum of congestion on flowgates with a monitored branch from bus in: BREC, DEI, HE, IPL, NIPS, SIGE, CONS (METC), or DECO

Source: May 15, 2015 MISO/PJM IPSAC



Session 3

MARKET-TO-MARKET PAYMENTS

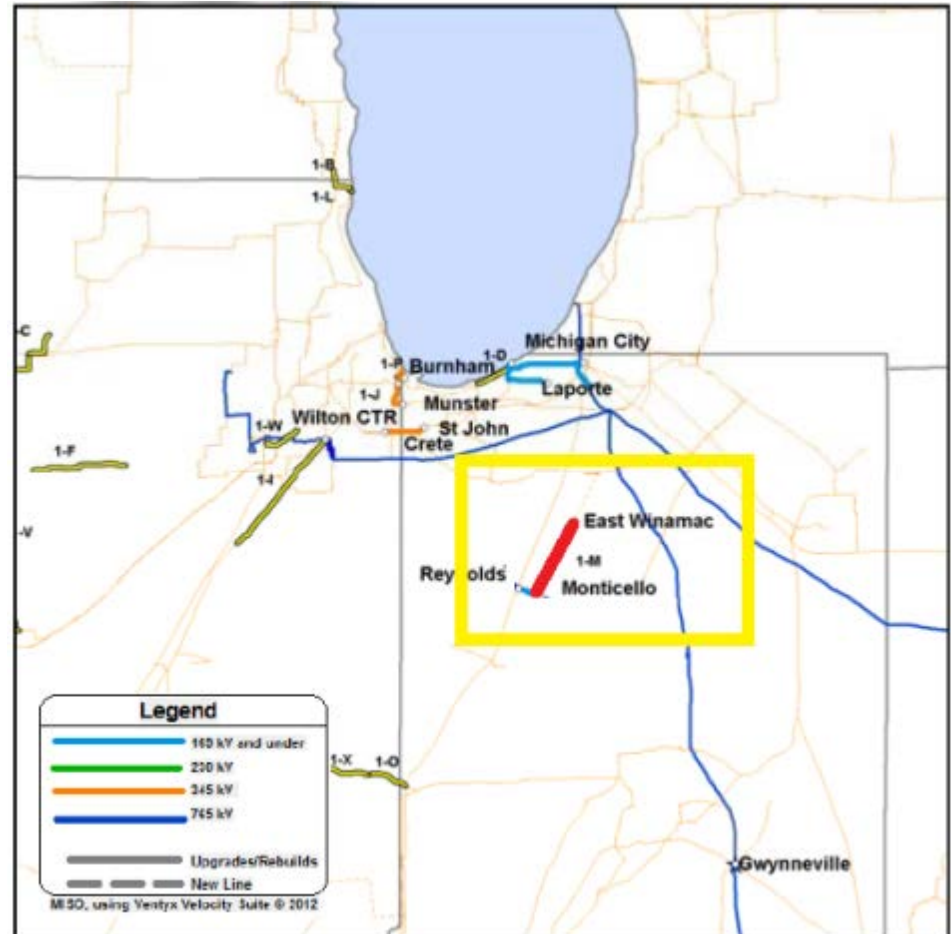
MISO/PJM – Market to Market Payments

1. The Market to Market (M2M) process is an effective short term tool
2. M2M payments and the underlying value of the Firm Flow Entitlement (FFE) hedge provide an overall value for a targeted constrained interregional flowgate
3. M2M + FFE is a value-driving metric
 - Captures the realized impact of the interregional constraint on the two RTOs
 - Data is readily available (NMRTTO data is currently used in M2M settlements and posted on RTOs' websites, MRTTO FFE can easily be added to reporting)
 - Metric can be blended with future-looking metrics in market efficiency study using % weighting, capturing both a real-time based metric and a future looking metric
 - Metric can be used as a standalone metric to allocate costs in analyses similar to the IPSAC's "Quick Hit" analyses

MISO/PJM – Market to Market Payments

East Winamac to Monticello 138kV

- Driven by large influx of new PJM and MISO generators along this seam
- Over \$33M paid from PJM to MISO since 2011
- \$9.8M paid from PJM to MISO in the 1st Qtr of 2014 alone
- Capital cost for upgrade was roughly \$8.3M
- Level of M2M payments vs. upgrade
 - M2M payments from PJM was 4x the capital cost
 - Over 20 years of revenue requirement could have been paid (nominal dollars)



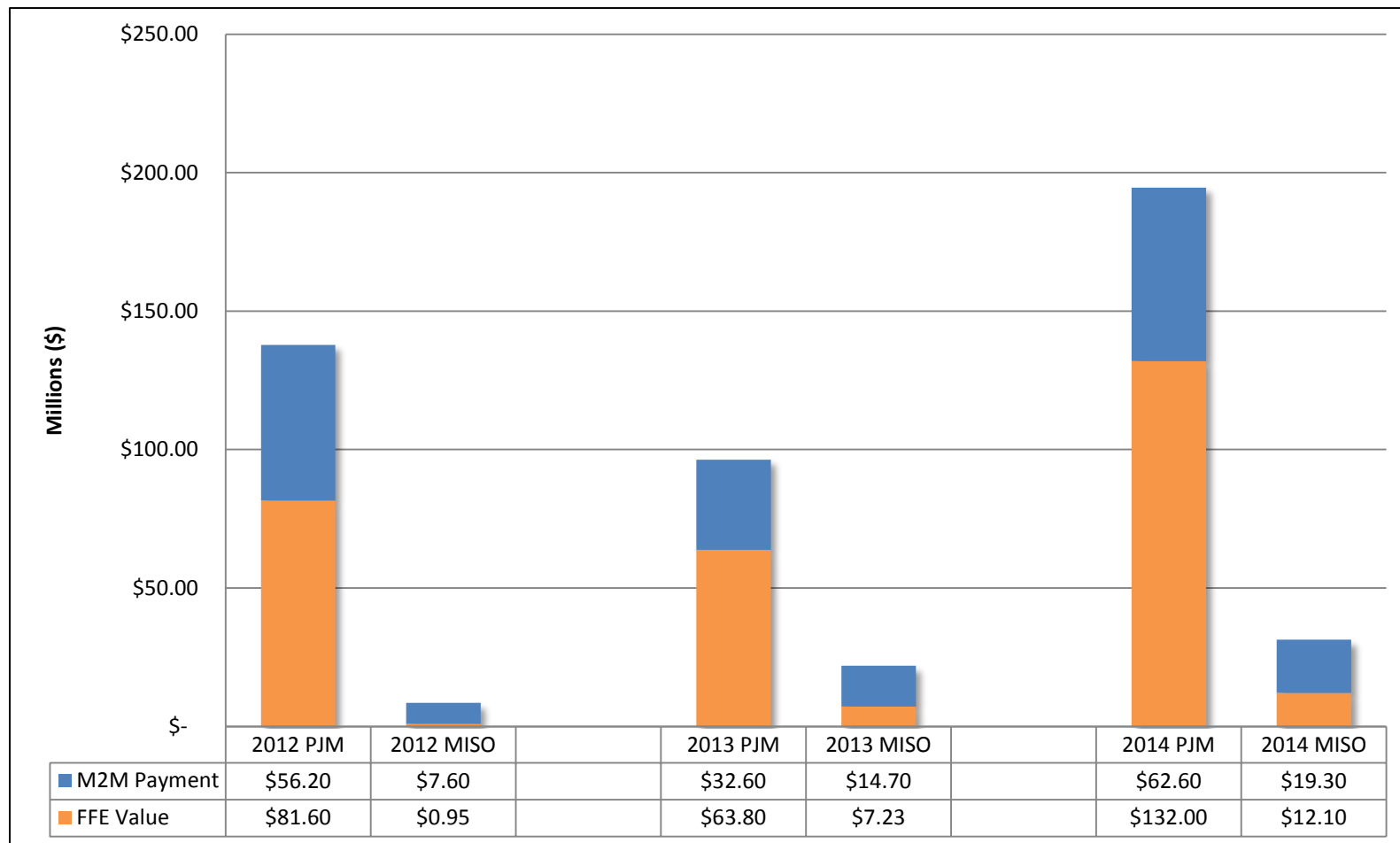
MISO/PJM – Market to Market Payments

Summary of Actual M2M Payments

Year	MISO to PJM Payments (\$ million)	PJM to MISO Payments (\$ million)	Total (\$ million)
2015 (1/1 – 2/14)	0.02	5.5	5.52
2014	19.3	62.6	81.8
2013	14.7	32.6	47.3
2012	7.6	56.2	63.8
2011	9.4	86.1	95.5
2010	18.1	51.3	69.4
2009	10.1	48.2	58.3
2008	12.4	59.1	71.5
Cumulative Total:			493.1

MISO/PJM – Market to Market Payments

Summary of Actual M2M Payments & FFE Value* (2012 – 2014)

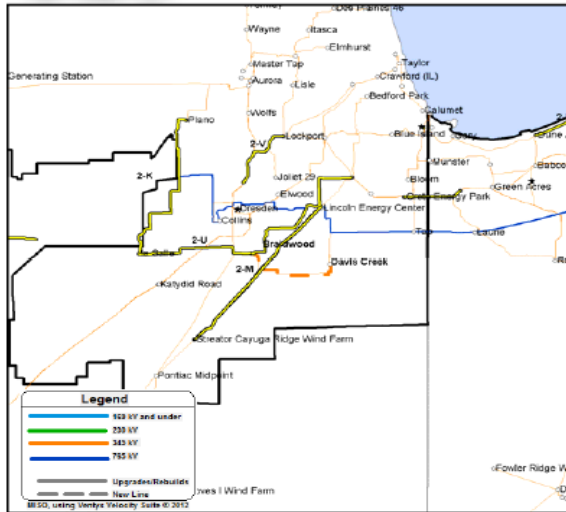


* - FFE calculation described in Footnote 32 in NIPSCO's March 31, 2015 filing

MISO/PJM – Market to Market Payments

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Session 4

LOWER VOLTAGE TRANSMISSION PROJECTS

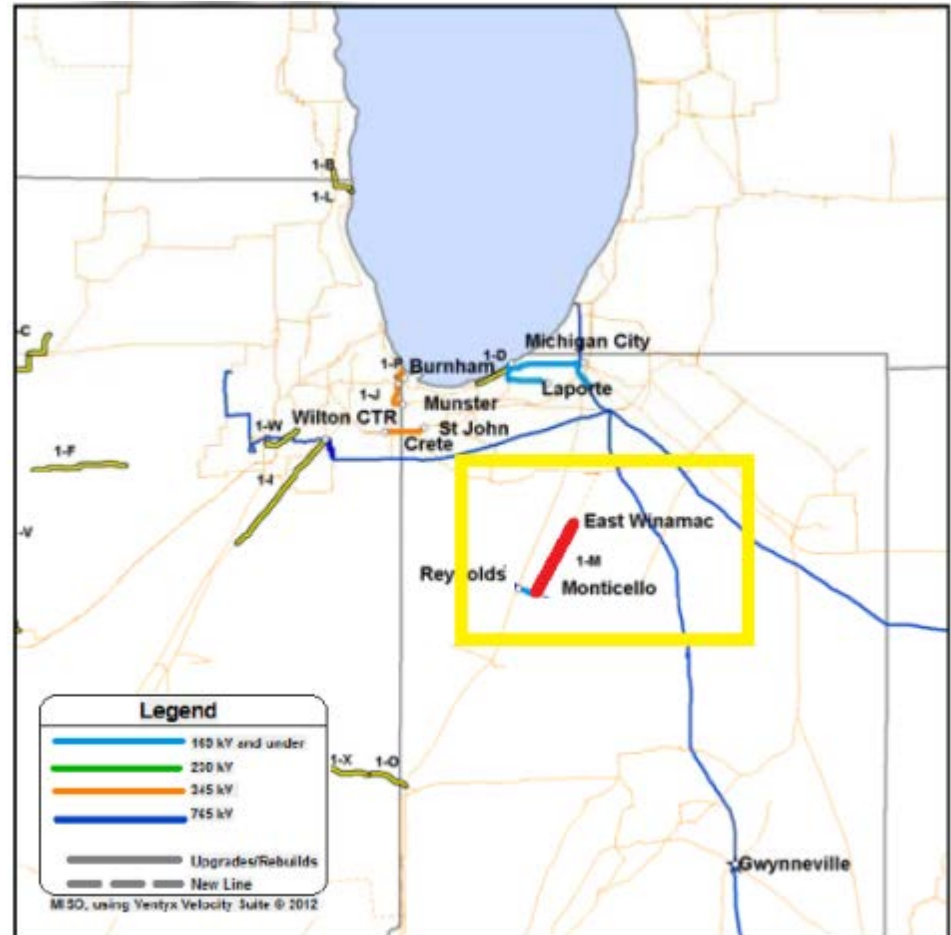
MISO/PJM – Lower Voltage Transmission Projects

1. Lower voltage projects are currently excluded as interregional projects due to MISO regional criteria
2. Many lower voltage facilities along the seams are part of a broader transmission pathway along with higher voltage facilities to move power between regions. Relief of a lower voltage bottleneck allows fuller utilization of the higher voltage system allowing greater regional transfers (“Quick Hits” targeted facilities)
3. Many times the level of M2M payment avoidance by one RTO if a 138kV constraint were relieved would more than offset the revenue requirement tied to the needed upgrades

MISO/PJM – Lower Voltage Transmission Projects

East Winamac to Monticello 138kV

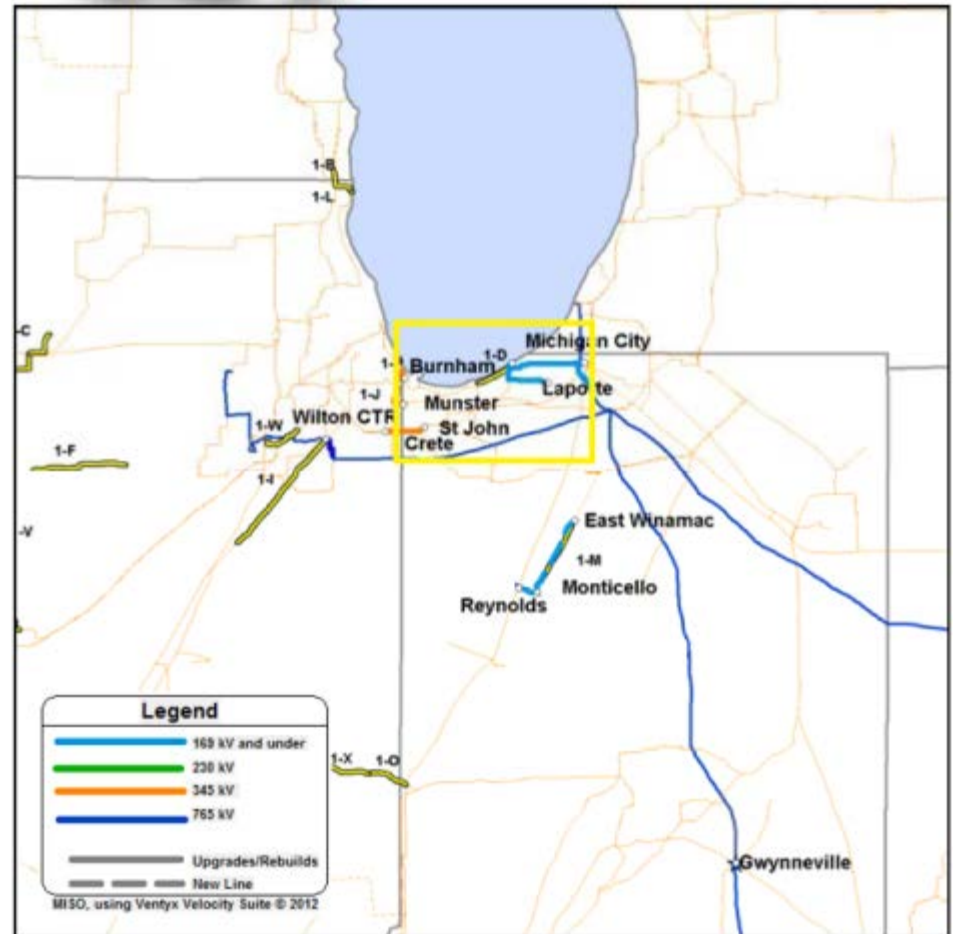
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- Market Efficiency applicability rules from JOA
 - 345kV and above (MISO Regional)
 - \$20M and above



MISO/PJM – Lower Voltage Transmission Projects

Northwest Indiana 138kV Circuits

- Over \$31M paid from PJM to MISO since 2012
- Congestion relief in this area sought by RTOs (“Quick Hit” target)
- Market Efficiency applicability rules from JOA
 - 345kV and above (MISO Regional)
 - \$20M and above



MISO/PJM – Lower Voltage Transmission Projects



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Source: May 15, 2015 MISO/PJM IPSAC

Session 5

GENERATOR INTERCONNECTIONS AND RETIREMENTS

MISO/PJM – Generator Interconnections & Retirements

- Generation Interconnection Requests

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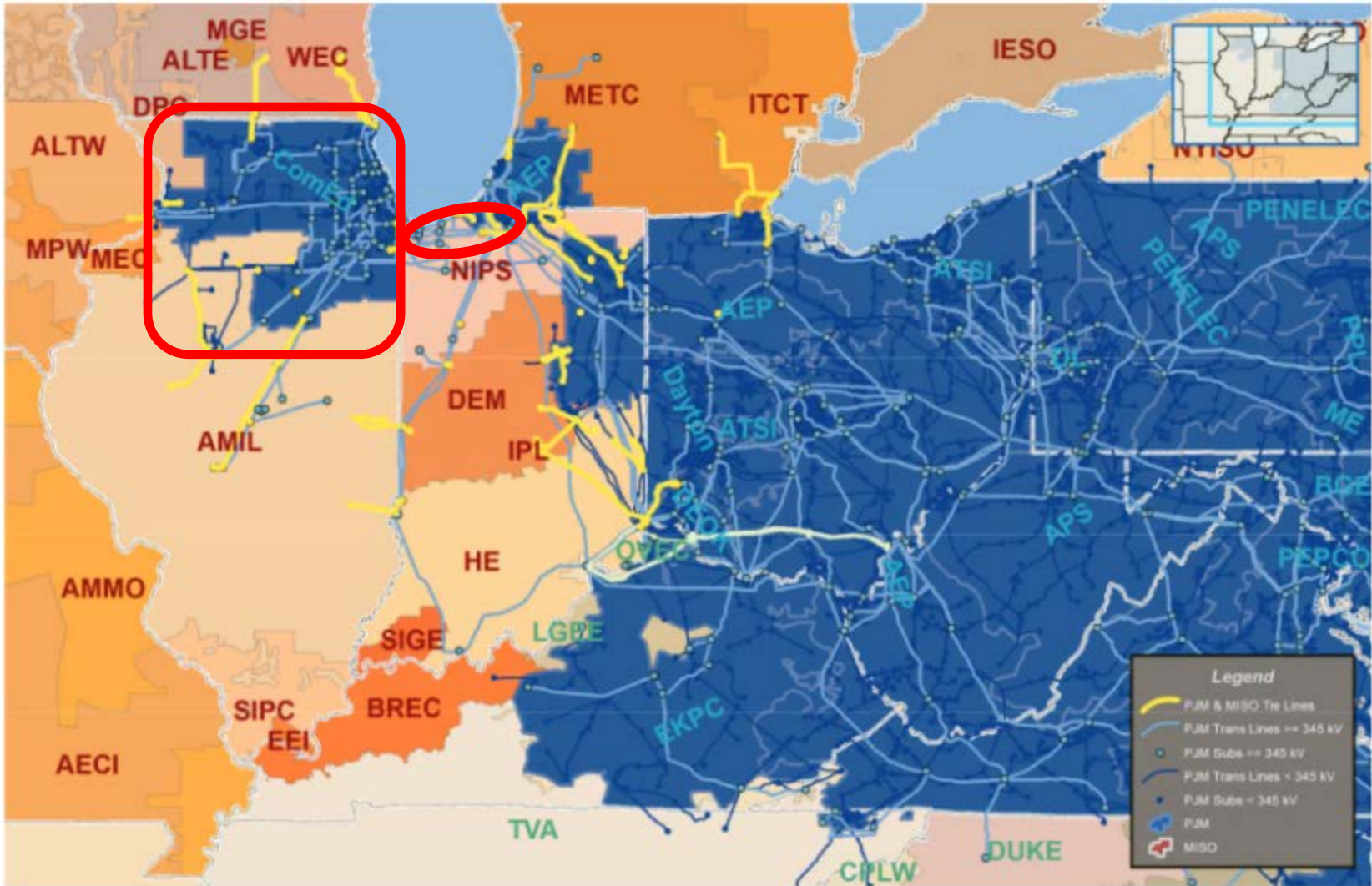
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