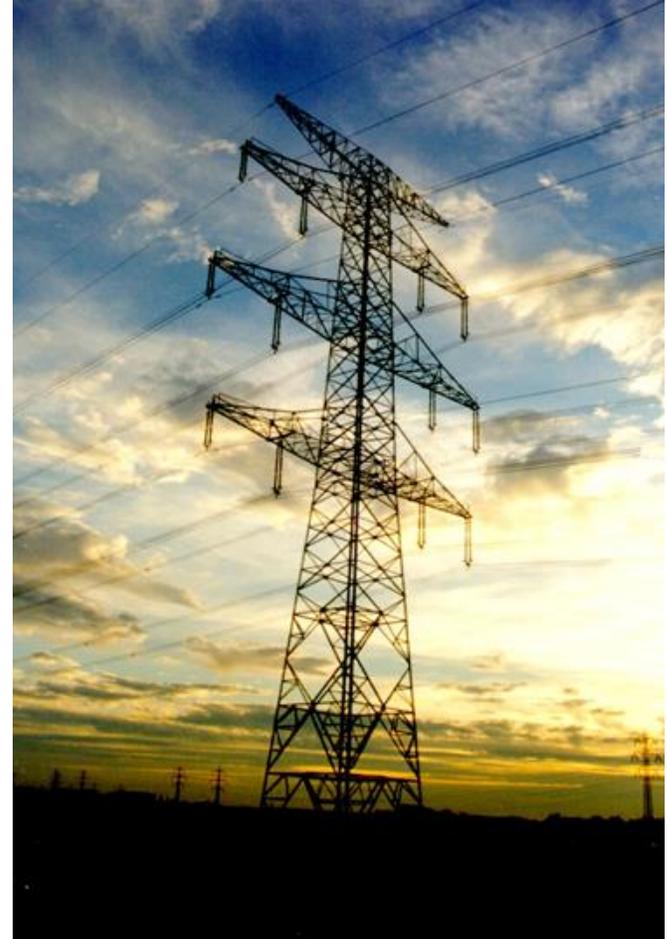




# MISO-PJM IPSAC



- PJM 2024/2025 Market Efficiency Cycle
- PJM RTEP & MISO MTEP Update
- PJM LTRTP
- MISO LRTP
- Annual Issues Review
- 3<sup>rd</sup> Party Issues and CSP Considerations
- Next Steps
- Open Discussion

# PJM Market Efficiency Update

# Conclusion of 2022/23 Market Efficiency Cycle

- In January 2024, PJM posted the 2022/23 ME Base Case, (modeled year 2028):
  - Included the reliability upgrades from the 2022 Window 3.
  - Case was posted on the [ME secure page](#).
- Congestion analysis found no suitable drivers to be included at this time in the 2022/23 ME Window.
- PJM will continue to analyze the congestion patterns as part of the 2024/25 Market Efficiency cycle.
  - All congested facilities from the 2022/23 cycle will continue to be evaluated as potential drivers to be included in the 2024/25 Market Efficiency Window anticipated to open January 2025.

# PJM Market Efficiency Simulations - M2M Congestion<sup>1)</sup> (2022/23 Cycle)

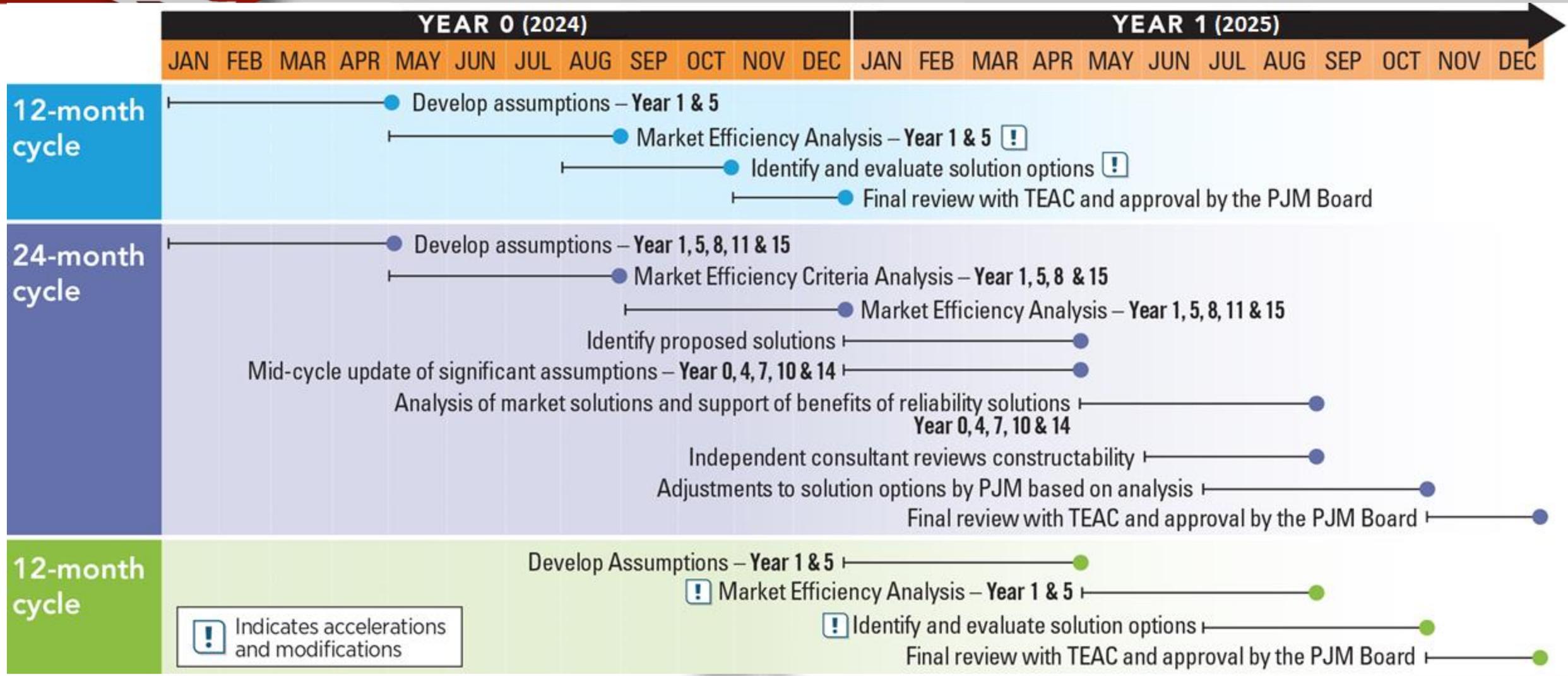
Constraint <sup>1)</sup>	Area	Type	2028 Annual Congestion ME Base Case After 2022 Window 3 Upgrades	2030 Annual Congestion ME Base Case After 2022 Window 3 Upgrades	2033 Annual Congestion ME Base Case After 2022 Window 3 Upgrades
Crescent Ridge-Corbin 138 kV	COMED-AMIL	Line	\$ 7,277,187	\$ 7,631,730	\$ 9,491,458
Green Acres-Olive 345 kV	COMED-AEP	Line	\$ 4,769,215	\$ 9,603,915	\$ 6,122,284
Mittal Steel-Putnam 138 kV	AMIL	Line	\$ 3,729,240	\$ 3,835,885	\$ 4,664,374
Stillwell 345/138 kV	NIPSCO	XFMR	\$ 1,766,364	\$ 1,954,327	\$ 4,268,758
Munster-Lake George 345 kV	NIPSCO	Line	\$ 954,185	\$ 399,629	\$ 2,460,135
Dune Acre-Michigan City 138 kV	NIPSCO	Line	\$ 650,747	\$ 1,096,110	\$ 2,417,109
Lallendorf-Monroe 345 kV	ATSI-DECO	Line	\$ 568,112	\$ 915,976	\$ 1,345,800
Kokomo-Tipton 230 kV	DUK-IN	Line	\$ 424,891	\$ 553,819	\$ 1,165,293
Gibson-Francisco 345 kV	DUK-IN	Line	\$ 162,664	\$ 14,052	\$ 1,291,980
Rock Creek-Quad City 345 kV	ALTW-COMED	Line	\$ 113,823	\$ 218,100	\$ 1,403,917

<sup>1)</sup> Constraints presented at the [February 2024 TEAC](#)

<sup>2)</sup> Table includes M2M constraints that bind >\$1M annual congestion in the 2028, 2030, or 2033 production cost simulations.

# 2024/25 PJM Market Efficiency Cycle

# 2024/25 PJM Market Efficiency Timeline



- Hitachi Energy PROMOD Database – Spring 2024.
- Powerflow consistent with the final 2028 RTEP powerflow.
  - Includes transmission upgrades and expansions approved at the February Board meeting.
- Load Forecast and Demand Response based on PJM 2024 Load Forecast Report.
- Updated Generation Expansion.
- Fuel/Emissions Price forecasts provided by Hitachi Energy (Spring 2024 vintage).
- Financial parameters, Discount Rate and Carrying Charge, based on the latest Transmission Cost Information Center spreadsheet.



Step	Tentative Target Date
Develop Base Case Assumptions	May 2024
Post Preliminary Base Case	July 2024
Stakeholders Feedback	September 2024
Identify Congestion Drivers	September – November 2024
Post Final Base Case and Target Congestion Drivers	January 2025
Long Term Proposal Window	January - May 2025
Analysis of Proposed Solutions	May – September 2025
TEAC Reviews and Board Approval	October - December 2025

# PJM RTEP & MISO MTEP Update

- New Reliability issues
  - Regional issues and newly approved projects near the seam
  - Please see selected TEAC and Subregional RTEP Committee – Western meeting slides posted with meeting materials
    - Includes \$5B solution for 2022 Window 3
- New Market Efficiency congestion
  - The new M2M constraints are presented on slide 6
  - All M2M constraints will continue to be evaluated as potential drivers to be included in the 2024/25 Market Efficiency Window anticipated to open January 2025.
- M2M historical congestion
  - Joint summary posted with meeting materials

- MTEP reliability planning update
  - TO submitted ‘bottom-up’ projects under review for MTEP24
    - Projects presented at MISO [sub-regional planning meetings \(SPMs\)](#) in early February
    - List of [MTEP Projects Under Evaluation](#)
  - MTEP24 Powerflow models under development
- MTEP economic planning update
  - MISO is performing a near-term congestion study in [2024](#)
  - Similar effort was performed in [2023](#)
- Long-Range Transmission Plan (LRTP) effort continues
  - Information and meeting materials posted on the [MISO LRTP webpage](#)
- M2M historical congestion
  - Joint summary posted with meeting materials

# PJM Long-Term Regional Transmission Planning (LTRTP)

Emmanuele Bobbio

25 March 2024

IPSAC

# PJM Long Term Regional Transmission Planning

- PJM is anticipating rapid load growth and changes in the resource mix resulting from economic forces, federal and states public policies, consumers preferences, and companies plans



44 GW



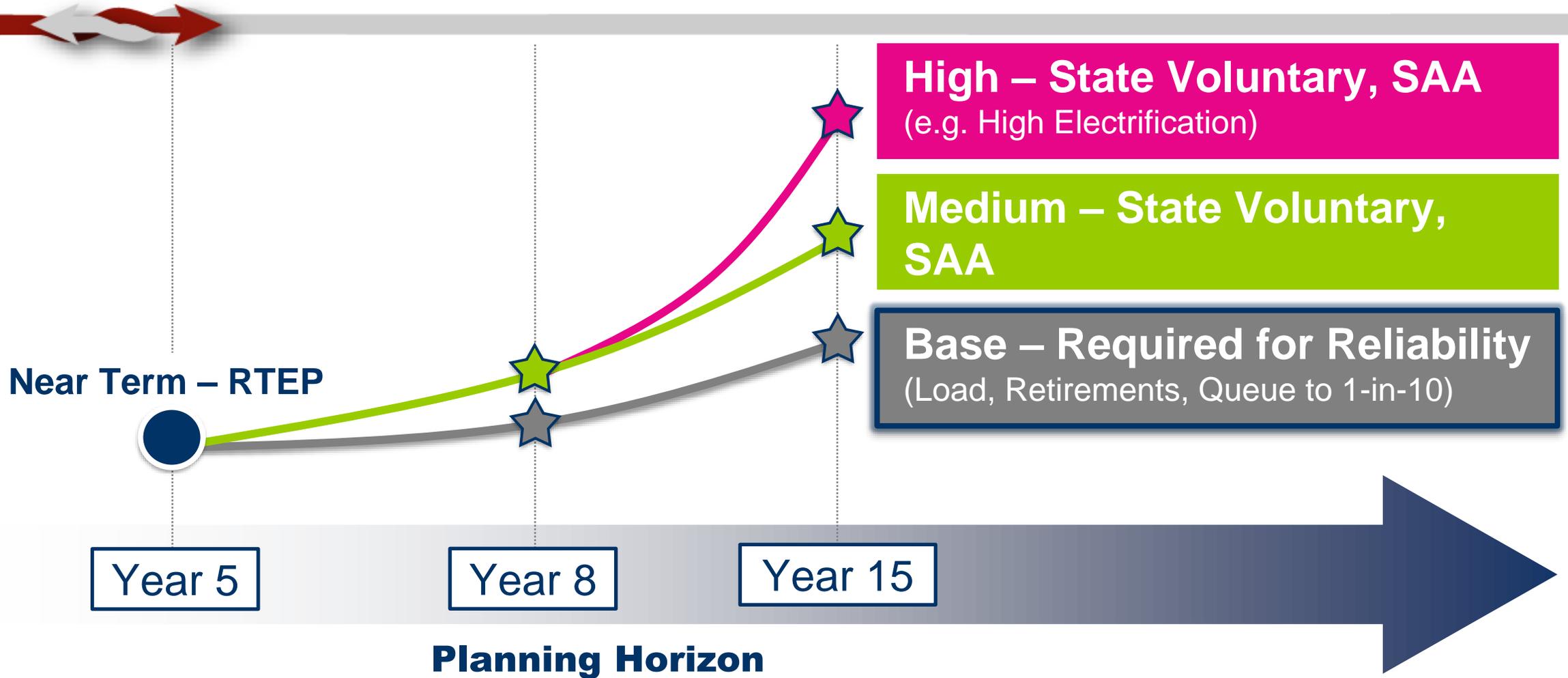
30 GW



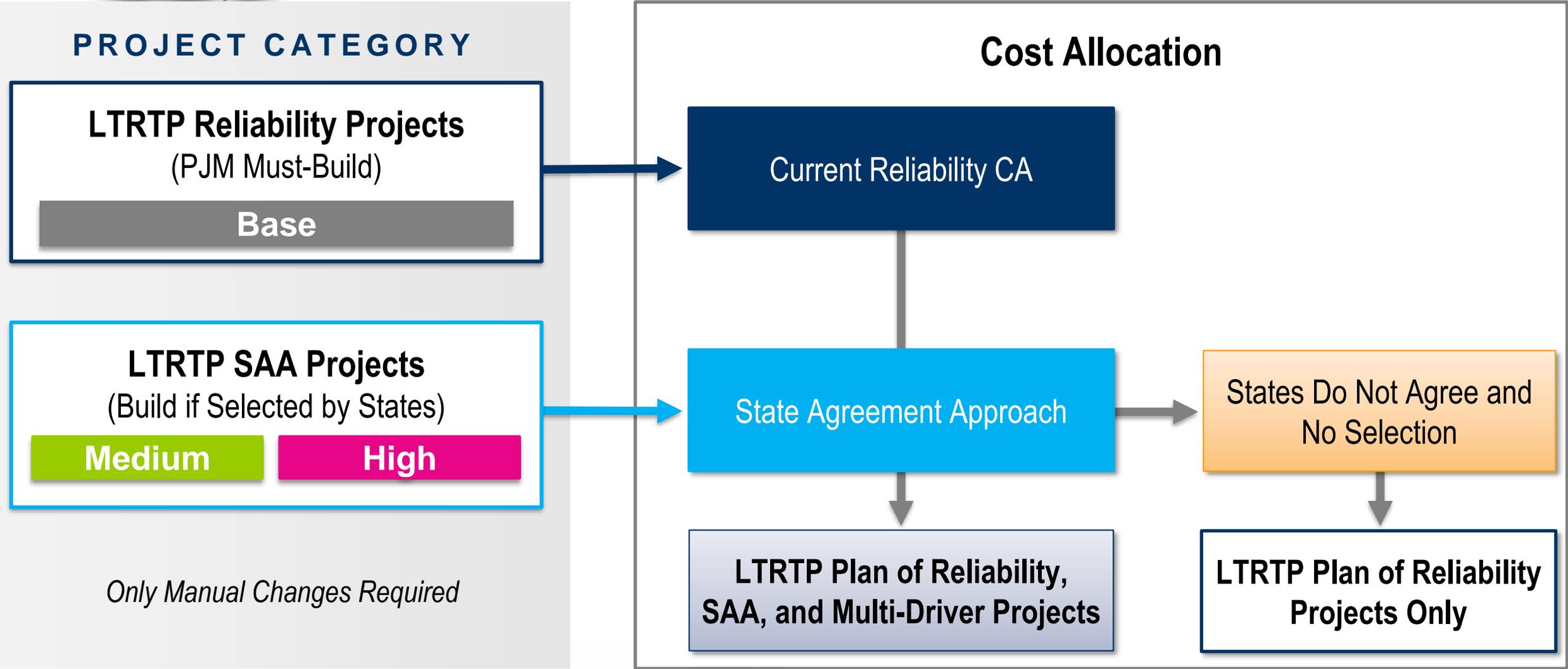
30%

*Next 15 years:*

- Enhance existing long-term planning framework to account for scenario-based, proactive planning and using benefits to select projects creating greatest value
  - Capacity expansion modeling
  - Projects Economic Benefits



- PJM can consider performing sensitivities, e.g. for lower data center load



# Matrix – Policies by PJM LTRTP Scenario



**Legend**

PJM's annual load forecast

Not Included    Included

**Policies**

	Base	Medium	High
Load Policies* (e.g. Electrification, BTM)			High
Federal Policy Retirements (e.g. EPA)			
State Policy Retirements (e.g. CO <sub>2</sub> , CEJA)			
Inflation Reduction Act			
Replacements/Generation Policies (e.g. RPS, Offshore wind)	Use queue to meet 1-in-10	Statutory	Statutory/ Objectives

**Notes:** Initial position on assumptions to be included in each scenario that will be further discussed in the assumption meetings; Sensitivities for econ. at-risk units and state policy retirements; \* Includes Data Centers;



- Benefit metrics identify long-lead transmission solutions that maintain reliability or address SAA needs at the lowest possible *system* cost

Benefit Metrics*		
System Cost	Energy Market Benefits	1. Production Cost Savings
	Capital Investment Benefits	2. Avoided Generation Investments
		3. Avoided Transmission Investments
Enhanced Reliability Benefits	4. Reduced Loss of Load	

- Alternative benefit metrics are *comprehensive* load payments + enhanced reliability benefits

$$\Delta \text{ Load Payments} = \Delta \text{ System Costs} + \Delta \text{ Profits}$$

\* These benefit categories are to be intended broadly. For example, PJM will start with Adjusted Production Cost (APC) savings used in Market Efficiency, but could include other metrics in the production cost savings category, as needed, such as reduced RMR, congestion from transmission outages, etc.



# MISO Long Range Transmission Planning (LRTP)

Jarred Miland

25 March 2024

IPSAC

The Long Range Transmission Planning (LRTP) process aims to produce a robust, least-cost approach to meet the transmission needs of an evolving system

**Step 1** - Through a rigorous stakeholder process, update Futures for resource mix and load

**Step 2** – Develop reliability and economic models based Future 2A

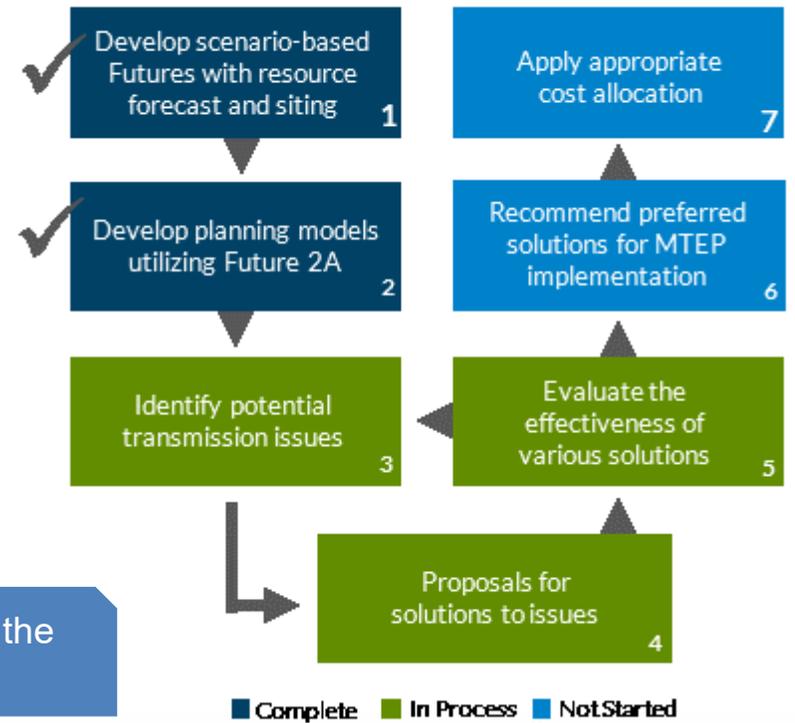
**Step 3** – Perform reliability and economic analysis to identify transmission issues

**Step 4** – Accept solution ideas and draft proposed solutions for identified issues

**Step 5** – Evaluate proposed solutions for robustness, revisit potential issues as they're identified

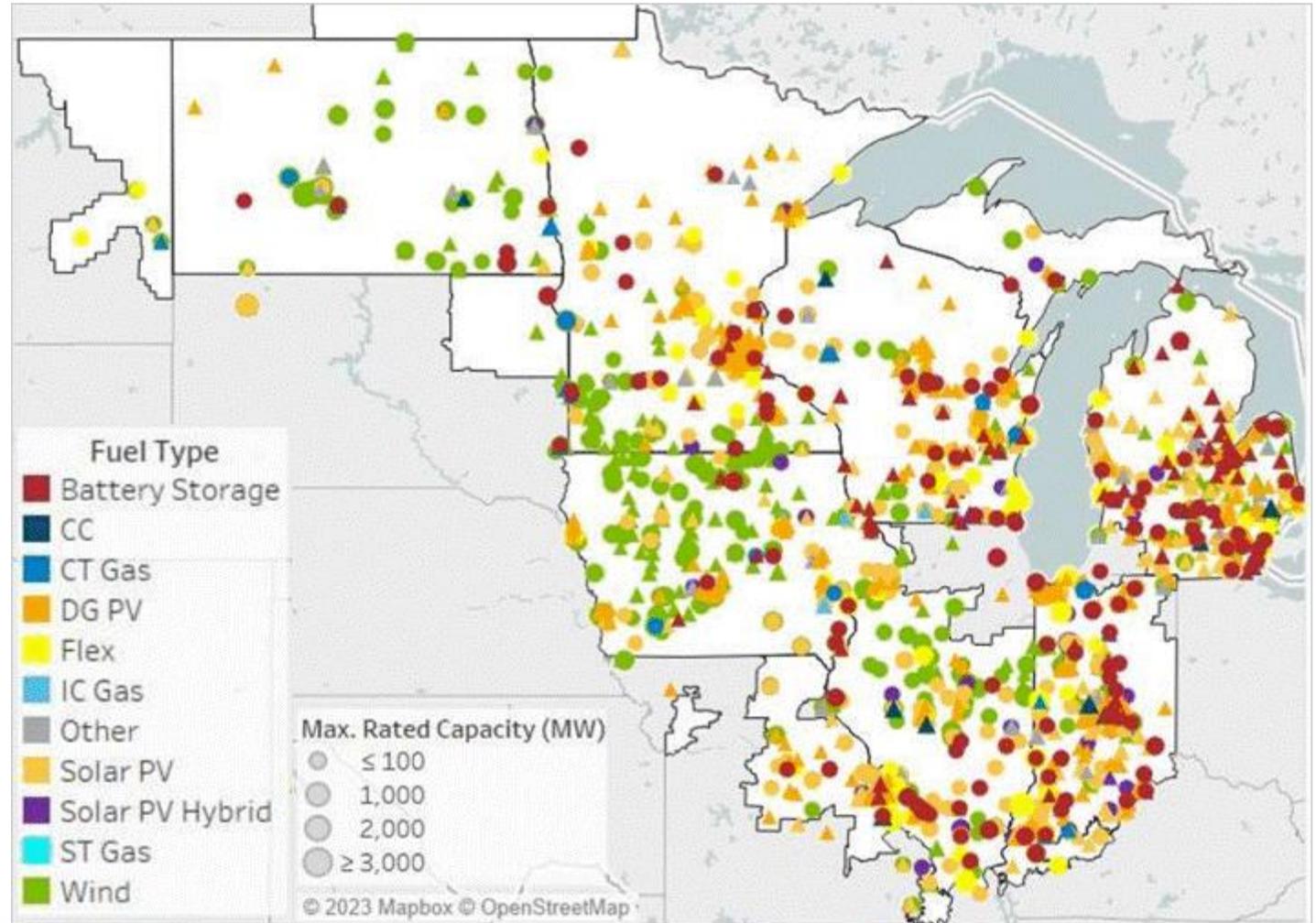
MISO'S current iteration between steps 4 and 5 will continue as the portfolio is refined in the alternatives assessment and validated through the business case analysis.

Tranche 2 progress in 7-step process



The total expansion for Future 2A in the Midwest Subregion provided the starting point in identifying issues and anticipated Tranche 2 solutions

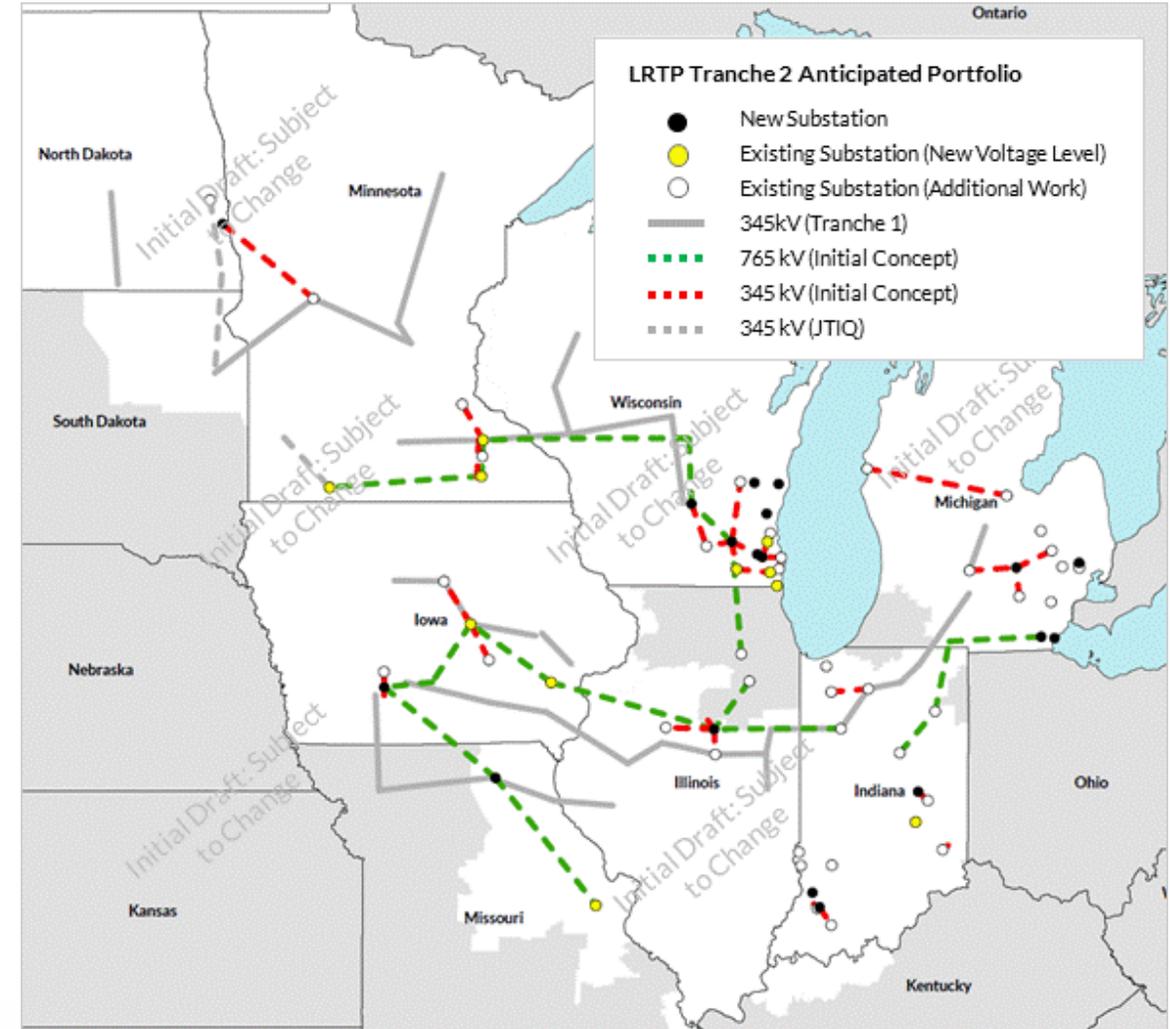
[Futures Report](#)



The draft anticipated portfolio will reliably and efficiently enable MISO member goals and load growth, with expected cost of \$17 - \$23 billion

## L RTP Tranche 2

Projects as of 03/04/2024



# Annual Issues Review

- 
- ✓ • In the 4th quarter, RTOs exchange:
    - Regional issues and newly approved projects near the seam
    - New regional issues
    - Interconnection requests under coordination
    - M2M historical congestion
  - ✓ • RTOs jointly reviewed above in January
  - ✓ • Receive Third Party issues in first quarter (required 30 days before Issues Review IPSAC)
  - ✓ • Issues Review IPSAC –
    - Held in the first quarter of each year
    - Must provide 60 calendar day notice of scheduled date
    - Stakeholder feedback due 30 days prior to IPSAC

- **Within 45 calendar days after the Issues Review IPSAC the JRPC shall determine the need for a Coordinated System Plan study**
- **JRPC notifies the IPSAC of its decision within 5 business days**

- Issues and plans have been discussed at regional meetings
  - PJM regional issues are presented at monthly [TEAC meetings](#) and [Subregional RTEP Western meetings](#)
  - MISO regional issues are presented at triannual [Subregional Planning Meetings](#)
- Third Party input was requested at the October 27, 2023 IPSAC meeting
  - Input/feedback was due by January 31, 2024
    - Based on the originally scheduled IPSAC meeting on March 1
  - Input/feedback due date was extended to February 24, 2024
    - Based on rescheduled IPSAC meeting to March 25

# Submitted 3<sup>rd</sup> Party Issues

### 6 entities provided feedback:

Num	Stakeholder	Feedback Description
1	RMI	RTOs should consider a more comprehensive scenario based forward-looking planning process. The process would have MISO and PJM stakeholder participation and consider the needs of renewable energy forecasts and goals, interconnection queue data, congestion and curtailment data, and load growth scenarios under various electrification futures.
2	OMS OPSI	RTOs should explore joint long-term interregional transmission planning to include improving transfer capacity to address extreme weather events.
3	Grid Strategies	RTOs should coordinate regional, generator interconnection, and long-term transmission studies to expand transmission ties. Cost allocation methodology to pay for Multi-Value Projects (MVPs) should be optimized to align with the joint RTO benefits.
4	NIPSCO	RTOs should include in their databases both the MISO LRTP and PJM Multi-driver project near St. John and Green Acres. Evaluate the project benefits.
5	INVENERGY	RTOs should reconcile the inconsistent study processes they use to study and accept Short-Term and Long-Term Firm PTP TSRs. Given the economic magnitude of retirement decisions, it is even more important to reconcile the study processes for Long-Term TSRs to ensure that the existing transmission system is utilized as reliably and efficiently as possible.
6	Minnesota PUC	RTOs should explore improving their joint long-range interregional transmission planning across their joint seam. Specifically, they encourage MISO and PJM to work together to: (1) engage in joint transmission modeling; (2) work with state regulators to determine reliability objectives and state policy objectives; and (3) leverage existing planning processes such as Long-Range Transmission Planning and Long-Term Regional Transmission Planning to take advantage of existing processes to plan new transmission holistically and manage this change.

- Feedback has been posted with meeting materials

- Targeted Market Efficiency Project (TMEP) Study
  - MISO and PJM opted not to perform a TMEP Study in 2023 based on limited 2021+2022 historical M2M congestion drivers.
    - The Powerton – Towerline upgrade from the 2022 TMEP Study was approved at the beginning of 2023 by the PJM and MISO boards.
    - RTOs believed it prudent to assess the impact of planned upgrades and congestion persistence with an additional year of market data before starting on a new TMEP study
  - RTOs are currently reviewing the highest congested elements and potential mitigating factors
- Interregional Market Efficiency Project (IMEP) Study
  - PJM and MISO are coordinating interregional congestion issues for consideration in the 2024 PJM-MISO CSP planning cycle
- Interregional Reliability Projects; Interregional Public Policy Projects; Ad-Hoc studies:
  - No issues currently identified

# Next Steps

- JRPC will determine the need for Coordinated System Plan studies and inform the IPSAC through the PJM and MISO email distributions
  - JRPC will inform the IPSAC by May 14, 2024 per JOA requirements
- Next IPSAC meeting is tentatively scheduled for mid-year as needed
  - Additional IPSAC meetings will be scheduled as needed depending on necessity of study

# Open Discussion

PJM:

[inter.regional.planning.team@pjm.com](mailto:inter.regional.planning.team@pjm.com)

MISO:

[interregionalplanning@misoenergy.org](mailto:interregionalplanning@misoenergy.org)