Regional and Interregional Transmission Planning

Single state vs. regional transmission planning

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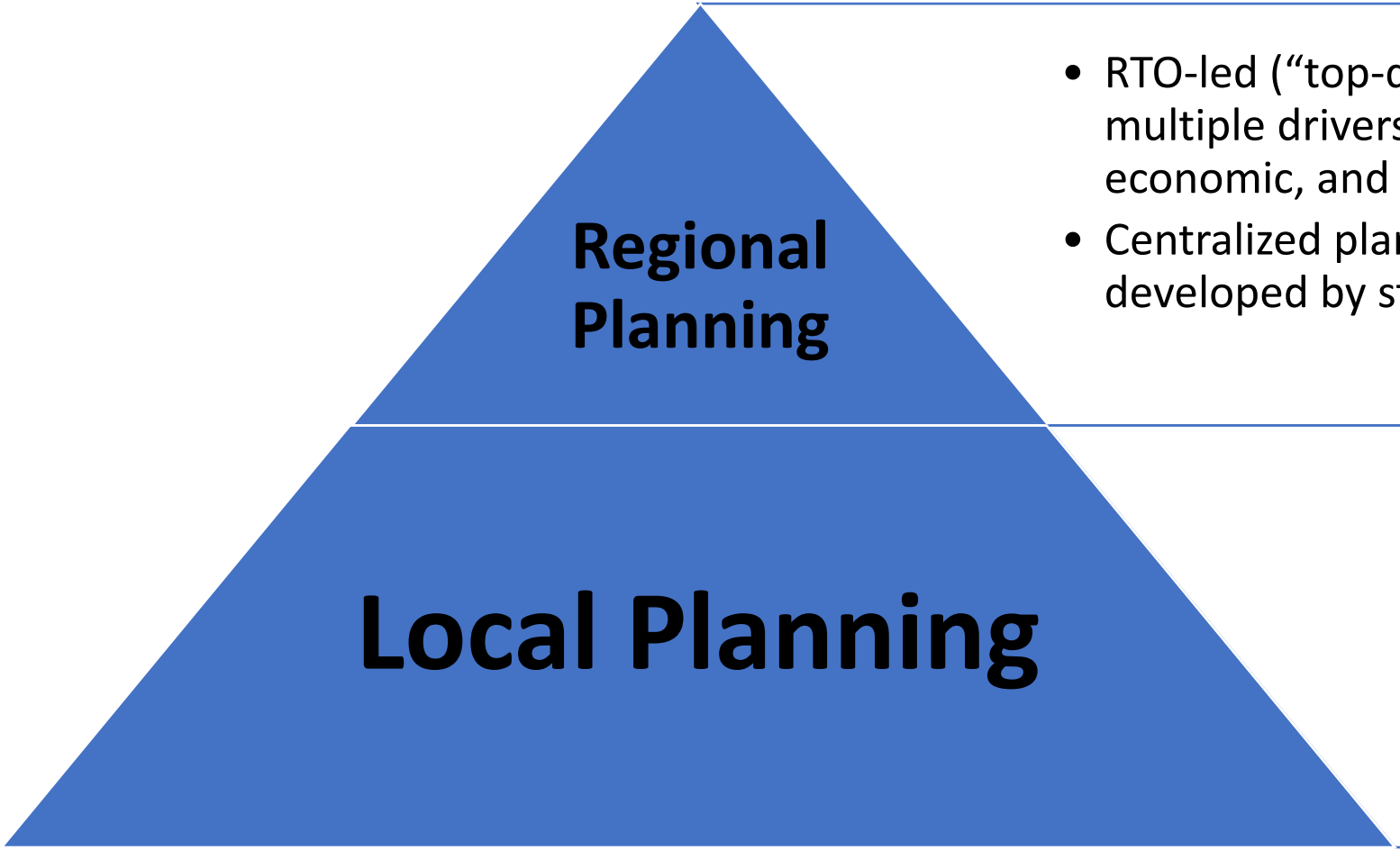
Outline

- Types of Transmission Planning
- State role in transmission planning
  - Single state vs. mulit-state
  - Cost Allocation
  - RTO process
- Latest Activity in Planning and Oversight
  - Local planning & Cost containment
  - Anticipated Planning Rule

Types of Transmission Planning

Transmission planning has two components



- RTO-led (“top-down”) planning, examining multiple drivers like local/regional reliability, economic, and policy needs
- Centralized planning that utilizes assumptions developed by stakeholders

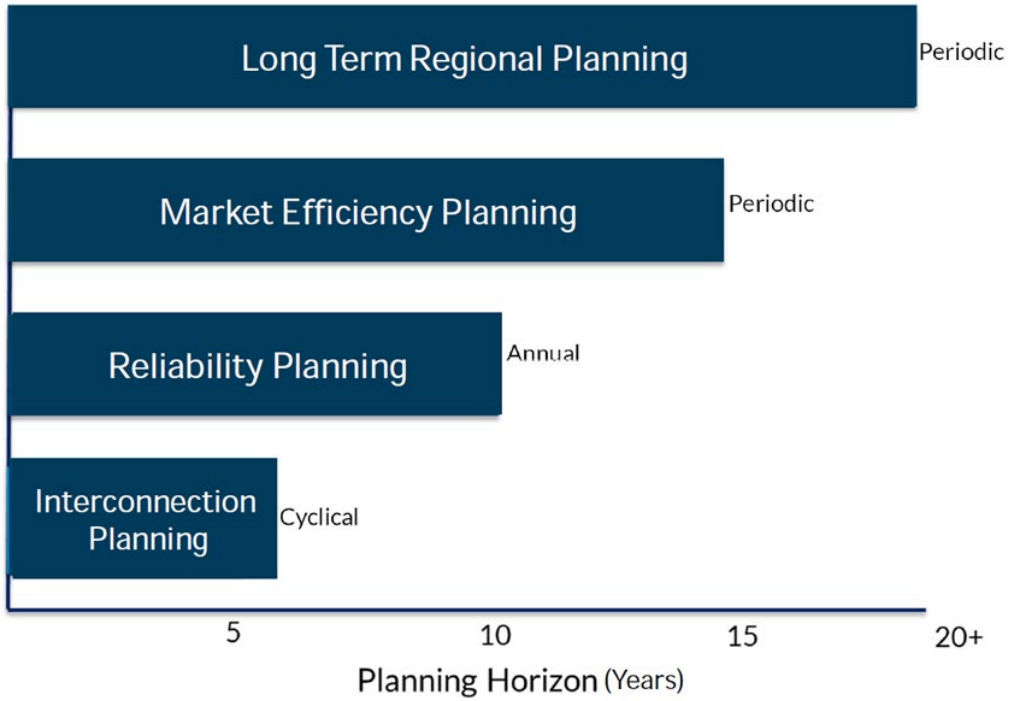
- Aggregation and study of all Transmission Owner projects
- RTO studies changes to each TO’s system to ensure compliance with NERC and Local Planning Standards

Top-Down Transmission Planning

- Examples: MISO MVPs and LRTP
  - MVPs = Midwest State RPS Goals
  - LRTP = happening now to deal with transition
- Evaluates multiple drivers of transmission (Reliability, Economics, and Policy) over different planning horizons (20+ years)

Components of Top-Down Planning

- Future scenarios
- State resource plans, policies, & goals
- States provide input on assumed new generation siting
- Assumptions on key variables: load growth, fuel prices, retirements, etc.



Bottom-Up Projects

Baseline Reliability Projects

- Developed by TOs to address localized transmission issues pursuant to NERC reliability standards

"Other" Projects

- Proposed by TOs to address localized issues other than those addressed by BRPs
- Load growth, age & condition, local reliability

Generator Interconnection Projects

- Network upgrades needed for new generation capacity

Some states have their own process for reviewing & approving local projects; others are active at SPM meetings

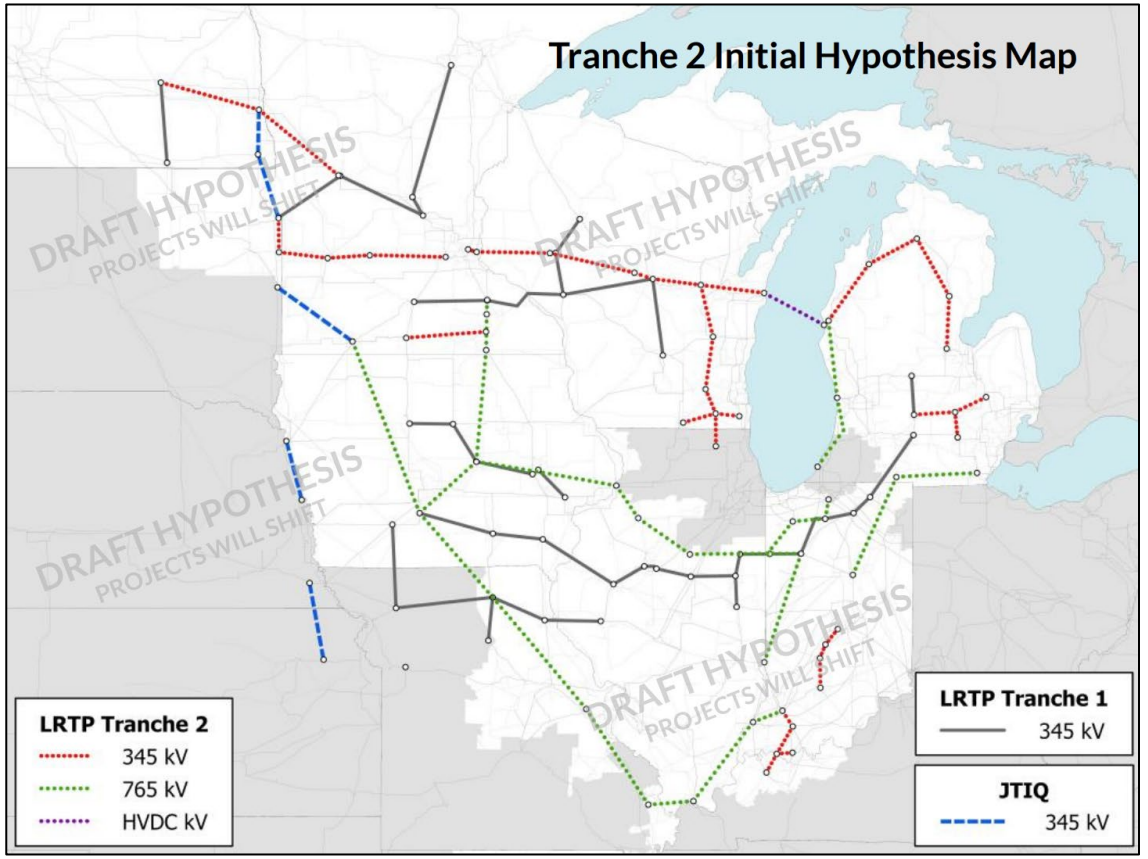
18-month MTEP Timeline

June	TO provides updates to planning criteria and provide models
Sept	All project submittals due by the 15th
Jan	First Subregional Planning Meeting *Projects Presented*
Feb - May	Review/comment on scope of SPM Review results & discuss alternatives
May	Deadline to submit project alternatives by May 31st.
June/July	Second Subregional Planning Meeting *Study Results* Preferred solutions identified
Aug	Stakeholders comment on preferred solutions & review cost allocations Third Subregional Planning Meeting *Final Package*
Sept - Oct	Comment on MTEP Report Draft Input on completed MTEP Process
Dec	MISO Board Approved MTEP Report

BRPs and Other Projects are assigned to the local Transmission Owner to construct.
Their costs are recovered from the zone(s) where they are located through formula rates.

Regional Transmission Planning

- RTOs conduct regional planning that examines multiple drivers for possible new transmission
  - Economics
  - Public Policy
  - Reliability
  - Local needs
- Must look ahead to expected future resources to properly plan the system
  - Generator additions/retirements
  - fuel costs
  - load growth, etc.
- Scenario Planning is key – look for no regrets projects
- There are consequences to bad planning
  - Interconnection queue breakdown
  - Denied resource retirements

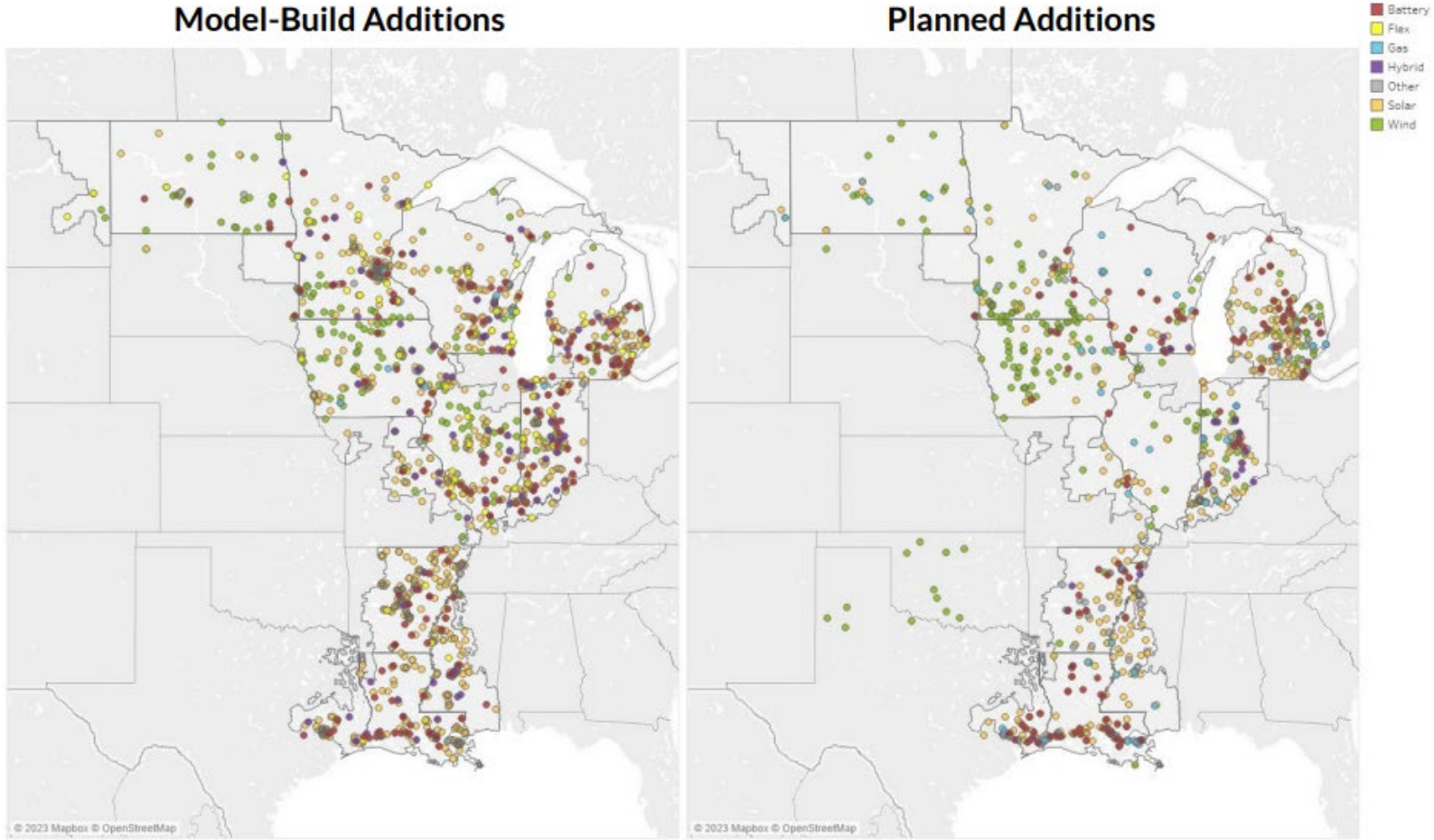


Planning the transmission system is extremely complex

Major assumptions need to be made

Projects can't be approved until they have a cost allocation methodology

After approval at an RTO, must seek state siting approvals



Project Categories and Cost Allocation

Primary MISO Transmission Project Categories

Project type	Primary driver and requirements	Cost allocation method
Multi-Value Project	Policy Above 100kV, projected cost of $20M, project portfolio requirements	Allocated throughout MISO based on load
Market Efficiency Project	230kV and above, at least $5 million,	100% to zones expected to benefit
Generation Interconnection Request	Interconnection request	Paid by requestor unless above 345 kV. Then 10% to footprint based on load
Baseline Reliability Project	Reliability needs	100% to local zone
"Other" Project	Doesn't meet another category	Zonal recovery rates

Gray shading indicates cost shared projects

"Top-Down" Transmission Projects

"Bottom-Up" Transmission Projects

Cost allocation depends on project type

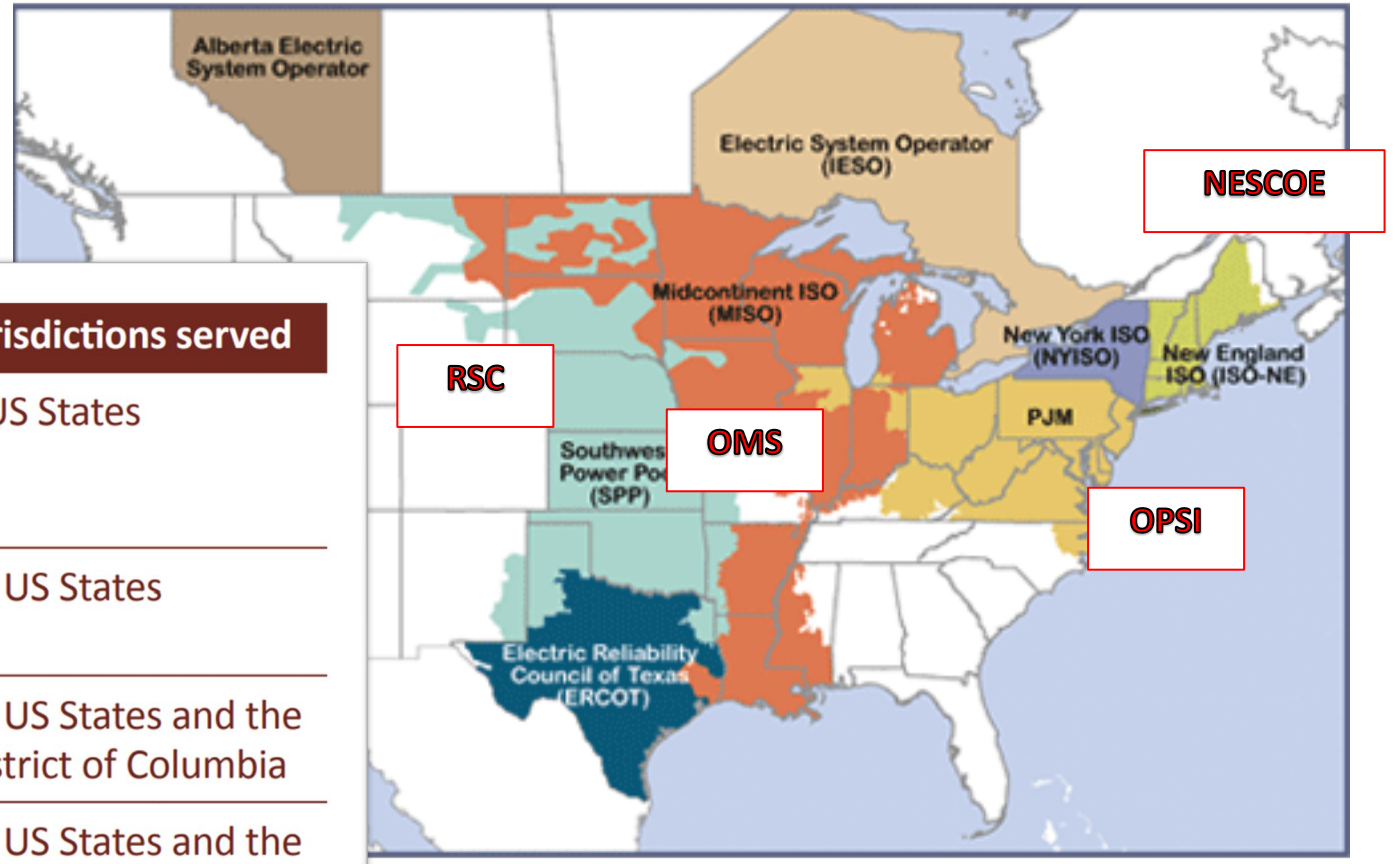
There have been plenty of tensions between regional grid operators and state entities

- Transmission planning that fails to account for resource mix changes
  - Interconnection queue delays
  - Preventing resource retirements
- Regional markets have conflicted with state regulatory decisions
  - Market rules that that prevent entry of state-sponsored resources
  - Tension between functioning wholesale markets and impacts from policies
  - Requirements that do not work with state processes

State role in transmission planning

Every Multi-State RTO has a Regional State Committee

RTO	RSC	Jurisdictions served
ISO New England (ISO-NE)	New England States Committee on Electricity (NESCOE)	6 US States
Southwest Power Pool (SPP)	SPP RSC	14 US States
PJM Interconnection	Organization of PJM States	13 US States and the District of Columbia
Midcontinent ISO (MISO)	Organization of MISO States (OMS)	15 US States and the Canadian province of Manitoba



Challenges for states in planning (together)

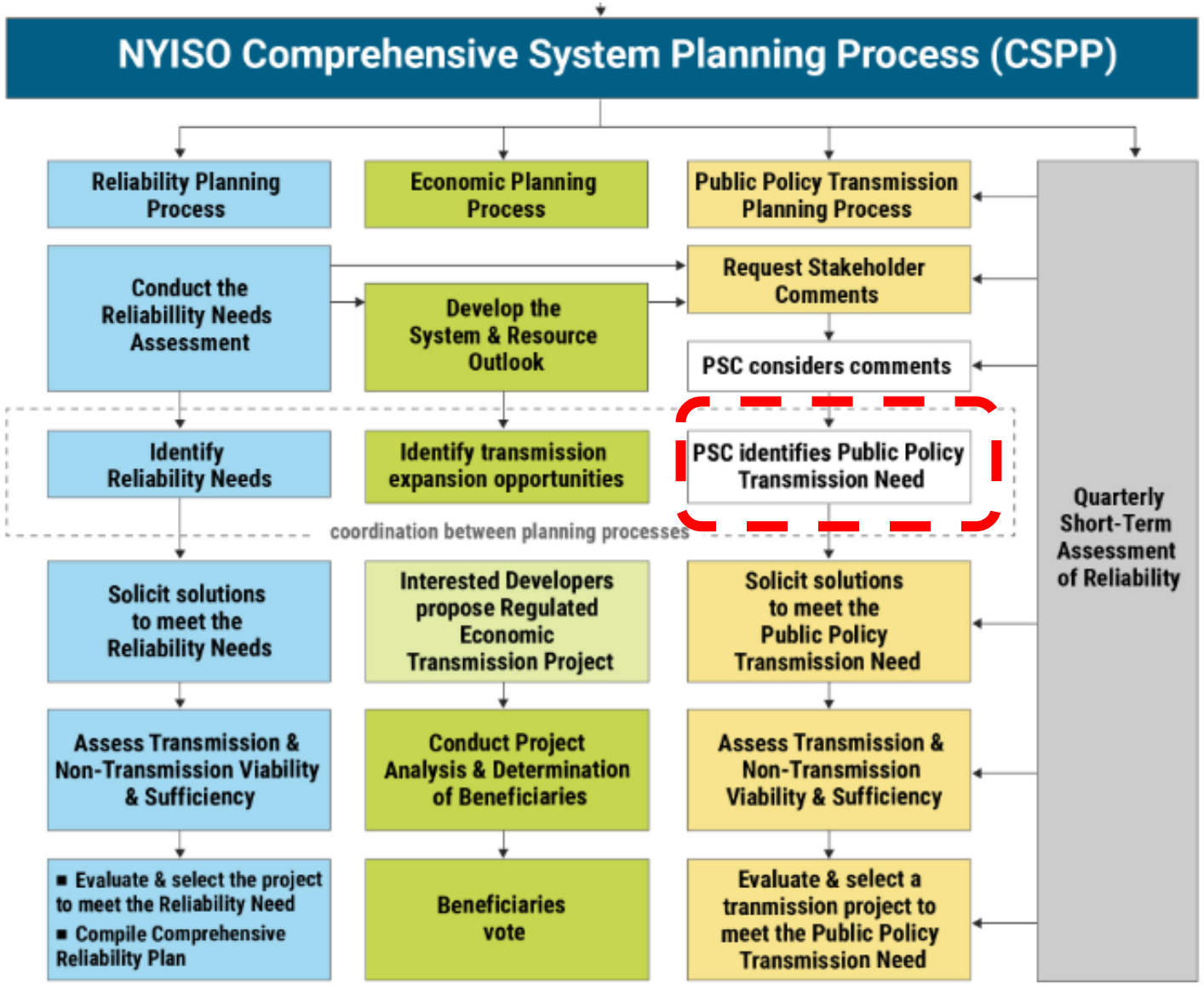
- Commissions can't pre-judge a project before a siting case
- Often states have diverging state policies
- Industries and customers are impacted differently by various cost allocation mechanisms
- States have differing levels of staff and resources dedicated to following regional planning activities
  - Challenging for some states to stay informed and participate in a meaningful way throughout planning process
  - Very dependent on RTO and TO technical capabilities
- States have varied internal review/approval processes
  - Impacts what may be expected from RTO

Key ingredients for success

- Have clear processes for developing joint positions
- Strive for consensus, but do not require it
- Rely on existing authorities as much as possible
  - This provides for flexibility
  - There is complexity and potential for challenges associated with new or modified roles and responsibilities
- Build relationships and listen to each other
  - States have found success when they've been able to clearly communicate their priorities and major concerns
  - Strong relationships amongst regulators builds trust
  - Able to learn from others' experiences
- Remain clear on benefits of cooperation

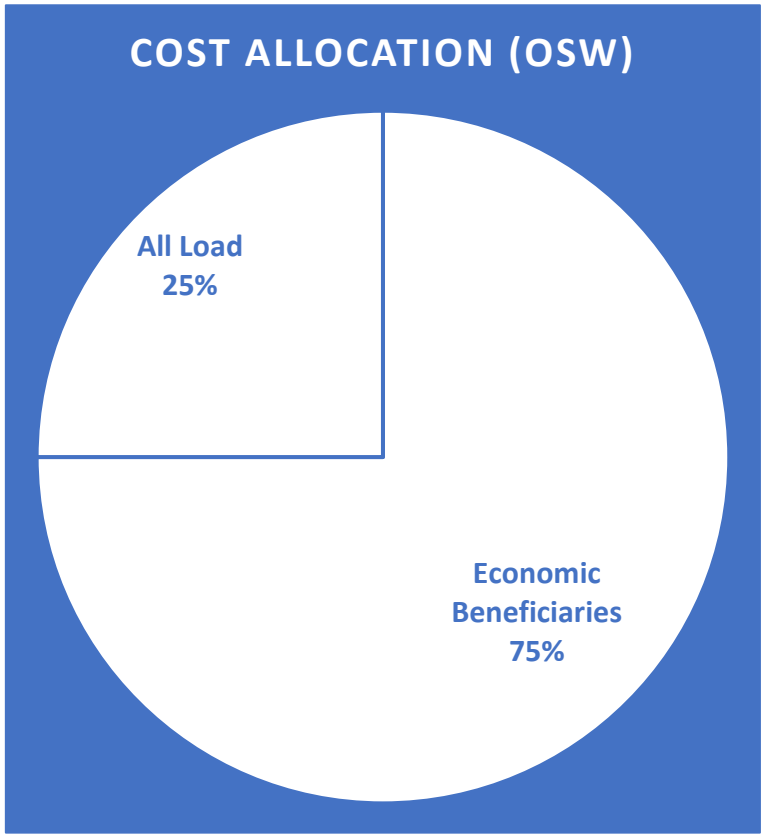
Single-state RTO example: NY

- NYISO utilizes a Comprehensive System Planning Process (CSPP)
  - Local
  - Reliability
  - Congestion & Resource Interconnection
  - Public Policy
- ISO board responsible for selecting most efficient and cost-effective solution to address needs identified by NYPSC



NY Public Policy Planning

- In 2019, New York State and the NYPSC identified the need to expand the state's AC transmission capability to deliver additional power from generating facilities located in upstate New York, including important renewable resources, to the population centers located downstate.
  - ➢ NYPSC identified the Public Policy Transmission Needs
    - ✓ increase Central East transfer capability by at least 350 MW
    - ✓ increase UPNY/SENY transfer capability by at least 900 MW
  - ➢ NYISO was actively involved in assisting PSC identify needs through years of studies
- NYISO staff review possible solutions
  - ➢ Analyze quantitative **and qualitative** metrics established in tariff
  - ➢ Tariff does not specify specific weighting of metrics, allowing ISO board to exercise independent judgement of projects
  - ➢ Cost allocated based on locational capacity requirements, reserve margin impacts, and total MW addressed by each project.
- ➢ In 2023, NYPSC identified PPT need to interconnect at least 4.7 GW of offshore Wind



Examples of successful multi-state collaboration

MISO MVP Portfolio (2011)

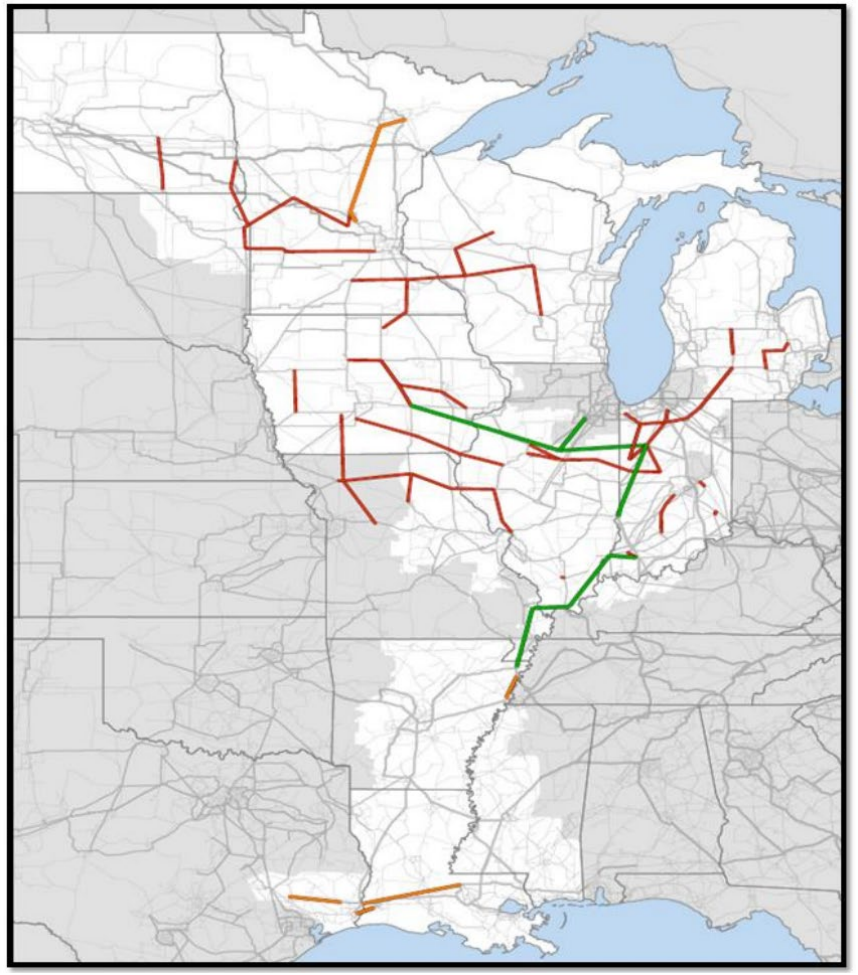
- Allowed for approval of $6B of projects that connected 25 GW of renewables
- There was policy consensus on integration of renewables
- Every state was able to see the benefits they would receive

MISO LRTP Tranche 1 (2022)

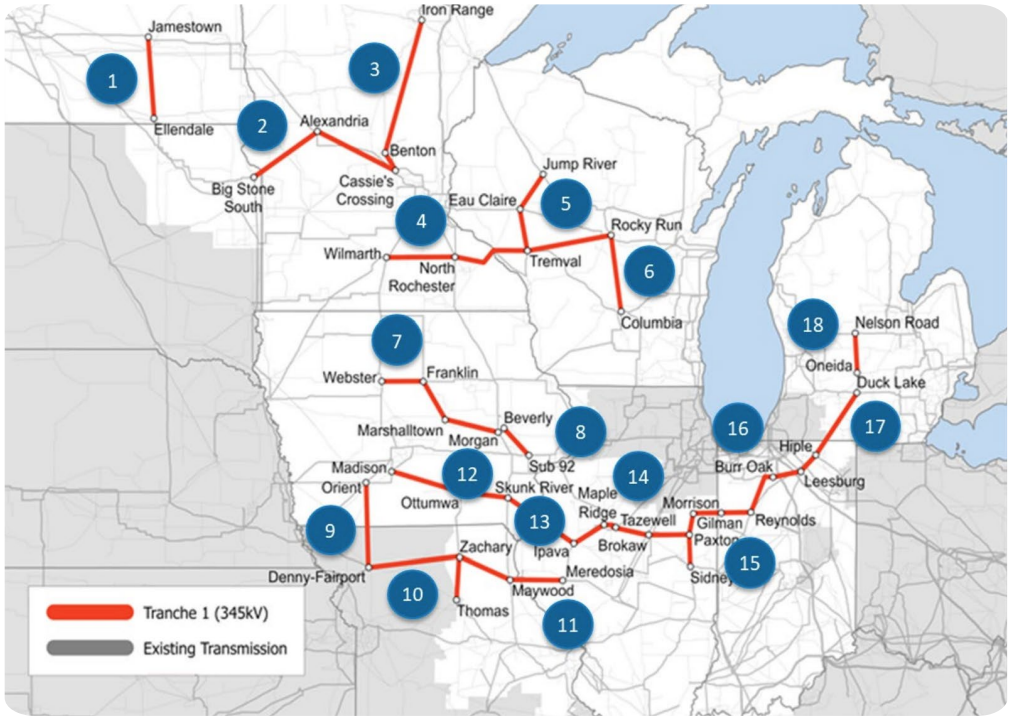
- States actively involved in providing resource mix and policy input into definition of “futures”
- State regulators, through OMS, led multi-year process to devise a cost allocation
  - Sub-regional MVP
- Frequent interaction between MISO, state regulators, stakeholders, and transmission owners led to successful approval of $10.3 B portfolio of projects
  - Projects are now making their way through state regulatory proceedings

OMS support for regional transmission planning

- OMS Board of Directors approved OMS's ***Statement of Principles re Long-Range Transmission Planning*** (June 2019)
  - OMS supports regional, coordinated, long-range transmission planning and will provide leadership in its development
- OMS created a Cost Allocation Principles Committee (CAPCom) and developed a set of principles to discuss provide input on cost allocation for LRTP projects.
  - CAPCom's ***Principles*** were approved January 2021



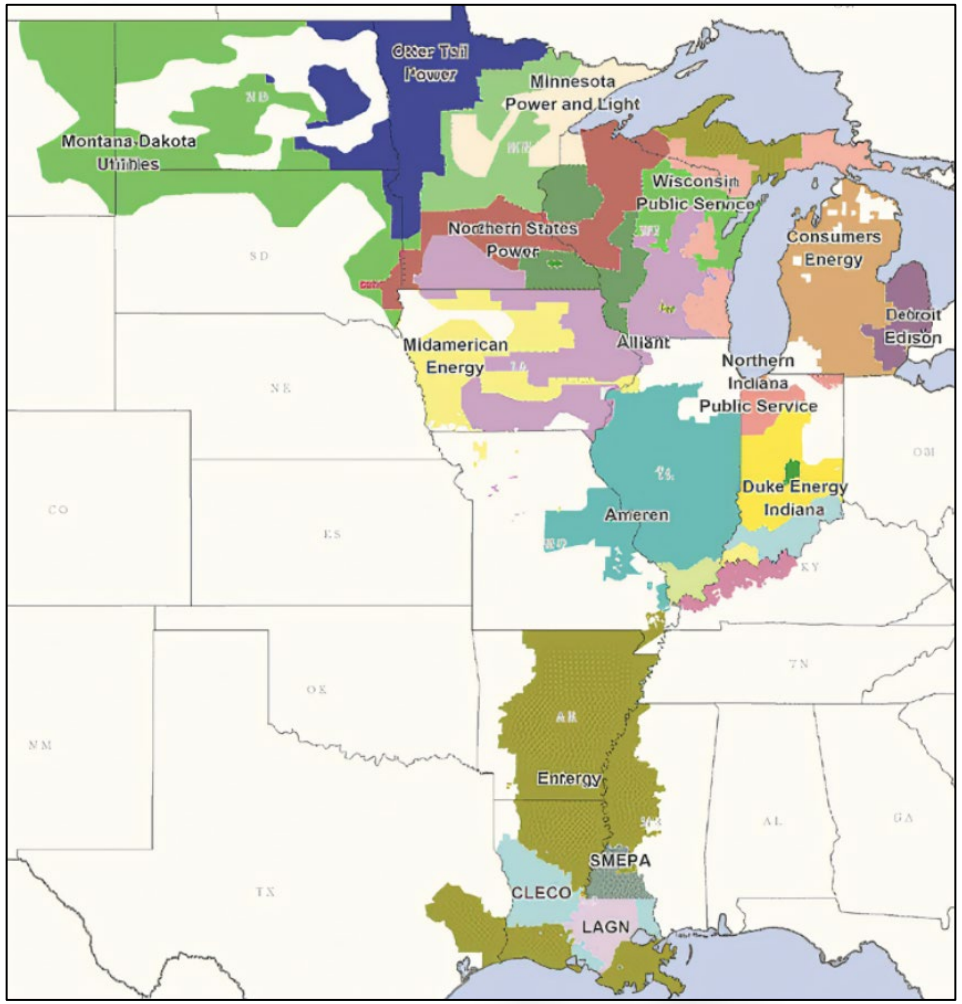
LRTP Tranche 1



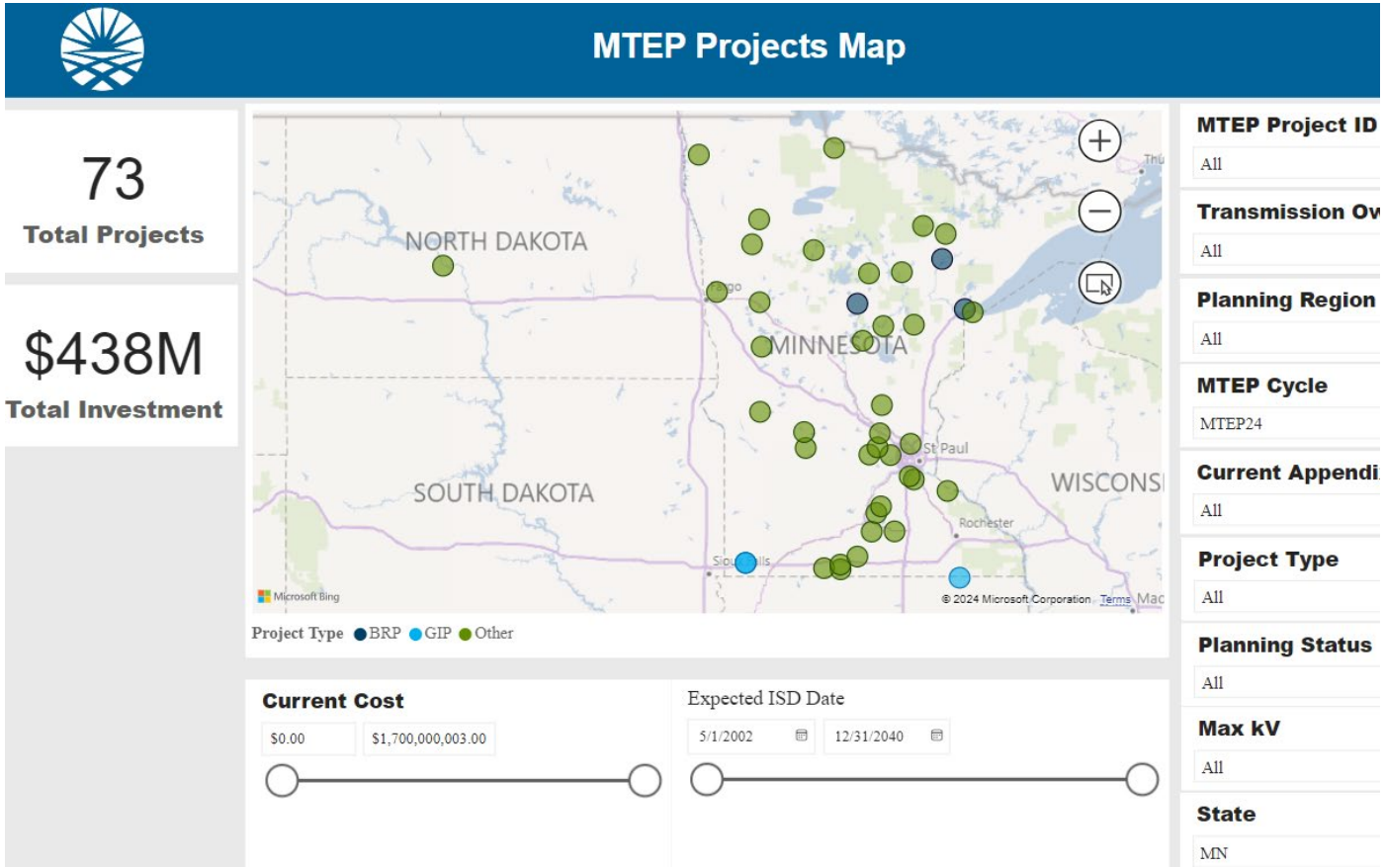
- Future 1 is based on state plans and policies, utility goals, etc.
- Identified reliability issues caused by future generation mix and developed solutions
- Analyzed economic & other benefits of solutions to determine final projects
- Costs allocated on a “postage stamp” basis, based on energy usage

Latest activity in planning and oversight

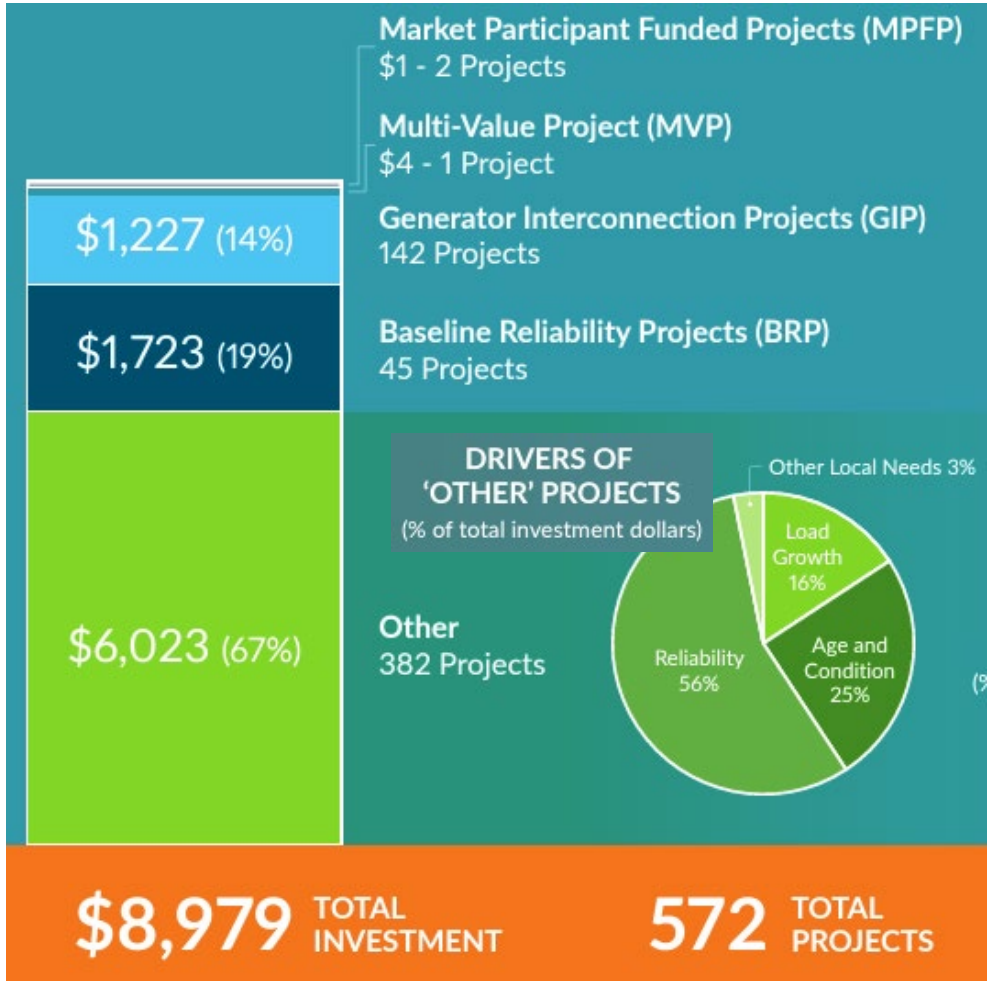
The largest challenge: regional resource planning



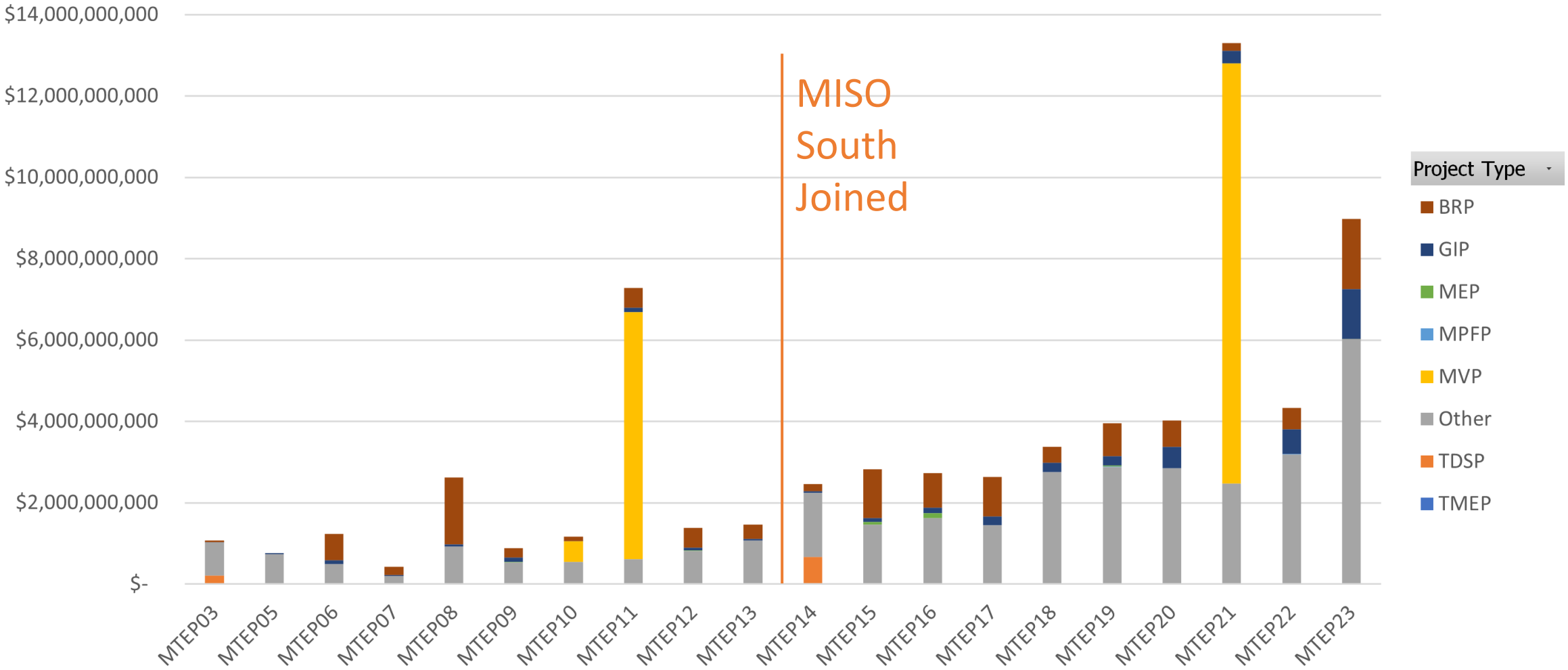
MTEP Portal



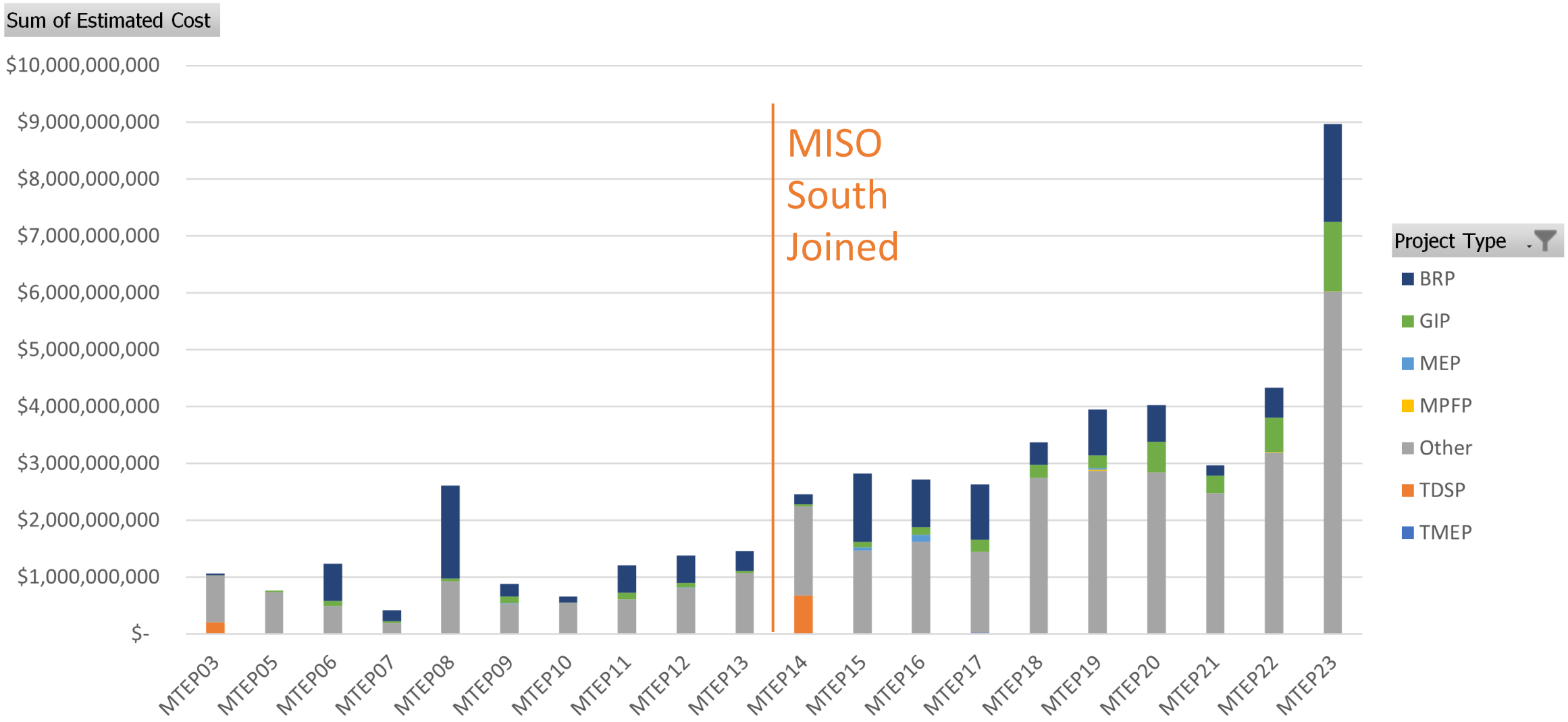
MTEP23 Project Investment



MISO-Approved Projects by Year and Type

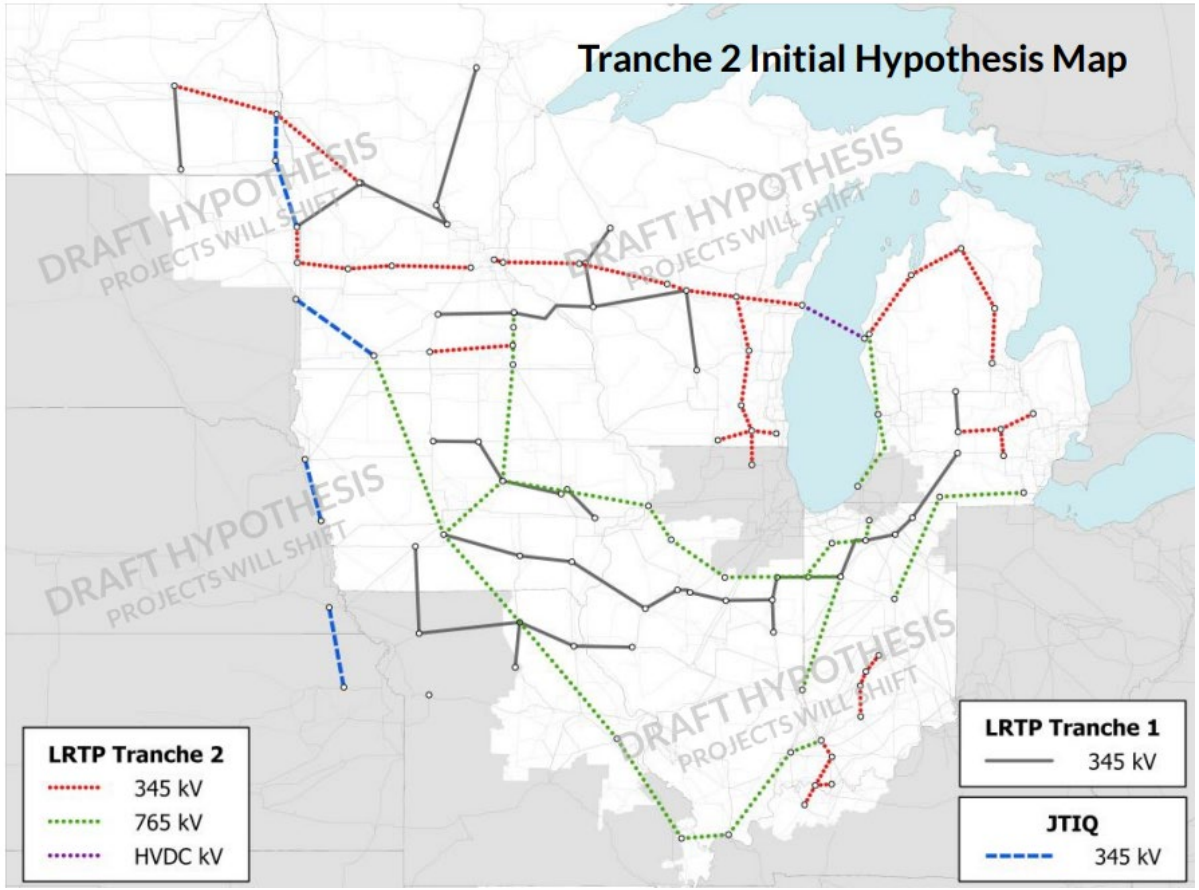


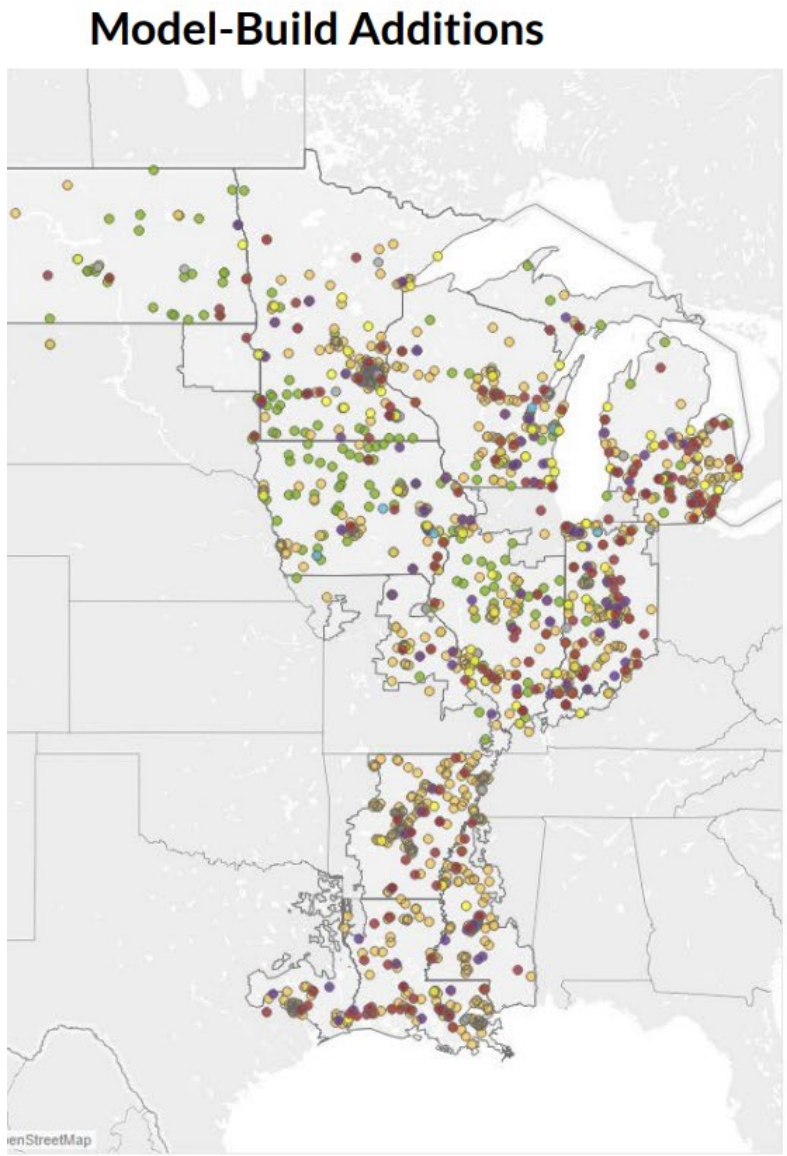
MTEP Projects without MVPs

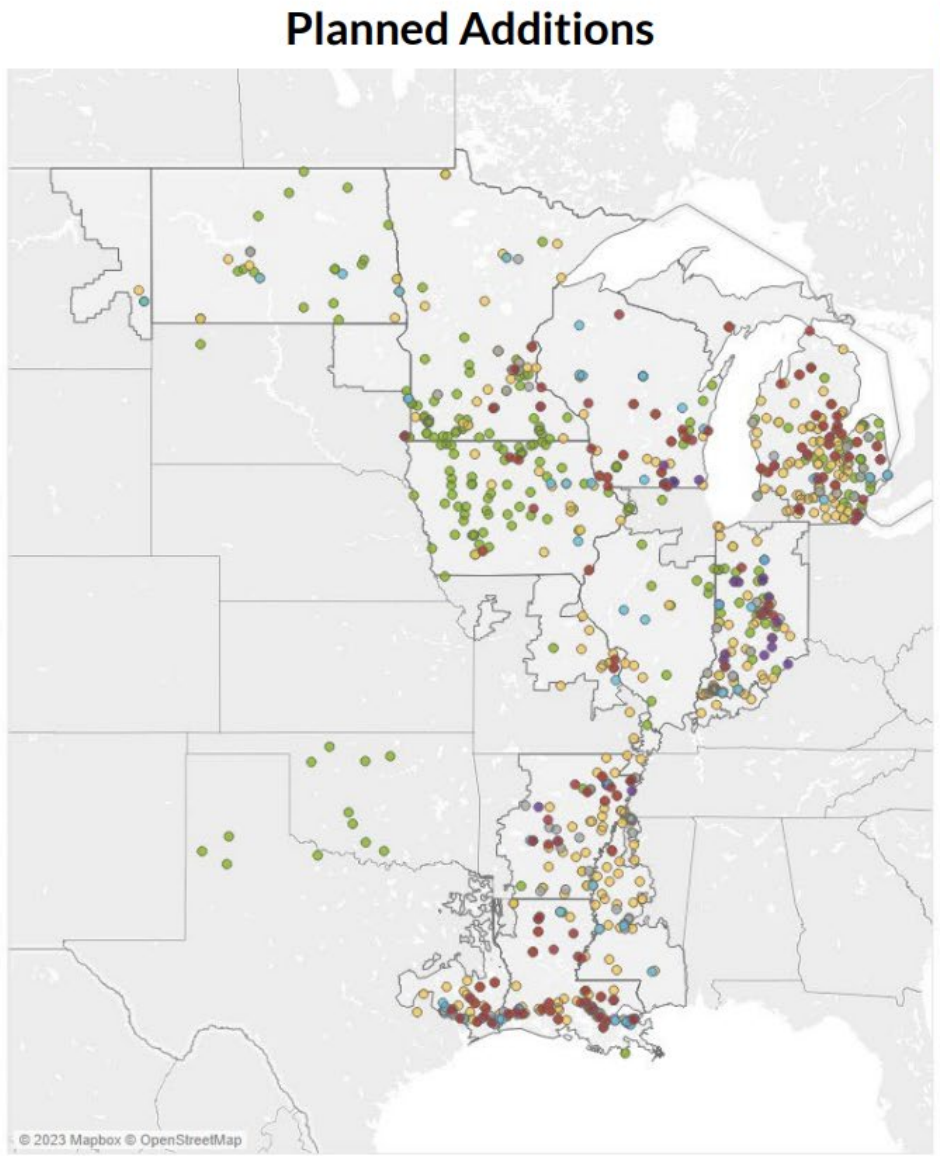


LRTP Tranche 2 is currently being planned

- Refreshed "Futures" with the latest resource expansion forecasts and retirement information
  - States evaluate siting inputs
- MISO will utilize regular stakeholder workshops throughout the planning process
- OMS is utilizing a technical consultant (RLC Engineering)







Planning Transmission for Uncertain Generation

- MISO Futures project generation 20+ years into the future
- Consider known resource plans and retirements
- LRTP evaluates system needs under future resource mixes