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August 27, 2021

VIA ELECTRONIC FILING

Iowa Utilities Board
Customer Service
1375 E. Court Avenue
Des Moines, IA 50319-0069

Re: Investigation into a Comprehensive Plan for Iowa's Transmission Grid of the Future, Docket No. INU-2021-0001

Dear Iowa Utilities Board:

The Midcontinent Independent System Operator, Inc. ("MISO") submits the attached informational materials to assist the Iowa Utilities Board ("Board") in its investigation in the above-noted proceeding.

On July 2, 2021, the Board issued its order opening an investigation regarding a comprehensive plan for Iowa's transmission grid of the future.¹ The Board requested comments and noted its intent to hold a workshop on August 30, 2021.² MISO submitted comments in response to the Board's request on August 2, 2021.³ On August 25, 2021, the Board issued its agenda for the workshop, requesting Iowa transmission owners (MidAmerican Energy Company, ITC Midwest LLC, and Iowa electric cooperatives that own transmission lines) address the following questions:

- The transmission owner's overall plan for generation and transmission in the next one, two, and five years.
- What the transmission owner believes is the overall plan for transmitting electricity in the public interest.

¹ In re: Investigation into a Comprehensive Plan for Iowa's Transmission Grid of the Future, Docket No. INU-2021-0001, Order Initiating Investigation, Requesting Comments, and Setting Date for Workshop (July 2, 2021).

² *Id.* at 5.

³ See Comments of the Midcontinent Independent System Operator, Inc., Docket No. INU-2021-0001 (August 2, 2021) ("MISO Comments") at 9.

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- How and to what extent Iowa's transmission owners collaborate among themselves and with other companies in the planning process.
- How and to what extent Iowa's transmission owners work to minimize the impact transmission lines have on Iowa landowners and whether there is more that can be done.
- How the Board can foster a more collaborative process to facilitate better long-term planning.⁴

MISO recognizes that while the Board seeks to further the discussion with the transmission-owning utilities in Iowa, the third bullet above regarding collaboration in planning largely relates to the MISO planning process discussed in the MISO Comments submitted in this proceeding.⁵ Accordingly, MISO offers the attached informational slide deck to aid in the Commission's review of the questions presented.

In addition, the last MISO Transmission Expansion Plan, MTEP20, provides a recent overview of the projects selected for inclusion in the MISO footprint.⁶ Projects for transmission-owning utilities in Iowa are described in the section of the report for the West region.⁷ Initial materials for MTEP21 are currently available for stakeholder review,⁸ with final approval by the MISO Board of Directors expected in December 2021.

We appreciate the opportunity to assist the Board with its investigation. MISO will be attending the workshop and will have representatives available should the Board have any questions regarding the MISO planning process.

Sincerely,

/s/ Kari Valley

Kari Valley

*Attorney for the Midcontinent
Independent System Operator, Inc.*

Attachment

⁴ In re: Investigation into a Comprehensive Plan for Iowa's Transmission Grid of the Future, Docket No. INU-2021-0001, Order Setting Workshop Agenda (August 25, 2021) at 2.

⁵ See MISO Comments at 9.

⁶ See MTEP20 at [MTEP Reports \(misoenergy.org\)](https://www.misoenergy.org/MTEP-Reports).

⁷ *Id.*, MTEP20, Section 4.5 at 157.

⁸ MTEP21 materials available at: [MTEP21 Report \(misoenergy.org\)](https://www.misoenergy.org/MTEP21-Report).



MISO Transmission Planning

Iowa Utilities Board
August 30, 2021

Executive Summary



- The MISO Transmission Expansion Plan (MTEP) provides a reliable and efficient plan through multiple coordinated planning processes and with transparent stakeholder engagement
- The final projects submitted in MTEP are those determined to best address an identified issue. MISO then applies a tariff-prescribed project categorization hierarchy with associated cost allocations

MISO transmission planning is comprehensive and aligns with the guiding principles of the MISO Board of Directors which incorporate similar principles as those of the OMS



Market access

Provide access to electricity at the lowest total electric system cost



Cost allocation

Ensure project costs are commensurate with planned benefits



Planning criteria

Meet policy and transmission owner planning criteria while safeguarding local and regional reliability



Information exchange

Analyze system scenarios and share with policy makers and stakeholders



Policy alignment

Align planning for changing resources with state and federal policy



Regional coordination

Plan with neighbors to eliminate barriers

Certain conditions must be satisfied to implement a transmission plan

Aligned Interests

Consensus on transmission required to address the footprint's collective needs



Robust Business Case

Include an analysis of benefits and costs for each project



Cost Allocation

Assign cost roughly commensurate with benefits

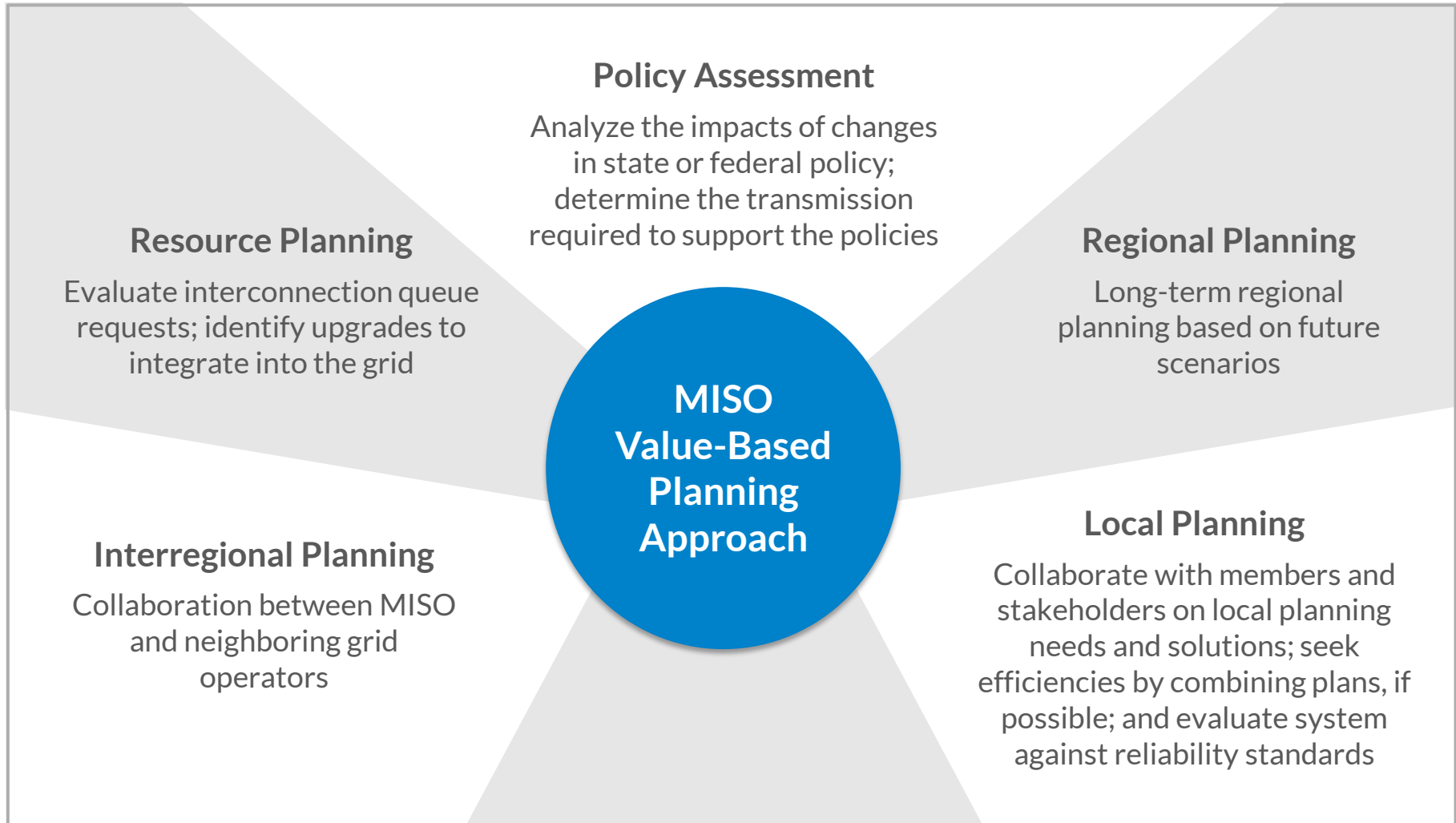


Cost Recovery

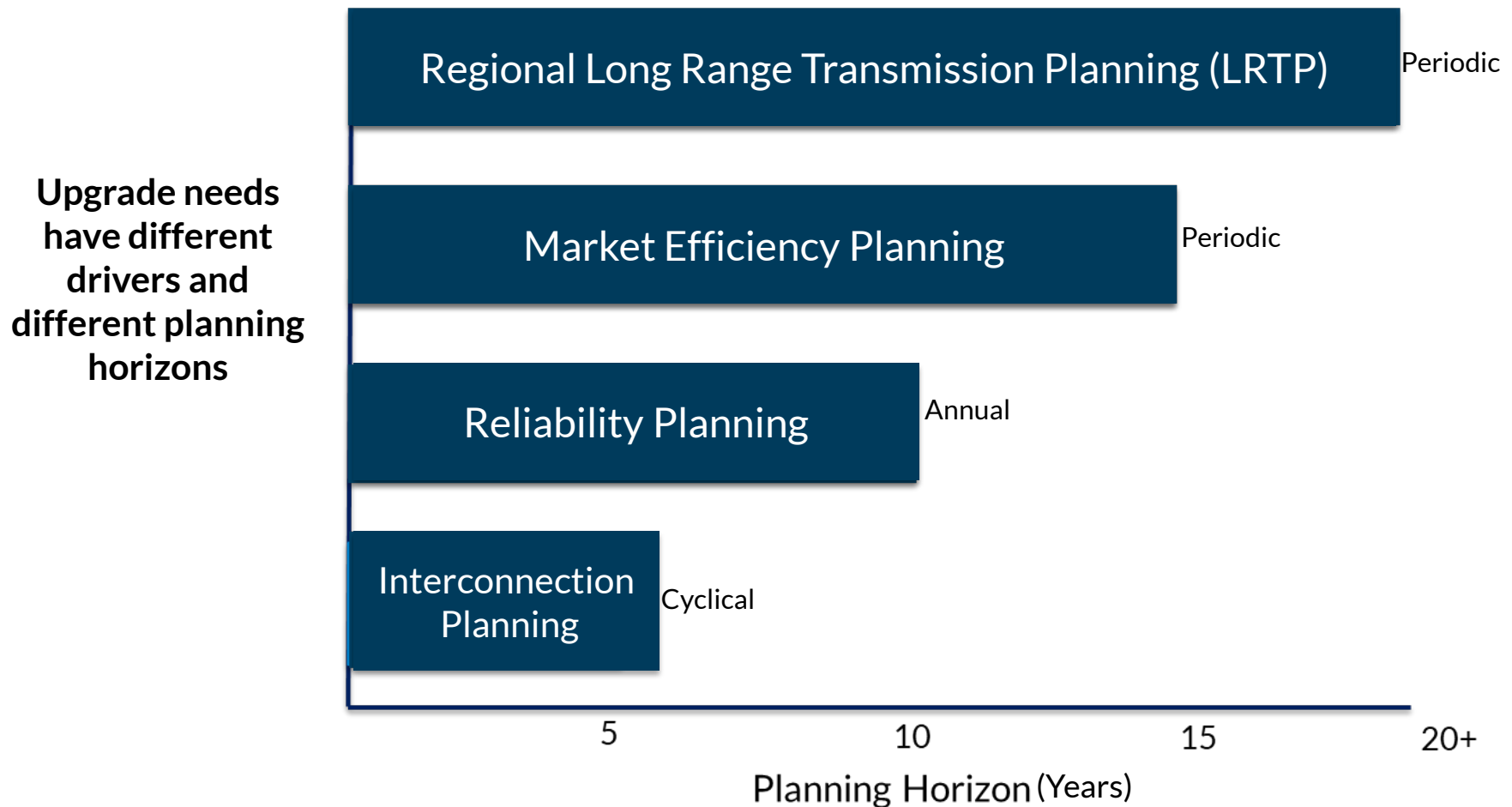
Reduce financial risk with recovery mechanisms



MISO's planning process ensures local needs are integrated with regional requirements

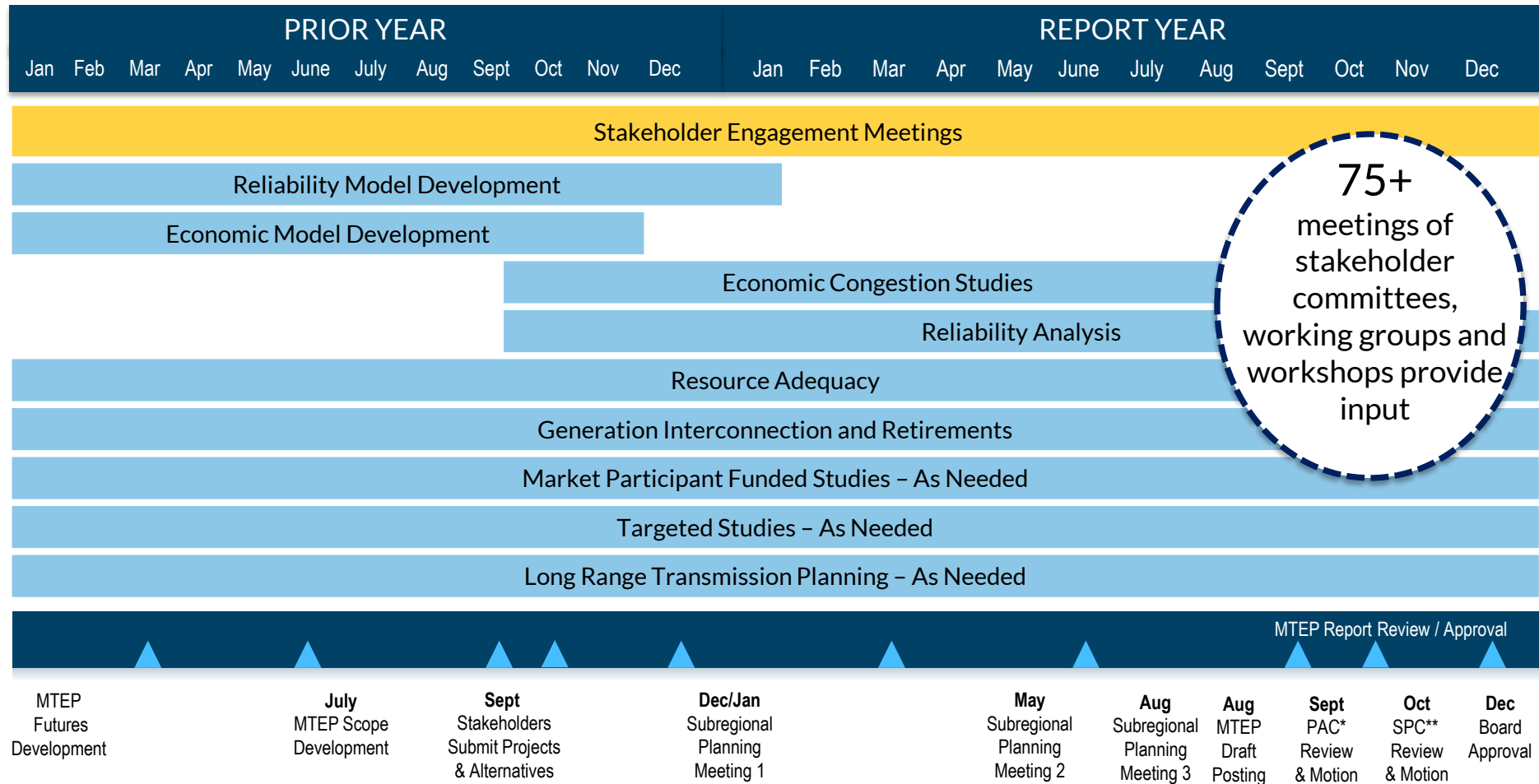


Transmission planning provides a comprehensive approach that covers short and long term needs to address generation additions, ongoing reliability, market efficiency and policy trends



MTEP is developed in overlapping cycles and delivered annually

Typical MTEP Cycle



75+ meetings of stakeholder committees, working groups and workshops provide input

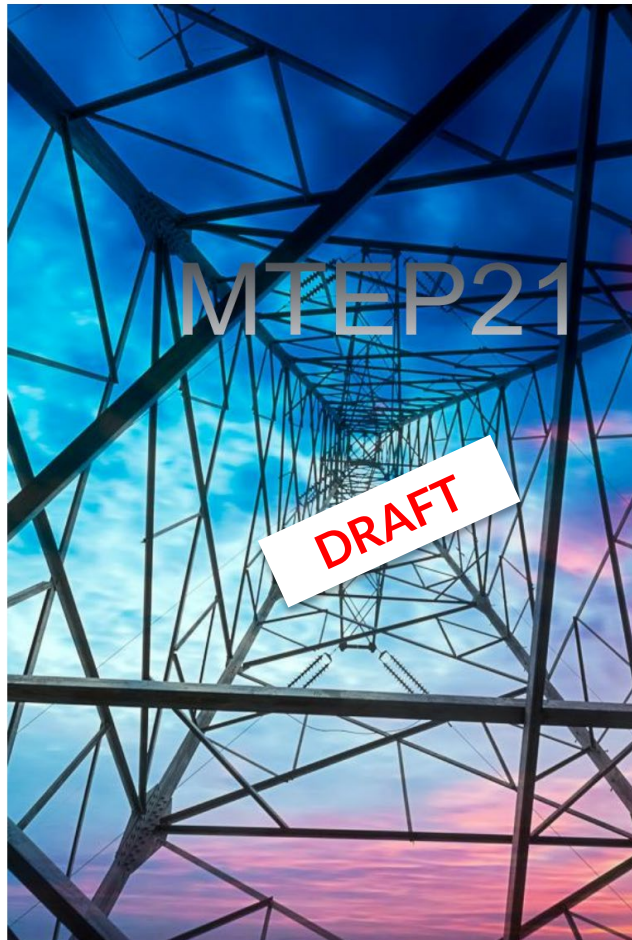
▲ Board Meetings

*Planning Advisory Committee; **System Planning Committee

Appendix:

MISO Transmission Expansion Plan (MTEP)

Transmission planning activities culminate in the annual MISO Transmission Expansion Plan (MTEP)



Planning Guiding Principles

- Develop transmission plans that will ensure a reliable and resilient transmission system that can respond to the operational needs of the MISO region.
- Make the benefits of an economically efficient electricity market available to customers by identifying solutions to transmission issues that are informed by near-term and long-range needs and provide reliable access to electricity at the lowest total electric system cost.
- Support federal, state, and local energy policy and member goals by planning for access to a changing resource mix.
- Provide an appropriate cost allocation mechanism that ensures that costs of transmission projects are allocated in a manner roughly commensurate with the projected benefits of those projects.
- Analyze system scenarios and make the results available to federal, state, and local energy policy makers and other stakeholders to provide context and to inform choices.

1.2 MISO Transmission Planning Process

A goal of the MTEP report is to satisfy the regulatory requirements as specified in Federal Energy Regulatory Commission Orders and the ISO Agreement. The report provides an annual snapshot with results and recommendations from the continuous planning processes MISO undertakes. MISO's planning process follows established guiding principles to ensure reliability, support policy requirements, and enable a competitive market to benefit all customers (see Figure 1.2-1 planning regions).

MISO will continue to follow federal and state policy as well as monitor fuel prices, plant retirements, and announced member plans for any changing industry trends. The ability not only to meet peak demand, but to move bulk power from resource areas to load centers across the footprint in all hours of the day will be needed to maintain system reliability and improve efficiency with the evolving resource fleet. Regional planning solutions will play an essential role in optimizing the natural and geographic diversity of these resources.

Periodically, the System Planning Committee of the Board of Directors provides input into MISO's Planning Guiding Principles. The most recent review and approval by the Board of Directors occurred in June 2021.

Planning Functions

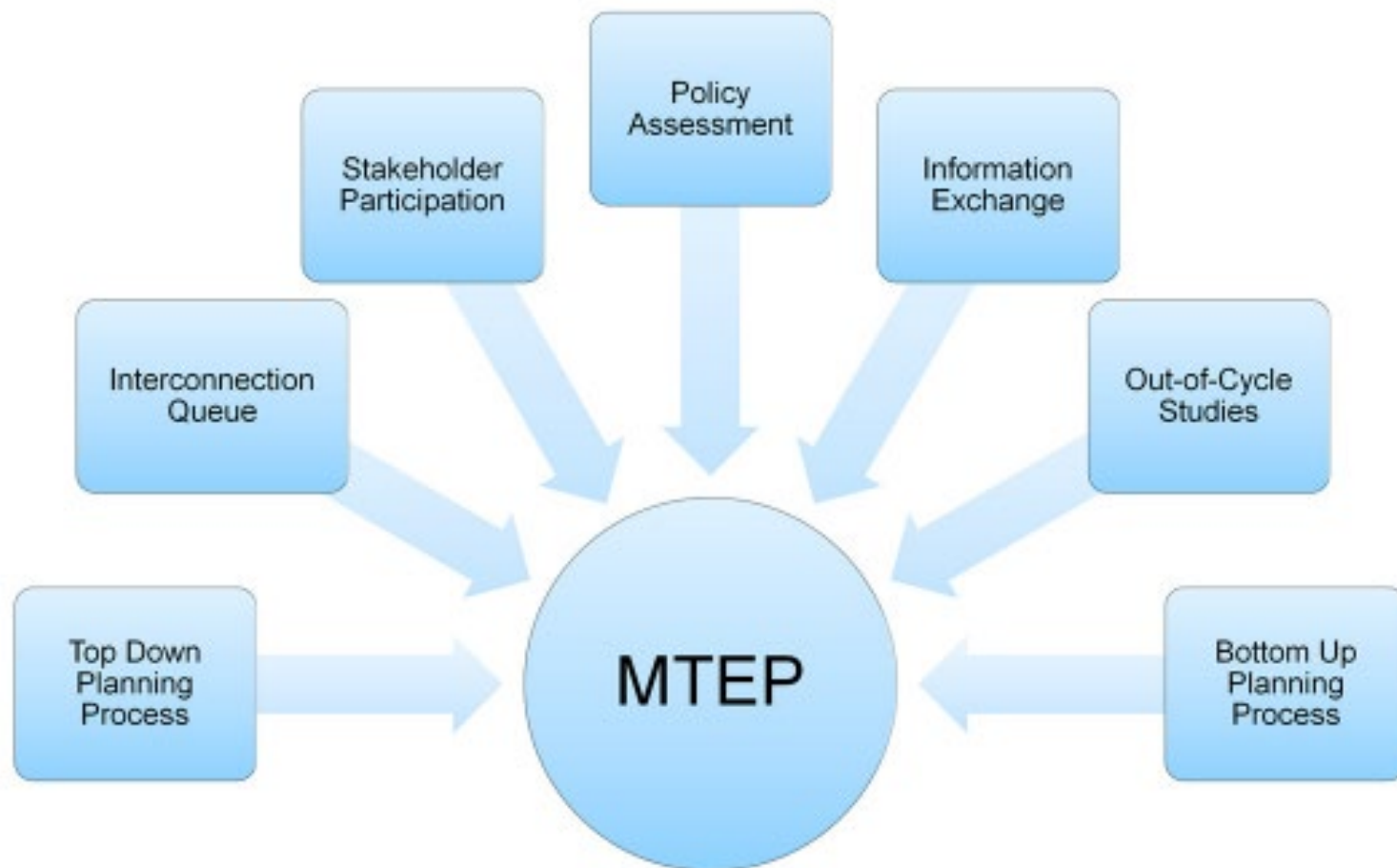
The planning process includes these functions, which are described in detail in the [Transmission Planning Business Practices Manual](#)².

- Model development
- Generator interconnection planning
- Transmission service planning
- Cyclical regional expansion planning activities
- Interregional coordination with neighboring transmission planning regions
- System Support Resource studies for unit suspension or retirement
- Transmission-to-Transmission interconnection
- Load interconnections
- Focus studies

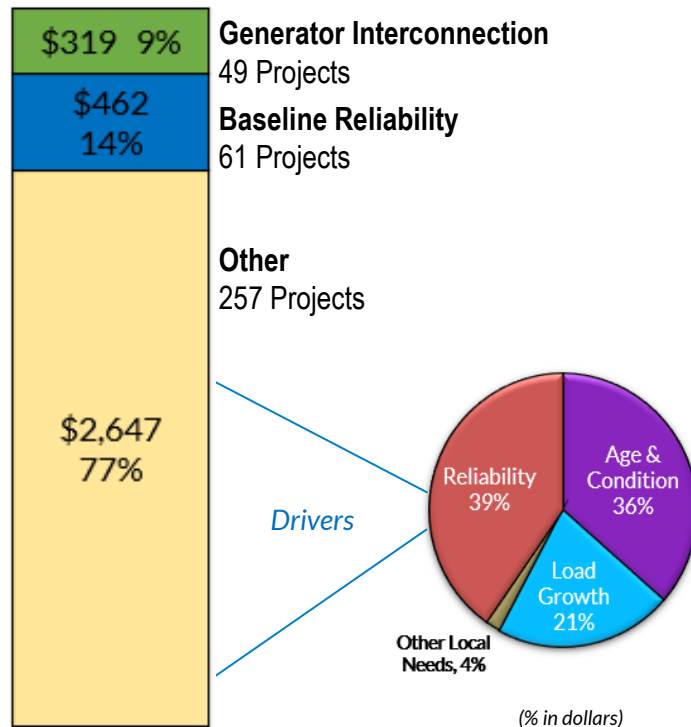
Draft MTEP21 report posted here: <https://www.misoenergy.org/planning/planning/mtep21/>

Previous MTEP reports: <https://www.misoenergy.org/planning/planning/previous-mtep-reports/#t=10&p=0&s=FileName&sd=desc>

MISO Transmission Expansion Plan



MTEP21 SNAPSHOT: 367 new projects, at a cost of \$3.4 billion, will be recommended for Board of Director approval in December 2021



Regional breakdown by category:

Planning Region	BRP	GIP	Other	Total
Central	\$42,000,000	\$46,882,056	\$504,725,928	\$593,607,984
East	\$317,432,200	\$125,376,518	\$345,341,731	\$788,150,449
South	\$71,230,000	\$25,350,708	\$903,933,290	\$1,000,513,998
West	\$31,177,603	\$121,345,035	\$893,154,000	\$1,045,676,638
Total	\$461,839,803	\$318,954,317	\$2,647,154,949	\$3,427,949,069

Data as of 7/30/2021

Types of Projects & Cost Allocation

Project Type	Description	Allocation to Beneficiaries
Multi-Value Project	Address energy policy laws and/or provide widespread benefits across footprint	100% postage stamp to load
Market Efficiency Project	Reduces market congestion when benefits are 1.25 in excess of costs	230 kV and above*: 100% of costs are distributed to zones commensurate with expected benefit.
Baseline Reliability Project	Addresses NERC reliability criteria	100% allocated to local Transmission Pricing Zone
Generation Interconnection Project	Project required for generator interconnection request	Primarily paid for by requestor; 10% of costs for projects at 345 kV and above are allocated via postage stamp to load.
Transmission Delivery Service Project	Project required for reliable Transmission Service Request	Generally paid for by Transmission Customer; Transmission Owner can elect to roll into local Transmission Pricing Zone rates
Participant Funded	Projects that are funded by the project requestor, often not the TO.	The requestor funds the project (i.e. pays up front through a contribution in aid of construction (CIAC), which excludes the project from a TO's rate base and zonal rates.
Other	Project that does not qualify for other cost allocation mechanisms. Typically driven by local needs such as load interconnection or age and condition issues	The costs of these projects are recovered in zonal rate.

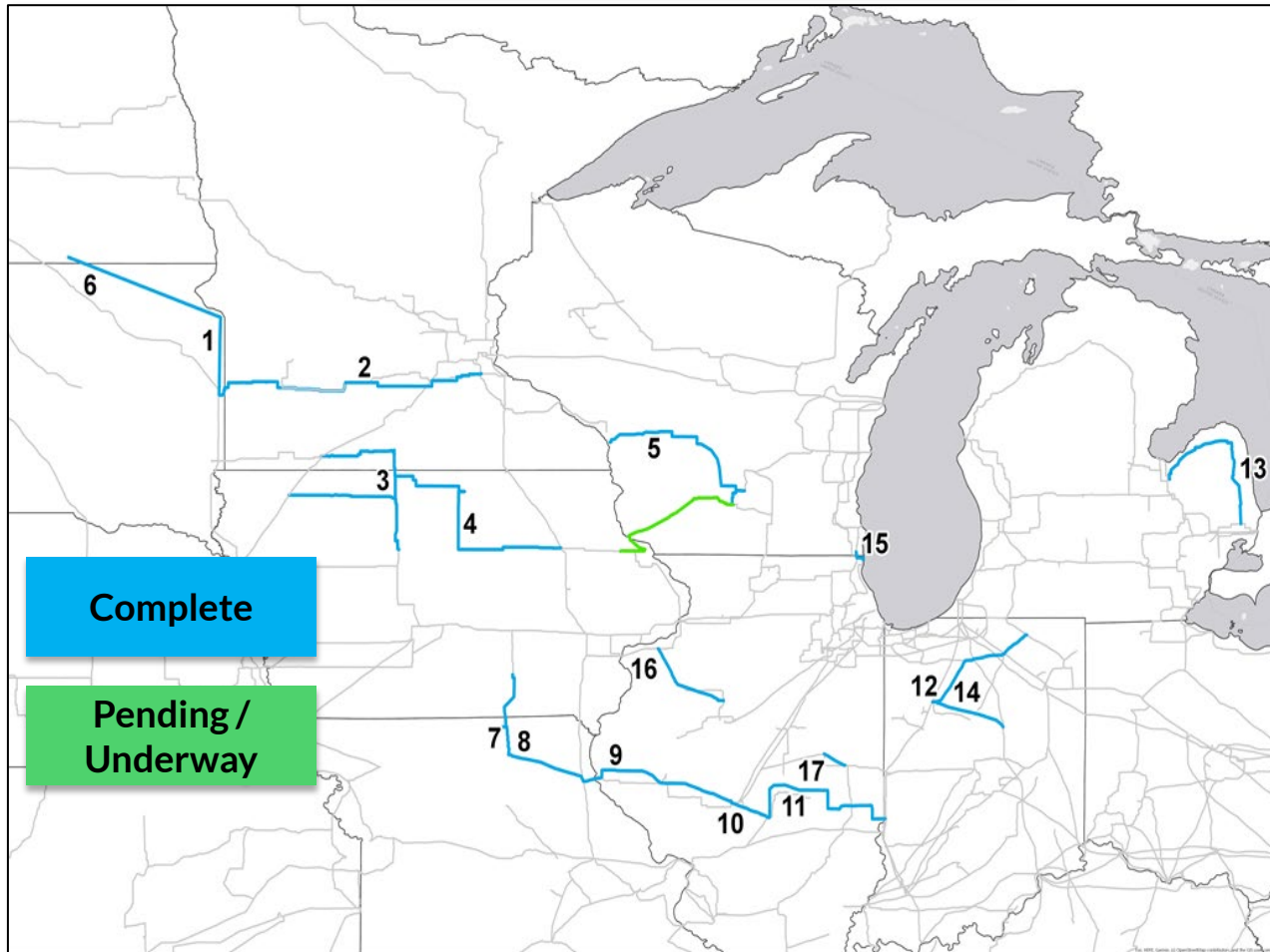
* Note costs of Interregional Market Efficiency Projects at or above 100 kV but below 345 kV are allocated 100 percent to benefitting zones based on Adjusted Production Costs.

Appendix:

Long Range Transmission Planning (LRTP)

MISO's Multi-Value Project (MVP) portfolio illustrated regional cooperation; today's challenges are even greater...

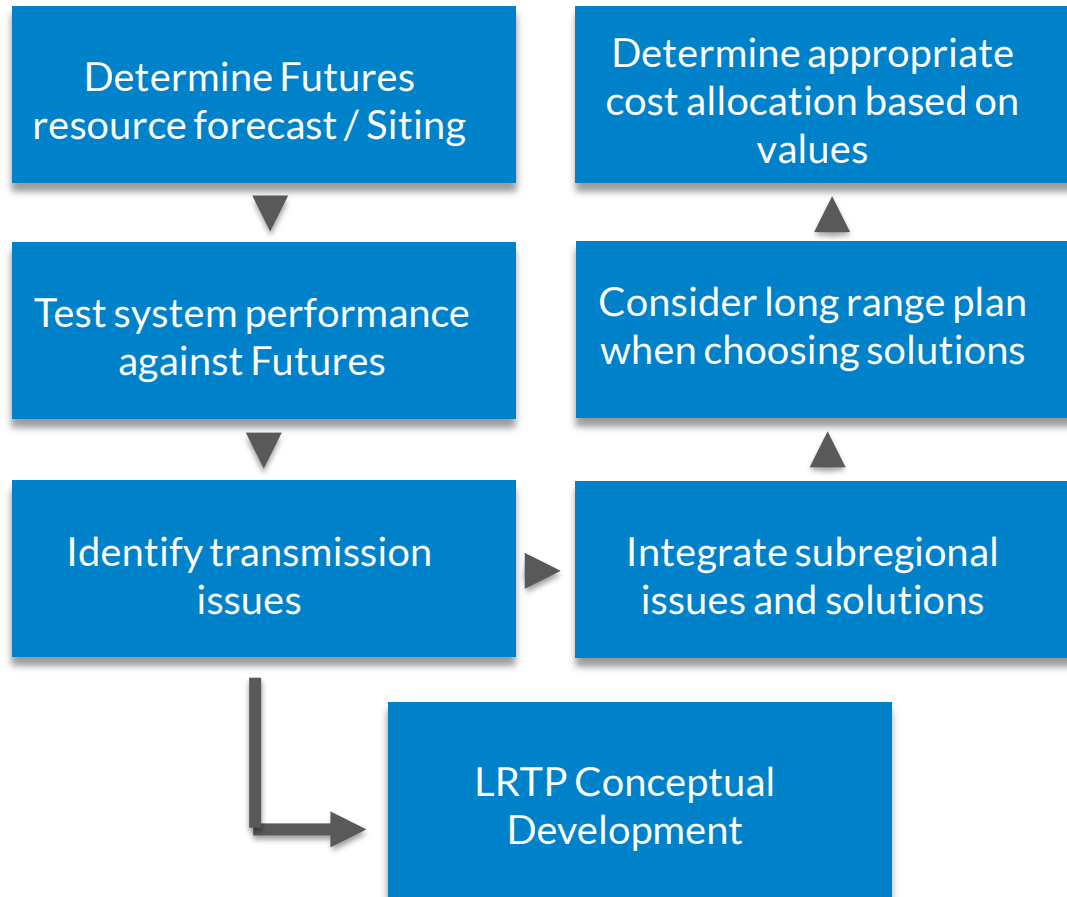
MVP Portfolio – 17 projects



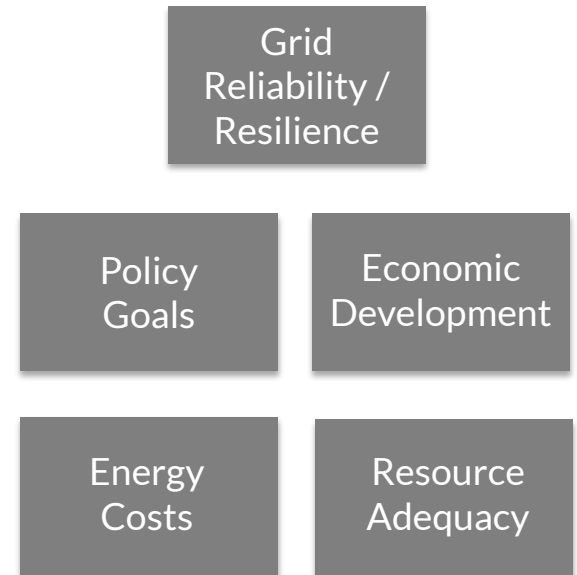
- Began studies in 2008
- Approved by MISO Board in 2011; current estimated portfolio cost of \$6.6 billion
- 16 projects complete; 1 still in process
- Projected to:
 - Enable over 50 million MWh of renewable energy per year to meet state goals and mandates
 - Create \$7 – \$39 billion in net benefits
- New capacity is already fully subscribed

Long Range Transmission Planning (LRTP) identifies grid needs based upon Futures, is multi-step, and considers subregional needs and solutions

PROCESS



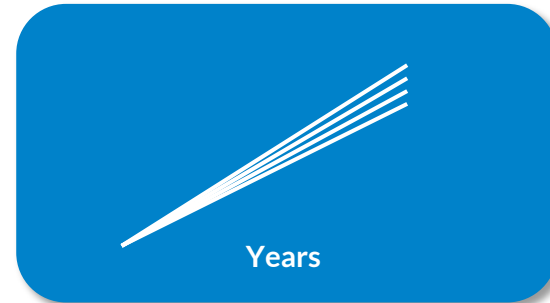
GOALS



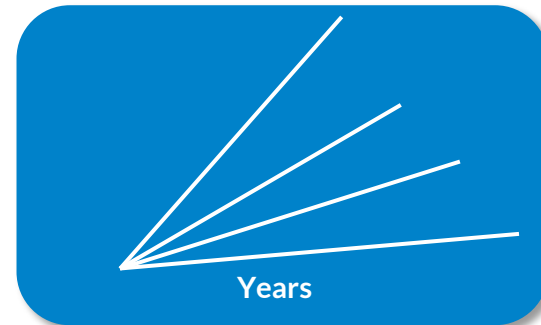
Why does MISO use “Futures” for transmission planning ?

- It's very difficult to accurately predict the future, so we create scenarios to hedge uncertainty and “bookend” a range of economic, political, and technological possibilities
- Goal: define a set of broad Futures to hedge against future uncertainties and help ensure that any new recommended transmission provides benefits and value, regardless of specific future developments

Narrow and less useful



Broad and more useful



MISO's Long Range Transmission Planning (L RTP) uses three "Futures" to incorporate & bookend uncertainty

Future 1

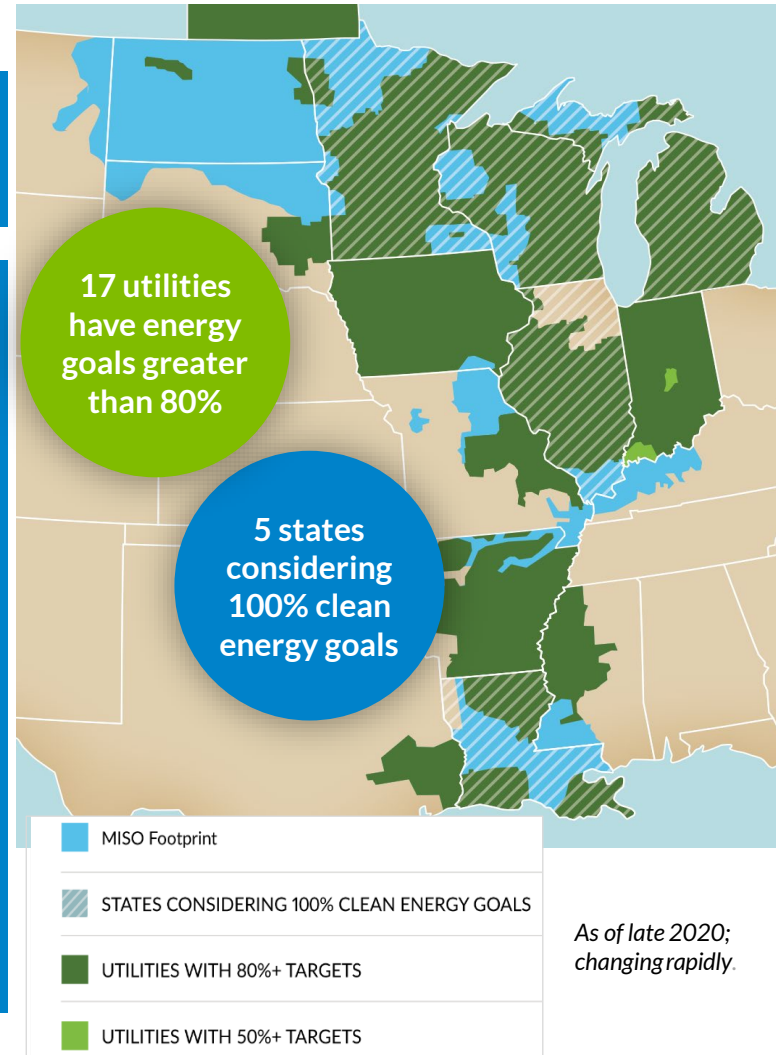
- The footprint develops in line with 100% of utility IRPs and 85% of utility announcements, state mandates, goals, or preferences.
- Emissions decline as an outcome of utility plans.
- Load growth consistent with current trends.

Future 2

- Companies/states meet their goals, mandates and announcements.
- Changing federal and state policies support footprint-wide carbon emissions reduction of 60% by 2040.
- Energy increases 30% footprint-wide by 2040 driven by electrification

Future 3

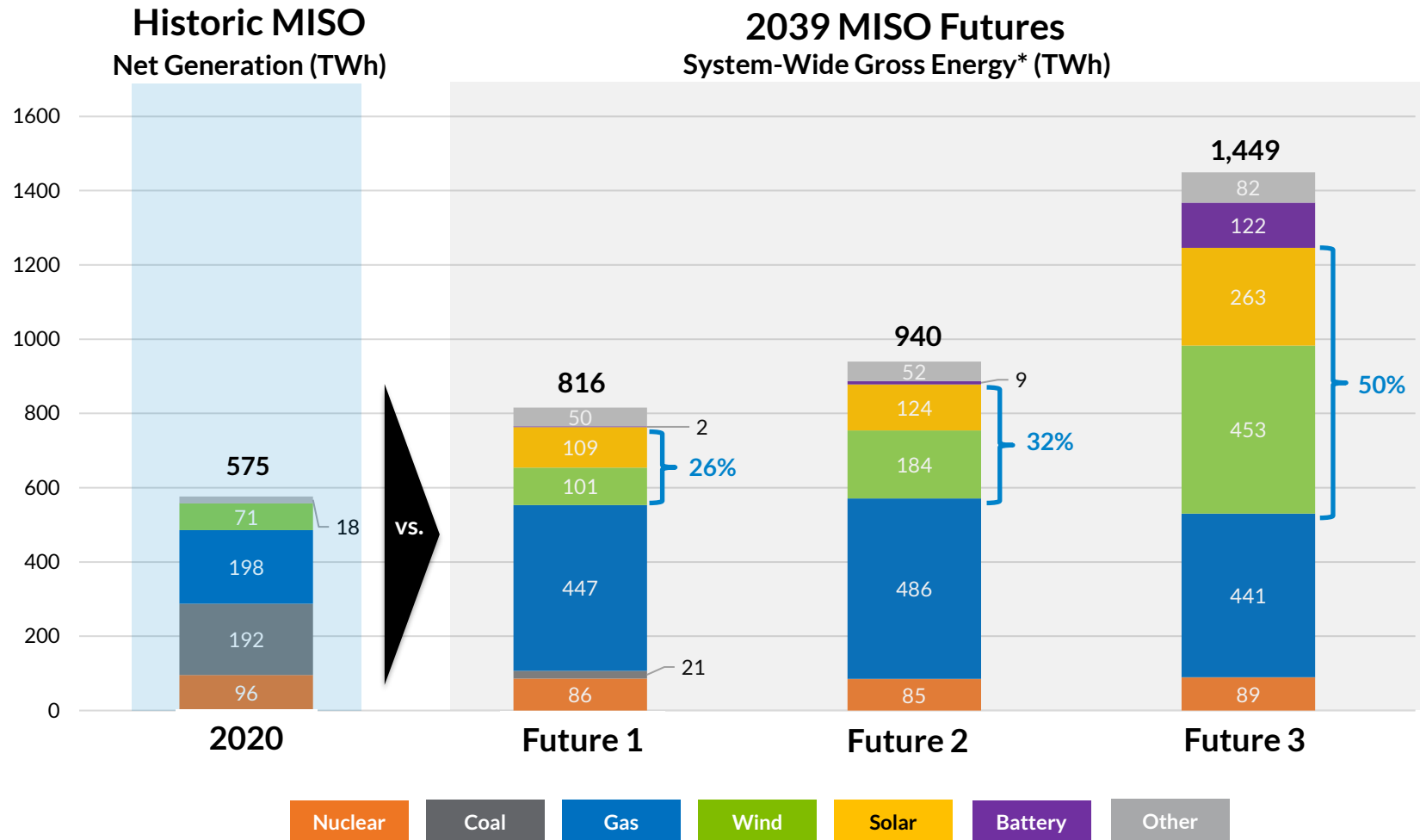
- Changing federal and state policies support footprint-wide carbon emissions reduction of 80% by 2040.
- Increased electrification drives a footprint-wide 50% increase in energy by 2040.



IRP = Integrated Resource Plan

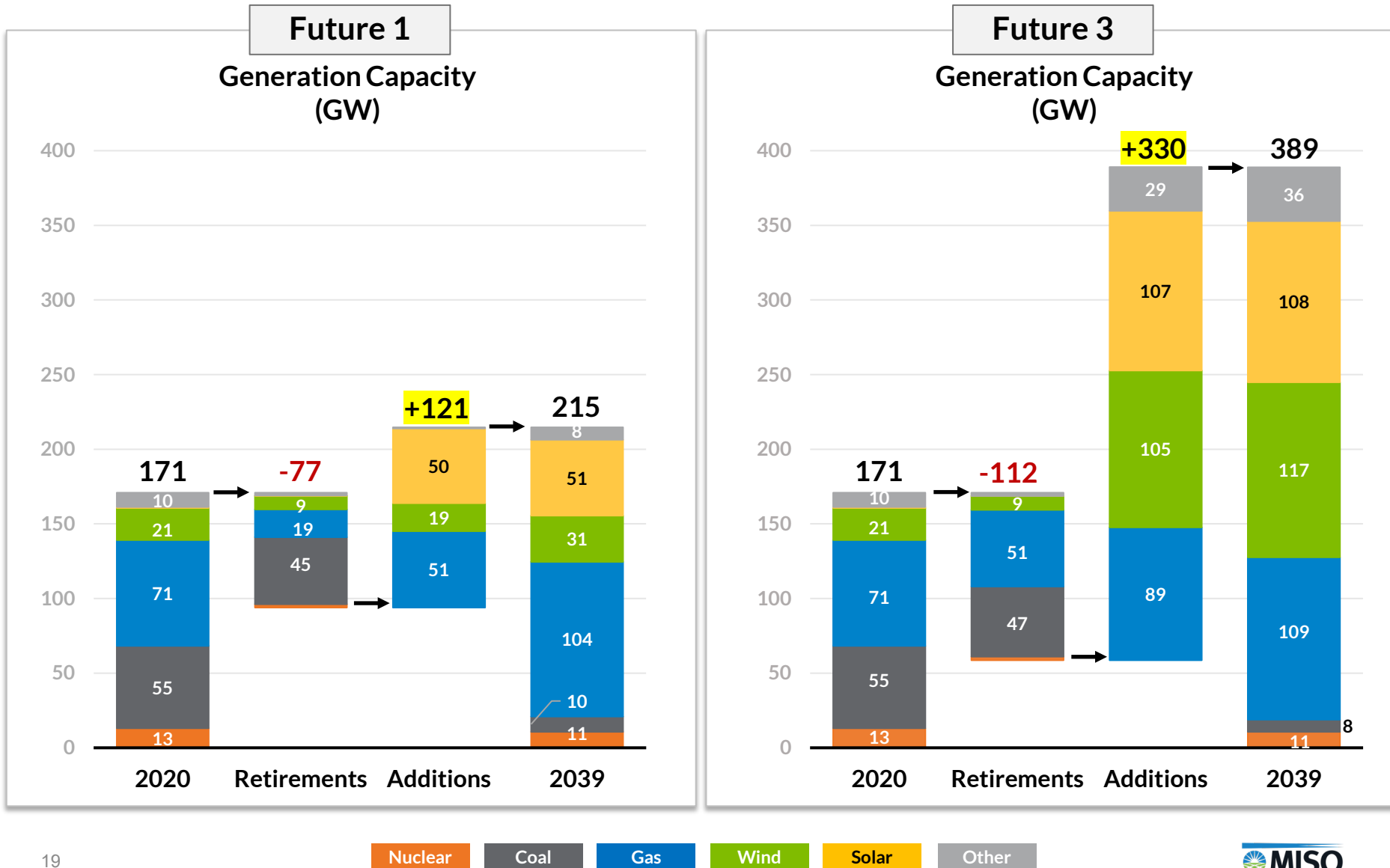
See: [MISO Futures Report for details.](#)

The Futures incorporate and build upon member plans to reflect the resource transition and changing demand patterns, including dramatic energy increases with electrification



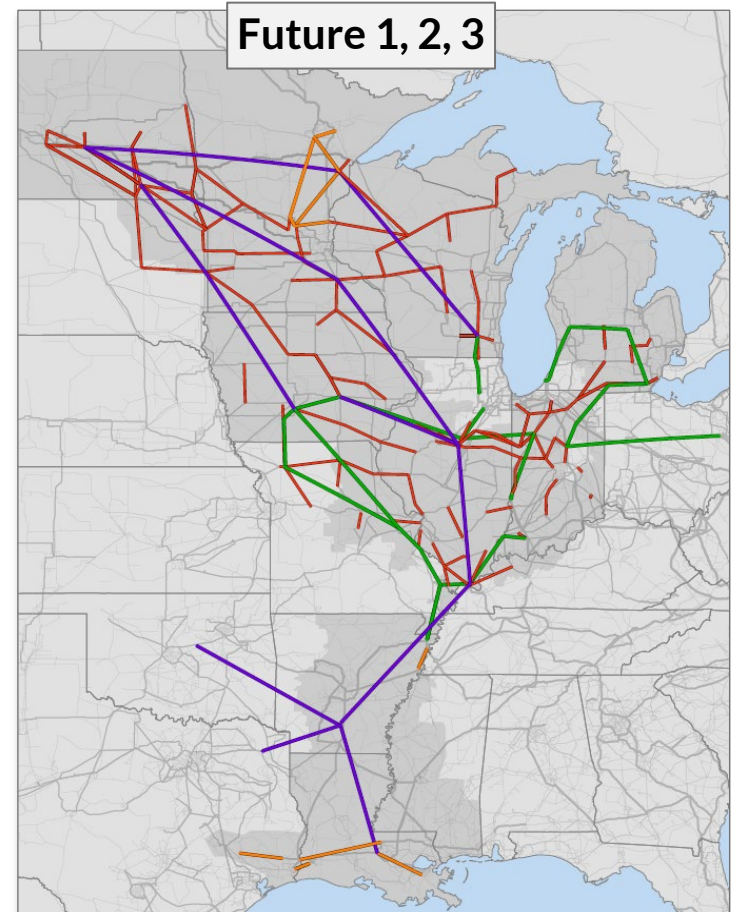
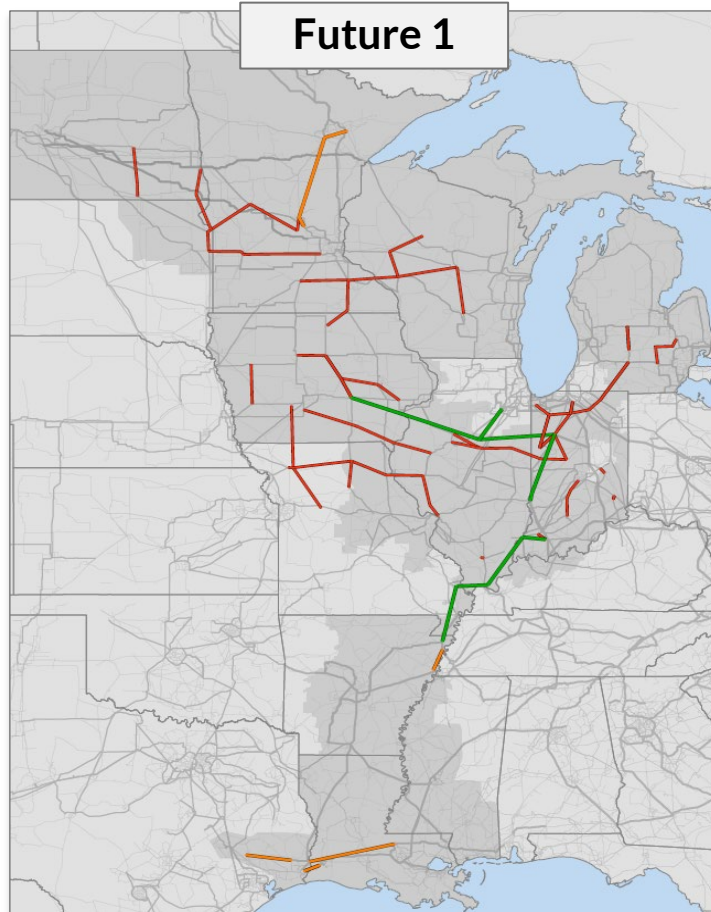
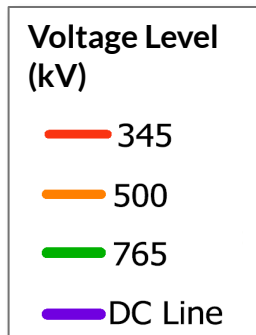
* System-Wide Gross Energy includes increasing amounts of dumped (or curtailed) renewable energy and storage fill; Net Generation does not include dumped energy, storage fill or DERs.

The Futures also reflect the significant capacity additions that will be needed to serve projected load



L RTP projects will promote regional bulk energy transfer, interzonal support, resource integration and retirements

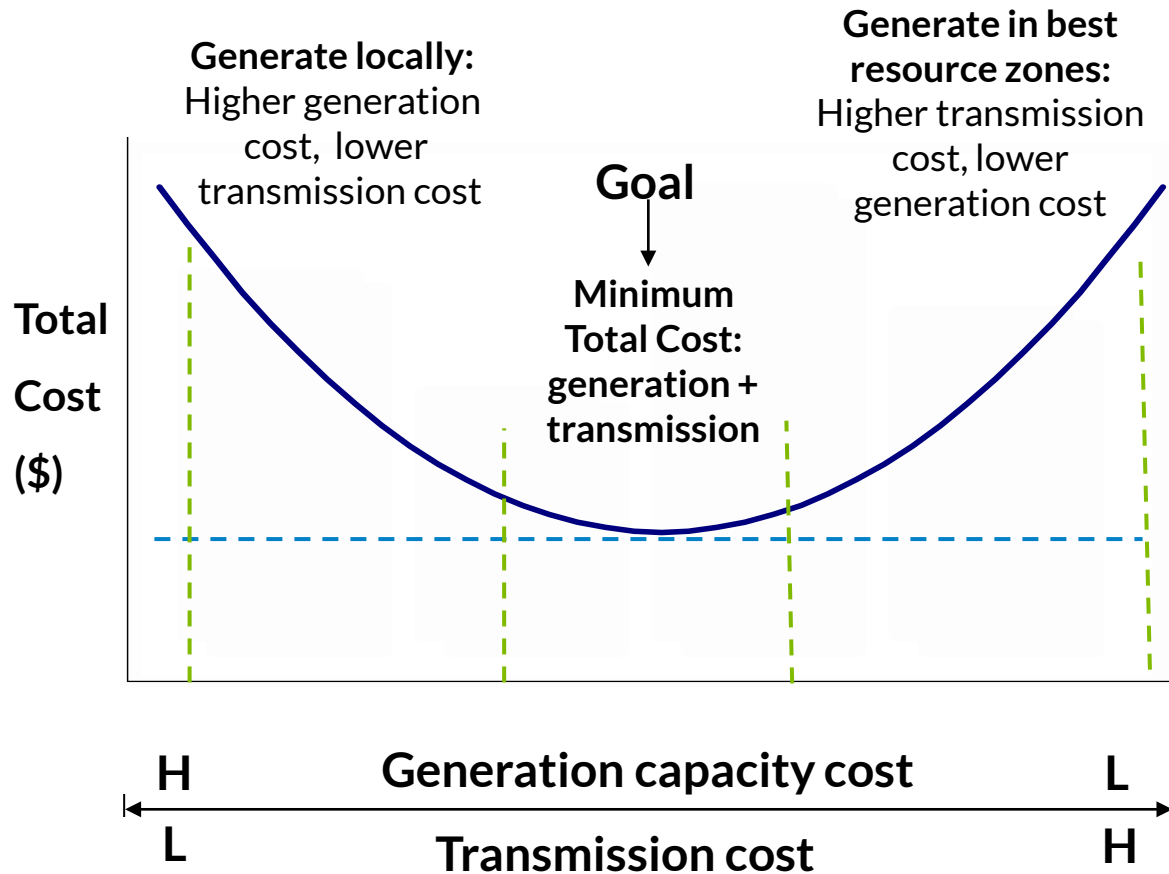
**Indicative
'Roadmaps'**
(as of June 2021)



Indicative 'Cost to Achieve'* (\$ Billion)	Future 1	Future 1, 2, 3
New Generation/Resources	+/- \$ 135 B	+/- \$ 430 B
New Transmission Solutions	+/- \$ 30 B	+/- \$ 100 B
Total New Investment	+/- \$ 165 B	+/- \$ 530 B

* Initial 'indicative' investment cost estimates expressed in 2020\$; generation additions thru 2039 are 121 GW in Future 1, 330 GW in Future 3; generation costs from EGEAS modeling; transmission solutions cost from MISO transmission cost estimating tools.

MISO plans transmission, not generation, but minimizing total costs requires balancing both generation and transmission investment



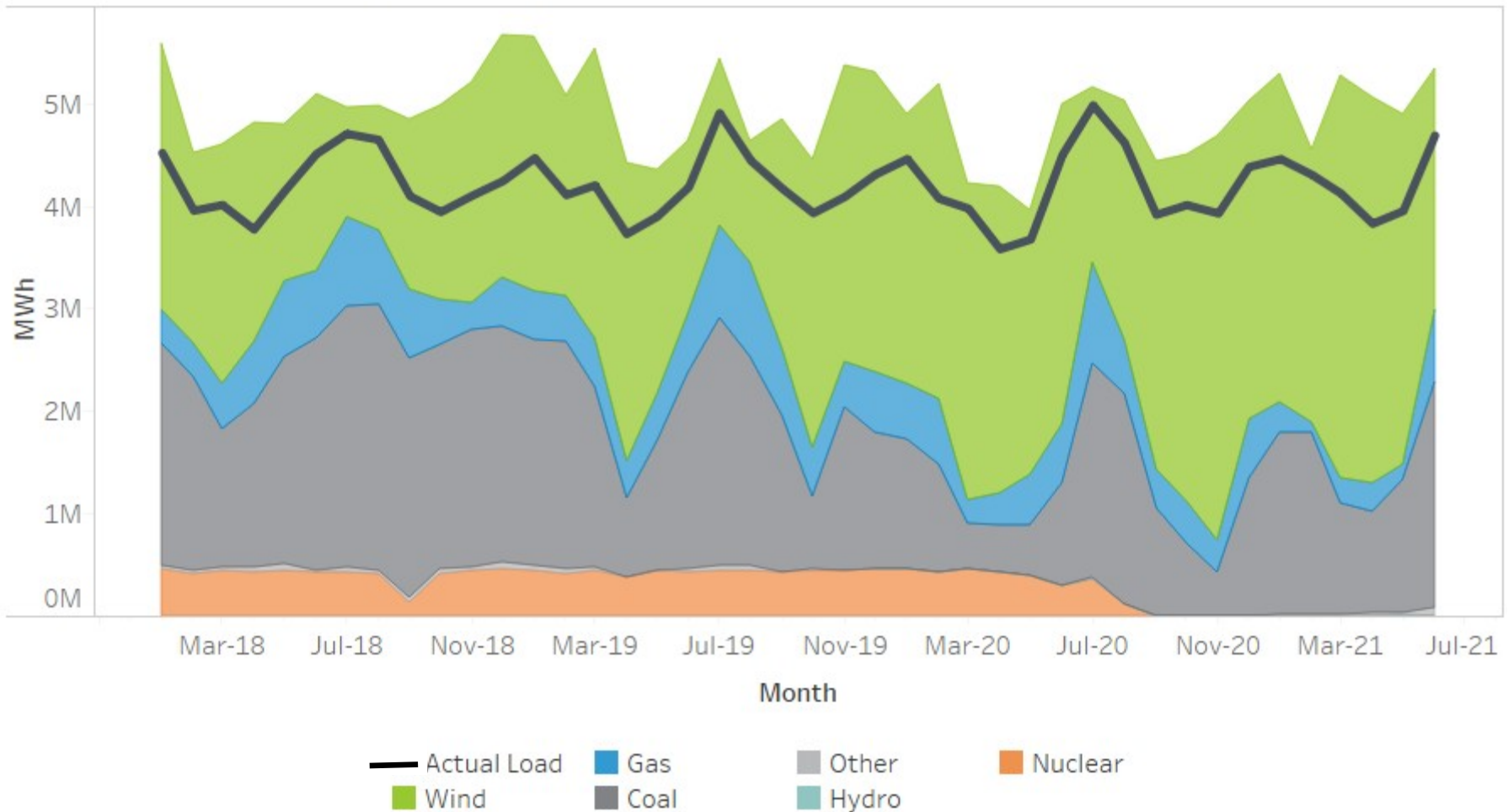
MISO's long range transmission planning process is focused on minimizing the total cost of delivered power to consumers – of energy, capacity and transmission – to meet a given objective

Appendix:

Iowa Generation and Load Balances

In aggregate, IA produces enough energy to meet its needs and export to the MISO market...

Iowa Generation by Fuel by Month



...but, it does not produce every hour and thus must depend on the market not only to absorb its excess but also provide resources when the wind isn't blowing

February 2021

June 2021

← One month of hourly data →

← One month of hourly data →



Iowa is an active participant in the use of the MISO market systems to economically balance its dependence on intermittent wind resources

