



Reliability Imperative: Long Range Transmission Planning

System Planning Committee of the
Board of Directors











December 07, 2021

Executive Summary



- As a key part of the Reliability Imperative, Long Range Transmission Planning (LRTP) is progressing with significant stakeholder engagement
- Solutions will be recommended as part of MTEP21 Appendix A in Q2 2022, pending FERC approval of cost allocation
- MISO is proposing cost allocation based largely on the Multi-Value Project methodology with subregional bifurcation

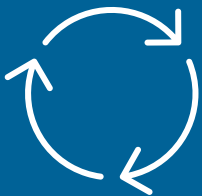
MISO is making progress and meeting major milestones

2021 Deliverables	Status	Progress	Notes
1. Develop an indicative transmission roadmap based on Future 1 by end of Q1 2021			
2. Identify early subset of initial transmission solutions based on Future 1 to enable resources announced by MISO members and reflected in Future 1			<ul style="list-style-type: none"> • Need to complete models and analysis • Posted Future 1, 20-year on 7/28 with reliability results • Posted power flow change files
3. Develop an indicative transmission roadmap based on Future 3 by end of Q4 2021			<ul style="list-style-type: none"> • Developed conceptual engineering judgment first draft • Future 3 model build delayed
4. Progress on developing a cost allocation approach for solutions identified via the LRTP initiative			<ul style="list-style-type: none"> • Working with a tight timeline • Increased communications and RECB meeting regularity
5. Recommend initial transmission solutions based on Future 1 to MISO Board of Directors for Q2 2022 approval			<ul style="list-style-type: none"> • Recommendation will follow cost allocation approval (FERC filing is planned)

MISO is planning to present solutions to the MISO Board in tranches



Candidate projects will promote reliable, regional bulk energy transfer, interzonal support, resource integration and retirements



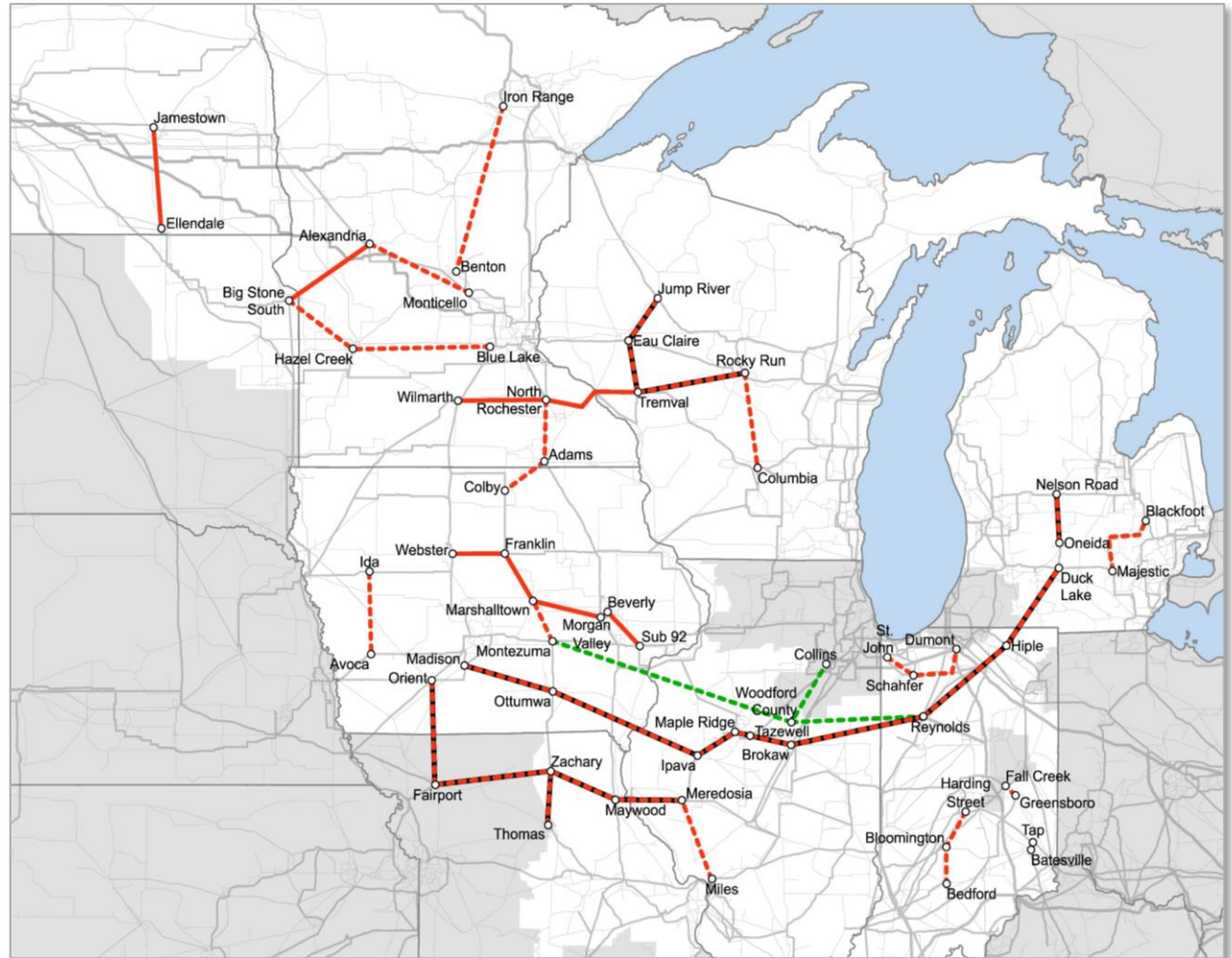
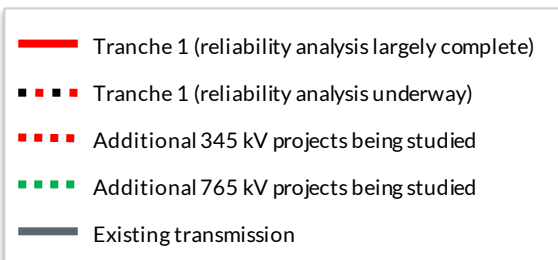
Multiple iterations will be conducted for different combinations of solution ideas and include stakeholder submitted alternatives and MISO indicative roadmap projects being tested



Additional LRTP candidates will be considered and inform future tranches brought forward for approval

The portfolio of no-regrets projects is designed to reliably meet the needs of the resource portfolio shift contemplated by members

- Engineering analysis, including consideration of alternatives, and development of business case is underway, which may result in modifications to the map shown
- Projects not included in Tranche 1 will be further evaluated for Tranche 2



As of 11/22/2021

Developing appropriate cost allocation that balances a wide array of needs and issues is challenging, but we've determined a methodology

1. Operate and plan as one RTO while addressing the need for speed in the North/Central regions
2. Respect subregional system configuration and policy differences
3. Meet regulatory requirements around regional planning

MISO proposes bifurcating the existing Multi-Value Project (MVP) cost allocation based on subregional differences to ensure a roughly commensurate 'beneficiaries pay' cost allocation

EXISTING MVP

Costs shared pro rata footprint-wide to load

Costs shared according to load

Portfolio evaluation required showing footprint benefits

SUBREGIONAL MVP

Costs shared pro rata to load within North/Central or South subregions

Costs shared according to physical project location

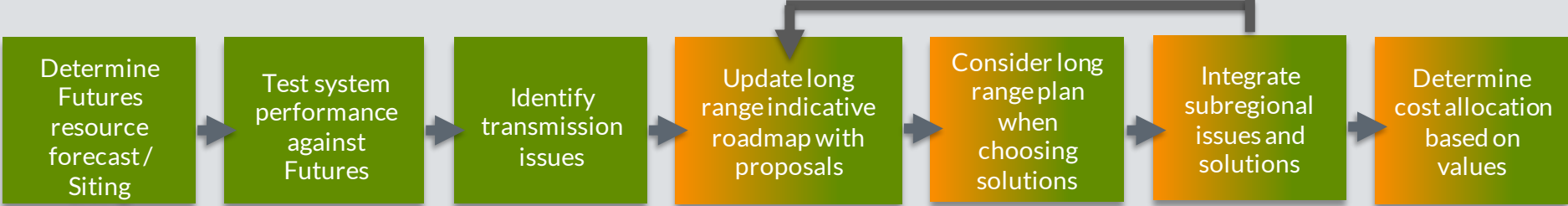
Portfolio evaluation required showing subregional benefits

FERC filing planned

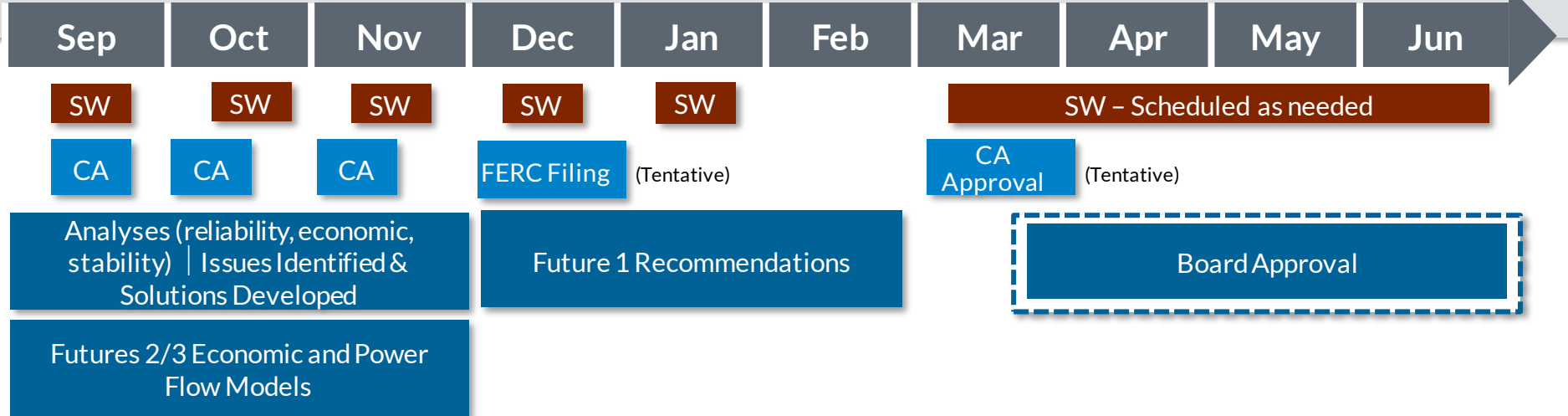
Project selection rules are not affected by the FERC filing

Solutions based on Future 1 analysis that meet criteria will be recommended for inclusion in MTEP21 Appendix A to the Board in Q2 2022, after FERC approval of cost allocation

Planning Process



LRTPEfforts

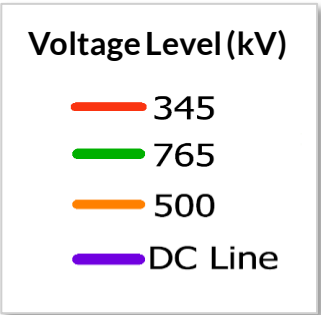


Appendix

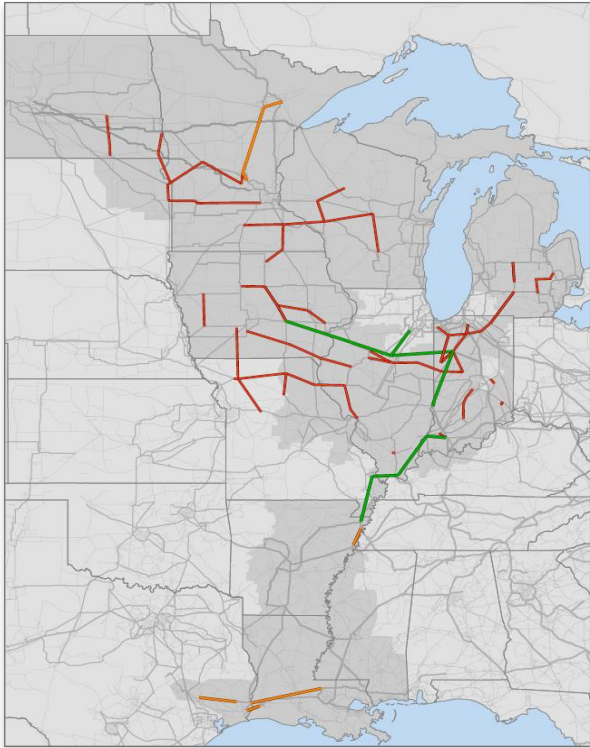
The indicative roadmaps will continue to help guide LRTP efforts

Indicative Roadmaps

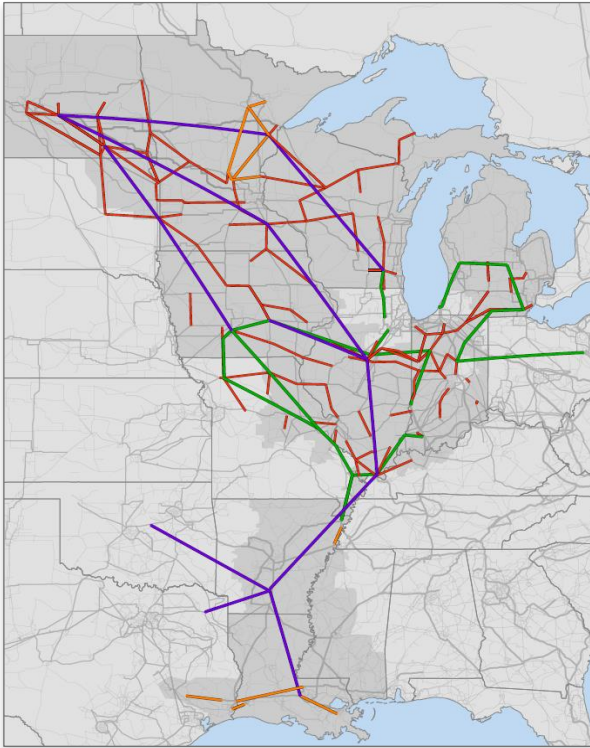
(As of June 2021)



Future 1



Future 1, 2, 3



Indicative Cost to Achieve*

New Generation/Resources
 New Transmission Solutions
 Total New Investment

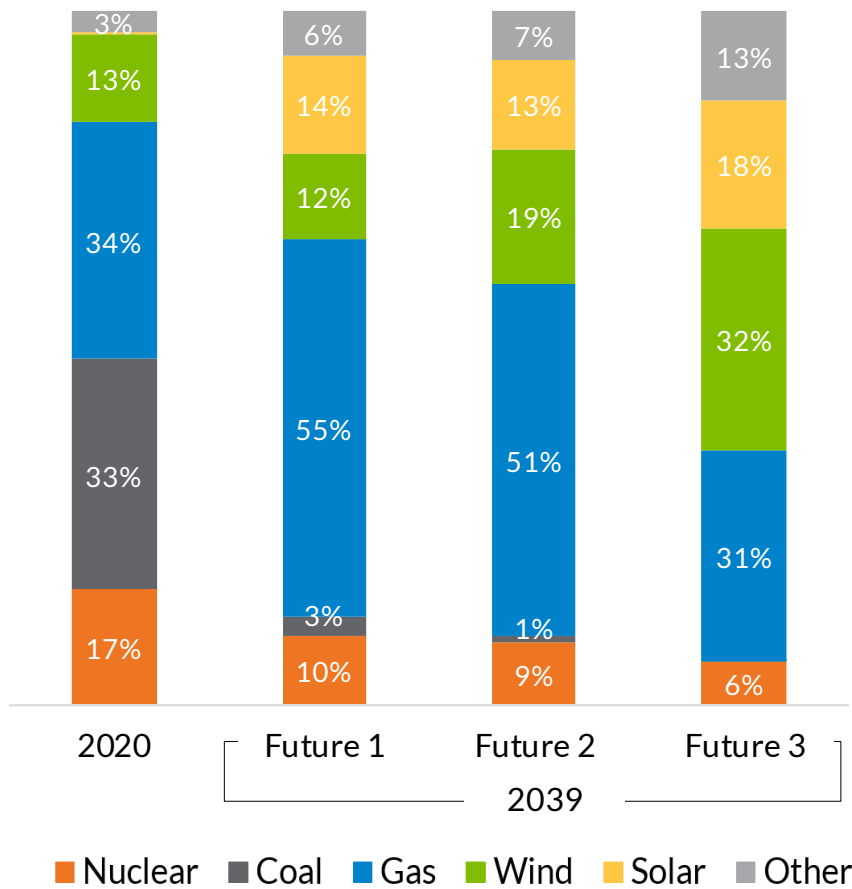
Future 1	
New Generation/Resources	+/- \$ 135 B
New Transmission Solutions	+/- \$ 30 B
Total New Investment	+/- \$ 165 B

Future 1, 2, 3	
New Generation/Resources	+/- \$ 430 B
New Transmission Solutions	+/- \$ 100 B
Total New Investment	+/- \$ 530 B

* Initial indicative investment cost estimates expressed in 2020 dollars. Generation additions through 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.

The Futures incorporate and build upon member plans to inform the resource transition and changing demand patterns

Generator Energy Mix



	Future 1	Future 2	Future 3
Additions	121 GW	160 GW	330 GW
Retirements	77 GW	80 GW	112 GW
Net Peak Load	136 GW	148 GW	164 GW
Emissions*	↓ 63%	↓ 64%	↓ 81%

* Based upon 2005 levels