



Reliability Imperative: Transmission Evolution

System Planning Committee of the Board of Directors

June 16, 2026

Executive Summary



- MISO's holistic planning processes are advancing the goals of the Reliability Imperative through integrated local, regional and interregional planning to create least-regrets solutions that accommodate member and state needs
- This starts with analyzing near-term system needs, where MISO is continuing to provide transparency and solutions for new load integration and member-planned upgrades while developing service options that support speed-to-reliable-power
- For longer-term planning, MISO continues to build from the completed Futures to take a broad, forward-looking view, integrating regional and interregional planning into a flexible framework that will guide the upcoming South and Midwest Long Range Transmission Planning (LRTP) studies

MISO's layered planning approach meets local demands while advancing regional and interregional needs

MISO's Integrated Planning Framework



LOCAL

Addresses immediate reliability needs in local communities



REGIONAL

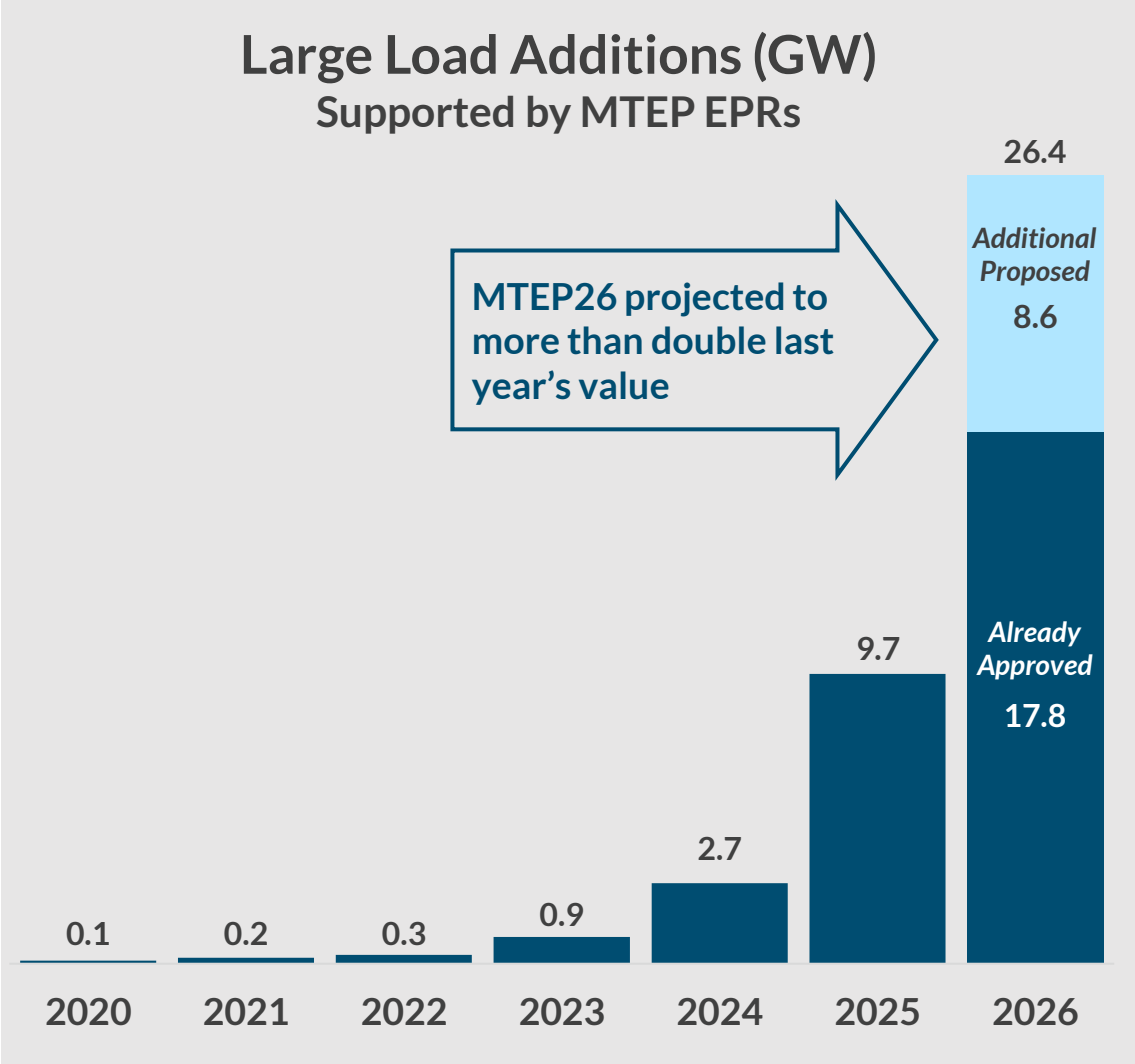
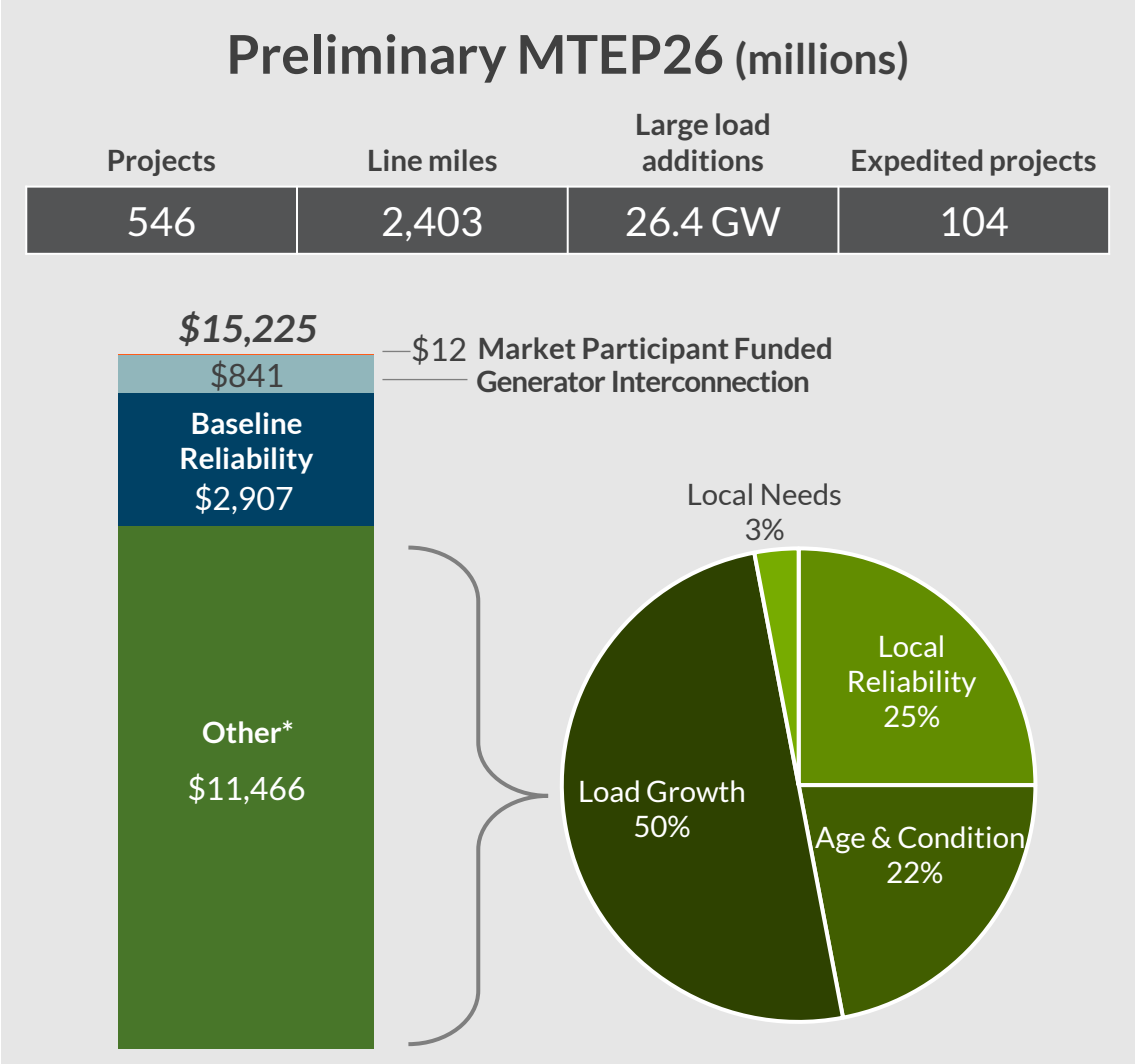
Plans the grid for the future, using shared long-term scenarios



INTERREGIONAL

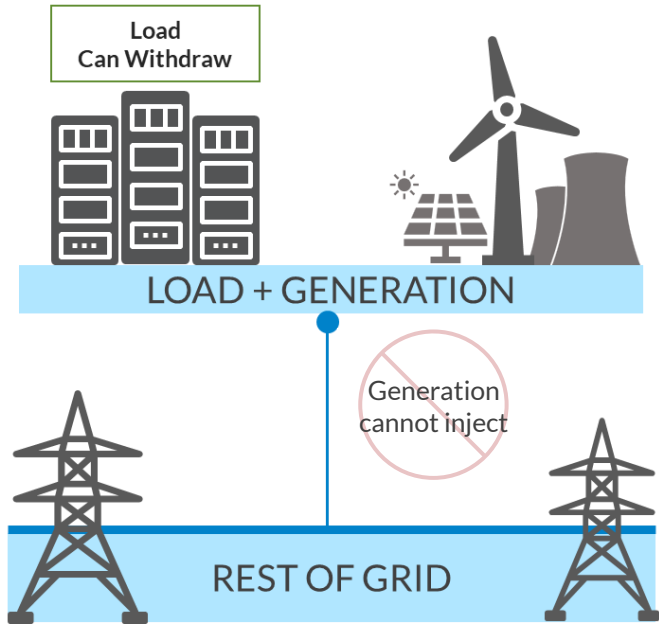
Strengthens connections with neighboring grid operators and improves reliability across regions while balancing different regional priorities, regulatory frameworks and fleet trajectories

MISO continues to partner with members and stakeholders to transparently and reliably support their near-term plans



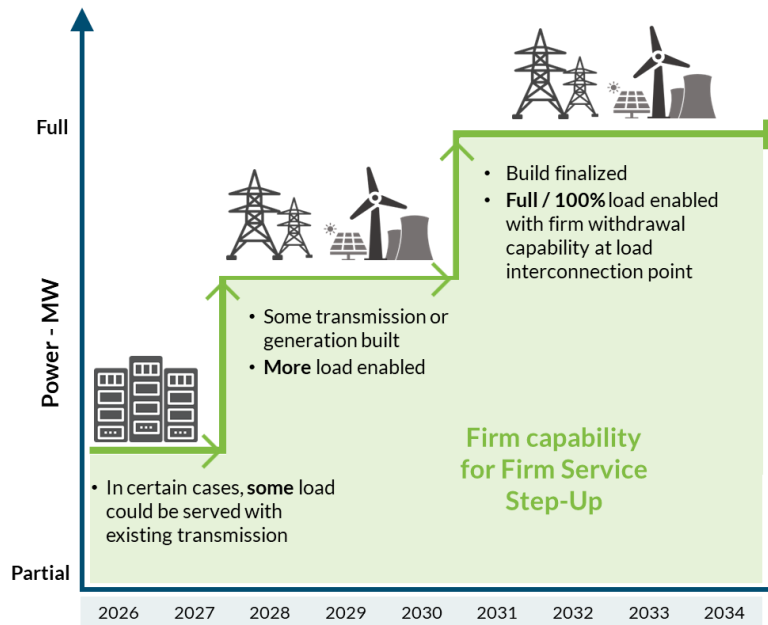
To accommodate load growth needs, MISO is pursuing three solutions to enable speed-to-reliable-power, along with interconnection reliability requirements

ZERO-INJECTION GIA



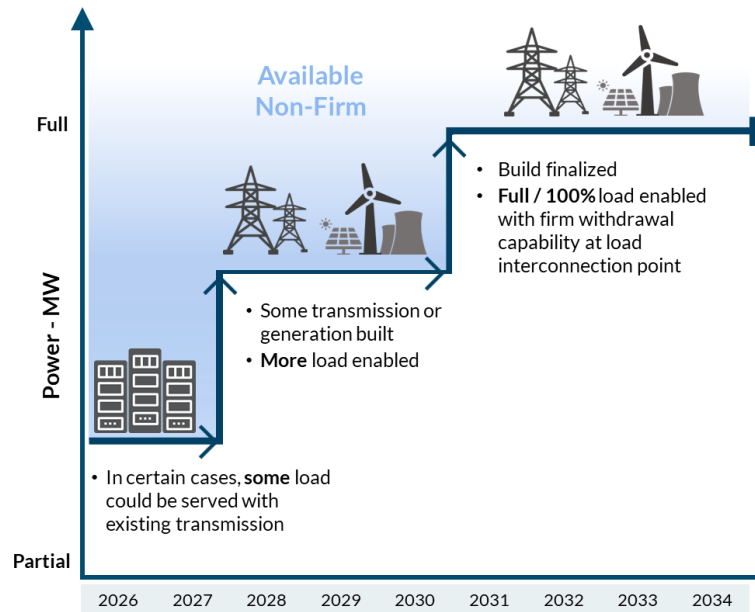
ZGIA generators use an interconnection service limited to serving loads at the same substation, with no material impact on the transmission system

FIRM SERVICE STEP-UP



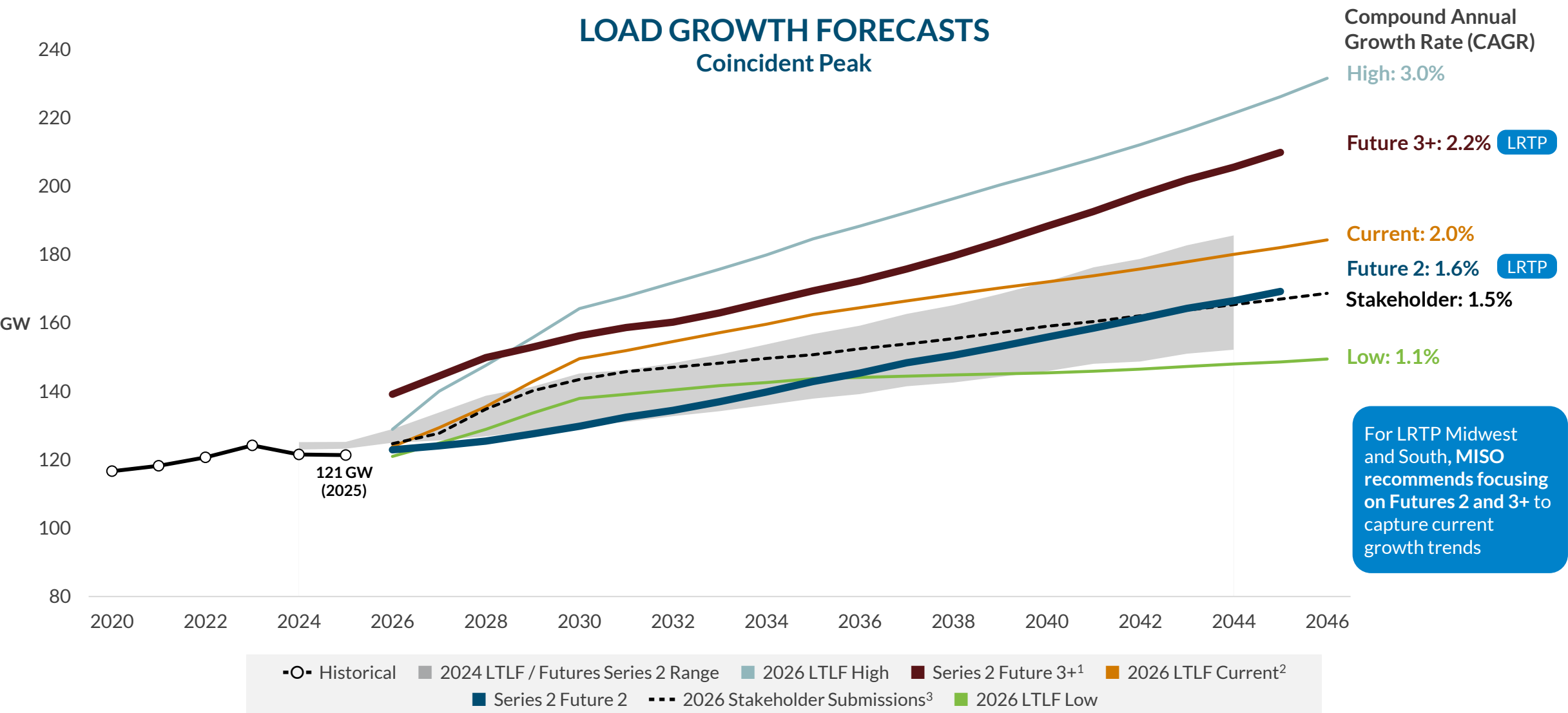
Additional studies identify the maximum firm service available at a delivery point while conditional generation and transmission build out

NON-FIRM SERVICE



A long-term non-firm service enables additional withdrawals on a temporary basis, provided operators can curtail loads during pre-emergency conditions

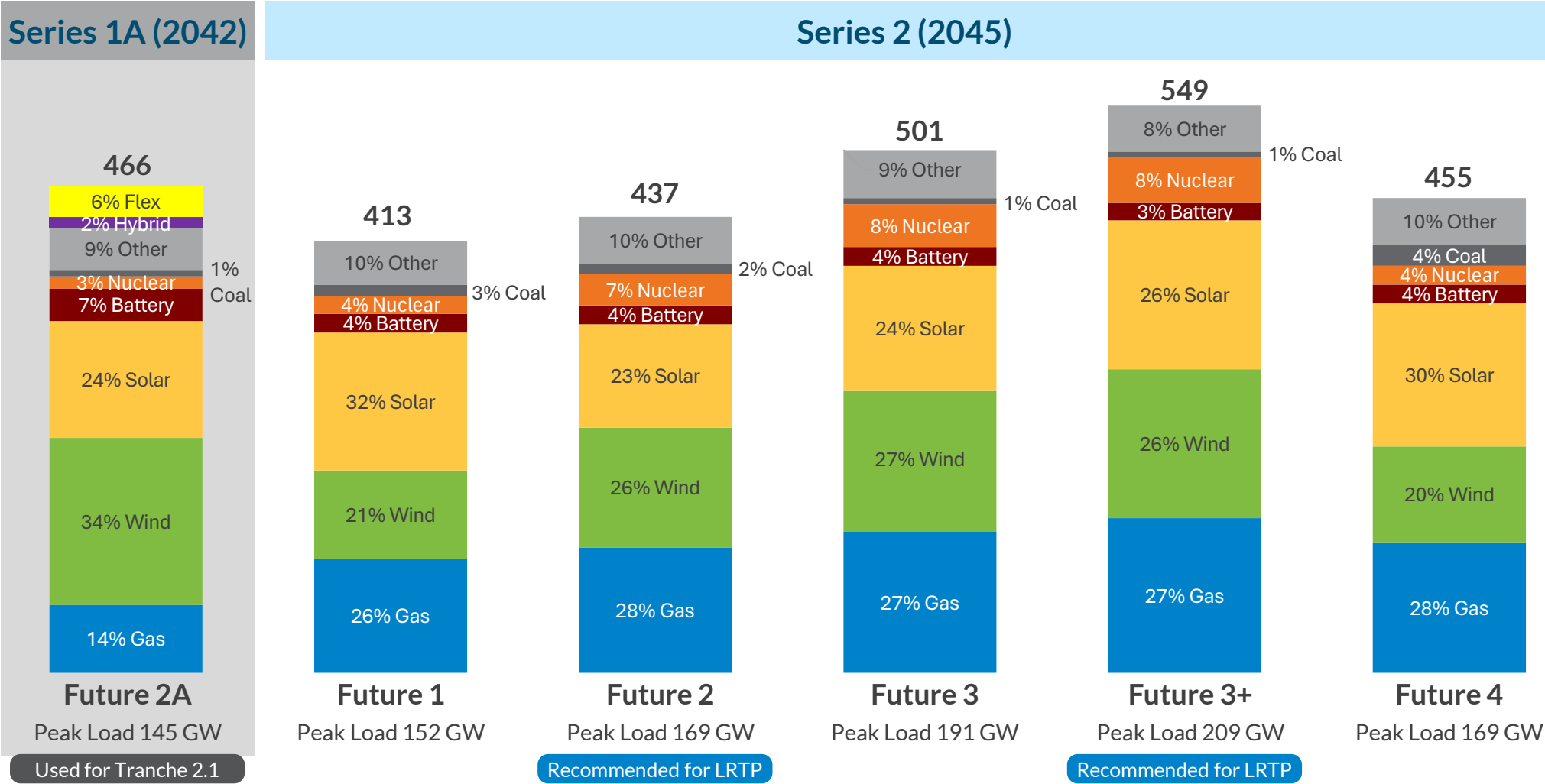
Load expectations continue to grow, with 2026 forecasts showing an increase over the 2024 values used to build the Futures



¹Future 3+ reflects the increased load growth assumptions from sensitivity analysis
²Annual data center CAGR is 103% through 2030
³2026 Preliminary Module-E Capacity Tool (MECT) stakeholder submissions; extrapolated post-2036 based on LTLF Pilot Survey submission rate of growth

Long-range studies must incorporate a range of load growth possibilities, as captured by the Futures

INSTALLED CAPACITY (GW)



Final Series 2 Highlights

- The final scenarios show capacity increases driven by load growth and a balanced resource mix
- Sensitivity testing resulted in one expansion slightly outside the Future 3 bookend
 - Future 3+ reflects the increased load growth sensitivity, but with a proportionally comparable resource mix to Future 3
- All scenarios are resource and energy adequate, meaning they don't require emergency energy and they meet or exceed MISO's Loss of Load Expectation (LOLE) criterion

South and Midwest LRTP are kicking off this quarter, helping our region prepare for a rapidly evolving system while building on prior MTEP and LRTP studies



South LRTP

Begins the subregional journey with a collaborative, investigative approach

Needs Support reliability and load growth

Process Evaluate system reliability and load-serving needs using models defined by the updated Futures, beginning with Louisiana and Texas

Outcome Options to guide next steps, which could include transmission and/or generation solutions for further study

*LOAD POCKET
Supporting Work*
Developing enhanced simulation capabilities to assess risk

Midwest LRTP

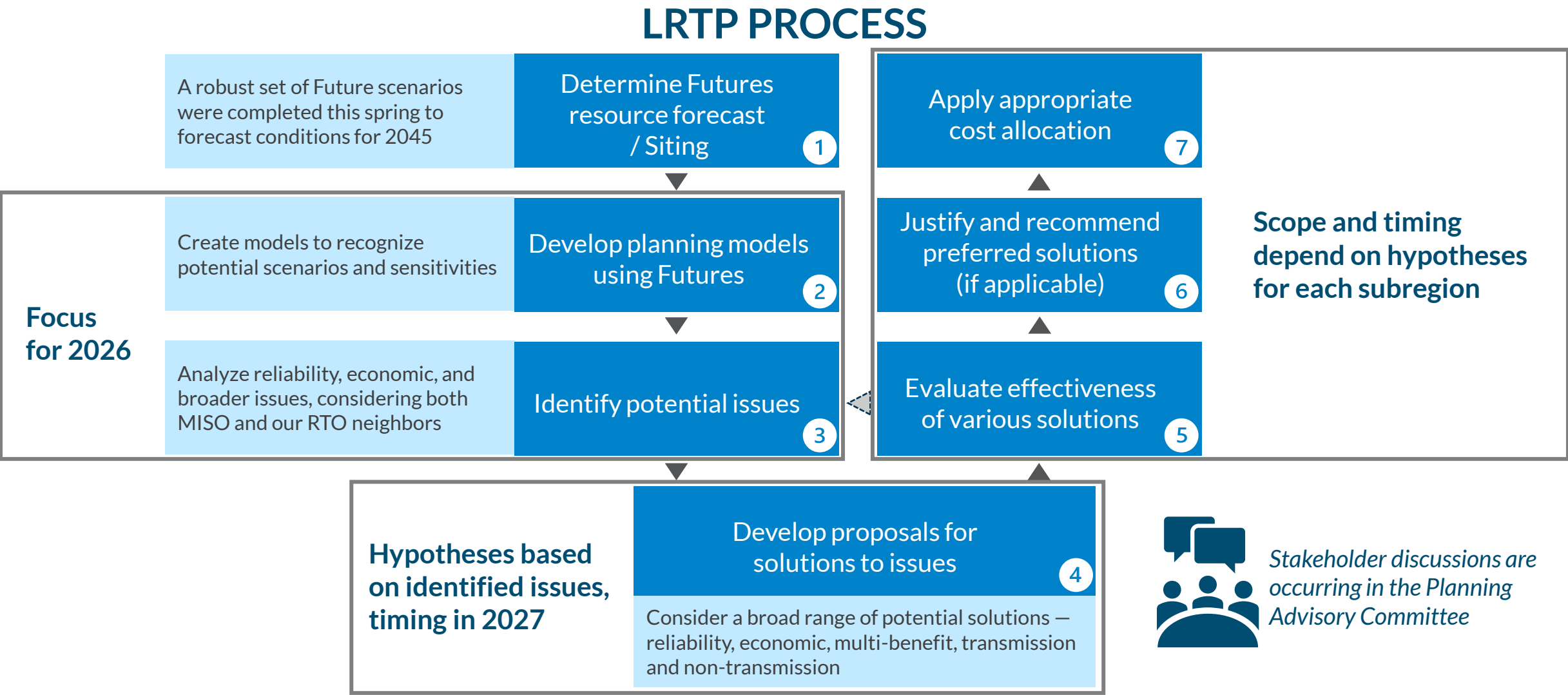
Builds on an extensive foundation of prior studies and stakeholder engagement

Needs Support subregional transfers, state and member goals, and load growth

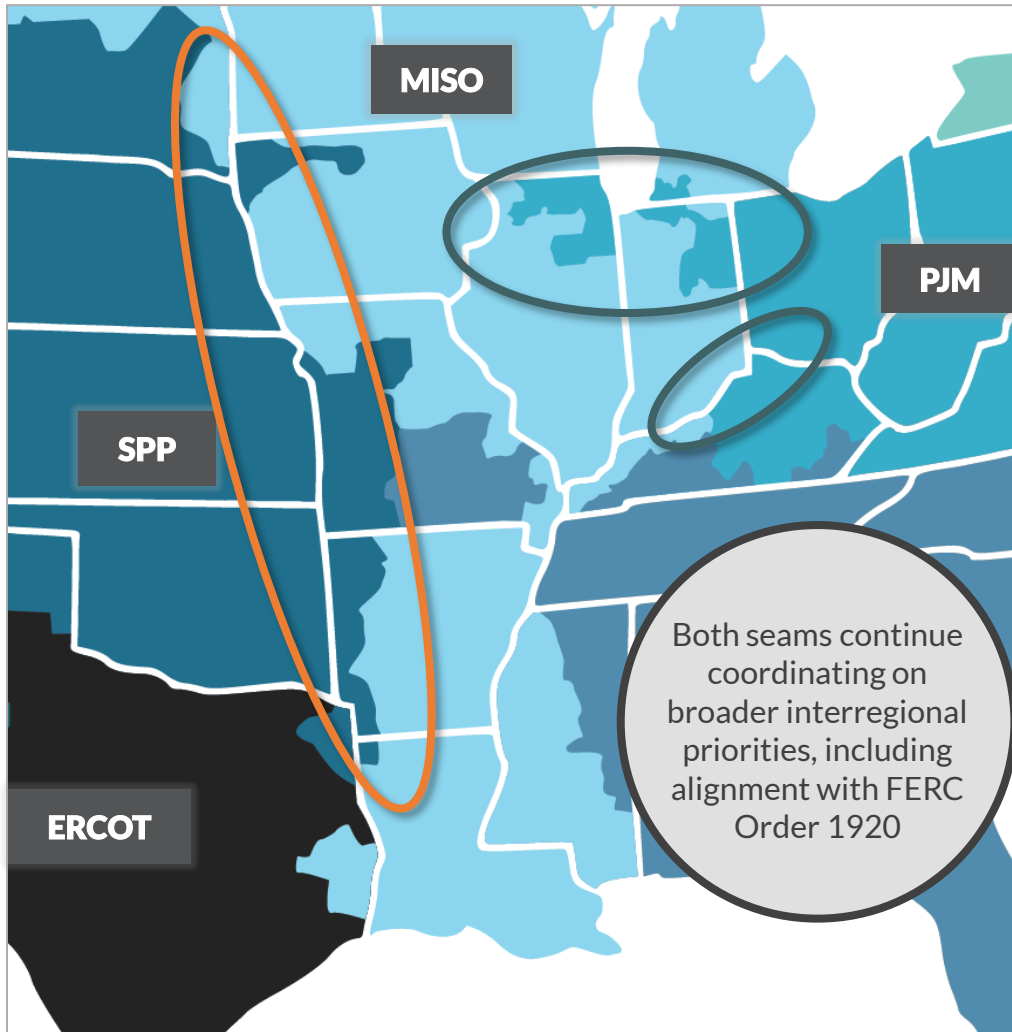
Process Evaluate system reliability and economics using models defined by the updated Futures

Outcome Solutions for identified issues (subsequent MTEP cycles)

L RTP solutions development will take a broad lens, with hypotheses being driven through our 7-step process



MISO will continue coordination with our seams neighbors to maintain partnerships and look for opportunities across planning horizons



PJM – MISO

- ✓ **2026 Targeted Market Efficiency Project (TMEP) study announced:** The RTOs announced a study to evaluate congestion along the seam
 - ✓ **Next step:** Draft TMEP scope with stakeholders
- ✓ **Continued discussions** on project type criteria and benefit frameworks to support future interregional project identification

SPP – MISO

- ✓ **2024-25 Coordinated System Plan (CSP) success:** For the first time ever, the study resulted in potential projects, a significant step forward in interregional coordination; the resulting two portfolio options improve reliability, reduce congestion, and enhance transfer capability
 - ✓ **Next step:** Business case analysis, paving the way for approval
- ✓ **2026-27 Coordinated System Plan announced:** The RTOs announced they would launch the 2026-27 CSP later this year
 - ✓ **Next step:** Draft CSP scope with stakeholders

MISO continues to execute the plans to support previously-approved portfolios

NEXT STEPS	STATUS / TIMING
Tranche 1: Provide post-approval transparency and support as required	Projects are progressing through regulatory processes
Tranche 2.1: Select developers through the competitive transmission process and provide post-approval transparency and support as required	Competitive selections are on track to conclude December 2026; regulatory processes have begun
JTIQ: Provide post-approval transmission transparency and support as required; study interconnection requests until full participation is reached	• Transmission projects are on track • While the last quarter update projected full interconnection participation this spring, SPP queue withdrawals delay the timeline to later this year or early next year

Appendix

Joint-Targeted Interconnection Queue (JTIQ) transmission projects are working toward regulatory approval; interconnection projects are advancing

JTIQ Transmission Projects Reporting Analysis

#	Project Name	State	Estimated In Service Date		Status		Notes
			MTEP Approved	Current Date ¹	State Regulatory Status	Const.	
1	Bison – Hankinson – Big Stone South	ND; SD	2034	2034	○		
2	Lyons Co – Lakefield Junction	MN	2032	2032	○		
3	Raun – S3452	IA	2031	2031	○		
4	Auburn – Hoyt	-	-	-	-	-	Projects reported by SPP
5	Sibley – 345 kV Bus Reconfiguration	-	-	-	-	-	Projects reported by SPP

Interconnection projects are moving forward

- Began screening for interconnection projects in September 2025; qualified projects benefit from the coordinated transmission upgrades and demonstrate measurable impact across the seam
- 28 GW of joint capacity enabled:
 - 19 GW approved in MISO and SPP
 - Remaining gigawatts expected to enter upcoming studies
- While the last quarter update projected full interconnection participation this spring, SPP queue withdrawals delay the timeline to later this year or early next year

Tranche 1 projects are progressing through regulatory processes

Tranche 1 Portfolio Regionally Cost Allocated Project Reporting Analysis

	Project	State	Estimated In Service Date		Status		Cost \$M		Notes
			MTEP Approved	Current Date	State Regulatory Status	Const.	MTEP Approved (2022\$)	Current Cost (2022\$; unless noted)	
1	Jamestown – Ellendale	ND	2028	2028	●		\$439	\$439*	
2	Big Stone South – Alexandria – Big Oaks	SD/MN	2030	2030	●		\$574	\$679*	
3	Iron Range – Benton County – Big Oaks	MN	2030	2030	●	In progress	\$970	\$1390	Cost change under variance analysis review.
4	Wilmarth – North Rochester – Tremval	MN/WI	2028	2028	●		\$689	\$786*	
5	Tremval – Eau Clair – Jump River	WI	2028	2029	●		\$505	\$484*	Date change under review.
6	Tremval – Rocky Run – Columbia	WI	2029	2030	●		\$1,050	\$1360*	Cost, date, scope of work change under review.
7	Webster – Franklin – Marshalltown – Morgan Valley	IA	2028	2028	⦿		\$755	\$755	
8	Beverly – Sub 92	IA	2028	2028	○		\$231	\$231	
9	Orient – Denny – Fairport	IA/MO	2030	2030	⦿		\$390	\$307*	
10	Denny – Zachary – Thomas Hill – Maywood	MO	2030	2030	●		\$769	\$530*	
11	Maywood – Meredosia	MO/IL	2028	2028	●		\$301	\$293*	
12	Madison – Ottumwa – Skunk River	IA	2029	2029	○		\$673	\$690*	
13	Skunk River – Ipava	IA/IL	2029	2029	⦿		\$594	\$579*	
14	Ipava – Maple Ridge – Tazewell – Brokaw – Paxton East	IL	2028	2028	●		\$572	\$626*	
15	Sidney – Paxton East – Gilman South – Morrison Ditch	IL/IN	2029	2029	●		\$454	\$431*	
16	Morrison Ditch – Reynolds – Burr Oak – Leesburg – Hiple	IN	2029	2029	●		\$340*	\$478*	
17	Hiple – Duck Lake	IN/MI	2030	2030	●		\$696	\$520*	
18	Oneida – Nelson Rd.	MI	2029	2029	●		\$403	\$403	
Total							\$10,405	\$10,980	

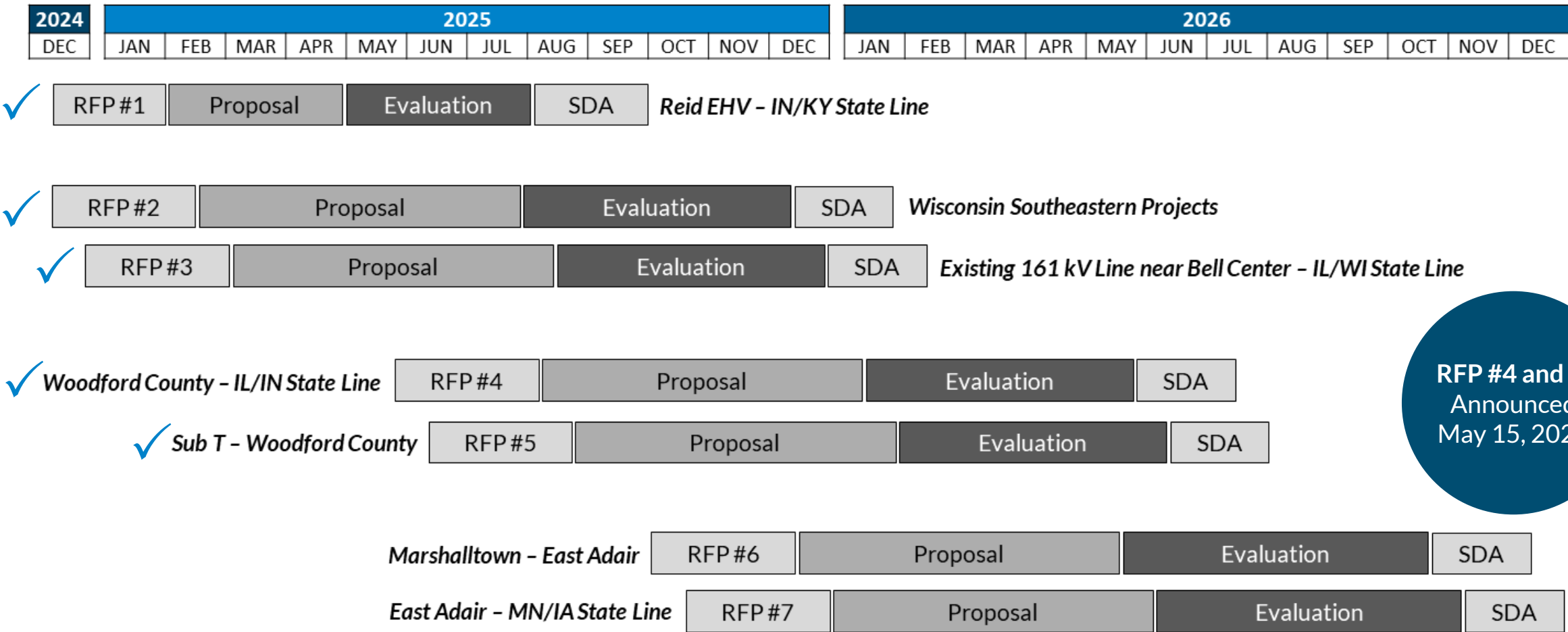
Status as of March 31, 2026

*Some or all facilities reported in nominal (year of occurrence) dollars

- Pending
- ⦿ In regulatory process or partially complete
- Regulatory process for need complete or no regulatory process requirements

MISO is selecting Tranche 2.1 developers through the competitive transmission process

Tranche 2.1 Competitive Transmission Selection Schedule



RFP #4 and 5:
Announced
May 15, 2026

RFP: Request for proposal SDA: Selected developer agreement
There is potential for additional competitive RFPs issued after first RFP and before last RFP; timing of RFP issuance unknown

Some Tranche 2.1 projects are working toward state regulatory approval, while others are pending developer selection

Tranche 2.1 Portfolio Regionally Cost Allocated Project Reporting Analysis

	Project	State	Estimated In Service Date		Status		Cost \$M		Notes
			MTEP Approved	Current Date	State Regulatory Status	Const.	MTEP Approved (2024\$)	Current Cost* (2024\$; unless noted)	
19	Bison – Alexandria	MN; ND	2032	2032	●		\$216	\$337*	Cost change under review.
20	Maple River – Cuyuna	MN; ND	2033	2033	●		\$908	\$1,107*	
21	Iron Range – Arrowhead	MN; WI	2032	2032	●		\$428	\$499*	
22	Big Stone South – Brookings County – Lakefield Junction	MN; SD	2034	2034	●		\$1,459	\$1,739*	
23	Lakefield Junction – East Adair	IA; MN	2034	2034	●		\$1,375	\$1,398*	
24	Lakefield Junction – Pleasant Valley – North Rochester	MN	2034	2034	●		\$1,195	\$1,955*	Cost change under review.
25	Pleasant Valley – North Rochester – Hampton Corner	MN	2032	2032	●		\$222	\$241*	
26	North Rochester – Columbia	MN; WI	2034	2034	●		\$1,924	\$1,873*	
27	Rocky Run – Werner – North Appleton	WI	2032	2032	○		\$212	\$212	
28	South Fond du Lac – Rockdale – Big Bend – Sugar Creek – Kitty Hawk	WI	2033	2033	○		\$1,102	\$1,102	
29	Bluemound – Arcadian – Waukesha – Muskego – Elm Road – Racine	WI	2032	2032	○		\$731	\$731	
30	Columbia – Sugar Creek	WI	2034	2034	○		\$743	\$686	
31	Sugar Creek – Collins	IL; WI	2034	2034	○		\$733	\$807	
32	Ludington – Denver – Tittabawassee & Nelson Road	MI	2032	2032	○		\$1,553	\$1,553	
33	Greentown – Sorenson – Lulu	IN; MI	2033	2033	○		\$1,310	\$1,310	
34	Oneida – Sabine Lake – Blackfoot & Majestic	MI	2032	2032	○		\$600	\$600	
35	Southwest Indiana–Kentucky	IN; KY	2032	2032	○		\$743	\$748*	
36	Southeast Indiana	IN; OH	2032	2032	○		\$578	\$578	
37	Maywood – Belleau – MRPD – Sioux – Bugle	IL; MO	2032	2032	○		\$881	\$881	
38	East Adair – Marshalltown – Sub T	IA	2034	2034	○		\$1,583	\$1,583	
39	Lehigh – Marshalltown – Franklin North & Montezuma	IA	2032	2032	○		\$588	\$588	
40	Sub T – Woodford County – Collins & Reynolds	IA; IL; IN	2034	2034	○		\$2,298	\$2,298	
41	Woodford County – Fargo & Radbourn	IL	2032	2032	○		\$422	\$422	
42	Burr Oak – Schahfer	IN	2032	2032	○		\$68	\$68	
Total							\$21,868	\$23,314	

Status as of March 31, 2026
*Some or all facilities reported in nominal (year of occurrence) dollars

○ Pending
● In regulatory process or partially complete
● Regulatory process for need complete or no regulatory process requirements

