



Long Range Transmission Planning: Tranche 1

LRTP Workshop

March 25, 2022

Agenda

- Draft Tranche 1 Portfolio Proposal
- Process Review
- Project Assessment
 - Central-East Region Corridor
 - Missouri
 - Iowa
 - Minnesota-Wisconsin
 - North Dakota-Northwest Minnesota
 - Central/Northern Minnesota
- Next Steps

Draft Tranche 1 Portfolio Proposal

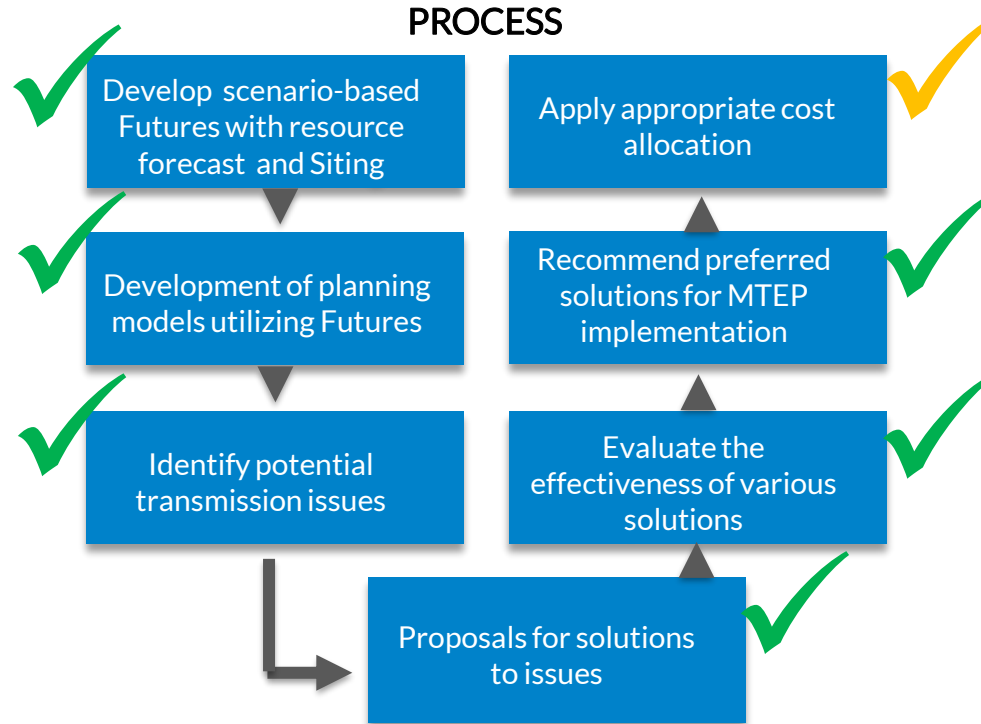
The transmission development need is urgent as the resource fleet rapidly evolves

- A transmission plan is needed to reliably enable the goals and plans of MISO states, utilities and industries
- The resource mix has been evolving at an increasing pace for more than 10 years; MISO queue has almost 56 GW of solar
- Reliability will become increasingly difficult as renewable energy levels increase throughout region
 - Instantaneous wind peak records were set on November 1st, 15th, and December 23rd, where MISO set its existing instantaneous wind peak of 20.2 GW serving 26.8% of MISO's load
 - Total In Service Wind is 26.5 GW with as much as an additional 4,500 MW expected to come online in next 12 months
 - MISO Futures project renewable penetration ranging from 26% to 50% in less than 20 years

The overarching objective of LRTP translates to the planning level objectives

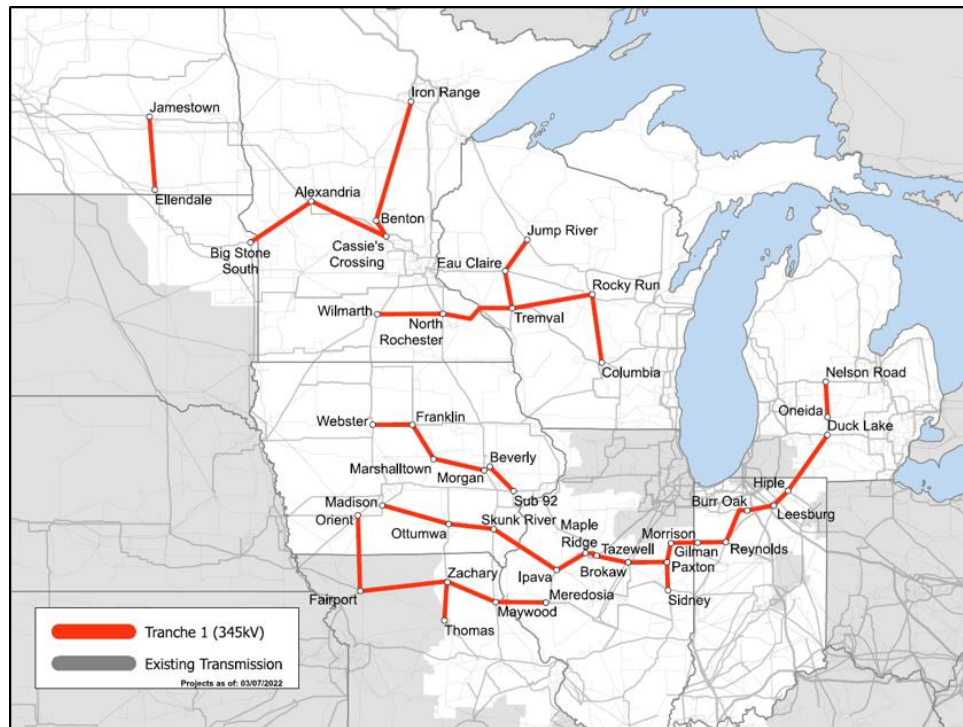
- Long Range Transmission Planning is necessary to ensure a reliable and efficient regional and interregional transmission system that enables the changing portfolio across the near and long term and is part of the comprehensive Reliability Imperative Initiative.

The overarching objective of LRTP translates to the planning level objectives



Tranche 1 Portfolio proposal is the culmination of two years of Futures development, modeling, and engineering and represents the most complex transmission planning study effort in MISO's history

- Portfolio embodies needed transmission for the everchanging fleet
- Addresses needs across the entirety of the MISO Midwest subregion
- More work still to do regarding additional Futures and will be addressed in tranche 2

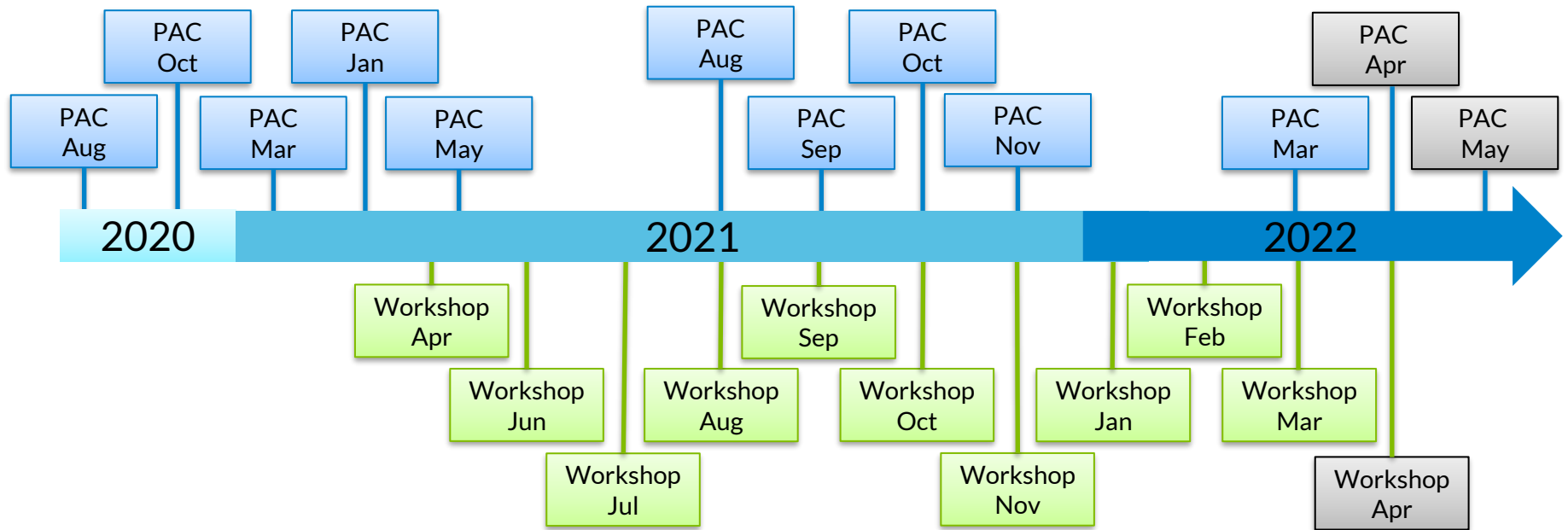


Preliminary project cost estimates for LRTP Tranche 1 is \$10.4 B for projects located across the MISO Midwest subregion

Draft LRTP Tranche 1 Portfolio	Location	Estimated Project Cost (\$M)*
Jamestown-Ellendale 345kV Bigstone-Alexandria 345kV – Cassie's Crossing	Western MN-Dakotas	\$955
Wilmarth – North Rochester – Tremval – Eau Claire – Jump River 345kV	MN-WI	\$1,194
Tremval – Rocky Run – Columbia	MN-WI	\$673
Iron Range – Benton – Cassie's Crossing	Western MN-Dakotas	\$853
Webster – Franklin – Morgan Valley 345kV Beverly – Sub 92 345kV	IA	\$894
Orient – Fairport – Zachary – Maywood – Meredosia 345kV Zachary – Thomas 345kV	Northern MO	\$2,032
Madison – Ottumwa – Skunk River – Ipava – Maple Ridge 345kV Tazewell – Brokaw – Paxton – Gilman – Morrison – Reynolds – Hiple – Duck Lake 345kV Paxton – Sidney 345kV Oneida – Nelson Road 345kV	IA-IL-IN-MI	\$3,429
Underbuild (facilities to be identified prior to final approval)		\$350
Total Portfolio Project Cost		\$10,380

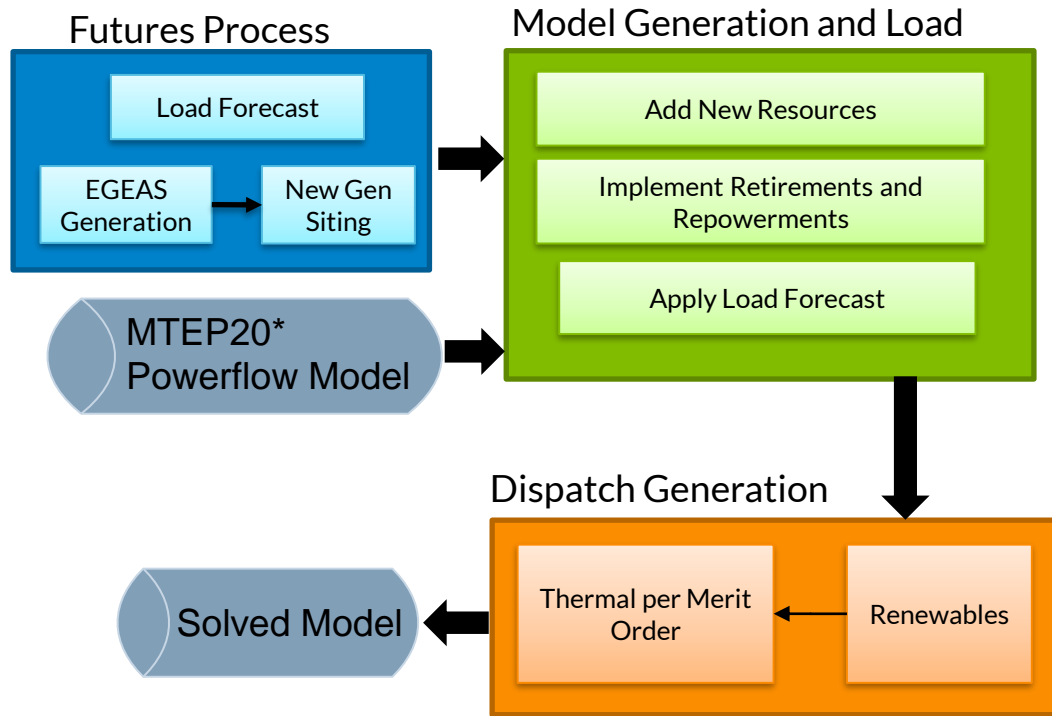
Process Review

Workshops and Stakeholder feedback an integral element of LRTP process and success



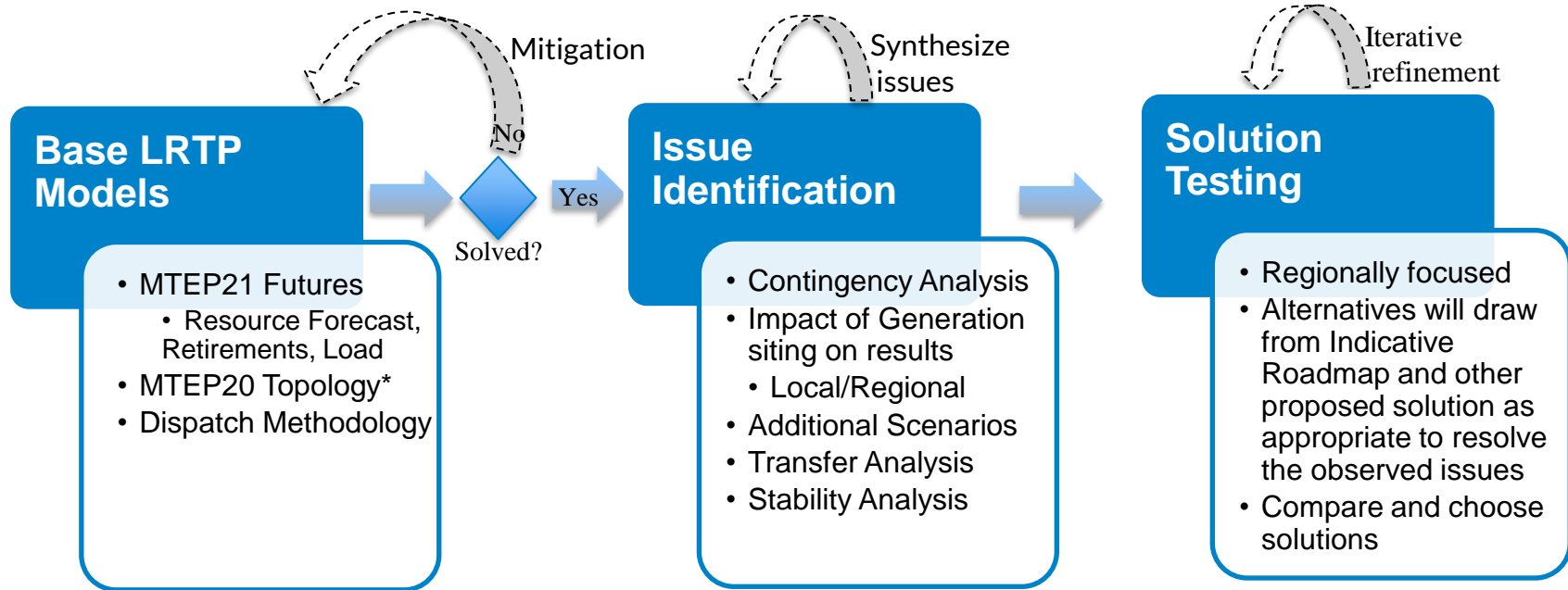
The model building process used for LRTP is representative of the cyclic MTEP process with MISO futures data set

- Generation and load forecasts taken from MTEP futures
- Regional Resource Forecasts, retirements, and re-empowerments



*MTEP21 updates included

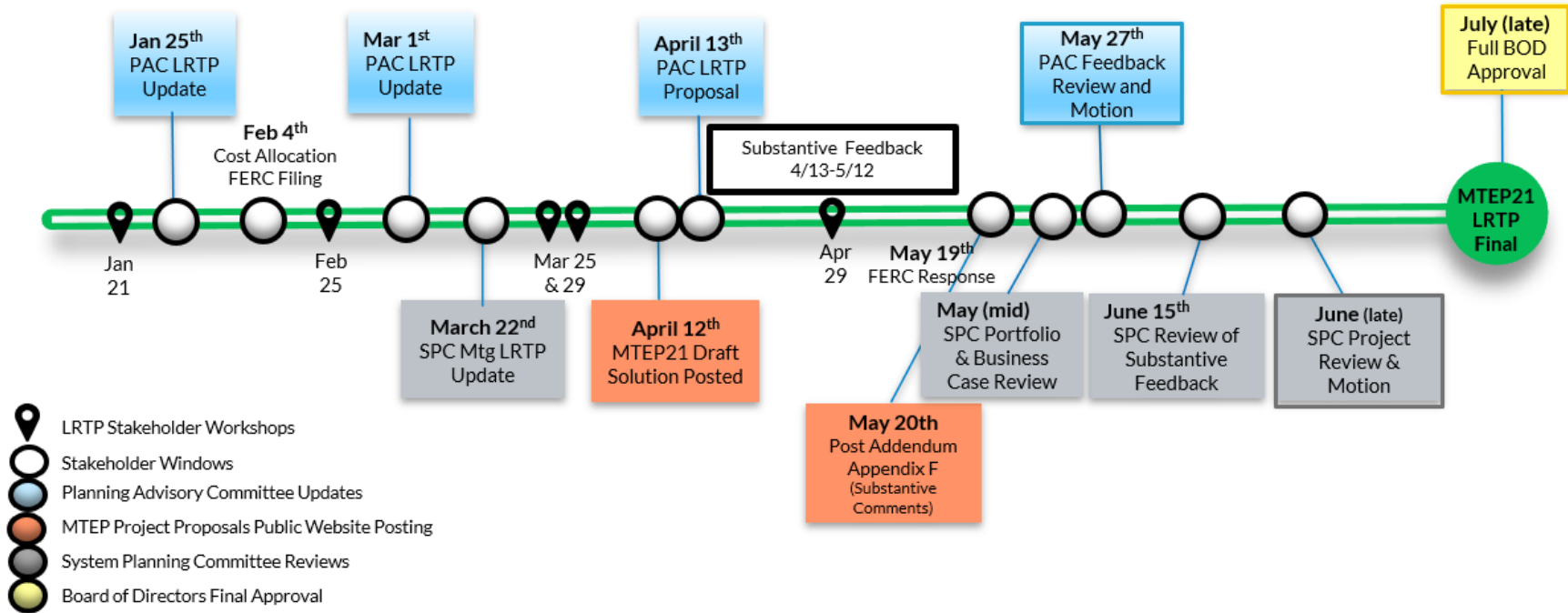
Reliability Assessment involves multiple iterative phases to identify the issues and test the solutions



*MTEP21 updates included

Next Steps

Tranche 1 approval will be delayed until July 2022 to facilitate more stakeholder review and engagement



Contact

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Thank You

Appendix

Links

- Models and results (requires UNDA/CEII):
<https://misoenergy.sharefile.com/home/shared/fof89d75-4353-4393-bcd2-f543bb3ce5f1>
- Long Range Transmission Planning Webpage
 - <https://www.misoenergy.org/planning/transmission-planning/long-range-transmission-planning/>