Long Range Transmission Planning

Large Load Siting Process

MISO transmission planning process for applying large loads

November 18, 2025

Purpose & Key Takeaways

Purpose

Review methodology to include large-scale loads into long-term economic and reliability models for transmission planning uses

Key Takeaways

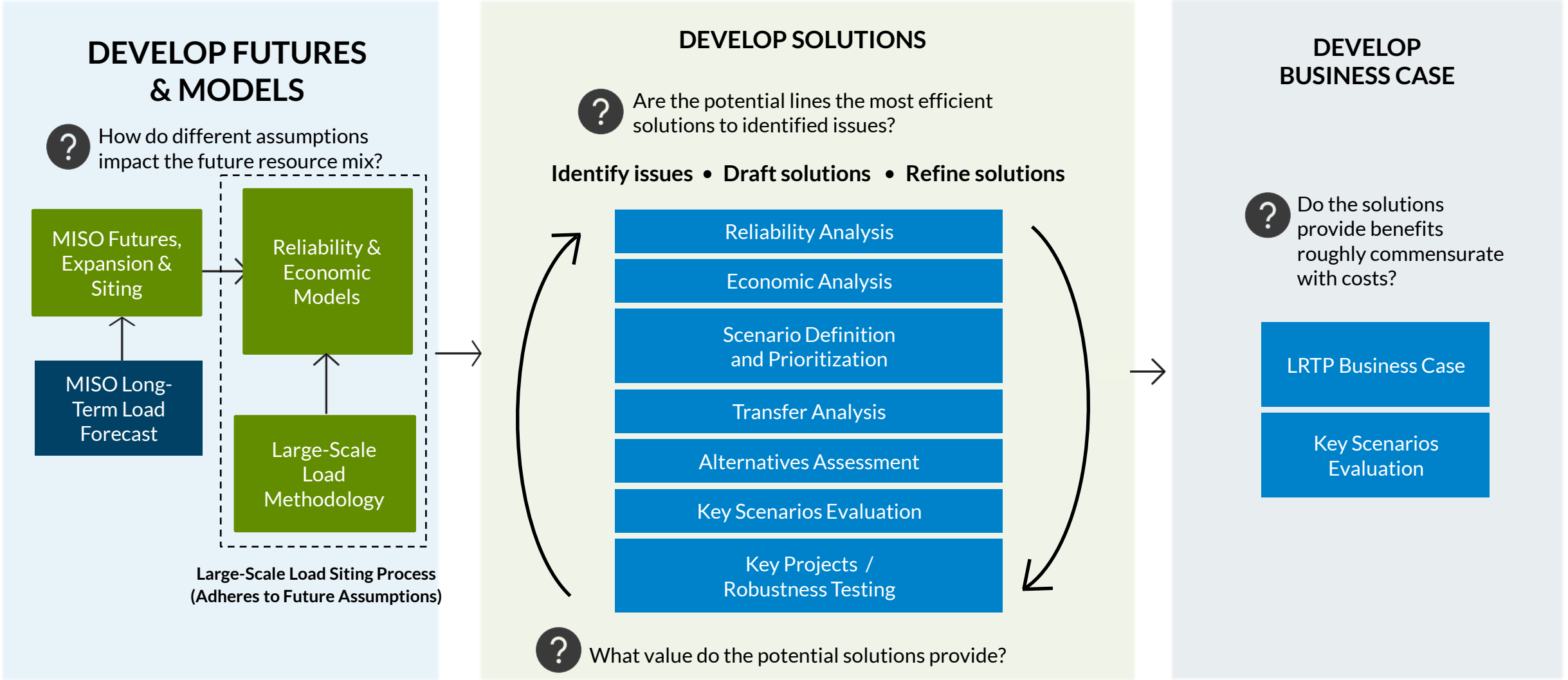
- The methodology identifies large-scale load and locations while preserving the integrity of the December 2024 Long-Term Load Forecast and MISO Series 2 expansion assumptions.
- Methodology uses verified data sources and 2025 Long-Term Load Forecast Pilot Survey to prioritize inclusion and siting of large-scale loads.
- Methodology enables scalable modeling of large loads without compromising MISO and LRZ-level forecast totals set in the December 2024 Long-Term Load Forecast.
- MISO is seeking informal stakeholder feedback to refine and align the proposed methodology

As part of MISO's Reliability Imperative, Long Range Transmission Planning is designed to manage the uncertainty of our shared future

Recognize member and state goals across the entire footprint	→	**Define a forward-looking resource expansion which conforms to member goals**
Apply guardrails in several scenarios to show reliability and transmission value	→	**Identify a least-regrets transmission build-out that hedges uncertainty**
Recognize some issues will be addressed by MTEP and Queue	→	**Focus on regional transmission solutions, rather than localized issues**

MISO's obligation is to plan to meet the goals and objectives of our members and states reliably and efficiently

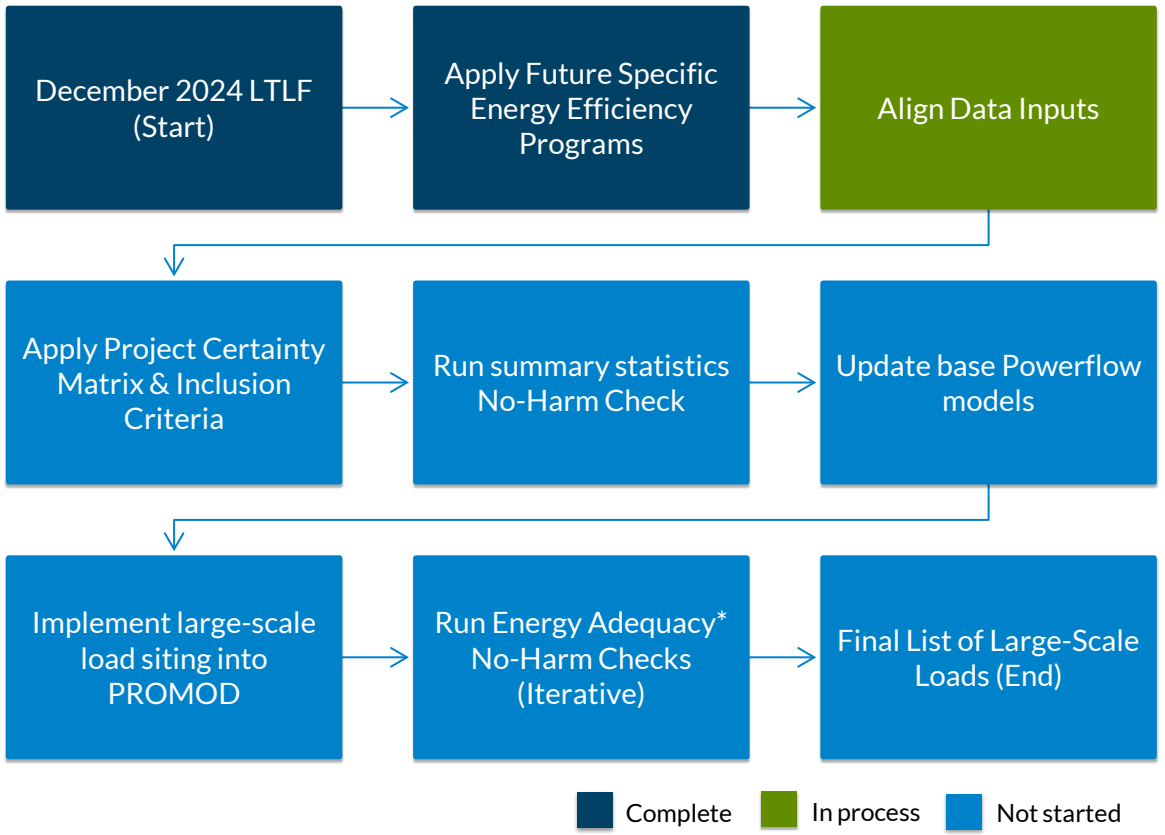
Today's focus is discussing the methodology for large-scale load additions into MISO's Series 2 Future Economic and Reliability models, helping ensure least-regrets transmission solutions



Complete | In Process | Not Started | Today's Focus

The large-load methodology is designed to identify large load locations needed for Energy Adequacy modeling, consistent with the Dec. 2024 LTLF Peak Load (MW) and Annual Energy (GWh)

Large-Scale Load Methodology Overview



Large-Scale Load Methodology Overview

- **Methodology**: Represent large-scale loads as non-conforming, mapped to specific powerflow buses for each LRZ, create LBA load shapes, and then utilize PROMOD to distribute remaining LBA demand to conforming loads.
- **Scope**: Conducted for each Series 2 Future for LRTP study years 10, 15, and 20 – corresponding to 2035, 2040, and 2045.
- **Data inputs:** December 2024 LTLF, 2025 LTLF Pilot Survey, MTEP25 Summer Peak Powerflow, MISOs List of Public Announced Loads, MTEP Process
- **Large-Scale Load Project Certainty Matrix:** A ranking system prioritizes loads based on development certainty ensuring higher-confidence projects are included first across all data sources. If all projects cannot be sited as non-conforming, project size will be used to determined which loads are modeled as conforming loads.
- **Large-Scale Load Inclusion Criteria by Future:** Load growth assumptions differ by Future and this criteria is designed to incorporate combinations of the project certainty criteria to site load within the limits set by the Dec. 2024 LTLF.
- **No-Harm Checks:** In addition to calculating LRZ and LBA summary statistics, the methodology uses Production Cost modeling Energy Adequacy* process to ensure no Emergency Energy is triggered, maintaining consistency with expansion results.
- **Outcome:** Each Future LTLF will have large-scale load additions, varying based on forecast potential, improving issues identification and in return helping ensure least-regrets transmission solutions.

*Emergency Energy is supplemental capacity needed and added by PROMOD to allow the model to solve when no other resources can be utilized and is performed without transmission constraints

The large-scale load methodology will utilize the following Project Certainty Matrix to determine the amount (MW) of load that will be included for each Future – respecting Dec '24 LTLF

Data Inputs	Project Certainty Matrix for Futures Selection		
	High	Medium	Low
Public Data* Certainty = High	1		
Public Data* Certainty = Medium		1	
Public Data* Certainty = Low			1
2025 LTLF Pilot Survey Certainty = High	1		
2025 LTLF Pilot Survey Certainty = Medium		1	
2025 LTLF Pilot Survey Certainty = Low			1
MTEP Process Certainty = In Base Model	1		
MTEP Process Certainty = Approved	1		
MTEP Process Certainty = Under Study		1	

Future	Inclusion Criteria**
Future 1	Include large-scale loads with known locations and Project Certainty = High, not exceeding Dec '24 LTLF
Futures 2 & 4	Include large-scale loads with known locations and Project Certainty = High and Medium, not exceeding Dec '24 LTLF
Future 3	Include large-scale loads with known locations, regardless of Project Certainty, not exceeding Dec '24 LTLF
All Futures	If total large-scale loads exceed load profile limits in a study year, project loads will be adjusted to match load profile limits, not exceeding Dec '24 LTLF

Large-Scale Project Certainty Matrix and Inclusion Criteria Overview

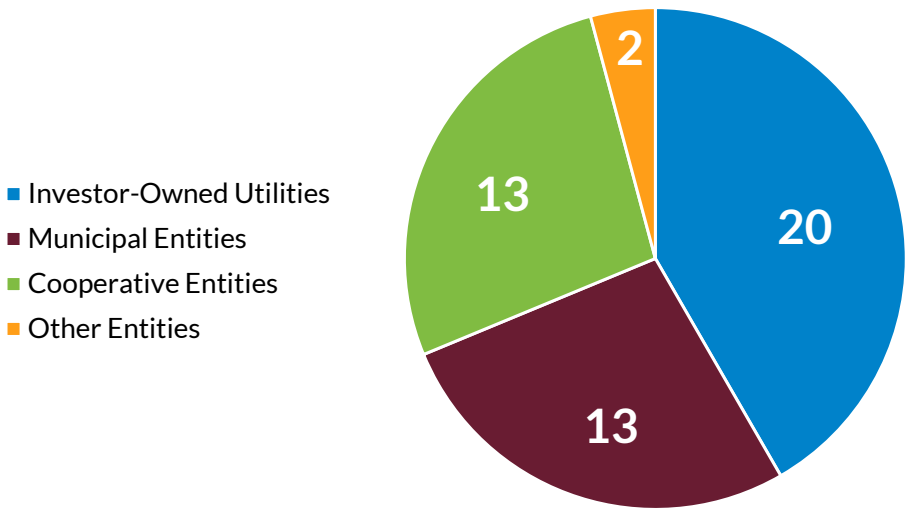
- **Project Certainty Matrix:** A unified matrix is used to assign "High," "Medium," or "Low" certainty level to each large-scale load project for each data input.
  - Public Data* (as of December 6, 2024) Certainty Definitions
    - High is assigned to large-scale load that is verified in MTEP process and 2025 LTLF Pilot Survey
    - Medium is assigned to large-scale load that is only in 2025 LTLF Pilot Survey
    - Low is assigned to large-scale load that is neither identified in MTEP process nor 2025 LTLF Pilot Survey
  - 2025 LTLF Pilot Survey Certainty Definitions
    - Large-scale loads are assigned a Project Certainty of "High," "Medium," or "Low" based on their corresponding Confidence Level designation, collected from stakeholder survey responses
  - MTEP Process Certainty classification aligns with planning status.
    - Large-scale loads are assigned a Project Certainty of "High," "Medium," or "Low" based on their corresponding study status.
- **Inclusion Criteria by Future:** The Project Certainty Matrix is applied according to each Future's load growth assumptions, where the **December 2024 LTLF Peak Load (MW) and Annual Energy (GWh)** serve as caps for total large-scale load additions.
  - Future 1 has lower load growth, Future 2 has stated policy, Future 3 has higher load growth, and Future 4 has supply shift

*Large Load Facility Additional Information

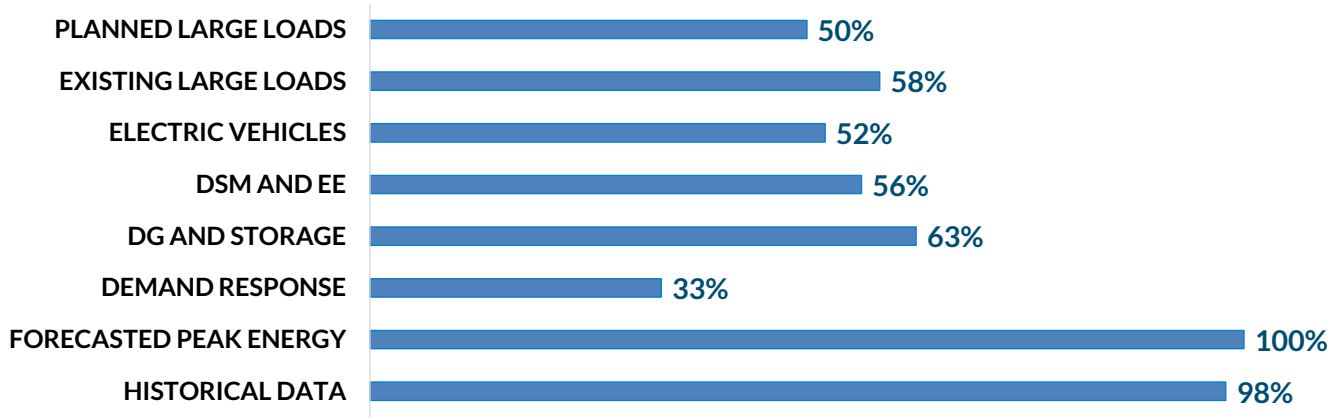
**This Inclusion Criteria by Future table defines how the Project Certainty Matrix (table above) is applied to each Future

As of November 12th, 2025*, MISO has received 48 submissions to the Large Load Pilot Survey from 41 distinct entities responsible for approximately 74% of MISO's total energy

- Of the 47 submissions to MISO, the stakeholder type and response rate by category are shown below:



Survey Submissions by Stakeholder Type



Response Rate by Data Request Category

*Some data is still trickling in; numbers will be updated when all submissions are finalized

MISO received a robust response on both existing and planned large loads with mapping to the 2024 Long-Term Load Forecast and Large Load Siting Process underway

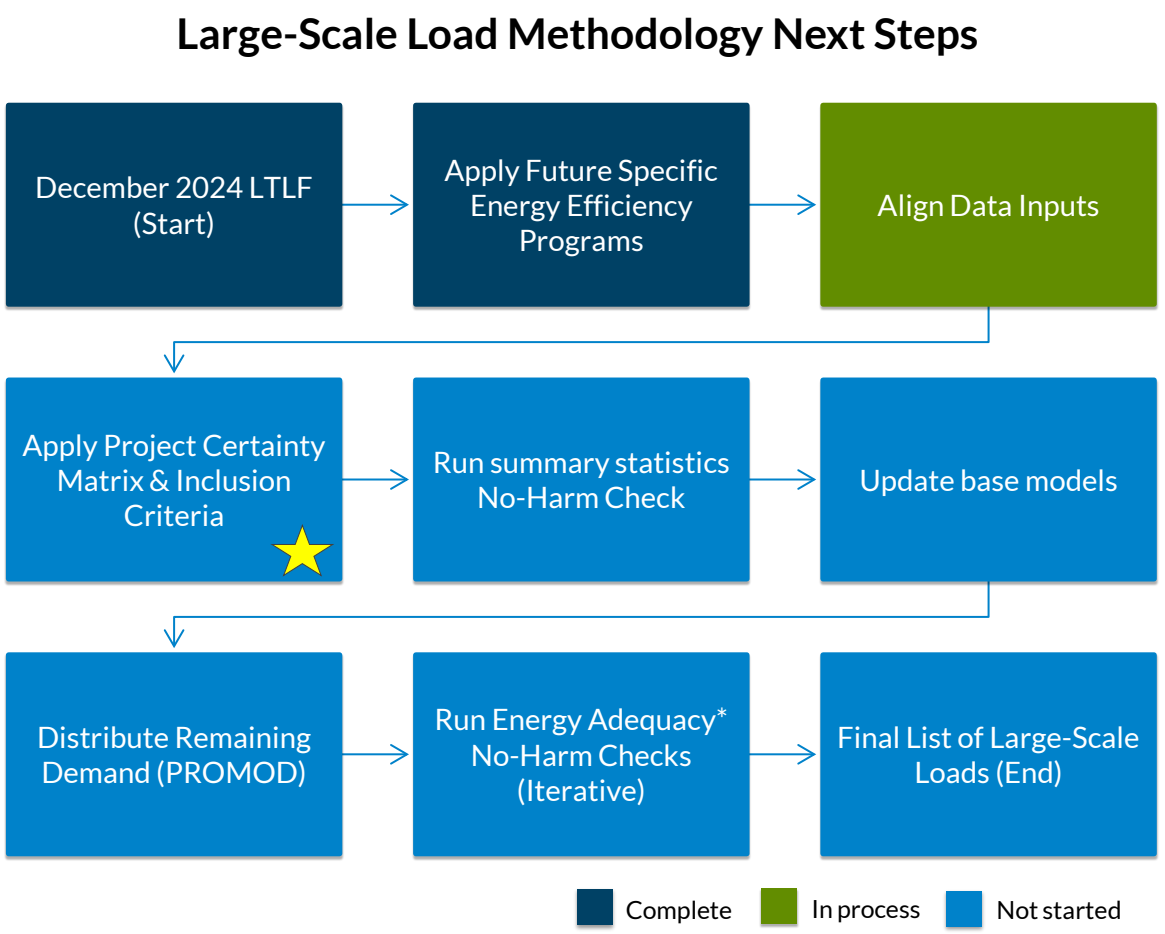
Category	Status	Number of Projects	Power Consumption (GW)
Data Centers*	Planned	148	61
	Existing	22	1.6
Industrial**	Planned	36	4.4
	Existing	184	169
Other^	Planned	17	4.4
	Existing	18	1.1
Total Submissions	**Planned**	**197**	**64**
	Existing	**224**	**171**

*including cryptocurrency facilities
**including education and hospital facilities
^including where the category was not submitted

- Stakeholder concerns around confidentiality and uncertainty in project implementation timelines have led to survey responses lacking important details, such as in-service dates, power consumption, MTEP project numbers, and project locational information.
- Stakeholders were instructed to not submit in-service dates and site locations for existing large load entries, limiting the usability of this data.
- MISO is continuing to reconcile large load data from the Survey with both the Large Load Siting Process and the 2024 Long-Term Load Forecast. However, additional time is needed to accurately complete this process.
- MISO is evaluating methods to prevent double counting of large loads across the load forecasting and siting processes.

Next steps

MISO staff is focused on finalizing review of all data inputs and implementing presented large-scale load methodology into transmission planning models



Next Steps

- The MISO 2025 Long-Term Load Forecast Pilot Survey submission period has closed, and MISO is currently in the process of reviewing and reconciling the submitted material, beginning with the large load data
- MISO's staff will proceed with presented methodology, applying Project Certainty Matrix and Inclusion Criteria
- After stakeholder informal feedback is reviewed, MISO will discuss any methodology updates at the December 17th Future Redesign Workshop

LRTP utilizes the Stakeholder Feedback Tool and team email for stakeholder communications

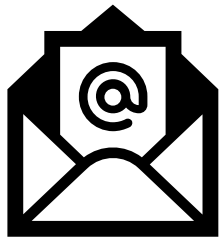
Stakeholder Feedback Tool* (Click here)

Formal

- Used by MISO to seek targeted feedback from stakeholders

Informal

- Used by stakeholders to provide informal feedback of non-technical information, such as policy, process, etc.
- Stakeholders can select feedback to be publicly posted or not posted



Data

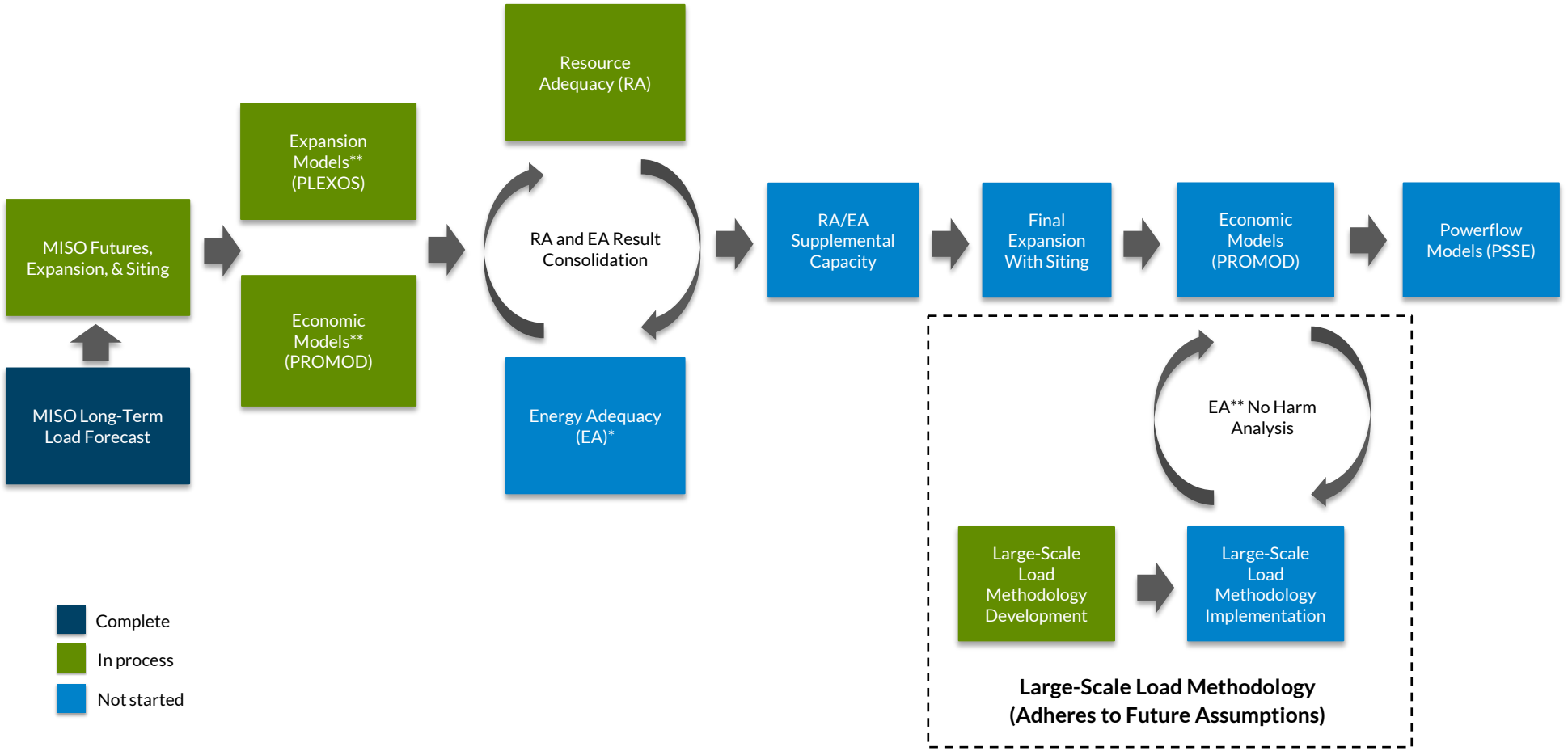
- Used to provide MISO LRTP team members technical information only, such as modeling, analytical, etc.
- LRTP@misoenergy.org

* Stakeholder Feedback Tool: https://www.misoenergy.org/stakeholder-engagement/stakeholder-feedback

Questions?

Appendix

Large-Scale Load methodology is performed outside MISOs Futures process but is designed to adhere to Future assumptions



*Energy Adequacy Overview, page 7 - Economic Planning Whitepaper

Today's Focus

Today's discussion is focused on Future 4 supply friction assumptions

Future Scenario Definitions

	Lower Load Growth		*Stated Policy*		*Higher Load Growth*		*Supply Shift*
	FUTURE 1		**FUTURE 2**		**FUTURE 3**		**FUTURE 4**
	Series 1 & 1A	*Series 2 (New)*	*Series 1 & 1A*	*Series 2 (New)*	*Series 1 & 1A*	*Series 2 (New)*	*Series 2 (New)*
Footprint Development	In line with 100% of utility IRPs and state legislation; and 85% of utility/state announcements	No Change	Companies/states meet their goals, policies and announcements	No Change	Companies/states meet their goals, policies and announcements	No Change	In line with supply frictions: limits build rate and causes tension with timelines of member plans and goals
Emissions	minimum 40% reduction from 2005 levels	No Change	minimum 60% reduction from 2005 levels	No Change	minimum 80% reduction from 2005 levels	No Change	minimum 60% reduction from 2005 levels, unless supply friction build rate violated
Load Growth	Consistent with current trends (0.35% CAGR)	Consistent with low-end projections (1.1% CAGR)	30% energy increase (0.8% CAGR)	Consistent with anticipated values (1.6% CAGR)	50% energy increase (1.1% CAGR)	Consistent with high-end projections (2.1% CAGR)	Consistent with anticipated values (1.6% CAGR) – additional Demand Response if needed
Generation Retirements	Age-based and member planned generation retirements	No Change	**Accelerated** age-based and member planned generation retirements	No Change	**Advanced** age-based and member planned generation retirements	No Change	No age-based generation retirements – delayed retirements if needed

IRP – Integrated Resource Plan
CAGR – Compound Annual Growth Rate
Series 2 (New) load growth CAGR starts from 2024. Series 1A Futures load growth CAGR starts from 2019

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