This FAQs document is for MISO stakeholders to reference when questions arise related to Tranche 2 of MISO’s Long Range Transmission Plan project. For more information, or if a question is not answered here, please refer to the following sources.

- Long-Range Transmission Planning on the MISO website
  - LRTP Tranche 2 Reliability Study Whitepaper
  - MISO Economic Planning Model Series 1A Battery Modeling Whitepaper
  - Series 1A Futures Report
- LRTP-related Knowledge Articles on the MISO Help Center

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Long Range Transmission Planning (LRTP) Overview

Why is MISO performing Long Range Transmission Planning (LRTP)?

The Reliability Imperative is the term MISO uses to describe the shared responsibility that MISO, its members, and states have to address the urgent and complex challenges to electric system reliability in the MISO region. MISO’s response to the Reliability Imperative consists of a host of interconnected initiatives that aim to address the region’s challenges in a comprehensive and prioritized fashion. These initiatives are organized into four primary pillars and LRTP is a key component of the Transmission Evolution pillar.

LRTP is needed to determine how transmission can help to ensure a reliable future system as the resource portfolio shifts. The need for LRTP is urgent, given the resource changes already happening, the speed of portfolio change desired by many of MISO’s members, and the length of time it takes a transmission project to go from concept to reality. Not only is there an increased urgency to identify future transmission solutions, but these solutions must also holistically address the needs of the MISO region.

Tackling these future energy needs requires a larger regional approach. LRTP looks comprehensively at MISO’s region and is very much a collaborative effort with stakeholders.

Why did MISO develop a hypothesis map and how will it be used during the study effort?

In developing LRTP Tranche 1, MISO began with an initial roadmap of potential transmission solutions, including solutions required to enable Future 3. These potential lines were adjusted, added, removed, and improved throughout the study process. In the same manner, the hypothesis map initially shared in December 2022 provides a starting point for Tranche 2 studies and includes ideas for potential solutions that address issues in the Midwest Subregion. The map does not represent final projects or a final portfolio. Qualitative considerations created a framework for the hypothesis, including:

- Resource fleet evolution
  - Deliver future remote renewable resource output to load
  - Facilitate conventional generation resource retirements

- Operational considerations
  - Internal transfer capability to enhance operating flexibility
  - External transfer capability for mutual support during extreme weather and events

- Demand side requirements
  - Demand and energy growth driven by electrification
Long Range Transmission Planning (LRTP)  
Tranche 2 – Frequently Asked Questions

The hypothesis map was then created based on knowledge gained from:

➢ Prior Futures siting results
➢ LRTP Tranche 1 analysis, including projects discussed but not included in Tranche 1
➢ Stakeholder discussions throughout and since LRTP Tranche 1
➢ Consideration of long-term LRTP vision (inclusive of Tranche 3 and 4)

The map will continue to evolve as MISO engages with stakeholders, performs analysis, assesses new issues and analyzes substitute alternatives as needed.

Why is MISO considering 765 kV and High-Voltage Direct Current (HVDC) and what are the benefits and concerns with these technologies?

Higher voltage transmission like 765 kV and HVDC provide efficiency and reliability benefits in the transport of electricity over long distances. As the resource fleet continues to evolve, 765 kV and HVDC lines may be more effective in delivering electricity from areas with a high potential for renewable generation to areas of high electricity demand. MISO will consider a combination of 345 kV – 765 kV and HVDC lines when studying projects for Tranche 2.

Both 765 kV and HVDC transmission lines have much greater capacity than 345 kV and lower voltage transmission lines. This higher capacity results in lower cost per MW of capacity and lower Right of Way (ROW) usage per MW of capacity.

There is minimal 765 kV and HVDC infrastructure in the MISO footprint, and strategies for spare equipment, redundancy during line outages, and the impacts on operations must be considered before the technology is implemented. Additionally, while MISO already oversees the operation of 765 kV lines, additional work needs to be completed for the MISO market to effectively dispatch HVDC lines.

How is MISO considering interregional coordination in Tranche 2?

As with the LRTP Tranche 1, MISO will coordinate with neighboring Regional Transmission Operators (RTO) and Transmission Owners (TO) to ensure awareness of projects as needed and to address underbuild or other needs that impact the feasibility of Tranche 2 projects. MISO anticipates addressing larger interregional issues in later LRTP Tranches.

How will the anticipated FERC Order, based on the 2022 Transmission Planning Notice of Proposed Rulemaking (NOPR), affect Tranche 2 and other tranches?

MISO continues to evaluate the potential requirements in FERC’s NOPR. MISO believes its processes are generally aligned with the Commission’s overall goals regarding the need for robust long-term transmission planning. MISO will update stakeholders on any impacts to the LRTP process if and/or when a rulemaking is released by FERC.
At the November 2022 Planning Advisory Committee (PAC) meeting, MISO stated that the ideas map represents approximately $20 – $30 billion of transmission. What does MISO think the final Tranche 2 portfolio will cost?

MISO is not working through the Tranche 2 process with a specific spending goal in mind. MISO remains focused on pursuing projects that address future grid issues and provides the most value to customers.

How many LRTP Tranches does MISO expect to pursue?

LRTP solutions are being developed in tranches or phases of effort, allowing solutions to be targeted to specific subregional needs before building to potential region-wide portfolios. Tranches 1 and 2 are focused on the Midwest Subregion. Tranche 3 will focus on the South, and Tranche 4 will address the North/South interface limit. In July 2022, the MISO Board of Directors (BOD) approved Tranche 1 projects as an addendum to MTEP21. Tranche 2 planning is underway and the timing for Tranches 3 and 4 will be determined as Tranche 2 approaches completion.

Longer-term, MISO envisions that regional planning will become an embedded part of MTEP processes. This may result in additional tranches based on system needs, although MISO does not envision that every analysis will result in a recommended transmission portfolio.

What process does MISO use for developing their LRTP portfolio?

MISO follows the 7-Step Process to perform its top-down transmission planning process, including LRTP.

1. Develop scenario-based Futures with load forecast, generation forecast, and siting results. *
2. Develop models utilizing Futures and test system performance.
3. Identify potential transmission issues.
4. Propose solutions to issues.
5. Develop models with proposed solutions and evaluate the effectiveness of various solutions.
6. Recommend preferred solutions for MTEP implementation.
7. Apply appropriate cost allocation.

*Prior to producing siting from EGEAS expansion results, the Futures and Economics teams work through a feedback loop to validate energy adequacy of EGEAS expansion in PROMOD. This is an improvement from the Tranche 1 process to save time in later steps of the model building process.
**Schedule**

When will the MISO Board of Directors approve the Tranche 2 portfolio?

The Tranche 2 effort commenced during the fourth quarter of 2022 and is expected to be finalized with MISO BOD approval during the first half of 2024.

When will models and analysis be ready for stakeholder review?

MISO has completed building both economic (production cost-based) and reliability (powerflow) models for Tranche 2 with stakeholder engagement. MISO has also performed initial issues identification. Tranche 2 modeling and analysis data are posted on Sharefile at the links below. To access MISO’s Sharefile site for transmission planning data and information, see Data Access section of this FAQs.

- Economic [Study Models](#) and [Initial Analysis](#)
- Reliability [Study Models](#) and [Initial Analysis](#)

How does the portfolio review and approval process work and when does MISO anticipate having a Tranche 2 draft portfolio available for stakeholder review?

As with the Tranche 1, Tranche 2 will follow the MISO Transmission Expansion Plan (MTEP) approval process, which includes a stakeholder review process leading up to the MISO Board of Directors (BOD) approval. The process will begin with review, feedback, and recommendation by the MISO Planning Advisory Committee (PAC), then moves to the System Planning Committee of the MISO BOD and is followed by final approval by MISO’s full BOD. Workshops will be held throughout the planning process to facilitate technical discussions and provide a forum for stakeholders to share ideas and feedback. With BOD approval targeted in the first half of 2024, stakeholders may have a draft portfolio for review in early 2024.
Stakeholder Engagement

How will stakeholders be able to engage in the LRTP process?

A series of Tranche 2 workshops will provide opportunities for stakeholders to provide feedback and ask questions, and MISO PAC meetings will include LRTP activity updates primarily through the MISO Liaison Reports. The workshops will be posted as they are scheduled and PAC meetings are currently posted on the MISO calendar. MISO will also provide periodic updates to the MISO BOD and its System Planning Committee.

MISO’s Feedback Tool and LRTP email address will be used for stakeholder feedback. MISO will utilize formal feedback requests to facilitate stakeholder feedback related to specific needs during the process. The Feedback Tool will also be used to submit informal feedback regarding topics such as process, policy or other types of information and inquiries not specifically asked for in a formal request. The LRTP email (LRTP@misoenergy.org) will be used strictly for detailed technical/engineering feedback related to modeling and analysis.

Are workshops open forums or do I have to be a MISO market participant or member to participate?

All MISO LRTP workshops are open forums. As with all MISO stakeholder forums, when asking questions, participants are required to identify themselves and who they represent.

How will information differ between LRTP workshops, PAC meetings and BOD meetings?

LRTP workshops will be the primary focus for discussions on process and analysis for the draft LRTP portfolio prior to approval. These workshops will provide stakeholders the opportunity to ask questions and participate in detailed discussions on high level and technical aspects of planning methodology, model building and study results. PAC meetings will provide policy discussions, as needed, on the LRTP process and facilitate discussion of the recommended portfolio prior to its potential approval. MISO BOD meetings will focus on major goals and milestones.
Futures

What are Futures and what purpose do they serve?

Futures are forward-looking planning scenarios used to understand what generation fleet and load landscapes could look like twenty years into the future. They allow MISO to bookend the uncertainty of the future generation and load portfolio by defining a range of potential plausible outcomes based on resource plans announced by member utilities and states. The Futures development process considers economic, policy and technological changes over time to model economic generation capacity expansion. They allow for multiple rates of change for load growth, generator retirements, fuel prices, decarbonization, renewable energy levels and other factors.

Because all transmission planning at MISO is dependent upon the type, location and quantity of future generation, Futures are an essential component in MISO planning processes, including MTEP and LRTP.

Developed with stakeholder input, MISO has three Futures that can serve as the foundation of reliability and economic models to see the transmission issues that arise in the base case and to assess potential solutions in the change case studies. Futures 1, 2 and 3 reflect different decarbonization goals, generation mixes, load growth, and levels of achieving state and utility announcements. Tranche 1 focused on Future 1, and Tranche 2 will focus on Future 2A (a refreshed Future 2).

How are Futures named?

Cohorts of Futures are referred to by series. The Series 1 MISO Futures were created in 2019-20, culminating an 18-month collaboration between MISO and stakeholders. The development of Series 1A began in 2022, with a focus on refreshing input data while maintaining the number and definition of Futures established in Series 1. Series 1A and subsequent Futures Series will continue to capture transformation within the MISO footprint, reflecting updates and serving as the foundation for forthcoming MISO initiatives. Iterations of Futures are a product of continued collaboration between MISO and its stakeholders.

What changed in the Futures refresh?

For Series 1A, MISO began a process to update or refresh the Futures in Summer 2022 to account for changes in legislation and energy goals among MISO utilities and states. Clean energy investment and decarbonization from passage of the Inflation Reduction Act (IRA) and the Illinois Climate & Equitable Jobs Act (CEJA), as well as renewable goals in Integrated Resource Plans (IRP) and the scale of renewable applications in the Generator Interconnection Queue (GIQ) all indicate a more rapid transition to renewables than what the Series 1 Futures anticipated. The refresh captures these updates without completely overhauling Series 1. The updated, Series 1A scenarios are named Future 1A, Future 2A and Future 3A (F1A, F2A and F3A for short).
When will the Futures refresh be finalized?

The Series 1A Futures have proceeded in several phases. The preliminary Future 2A expansion was completed in November 2022 and presented at the November 2022 PAC meeting. Stakeholder feedback was requested and as a result, additional scope was added to validate the expansion. The non-chronological expansion was spot tested in a chronological analysis to validate energy sufficiency. As a result of the chronological energy adequacy validation, approximately 29 GW of flexible attribute units were added to the final F2A expansion and siting. This work was completed in April 2023 and presented at the April 2023 LRTP Workshop.

Series 1A has concluded with the publication of the Series 1A MISO Futures Report, which includes the results of all three refreshed Futures, including Futures 1A and 3A.

Where can I get more information on Futures?

Navigate to MISO’s website to find the following:

- Future Planning Scenarios webpage
- Long Range Transmission Planning (LRTP) Workshop meeting materials
- Planning Advisory Committee (PAC) meeting materials

The MISO Futures Report from 2021 provides more background and detail on the original Futures. Also, in response to questions about what has remained constant and what has changed in the refreshed Futures, MISO has produced a Futures Refresh Assumptions Book. Finally, Futures refresh results have been posted in a Series 1A MISO Futures Report.
What information does MISO include in PROMOD models?

Base PROMOD models are first developed without applying the MTEP Futures information and assumptions ("PROMOD No Futures"). These models include the following base information:

- **ABB Hitachi PROMOD Release sourced:**
  - Fall 2021 – generator updates and economic data
  - Spring 2022 – coal price updates
  - 11.5 engine with plans to update to 11.5.1 when released
- **Resource Utilization:**
  - Includes generators with signed Generator Interconnection Agreement additions
- **MTEP22 Year 2032 Summer Peak powerflow topology (with some known updates):**
  - PROMOD models will include LRTP Tranche 1 projects
- **Study years (three individual models):**
  - 2032, 2037, 2042 (Year 10, Year 15, Year 20)

Once finalized, the MTEP Futures expansion and generation siting information as well as Gas Pipeline Competition Model (GPCM) natural gas forecasts are then applied to each PROMOD model. Note that each MTEP Future requires a separate suite of PROMOD models.

Are PROMOD models available for stakeholder review and feedback?

Yes, the models were posted in August 2023 for stakeholders with the appropriate non-disclosure agreements and a verified PROMOD license to view. MISO requested stakeholder feedback and incorporated applicable feedback before final models were posted in October 2023.
Will MISO be posting updated Economic Models during the Tranche 2 study process with Tranche 2 solutions included?

No. MISO uses in-house developed post processing tools to add transmission topology additions to the PROMOD output files (.PFF and .EVE), bypassing the PROMOD GUI (Graphic User Interface). As a result, MISO does not publish a PROMOD model containing topology additions or projects under study. All necessary project files (e.g., .IDV files) and information will be made available for stakeholders to recreate the analysis.

MISO requests that any technical questions regarding PROMOD software, functionality, or troubleshooting be directed to Hitachi/ABB rather than MISO staff.

What information does MISO include in powerflow models?

In Tranche 2, the powerflow core models were built from the MTEP22 topology (including LRTP Tranche 1 approved projects) with load, generation, and siting information from Future 2A. Powerflow modeling reflects a snapshot in time. Each model is built to represent a specific condition and generation is dispatched to meet load levels within that condition.

Powerflow core models were developed for summer peak, winter peak, light load, and average load conditions for both the 10-year and 20-year futures. Each Future studied requires a separate set of powerflow core models. Additional scenarios of interest will be incorporated into powerflow core models during the analysis phase of the study.

What assumptions does MISO use to develop the LRTP powerflow models?

MISO published and updated a LRTP Tranche 2 Reliability Study Whitepaper on powerflow modeling with details on assumptions and methodology for the LRTP powerflow models.

What powerflow model information was posted for stakeholders?

All powerflow core models and related input data and files were posted in August 2023 for stakeholder review, and any applicable feedback was incorporated into the final models posted in October 2023.
What types of analysis will MISO perform in LRTP Tranche 2?

MISO plans to perform thermal and voltage steady state analysis (powerflow) along with transfer capability analysis, voltage stability, angular stability, and production cost analyses for Tranche 2. MISO may include additional studies as issues are identified throughout the planning process. Initial issues identification has been posted to Sharefile for stakeholders with the appropriate non-disclosure agreements in place at the links listed below.

- Economic Initial Analysis
- Reliability Initial Analysis

What type of considerations go into selecting a best project?

The objective of the LRTP projects is to ensure the reliable and economic delivery of energy as the resource portfolio shifts. In addition to solving identified issues, a project in LRTP may be considered the best alternative due to relative cost impacts, use of existing infrastructure, available ROW and savings associated to other economic benefits detailed in the MISO Tariff.

How will MISO treat JTIQ projects in Tranche 2, and will they be included in the base models?

Tranche 2 will include all MTEP projects approved as of MTEP22. The Joint Targeted Interconnection Queue (JTIQ) portfolio is anticipated to be approved during the Tranche 2 study process; its impact on the LRTP portfolio will be determined after approval.
Transmission Solution Idea Submissions

What is the Transmission Solution Window?

The Transmission Solution Window is a construct implemented as a solution to meet the requirements of FERC Order 1000 and serves two purposes.

- Specifically, it provides a formal platform for all transmission development entities to submit transmission solutions to MISO and receive five percentage points for Planning Participation in the competitive transmission bidding process.
- It is an opportunity for MISO to receive additional thoughts on solution ideas to address identified transmission issues. This can come from any stakeholder regardless of intent to participate in a competitive transmission bidding process.

To meet the participation requirements the process requires:

- Transmission solutions be submitted during the prescribed window of dates published by MISO,
- A submission form must be fully completed along with all required information, and
- The solution idea must be provided for the particular MISO study in progress for which MISO is soliciting such solutions. Former transmission studies that have been completed or other in-progress studies not subject to the solution window are not applicable.

What solutions are MISO looking for from stakeholders for LRTP?

In the context of the Transmission Solution Window, the terms ‘solutions’ and ‘alternatives’ are often used interchangeably. Regardless of the term, in essence, MISO is looking for stakeholder-driven ideas to identified transmission issues. MISO is developing its potential transmission solutions while also looking to stakeholders for their ideas. Through the open and transparent stakeholder process, MISO will consider these various potential solutions to arrive at a reliable and value-driven transmission grid expansion.

For stakeholders interested in participating in this process, transmission models and input files are provided for both reliability and economics, notwithstanding appropriate UNDA/CEII requirements. MISO does not limit or specify what such potential solutions, or alternatives, can be. New transmission lines or substations, upgrades to existing facilities, reactive power support devices, non-transmission alternatives, etc. are all viable ideas for consideration.

How will MISO use the submitted solutions?

MISO will consider submitted solution ideas from stakeholders. Submitted solution ideas could include the entire submitted solution scopes as proposed or select components of submitted solution ideas. MISO may combine components of multiple submitted solution ideas together to create different solution ideas or may combine components of multiple submitted solutions ideas together with MISO developed solution idea components to create different solution ideas.
MISO will exercise engineering judgment in determining which solution ideas or portions thereof to consider as additional transmission and/or as alternatives to currently proposed solutions. MISO may test certain solution ideas as submitted or modified and will not necessarily test all submitted solution ideas.

**Who can participate and submit potential solutions?**

All stakeholders are welcome to participate in this process. For those who are interested in obtaining the five percent Planning Participation, the solution form must be fully completed with all required information included in the submission. For those not interested in the competitive transmission process, as much information and detail as possible should be submitted to help MISO timely and efficiently process potential solutions. MISO strongly encourages entities to run their own analysis to compare with MISO’s results and potential solutions. MISO also encourages active dialogue through its stakeholder process, which for LRTP is conducted through a series of workshops. It is only through this dialogue that an ultimate set of solutions, or portfolio, can be achieved.

**If I submitted projects in the Tranche 1 Transmission Solution Idea Submission Window, will I get the 5% Planning Participation for Tranche 2?**

No. A new Transmission Solution Idea Submission Window will be utilized for Tranche 2 and proposed solutions must be submitted then.

**When will MISO open a Transmission Solution Idea Submission Window for Tranche 2? Once opened, what is the process for stakeholders to submit their ideas?**

MISO has opened the Transmission Solution Idea Submission Window as of the January 26, 2024 LRTP workshop. It is expected to be open for an indefinite amount time, at a minimum until the March 15, 2024 LRTP workshop. MISO will notify stakeholders two weeks in advance of the window closing.

To submit a solution idea, go to the MISO website on the Long Range Transmission Planning webpage and fill out Submission Forms Part 1 and Part 2 under related documents. Once forms are fully completed, submit them to the LRTP email address at LRTP@misoenergy.org.

Tranche 2 modeling and analysis data are posted onto MISO’s Sharefile site, linked below. MISO will notify stakeholders as new analysis is performed and posted. To access MISO’s Sharefile site, see Data Access section of this FAQs.

- Economic Study Models and Initial Analysis
- Reliability Study Models and Initial Analysis
- MISO LRTP Transmission Solution Idea Submission Form Part 1
- MISO LRTP Transmission Solution Idea Submission Form Part 2
Cost Allocation

What cost allocation mechanism will MISO use for Tranche 2?

MISO will continue to focus on solutions in Tranche 2 that provide a variety of benefits for the region. As with Tranche 1, MISO anticipates the Tranche 2 portfolio will deliver sufficient benefits to qualify under the current Multi-Value Project (MVP) cost allocation mechanism, with costs allocated only to the subregion where benefits are spread to ensure a roughly commensurate “beneficiaries pay” cost allocation that meets the requirements of MISO’s Tariff.

Are new cost allocation mechanisms being discussed at MISO?

Discussions with stakeholders are ongoing to consider alternative cost allocation mechanisms for Tranches 3 and 4.

How can I get involved in cost allocation discussions?

Stakeholders may engage in ongoing cost allocation discussions through participation in MISO’s Regional Expansion Criteria and Benefits Working Group (RECBWG).

Where can I get more information on cost allocation?

Existing Tariff provisions for Multi-Value Project cost allocation can be found in Attachment FF to the MISO Tariff.
Data Access

How can I see and review models and input data for LRTP?

MISO uses Sharefile to post models and input data. See Sharefile Access & Use article on the MISO Help Center for access: [https://help.misoenergy.org/knowledgebase/article/KA-01377/en-us](https://help.misoenergy.org/knowledgebase/article/KA-01377/en-us)

How can I access the economic model PROMOD engine version?

MISO will utilize PROMOD engine 11.5.1 for LRTP Tranche 2 economic analysis, which is set to be released March of 2023. To access this engine and receive general PROMOD help, please email the PROMOD vendor, Hitachi Energy, at PB_Support.PGES@hitachi-powergrids.com.

How do I know if I have access to LRTP data? How can I get access if I don’t have it?

LRTP models and input data are in Sharefile. Only authorized individuals designated by certified MISO stakeholders can access this information. If an authorized individual does not have access, a completed Request Access to Restricted Content form should be submitted in the MISO Help Center.

If you’re not sure that you’re an authorized individual, please view MISO’s Non-Disclosure Agreement Types and Instructions or contact the Help Center at help@misoenergy.org. Only authorized individuals designated by certified MISO Members, Market Participants, and Authorized Agencies are eligible to execute these agreements.

For forms and additional information, please navigate to MISO’s website under Client Services and Readiness.
Sources related to LRTP Tranche 2

**Renewable Integration Impact Assessment (RIIA)**
Navigate to the RIIA page on the MISO website:
*MISO Homepage > Planning > Policy Studies > Renewable Integration Impact Assessment*

**RIIA One Pager**
- Overview of the need for the RIIA and what the analysis looks at
- Brief description of the Five Risks determined by the RIIA

**RIIA Summary Report**
- Details on the need for RIIA and risks determined
- Applying identified risks to key focus areas: Resource Adequacy, Energy Adequacy, and Operating Reliability
- Identifying key threats to specific focus areas
- Summary of Technical Assumptions used in the study

**Multi-Value Projects**
Navigate to the Multi-Value Projects (MVPs) page on the MISO website which defines MVP transmission projects and provides an overview of the annual review process:
*MISO Homepage > Planning > MTEP > Multi-Value Projects (MVPs)*

**BPM-020 Transmission Planning > Multi-Value Projects (Section 7.5)**
Download full BPM zip file here: Business Practices Manuals

- Details the three different criteria a project can meet to be an MVP:
  - Delivers energy more reliably and/or economically than without the upgrade
  - Provides Benefit-to-Cost ratio of 1.0 or higher across multiple pricing zones
  - Addresses at least one Transmission Issue associated with a projected violation of NERC or Regional Entity reliability standard and provides economic value across multiple pricing zones
- Details conditions all MVPs must meet
- Details Economic Benefits considered when qualifying a project as an MVP
- Details Facility qualifications required for Cost-Sharing
- General overview of Cost Allocation and MVP Usage Charge
LRTP Tranche 1
Navigate to the Long-Range Transmission Planning page on the MISO website:
MISO Homepage > Planning > Transmission Planning > Long-Range Transmission Planning > Tranche 1 tab

**Detailed Business Case**
- Timeline of LRTP development
- Details on MVP criteria and how LRTP meets those
- Identifies objective of LRTP and scope of the business case
- Overview of the present value of LRTP portfolio
- Details assumptions in reference and change cases for each set of benefits metrics
- Discussions on natural gas price sensitivities considered
- Overview of cost allocation methods

**Detailed Business Case Analysis**
- Detailed business case assumptions (i.e., inflation, discount rate etc.)
- Detailed calculations on individual benefits, NPV of benefits and cost allocation (CAZ)
- Benefits detailed include congestions and fuel savings, avoided capital cost of local resource investment, avoided transmission investment, resource adequacy savings, avoided risk of load loss, decarbonization

Navigate to the Previous MTEP Reports page on the MISO website to view the MTEP 21 LRTP Addendum for Tranche 1:
MISO Homepage > Planning > MTEP > Documents > MTEP Reports > LRTP Tranche 1 Addendum

**MTEP 21 LRTP Tranche 1 Portfolio Zip Folder**
- MTEP 21 Addendum LRTP Tranche 1 Portfolio Exec Summary and Report
  - Overview of the LRTP Process
  - Background information on Futures 1, 2, & 3
  - Details on Study Inputs and Futures Used
  - Background on individual projects and issues they address
  - Breakdown of LRTP Portfolio Benefits
- LRTP Tranche 1 Appendix A-3 Schedule 26A Indicative
  - In-Service Date Projections by Project
  - Project Gross Cost in 2022 $
  - Indicative Annual MVP Charges by LBA
- MTEP 21 LRTP Addendum Appendix A
  - List of Projects including geographic locations (state, TO, region), ISD Projection, description, system need, estimated cost, cost allocation, max/min voltage
  - List of individual Facilities including geographic locations (substations, state, TO, region), description, estimated cost, max/min voltage, emergency facility rating, miles upgrade/new