

**Manual No. 030**

***Business Practices Manual***

***Dynamic Transfers:***

***Pseudo-ties and Dynamic  
Interchange Schedules***

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## Revision History

Doc Number	Description	Revised by:	Effective Date
BPM-030-r7	Annual Review	A. Doner	JUL-01-2024
BPM-030-r6	Renamed BPM to Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules, and added Section 3 to document the Dynamic Interchange Schedule process. Cleaned up grammar, punctuation, capitalization, imbedded links, and references. Added missing definitions and references. Removed references to Schedule 2.	A. Doner	JUL-01-2023
BPM-030-r5	Annual Review completed. Added details for utilizing MISO Model Manager. Cleaned up grammar, punctuation, capitalization, and references. Added clarifications and additional details.	A. Moore	SEP-01-2022
BPM-030-r4	Annual Review completed.	K. Abell	JUN-01-2021
BPM-030-r3	Annual Review completed. Added details for treatment of Grandfathered Agreements.	K. Abell	JUN-01-2020
BPM-030-r3	Annual Review completed. Table 1.6 edits for pseudo-tie removal and re-instatement.	K. Abell	SEP-01-2019
BPM-030-r2	Annual Review completed. Modify Attachment FFF-1 and FFF-2 requirement for pseudo-tied generator volume for partial unit.	K. Abell	SEP-01-2018
BPM-030-r1	Annual Review Completed Add Section 1.6 Notification and Approval Timeframe Add Section 4.2 for Pseudo-Tied Out Generation serving Pseudo-Tied Out Load Add Section 10 Pseudo-Tie Suspension Add Section 11 Pseudo-Tie Termination	A. Schiro	MAR-01-2018
BPM-030	Original document	A. Schiro	MAR-01-2017

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## 1. Introduction

This introduction to the Midcontinent Independent System Operator, Inc. (“MISO”) *Business Practices Manual (“BPM”) for Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules* includes basic information about this BPM and the other MISO BPMs. The first section (Section 1.1) of this Introduction provides information about the MISO BPMs. The second section (Section 1.2) is an introduction to this BPM. The third section (Section 1.3) identifies other documents in addition to the BPMs, which can be used as references when reading this BPM.

### 1.1 Purpose of the MISO Business Practices Manuals

The BPMs developed by MISO provide background information, guidelines, business rules, and processes established by MISO for the operation and administration of the MISO markets, provisions of transmission reliability services, and compliance with the MISO settlements, billing, and accounting requirements. A complete list of MISO BPMs is available for reference through MISO’s website. All definitions in this document are as provided in the MISO Tariff, the NERC Glossary of Terms Used in Reliability Standards, or are as defined by this document.

### 1.2 Purpose of this Business Practices Manual

The purpose of this document is to outline the requirements for the implementation of a Dynamic Transfers, including Pseudo- Ties and Dynamic Interchange Schedules, within the MISO Balancing Authority (“BA”).

MISO prepares and maintains this *BPM for Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules* as it relates to the reliable and efficient operation of MISO’s region of authority. This BPM conforms and complies with MISO’s Open Access Transmission, Energy and Operating Reserve Markets Tariff (“Tariff”), the North American Electric Reliability Corporation (“NERC”) Reliability Standards (as applicable) the NERC regional entity specific Reliability Standards (as applicable), and the North American Energy Standards Board (“NAESB”) Business Practice Standards and is designed to facilitate administration of efficient Energy and Operating Reserve Markets.

This BPM applies only to transfers across the metered bounds of the MISO Balancing Authority Area (“BAA”) into or from the external BAA, and does not apply to transfers wholly internal to the MISO BAA. Appendix A of the BPM contains the Pseudo-tie

Implementation Process, which details the step-by-step process required for a new or changed Pseudo-tie to be approved and implemented. Appendix B of the BPM contains the Dynamic Interchange Schedule Implementation Process, which details the step-by-step process required for a new Dynamic Interchange Schedule to be approved and implemented.

This BPM benefits readers who want answers to the following questions:

- What is a Dynamic Transfer?
- What are the types of Dynamic Transfers?
- How can I qualify to implement a Dynamic Transfer?
- How do I implement a Dynamic Transfer with MISO?
- How will I settle with MISO?
- How will MISO model the Dynamic Transfer?
- What are MISO's Dynamic Transfer telemetry requirements?

## 1.3 What is a Dynamic Transfer?

**Per the NERC Glossary of Terms and Module A of the MISO Tariff, a Dynamic Transfer is defined as:**

The provision of the real-time monitoring, telemetering, computer software, hardware, communications, engineering, energy accounting (including inadvertent interchange), and administration required to electronically move all or a portion of the real energy services associated with a generator or load out of one BA Area into another.

## 1.4 Definitions

- **Applicant**: An entity desiring to hold FTRs, take Transmission Service, engage in Market Activities or take any other service under the MISO Tariff, or become a Market Participant, Transmission Customer or Coordination Customer under the MISO Tariff.
- **Asset Registration Request**: A sub-section of the Market Participant application, as well as the Attachment B – Change of Information process that must be completed if the Applicant intends to submit Offers' to supply Energy and Operating Reserve from specific resources or Bids to purchase energy in the Energy and Operating Reserve Markets.
- **Certified MP**: A Market Participant that has been approved to engage in Market Activities as an MP pursuant to the provision of the MISO Tariff.
- **Electronic Tag (e-Tag)**: Information describing a physical interchange Transaction or intra-BA Transaction, and its participants.
- **Energy Management System (EMS)**: The software system used by the Transmission Provider and Transmission Operators for acquisition and processing of operational data.
- **External Asynchronous Resource (EAR)**: A Resource representing an asynchronous



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DC tie between the synchronous Eastern Interconnection grid and an asynchronous grid that is supported within the Transmission Provider Region through Dynamic Interchange Schedules in the Day-Ahead Energy and Operating Reserve Market and/or Real-Time Energy and Operating Reserve Market. External Asynchronous Resources are located where the asynchronous tie terminates in the synchronous Eastern Interconnection grid.

- **Generator**: Any generating or generation facility, including a storage Resource, subject to the Transmission Provider's direction hereunder pursuant to either the Operating Protocol for Existing Generators, an IOA or an LGIA.
- **Interchange Distribution Calculator (IDC)**: The Eastern Interconnect Data Sharing Network (EIDSN) tool used by Reliability Coordinators in the Eastern Interconnection which calculates the distribution of energy flows over specific Flowgates and is used for assigning relief obligations and curtailments
- **Load Zone**: A zone determined by Market Participants representing an aggregate area of consumption for a single Load Serving Entity within the MISO Balancing Authority Area and used for the purposes of scheduling, reporting Actual Energy Withdrawal volumes, and settling Energy transactions at aggregated Load levels, approved and maintained by the Transmission Provider to facilitate transactions.
- **Local Balancing Authority (LBA)**: An operational entity or a Joint Registration Organization which is (i) responsible for compliance to NERC for the subset of NERC Balancing Authority Reliability Standards defined in the Balancing Authority Agreement for their local area within the MISO Balancing Authority Area, (ii) a Party to Balancing Authority Agreement, excluding MISO, and (iii) shown in Appendix A to the Balancing Authority Agreement.
- **Market Participant (MP)**: An entity that (i) has successfully completed the registration process with the Transmission Provider and is qualified by the Transmission Provider as a Market Participant, (ii) is financially responsible to the Transmission Provider for all of its Market Activities and obligations, and (iii) has demonstrated the capability to participate in its relevant Market Activities.
- **Transmission Provider**: MISO or any successor organization.
- **Transmission Loading Relief Procedures (TLR)**: A procedure used in the Eastern Interconnection to relieve potential or actual loading on a Constrained Facility or Flowgate.
- **Transmission Service**: Point-To-Point Transmission Service provided under Module B of the MISO Tariff on a firm and non-firm basis, including HVDC Service, and the Network Integration Transmission Service under Module B of MISO's Tariff.
- **webRegistry**: A web-based system that allows industry participants to register and maintain their company information used by industry participants in business operations.

## 2 Types of Dynamic Transfers – Pseudo-ties

### 2.1 Pseudo-ties

**Per the NERC Glossary of Terms, a Pseudo-tie is defined as:**

A time-varying energy transfer that is updated in Real-time and included in the Actual Net

Interchange (“NIA”) term in the same manner as a Tie-Line in the affected Balancing Authorities’ Reporting Area Control Error (“ACE”) equation (or alternate control processes).

**Further defined by the MISO Tariff as:**

A telemetered reading or value that is updated in real time and used as a tie line flow in the ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered megawatt hour (“MWh”) value for interchange accounting purposes. Pseudo-tied status of Resources and Loads may only be changed during Network Model updates, and the timing of such updates shall be as defined in the Business Practices Manuals.

## **2.1.1 Types of Pseudo-ties**

### **2.1.1.1 Generator pseudo-tied into MISO**

A generator connected directly to an external transmission system, but telemetered into MISO. This requires Transmission Service to a MISO interface from the external BA. The unit is dispatched by MISO and is included in the MISO Automatic Generation Control (“AGC”) function. The output of the unit can be partially telemetered into MISO, which is also referred to as a Pseudo-tie for a partial unit. In the event of a Pseudo-tie for a partial unit, only the output of the unit associated with the Pseudo-tie will be dispatched and included in the AGC function by MISO.

### **2.1.1.2 Generator pseudo-tied out of MISO**

A generator connected directly to the MISO transmission system, but telemetered into an external BA. This requires Transmission Service from the unit location to a MISO interface or transmission service provided by one or more Grandfathered Agreements (GFAs) or Carved Out GFAs. The unit is not dispatched by MISO. The unit would be included in the external BAs’ AGC. The output of the unit can be partially telemetered out of MISO, which is also referred to as a Pseudo-tie for a partial unit. In the event of a Pseudo-tie for a partial unit, MISO will continue to dispatch and include in the AGC function the part of the unit not associated with the Pseudo-tie.

### **2.1.1.3 Generator Pseudo-tied through and out of MISO**

A generator connected directly to an external transmission system that is reliant on MISO transmission to get to another external BA. This requires: (i) Transmission Service from the source external BA, the attaining external BA, and Transmission Service from MISO; or (ii) transmission service provided by one or more Grandfathered Agreements (“GFAs”) or Carved Out GFAs. The unit is not dispatched by MISO. The unit would be included in the source and attaining external BAs’ AGC. A Financial Schedule will be created to account for congestion and losses across MISO’s system.

**2.1.1.4 Pseudo-tied load**

In some instances, Market Participants (“MPs”) may wish to consolidate loads into one Load Zone for the loads on the periphery of the Local Balancing Authority (“LBA”). This is implemented in the Network Model by pseudo-tying loads from one LBA to another which redefines the load boundary of both LBAs. This includes loads being Pseudo-tied into MISO, as well as loads being pseudo- tied out of MISO.

**2.1.1.4.1 Load Pseudo-tied into MISO**

A load that is physically located in an external BA but Pseudo-tied into a MISO LBA. Loads Pseudo-tied into MISO are included in the LBA area load calculation and assigned a Load Zone defined in the MISO LBA. The load will be subject to the MISO Energy and Operating Reserves Market and accounted for in centralized dispatch. The load is subject to the Transmission Service arrangement it has with the external BA; MISO is not a party to those arrangements.

**2.1.1.4.2 Load Pseudo-tied out of MISO**

A load that is physically located in a MISO LBA but Pseudo-tied to an external BA and considered in the external BA load calculation.

**2.1.2 Notification/Approval Timeframes and Document Requirements**

<b>Notification Matrix for Pseudo-ties</b>				
<b>Pseudo-tie Type</b>	<b>Request</b>	<b>Notification/Approval Timeframe</b>	<b>Attachment FFF Required</b>	<b>MCR Required</b>
Generator	Add new generator Pseudo-Tie (full or partial unit)	1 year prior to implementation <sup>1</sup>	Y	Y
Generator	Modify TSR associated with Pseudo-tie	TSR approved at least 3 months prior to implementation	Y	Y
Generator	Modify Pseudo-tied generator volume for partial unit	TSR approved at least 3 months prior to implementation	Y	Y
Generator	Remove generator Pseudo-tie and return generator to MISO Market	Topology Model Updated Notification Timeframe	N	Y

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Generator	Reinstate Pseudo-tie Generator <sup>2</sup>	6 months prior to implementation	Y	Y
Load	Add new load Pseudo-tie	1 year prior to implementation <sup>1</sup>	Y	Y
Load	Modify definition of a load Pseudo-tie Corridor	1 year prior to implementation <sup>1</sup>	Y	Y
Load	Modify TSR associated with Pseudo-tie	TSR approved at least 3 months prior to implementation	Y	Y
Load	Remove load Pseudo-tie and return load to MISO Market	Topology Model Updated Notification Timeframe	N	Y
Load	Reinstate load Pseudo-tie <sup>2</sup>	6 months prior to implementation	Y	Y

<sup>1</sup> The notification requirement of one-year allows for both the native and attaining Balancing Authorities to update real-time models should they not meet the two-percentage point Generator to Load Distribution Factors ("GLDF") difference requirement. It also allows time for TSR requests and studies. Should all requirements be met prior to the one-year deadline, an earlier implementation may be coordinated between the native and attaining Balancing Authorities.

<sup>2</sup> Re-instating a Pseudo-tie applies to a generator or load previously Pseudo-tied, but not currently Pseudo-tied. The generator or load is requesting to re-instate the previous Pseudo-tie. Modifications to Pseudo-tie volume, source, or sink do not qualify as re-instatement of a Pseudo-tie.

## 2.1.3 Guiding Principles for Reliable Operations

MISO will consider the following guidelines when evaluating a Pseudo-tie request.

MISO, in its role as the Balancing Authority and Reliability Coordinator, is responsible to ensure Pseudo-ties are reliably implemented and maintained. MISO will:

- Implement Pseudo-ties in a reliable manner.
- Work with the requesting Market Participant to execute the Pseudo-tie Agreement (i.e., Attachment FFF Agreement).
- Evaluate Pseudo-tie implementation readiness by proactively examining Flowgates impacted by Pseudo-tie transfers.
- Ensure sufficient modeling quality to support the congestion management processes for Pseudo-ties.
- Develop a schedule for each Pseudo-tie request. The Pseudo-tie implementation timeline is mutually agreed upon between native Balancing Authority, attaining Balancing Authority, Asset Owner, and MISO Local Balancing Authority.

## 2.1.4 Implementation Timeline is based on:

- Generator Deliverability / Transmission Service Queue
- Study Requirements
- Market Registration Requirements
- Telemetry Installation or Configuration
- Reliability Coordinator & Balancing Authority Energy Management System Update Timeline
- M2M identification of Coordinated Flowgate ("CF") / Reciprocal Coordinated Flowgate ("RCF")
- Completed NAESB webRegistry

## 2.1.5 Transmission Service

- The Pseudo-tie Agreement does not provide transmission service or interconnection service, and does not modify the rates, terms, or conditions of any transmission service reservation held by the MP.
- Long-Term Firm Transmission Service Reservation (Point-to-Point or Network) is required and should be maintained for the entire duration and entire path of the Pseudo-tie including within native and attaining BA areas.
- Current Pseudo-ties with existing Transmission Service Requests ("TSRs") can continue to use those TSRs for the entirety of the TSR term.
- Existing TSRs not yet utilized for Pseudo-ties may require re-study to ensure adherence to Pseudo-tie TSR requirements.
- TSR sources and sinks must reflect Balancing Authority Areas consistent with

the MISO Network and Commercial Models.

- TSRs will be re-studied due to a change of source or sink.
- TSR studies will be required if Pseudo-tie source/sink is not same as that of the underlying TSR.
- Any TSR (new, existing, or redirected) used for a new Pseudo-tie must include evaluation from source to sink.
- A System Impact Study will be required for the MISO TSRs. From this study, MISO identifies constraints in the MISO system. For identified constraints, MISO will perform the required facility study to estimate the cost/schedule to upgrade the transmission element.
- MISO will notify the external Transmission Provider of constraints found on their system during the MISO System Impact Study. MISO will coordinate with external Transmission Provider and they will perform the required studies to estimate the cost/schedule to upgrade the transmission element on their system.
- See Table 1 for additional TSR path guidance.

## **2.1.5.1 TSR utilized for Pseudo-tied out generation**

- TSR source must be a designated generating facility in the MISO Commercial Model.
- MISO TSR sink will be modeled on the external BA or LBA where the designated load is physically located.
- MISO will perform additional studies using criteria or assumptions required by the external BA market rules (reliability criteria). Transmission Customer pays for study and associated upgrades.

## **2.1.5.2 TSR utilized for Pseudo-tied in generation**

- External TSR source should be the designated generating facility.
- MISO TSR source must be the external LBA where the designated generating facility is physically located.
- MISO TSR sink must be the MISO LBA where the unit is being Pseudo-tied.

## **2.1.5.3 TSR utilized for Pseudo-tied in load**

- MISO TSR sink must be the external LBA where the designated load is physically located.
- MISO TSR source must be a MISO Commercial Pricing Node ("CPNode").

## **2.1.5.4 TSR utilized for Pseudo-tied out load**

- TSR sink must be a designated Load Zone in MISO Commercial Model.

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- TSR source must be modeled on the external LBA/BA basis.

### 2.1.5.5      **TSRs utilized for Pseudo-tied through and out generation**

- External TSR source should be the designated generating facility.
- MISO TSR source must be the external BA where the designated generating facility is physically located.
- MISO TSR sink will be modeled on the external BA or LBA where the designated load is physically located.

**Table 1. Transmission Service Reservation Paths**

<b>Type of Pseudo-tie</b>	<b>TSR Path</b>	<b>Source</b>	<b>Sink</b>
Generator Pseudo-tied into MISO	Import	External BA	MISO
Load Pseudo-tied out of MISO	Import	External BA	MISO
Generator Pseudo-tied out of MISO	Export	MISO	External BA
Load Pseudo-tied into MISO	Export	MISO	External BA
Wheel through Pseudo-tie	Wheel Through	First External BA	Second External BA

### 2.1.6 Markets

Pseudo-ties are used by BAAs to modify the metered boundary. Either generation or load may Pseudo-tie into or out of the MISO BAA. MISO will expect the requestor of the Pseudo-tie to complete the Pseudo-tie Agreement. Load pseudo-tying into the MISO BAA will need to be incorporated into at least one Load Zone Commercial Pricing Node ("CPNode"). Generation pseudo-tying into the MISO BAA is treated like any other Generation Resource under the MISO Tariff. When load Pseudo-ties out of the MISO BAA, a Pseudo-tie Load ("PSL") CPNode is typically created. When a generator Pseudo-ties out of the MISO BAA, a Pseudo-tie Generator ("PSG") CPNode is typically created. A PSL or PSG CPNode is not needed for Pseudo-tied out load or generation if the MISO Transmission System is not utilized or if the requester is using GFA Carved-Out Transmission Service. A Real-time Financial Schedule is utilized with the PSG and/or PSL CPNode and the Interface CPNode representing the attaining BAA, except where section 4.1 applies.

- Generation and load pseudo-tying into the MISO BAA may participate in the Energy and Operating Reserve Markets. MPs of generation and load pseudo-tying out of the MISO BAA may participate in the Day-Ahead Market with Virtual Bids and/or Virtual Offers. Real-time Financial Schedules will be created to collect Transmission Usage Charges for the Pseudo-tie. For details on Energy and Operating Reserve Markets Participation, see BPM-002 Energy and Operating Reserve Markets.
- For details on Financial Bilateral Transactions, see BPM-002 Energy and Operating Reserve Markets.
- For partial Pseudo-ties, MISO expects Pseudo-tie share remaining in MISO to follow dispatch. Ramp rate offers should represent share of ramp rate achievable inside MISO Market.
- For details on Pseudo-tie Jointly-Owned Units ("JOUs"), see Jointly-Owned Unit Resources in BPM-002 Energy and Operating Reserve Markets.
- For details on Jointly-Owned Generation Resources or Operating Reserves, see the MISO Tariff.

### 2.1.7 Pseudo-tied out generation serving Pseudo-tied out load using MISO firm transmission service

If a Pseudo-tied out generator is serving a Pseudo-tied out load using MISO firm network



transmission service, the MP has two options:

- Set up Real-Time Financial Schedules for the generation and load separately, in the same manner as regular Pseudo-tied out generation or load; or
- Set up a Real-Time Financial Schedule between the PSG CPNode and the PSL CPNode, instead of separate Financial Schedules to external BAs. Any imbalance between the PSG and PSL still needs to use regular Financial Schedule as stated in 2.1.6.

## 2.1.8 Financial Transmission Rights and Auction Revenue Rights

- See BPM-004 FTR and ARR for details on Pseudo-tie Financial Transmission Rights (“FTR”) and Auction Revenue Rights (“ARR”).

## 2.1.9 Resource Adequacy

- See BPM-011 Resource Adequacy section on Qualifying and Quantifying Planning Resources.
- See MISO Tariff Module E1 section on Establishment of Local Clearing Requirement.

## 2.1.10 Settlements

- MISO establishes Real-Time Financial Schedules to represent Pseudo-ties and collect Transmission Usage Charges in accordance with BPM-005 Market Settlements.
- MPs are responsible for entering the real-time actual flow on the Financial Schedule for settlement purposes.
- Pseudo-ties are charged Schedule 17 of the MISO Tariff (Energy Market Support Administrative Service Cost Recovery) and Schedule 24 of the MISO Tariff (Local Balancing Authority Cost Recovery) as both buyer and seller on the Financial Schedule.
- See BPM-005 Market Settlements Calculation Guide for more information on:
  - Pseudo-tie financial bilateral transactions;
  - Pseudo-tied Generation Settlement; and
  - Pseudo-tied Load Settlement.
- When the entire physical unit is Pseudo-tied out of MISO, the generation cannot use Schedule 20 (Treatment of Station Power) of the MISO Tariff since the resource is not participating in the market.

## 2.1.11 Telemetry

- NERC Reliability Standard BAL-005-1 R7 requires each Balancing Authority

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to include all Tie-Line flows with adjacent BAAs in the ACE calculation. Therefore, MISO is responsible for Real-Time monitoring of the Tie-Line flows as the BA operator and the Reliability Coordinator ("RC"). A "Tie-Line" is defined as any connection between a MISO LBA and a MISO Tier 1 BA, including physically and Pseudo-tied in accordance with BPM-005 Market Settlements and BPM-010 Network and Commercial Models.

- MP arranges for Tie-Line metering with the appropriate LBA in accordance with BA Agreement Section 4.5 Responsibilities Relating to Actual Interchange and BPM-010 Network and Commercial Models, New MISO BA Tie-Line section.
- MISO requires Pseudo-ties to use redundant Tie-Line MW measurements at the agreed-upon metered location.
  - The MISO LBA will provide MISO the primary Pseudo-tie MW (TMW) and MWh measurements. The external BA provides MISO with the secondary MW measurement (TMW1).
- To the extent available, the non-metered tie point (*i.e.*, metering available at the opposite end from the agreed-upon location) must be provided to MISO via Inter-control Center Communications Protocol ("ICCP").
  - The non-metered end measurement (TMW2) will allow MISO to transition to the opposite side metering to continue monitoring and recording the MWh flows for each hour should the primary remote terminal unit ("RTU") become unavailable due to routine maintenance or unscheduled outage.

## 2.1.12 Modeling

- BPM-010 Network and Commercial Models outlines the Pseudo-tie modeling options, including the treatment of Pseudo-tied Jointly-Owned Units, external Pseudo-tied generation, and Pseudo-tied load. Pseudo-tie modeling examples are in the BPM-010 Network and Commercial Models Attachments.
- See BPM-010 – Network and Commercial Models – Load Modeling section for more details on auxiliary load modeling.
- Pseudo-tied capacity offered into the MISO Market shall remain in the Market until the next regularly scheduled Network and Commercial Model update. When only a portion of a resource is Pseudo-tied into the MISO Balancing Authority, the change in total output of the physical unit shall include the change in MW value sent to MISO for this portion of the unit. The MP should be prepared to provide evidence that the output of the resource is being moved

in response to the market dispatch. See BPM-010 Network and Commercial Models for more details.

## 2.1.13 Congestion Management

- Congestion management processes for Market-to-Market (“M2M”) and NERC Transmission Loading Relief (“TLR”) need to continue to work reliably with Pseudo-tied generation. For generation physically in market areas (native BA), Pseudo-tied generation contribution to Market Flows must be adequately calculated and available in M2M and NERC TLR processes.
- Prior to a new Pseudo-tie being approved for implementation, all parties (e.g., the MP, the native BA and the attaining BA) must agree on a plan for congestion management.
- The congestion management plan may include needed modeling enhancements, Operating Guides, procedures, new Flowgates, or other processes needed in order to reliably manage potential circumstances specifically related to Pseudo-tie implementation and operation. MISO will evaluate the need for an additional BA or RC agreement from a 2nd Tier BA.
- Market flows need to be calculated adequately for Pseudo-tied generation. Due to potential reliability, resiliency, and convergence concerns, MISO reserves the right to not expand the external Network Model representation into areas solely for Pseudo-tied generation.
- See MISO Tariff – Attachment LL – Congestion Management Process (“CMP”) Master for more information on Pseudo-ties and market flows.

## 2.1.14 Market to Non-Market Pseudo-ties

- Pseudo-tied generation and load must be modeled in the IDC model such that impacts from Pseudo-tied generation or load may be curtailed as needed in NERC TLR 5.
- Operating Guides must be in place for Pseudo-tied generation such that the Pseudo-tied generation can be manually committed, de-committed, and re-dispatched, as needed, for local transmission reliability.
- For Pseudo-tied generation physically located in a market area native BA and transferring to a non-market attaining BA, MISO recommends owner of Pseudo-tied generation will monitor and respond appropriately to Locational Marginal Prices (“LMPs”). For example, for relatively low or negative LMPs at the generator, MP will have output lowered if feasible. For relatively high LMPs at the generator, MP will have output raised if feasible. These actions are

expected to result in more economical operation of the Pseudo-tied generation, more reliable transmission congestion management, and less out-of-market manual instructions.

## 2.1.15 Market-To-Market Pseudo-ties

### 2.1.1.15.1 Requirements for Market-to-Market Pseudo-ties

For the congestion management process to work properly, M2M Flowgates that will be impacted by Pseudo-tied generation need to be identified. Energy Management System (“EMS”) Network Model for attaining BAA solution and related Generator to Load Distribution Factors (“GLDFs”) need to be benchmarked such that market flow will be calculated adequately on the M2M Flowgates.

#### 2.1.1.15.1.1 Market-to-Market Flowgate Identification

- The native Regional Transmission Organization (“RTO”) will use 24 months of historical congestion data to identify potential M2M Flowgates for Pseudo-tie implementation.
- Attaining RTO will examine the proposed Flowgates utilizing CMP study 2 criteria (as outlined in CMP Section 3.2.1). Attaining RTO will run other coordination study tests as outlined in CMP Section 3.2.1 if needed or requested by native RTO.

#### 2.1.1.15.1.2 Validate EMS model observability & accuracy requirements

- MISO’s state estimator application feeds topology and flows to the market flow calculation engine which performs a Generator Shift Factor (“GSF”) and GLDF calculation.
- RTOs will make every effort to ensure that the attaining RTO’s Pseudo-tie
- GLDF calculation results are within plus or minus 2% of the native RTO’s shadow Pseudo-tie GLDF calculation results for the identified M2M Flowgates. As an example, the attaining RTO’s GLDF calculation needs to be between 6% and 10% if the native RTO’s GLDF is 8%. native RTO’s GLDFs will be the reference calculation to benchmark accuracy. Once the 2% accuracy requirement is met, the RTOs will make every effort to maintain this through accurate modeling representation and coordination during each model update. Once the MISO Model Manager is designated as the tool of record, MPs will utilize Model Change Request (“MCR”) to submit accurate modeling representation. In the event it is not possible or feasible for the attaining RTO to obtain and maintain this alignment of GLDFs, a proposed new Pseudo-Tie may

not be approved and approval of existing Pseudo-ties may be revoked.

- The GLDF comparison between the attaining and native RTOs will start approximately one (1) month after notification of the proposed Pseudo-tie.

RTOs will meet benchmarking standards at least one (1) EMS Network Model update prior to Pseudo-tie activation.

## 2.1.16 Pseudo-tie Registration

### 2.1.16.1 Who should register a Pseudo-tie?

The responsible MP should register the Pseudo-tie with MISO. This includes:

1. Obtaining necessary approvals from both the native and attaining Balancing Authorities.
2. Following all topology deadlines for completing requirements to register the Pseudo- Tie in MISO's Network and Commercial Models, including confirming the asset change.
3. Completing registration requirements with North American Energy Standards Board ("NAESB") webRegistry to ensure compliance with NAESB WEQ Standard 004-1.9.

## 2.1.17 Why do I need to obtain approvals from impacted LBAs?

Moving resources changes the resource-load balance of MISO LBAs and therefore, requires the MP to inform impacted LBAs and provide MISO with approvals. For loads, because the implementation redefines the load boundary for impacted LBAs, the MP is required to inform impacted LBAs and provide MISO with approvals. See NAESB WEQ Standard 004 for additional information.

## 2.1.18 Why do I need to register with MISO and webRegistry?

MISO must comply with NAESB WEQ Standard 004-1.9, which provides that each BA shall only implement or operate a Pseudo-tie that is included in the NAESB Electric Industry Registry ("EIR") publication/webRegistry. The registration of Pseudo-ties in webRegistry is an additional step in support of MISO's Commercial Model process to ensure MISO is only operating Pseudo-ties that have been appropriately registered and approved.

### 2.1.18.1 Registration Process

These steps outline the registration process; this does not replace any pre-qualification steps as discussed in this BPM.

**Step 1:** Entity submits new Pseudo-tie request for inclusion in MISO's Commercial Model via MP application (new Applicants only). In addition, entity submits a Model Change Request (MCR) in the MISO Model Manager tool.

[MISO Extranet – EMS Models](#) → Network and Commercial Models Current Year  
[MISO Public Website – Markets and Operations](#) → Network and Commercial  
Model Schedule YYYY-YYYY Model Update Schedule.pdf

All documentation, including any templates or required legal documents, must be sent to MISO's Client Services & Readiness (CSR) team by stated deadlines. All materials can be scanned and emailed to [help@misoenergy.org](mailto:help@misoenergy.org).

**Step 2:** MISO verifies that accurate, complete documentation is provided from Applicant or Certified MP and ensures requestor validity.

**Step 3:** MISO notifies appropriate internal departments of new/revised Applicant and Certified MP asset registration requests via email.

**Step 4:** MISO emails Applicant or Certified MP prompting them to confirm their Pseudo-tie asset registration request in the MISO Model Manager ("MMM") Asset Registration template and MISO Model Manager Asset Registration Template; confirmation activities must adhere to provided deadlines.

## 2.1.18.2 NAESB Registration

All Pseudo-ties must be registered with NAESB webRegistry. See MISO NAESB webRegistry Guidelines for more details on registering a Pseudo-tie in NAESB.

## 2.1.19 Pseudo-tie Suspension

MISO may suspend a Pseudo-tie if the modeling, telemetry, or transmission service requirements are not being fulfilled. MISO will coordinate the suspension with the native/attaining Balancing Authority to ensure all reliability functions are maintained.

- The flow along the Pseudo-tie will be reduced to zero.
- The Pseudo-tie representation will remain with the MISO Model.
- Attachment FFF will be suspended until the issue is resolved.
- MISO will work with the Market Participant and native/attaining Balancing Authority to resolve the unfulfilled requirements which led to the suspension.

Should a path toward resolution not be agreed upon within thirty (30) days, MISO

may elect to terminate the Pseudo-tie.

### **2.1.20 Pseudo-tie Termination by Native or Attaining Balancing Authority**

MISO may terminate a Pseudo-tie if:

- For MISO M2M participant entities, the two-percentage point GLDF requirement is no longer met, and the native/attaining Balancing Authority is unwilling or unable to update Reliability and Market Models.
- Repeated ICCP telemetry issues are reported, and the Market Participant is unwilling or unable to remedy the failure.
- MISO receives a termination notice from the native/attaining Balancing Authority.

MISO and the native/attaining Balancing Authority will coordinate the termination activities to ensure that all reliability functions are maintained.

For Pseudo-tied out generation that is subject to termination, the Pseudo-tie will be removed from the MISO Network and Commercial Models during the next available update and the Pseudo-tie Generator CPNode (PSG) will be terminated. The generator will revert back to MISO within the native Local Balancing Authority Area. The Market Participant will be able to register the generator within the MISO Market. Should the Market Participant elect not to register the generator, it will be treated as a behind-the-meter generator.

For Pseudo-tied in generation that is subject to termination, the Pseudo-tie will be removed from the MISO Network and Commercial Models during the next available update, the Generator CPNode (GENNODE) will be terminated, and the generator will revert back to the native Balancing Authority. The generator will be represented as an external unit and will no longer be dispatched by MISO. Attachment FFF will be terminated.

### **2.1.21 Pseudo-tie Retirement**

- Pseudo-tied out generator owners are required to submit an Attachment Y form to MISO in accordance with Section 38.2.7 Generation Suspension, Generation Retirement, and System Support Resource of the MISO Tariff.
- All Pseudo-tied in generation is considered a MISO resource and must comply with Section 38.2.7 Generation Suspension, Generation Retirement and System Support

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Resource of the MISO Tariff.



### **3 Types of Dynamic Transfers – Dynamic Interchange Schedules**

#### **3.1 Per the NERC Glossary of Terms, a Dynamic Interchange Schedule is defined as:**

A time-varying energy transfer that is updated in Real-time and included in the Scheduled Net Interchange (NIS) term in the same manner as an Interchange Schedule in the affected Balancing Authorities' control ACE equations (or alternate control processes).

Further defined by the MISO Tariff as: Interchange Schedules for which the Market Participant has put in place Real-Time and interval metering facilities approved by the Transmission Provider where Resources are supplying Energy to Load on a Real-Time basis and the supply is being affected through use of scheduled Interchange in the Transmission Provider's ACE equation.

Even though an External Asynchronous Resource ("EAR") is represented within the MISO Region through a Fixed Dynamic Interchange Schedule, the Dynamic Interchange Schedules of EARs are not covered by this BPM.

##### **3.1.1 Types of Dynamic Interchange Schedules**

###### **3.1.1.1 Export Schedule**

An Interchange Schedule in which the Interchange Schedule Receipt Point lies within the MISO Balancing Authority Area and the Interchange Schedule Delivery Point lies outside the MISO Balancing Authority Area.

###### **3.1.1.2 Import Schedule**

An Interchange Schedule in which the Interchange Schedule Delivery Point lies outside the MISO Balancing Authority Area and the Interchange Schedule Receipt Point lies within the MISO Balancing Authority Area.

###### **3.1.1.3 Through Schedule**

An Interchange Schedule in which both the Point of Receipt and Point of Delivery are external to the Transmission Provider Region.

###### **3.1.1.4 Within Schedule**

An Interchange Schedule in which both the Point of Receipt and Point of Delivery are internal to the Transmission Provider Region.

### **3.2 Notification /Approval Timeframes and Document Requirements**

MISO must receive notification from the Generator or Load of the intention to add a Dynamic Interchange Schedule at least one (1) year prior to the desired implementation date.

### **3.3 Guiding Principles for Reliable Operations**

MISO will consider the following guidelines when evaluating a Dynamic Interchange Schedule request. MISO, in its role as the Balancing Authority and Reliability Coordinator, is responsible to ensure Dynamic Interchange Schedules are reliably implemented and maintained. MISO will:

- Implement Dynamic Interchange Schedules in a reliable manner.
- Evaluate Dynamic Interchange Schedule implementation readiness by proactively examining Flowgates impacted by Dynamic Interchange Schedule transfers.
- Ensure sufficient modeling quality to support the congestion management processes for Dynamic Interchange Schedules.
- Develop a schedule for each Dynamic Interchange Schedule request. The Dynamic Interchange Schedule implementation timeline is mutually agreed upon between native Balancing Authority, attaining Balancing Authority, Asset Owner, and MISO Local Balancing Authority.

### **3.4 Implementation Timeline is based on:**

- Generator Deliverability / Transmission Service Queue
- Study Requirements
- Market Registration Requirements
- Telemetry Installation or Configuration
- Reliability Coordinator & Balancing Authority Energy Management System Update Timeline
- MISO Local Balancing Authority ("LBA") Agreement to Provide Data Exchange Services
- Market Participant, or applicable service entity, registered with an e-Tagging service

### **3.5 Transmission Service**

- A Transmission Service Reservation (Point-to-Point or Network) is required and should be maintained for the entire duration and entire path of the Dynamic Interchange Schedule including within native and attaining BA areas.
- Current Dynamic Interchange Schedules with existing Transmission Service Requests ("TSR") can continue to use TSR for the entirety of the TSR Term.
- For Dynamic Schedules sourced in MISO, the MISO TSR source must be in the MISO LBA where the designated generating facility is physically located.

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- For Dynamic Schedules sinking within MISO, the MISO TSR sink must be in the MISO LBA where the designated load is physically located.
- Transmission Service Reservation source and sink must reflect Balancing Authority Areas consistent with the MISO Network and Commercial Models.
- TSRs will be re-studied due to a change of source or sink.
- TSR study will be required if the Dynamic Interchange Schedule source/sink is not same as that of the underlying TSR.
- Any TSR (new, existing, or redirected) used for a new Dynamic Interchange Schedule must include evaluation from source to sink.
- A System Impact Study may be required for the MISO TSRs. From this study, MISO identifies constraints in MISO system. For identified constraints, MISO will perform the required facility study to estimate the cost/schedule to upgrade the transmission element.
- MISO will notify the external Transmission Provider of constraints found on their system during the MISO system impact study. MISO will coordinate with external Transmission Provider and they will perform the required studies to estimate the cost/schedule to upgrade the transmission element on their system.

### **3.5.1 TSR utilized for Dynamic Interchange Export Schedule**

- TSR source must be a designated generating facility in the MISO Commercial Model.
- MISO TSR sink will be modeled on the external BA where the designated load is physically located.
- MISO will perform additional studies using criteria or assumptions required by the external BA market rules (reliability criteria). Transmission Customer pays for study and associated upgrades.

### **3.5.2 TSR utilized for Dynamic Interchange Import Schedule**

- External TSR source should be the designated generating facility.
- MISO TSR source must be the external BA where the designated generating facility is physically located.
- MISO TSR sink must be the MISO LBA where the designated load is physically located

### **3.5.3 TSRs utilized for a Dynamic Interchange Through Schedule**

- External TSR source should be the designated generating facility.
- MISO TSR source must be the external BA where the designated generating facility is physically located.
- MISO TSR sink will be modeled on the external BA where the designated load is physically located.

## 3.6 Markets

- An Interchange Schedule is submitted via a NERC e-Tag by an MP representing withdrawals and injections at specified locations.
- When creating an e-Tag for Interchange Schedules, each MP must select an energy type, a transaction type, and a market type.
- For more information regarding Dynamic Interchange Schedules, see BPM-002 Energy and Operating Reserve Markets.

## 3.7 Settlements

- See BPM-005 - Market Settlements for information on the settlement of Dynamic Interchange Schedules.

## 3.8 Telemetry

- For the MISO Generation and Interchange team to accurately monitor dynamic schedules, the following telemetry points are required:
  - Instantaneous MW value between MISO LBA and external Tier1 BA (UDYS)
    - An aggregated value by BA-BA interface
    - Value actively being scheduled and used in MISO's respective ACE calculations
    - Data communication path is from the Marketer to the MISO LBA and then to MISO
  - Instantaneous MW value between external Tier1 BA and MISO LBA (UDY2)
    - An aggregated value by BA-BA interface
    - Value actively being scheduled and used into the neighboring RC's ACE calculations
    - Redundant communication path from the Marketer to neighboring RC and then to MISO
  - Total of all 15-minute Ahead MW Dynamic Schedules (DY15)
    - An estimate of what the Marketer thinks will be scheduled 15 minutes from the present moment for all the dynamic schedules in a single interface.
    - The Marketer is responsible for making their best effort at estimating where they believe the Dynamic Schedule will be in 15-minutes
    - Data communication path is from the Marketer to the MISO LBA and then to MISO
  - 15-minute Ahead MW Dynamic Schedule (D15)
    - An estimate of what the Marketer thinks will be scheduled 15 minutes from the present moment for a single dynamic schedule.
    - The Marketer is responsible for making their best effort at estimating where they believe the Dynamic Schedule will be in 15-minutes
    - Data communication path is from the Marketer to the MISO LBA and then to MISO
  - Hourly MWH of what was scheduled in the previous operating hour (DYSH)
    - The ATF MWh volume representing what was scheduled during the previous Operating Hour.

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- Value will be used to update the Schedule in MISO's scheduling system for the purposes of Energy Accounting and Settlements.
- Will also be used to aid in the identification and mitigation of errors, per the NERC BAL-005-1 Standard, Requirement R7.
- Communicated by the Marketer to the MISO LBA and then to MISO.
- See BPM-031 ICCP Data Requirements for data, frequency requirements, and naming conventions for MISO ICCP data exchanged in support of the MISO LBA and/or Market Participant.
- The neighboring BA is required to provide a back-up set of measurements, specifically the instantaneous MW value.
- CPNodes representing External Interfaces are used for settling of Interchange Schedules with MISO.

## 3.9 Modeling

Topology or non-topology model updates are determined on a case-by-case basis for each Dynamic Interchange Schedule. Dynamic Interchange Schedules can only be implemented with a quarterly model update (see [Model Update Schedule](#)).

The information below is needed by the cutoff date for submitting MISO model changes:

- Instantaneous Dynamic Schedule Telemetry
  - An aggregated value by BA-BA interface
  - Individual schedules within each BA-BA interface
  - Redundant telemetry
  - In-Use Measurement from First Tiers
- 15-Minute Ahead Dynamic Interchange Schedule Forecast
- After-the-Fact MWh value of what was Dynamically Scheduled during the previous Operating Hour
  - This is the value that the LBA will typically update the schedule in webTrans with for the purposes of Energy Accounting and Settlements
  - Per NERC Standard BAL-005-1, this value is required to aid in the identification and mitigation of errors
- Source and sink of the Dynamic Interchange Schedule.

Dynamic Interchange Schedules are modeled as e-Tags to represent flow. MISO's expectations for tagging and operating the Dynamic Interchange Schedule are as follows:

An e-Tag will be submitted prior to the flow of the Dynamic Schedule in Real-Time. (Without an e-Tag in place, there is no means to account for and settle the energy.)

- The estimated volumes on the e-Tag should be updated to reflect expectations of the Dynamic Schedule.
  - For example, if the Dynamic Schedule is at 0 MWs and is expected to remain at 0 MWs, update the e-Tag to reflect 0 or a value closer to 0. Do not leave the maximum capacity on the e-Tag (i.e. estimating 100 MWs while 0 MWs are flowing and 0 MWs are expected to flow during the next few hours).
- The Dynamic Schedule will abide by the limitations of curtailments issued on the e-Tag.

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- For example, if the Dynamic Schedule has a capacity of 100 MWs but is curtailed to 50 MWs, then the instantaneous telemetry should respect the curtailment and should NOT exceed 50 MWs for the duration of the curtailment.
- If there are issues with the telemetry for the Dynamic Schedule such that MISO finds the telemetry to be deficient, the Dynamic Schedule may be curtailed to 0 MWs until all issues are resolved.

### 3.10 Congestion Management

- Dynamic Interchange Schedules are e-Tagged and made available in the IDC for impact curtailments under NAESB Transmission Loading Relief (“TLR”) procedures (WEQ-008).
- The IDC includes dynamic e-Tag impact as part of available Generation to Load (“GTL”) impact for curtailment of the sink BA.
- TLR impacts as a result of dynamic e-Tags will generally be curtailed by means GTL relief, however if market generation is not viable to provide the GTL relief requirement attributed by a dynamic e-Tag, dynamic e-Tags sinking in the MISO BA may be curtailed by the MISO RC.
- Dynamic Interchange Schedules are also accounted for in the calculation of MISO Market Flow in the same manner as interchange Schedules. See MISO Tariff Attachment LL – Congestion Management Process (CMP) for more information on market flows.
- MPs submitting Dynamic Interchange Schedules are expected to adhere to e-Tag curtailments and lower congested flow accordingly. Failure to do so may result in MISO action up to and including termination of the Dynamic Interchange Schedule.

### 3.11 Validate EMS model observability & accuracy requirements

RTOs will meet benchmarking standards at least one (1) EMS network model update prior to Dynamic Interchange Schedule activation.

### 3.12 Grandfathered Agreement Considerations

GFA transmission rights may be used for Dynamic Interchange Schedules. When used, a non-MISO local Transmission Provider will be referenced on the corresponding e-Tag. This entity will have the responsibility to adhere to NERC INT standards regarding Transmission Provider roles.

### 3.13 Dynamic Interchange Schedule Model Change Request (MCR)

Step 1: Responsible MP submits a Model Change Request (MCR) in the MISO Model Manager tool. The MCR should reflect all topology or non-topology model changes for the Dynamic Interchange Schedule.

[MISO Extranet – EMS Models](#) → Network and Commercial Models Current Year  
[MISO Public Website – Markets and Operations](#) → Network and Commercial Model Schedule YYYY-YYYY Model Update Schedule.pdf

All documentation, including any templates or required legal documents, must be sent to MISO's Client Services & Readiness (CSR) team by stated deadlines. All materials can be scanned and emailed to [help@misoenergy.org](mailto:help@misoenergy.org).

**Step 2:** MISO verifies that accurate, complete documentation is provided from Applicant or Certified MP and ensures requestor validity.

**Step 3:** MISO notifies appropriate internal departments of new/revised Applicant and Certified MP asset registration requests via email.

**Step 4:** MISO emails responsible MP prompting them to confirm their asset registration request in the MMM Asset Registration template and MISO Model Manager Asset Registration Template; confirmation activities must adhere to provided deadlines.

#### 3.13.1 The responsible MP is accountable for the following:

- following all deadlines in MISO's Model Update Schedule;
- for submitting changes in MISO's Network and Commercial Models, if required;
- confirming their Dynamic Interchange Schedule request in the Asset Registration Tool;
- confirmation activities must adhere to provided deadlines; and
- completing registration with an e-Tagging service.

### **3.14 Suspension and Termination**

MISO may suspend or terminate a Dynamic Interchange Schedule if the modeling, telemetry, or transmission service requirements are not being fulfilled. The Dynamic Interchange Schedule will be curtailed to 0MWs until all requirements have been met.

If Market Participant intends to terminate a Dynamic Interchange Schedule, they must notify MISO through the MISO Help Center.



## 4 References

- BPM-001 Market Registration
- BPM-002 Energy and Operating Reserve Markets
- BPM-004 FTR and ARR
- BPM-005 Market Settlements
- BPM-005 - MS-OP-029 Market Settlements 5 Minute Calculation Guide
- BPM-010 Network and Commercial Model
- BPM-011 Resource Adequacy
- BPM-013 Module B - Transmission Service
- BPM-015 Generator Interconnection
- BPM-031 ICCP Data Requirements
- MISO Tariff
- MISO BPMs
- MISO BA Agreement
- MP Application
- NAESB webRegistry Guidelines
- NERC INT Standards
- NERC Reliability Standards
- NAESB WEQ Business Practice Standards
- RTO-PTU-OP1 PJM-MISO Pseudo-Tied Units Operating Procedure
- RTO-SPEC-006 – MISO Reliability Data Specification

## Appendix A –Pseudo-tie Implementation Process

Notification	Responsible Party	Due Date
Market Participant sends notification to <a href="mailto:TieSupport@misoenergy.org">Pseudo-TieSupport@misoenergy.org</a> and external Balancing Authority indicating intent to Pseudo-tie or change a Pseudo-tie. Market Participant also submits a Dynamic Transfer request through MISO's <a href="#">Help Center</a> .	Market Participant	MISO – 1 Year prior to activation Note: Non-MISO entities may require notification beyond 1 year.
MISO responds to Market Participant with proposed Pseudo-tie activation schedule	MISO	1 month after notification
Pre-Assessment	Responsible Party	Due Date
Confirm M2M and Non-M2M processes (Interchange Distribution Calculation) support Pseudo-tie.	Reliability Coordinators, MISO Seams Administration	1 month after notification
Agree on plan and timeline for running Flowgate tests and performing benchmarking – subject to the Market-to-Market and Non-Market accuracy criteria in Section 8 – Congestion Management of this BPM.	Reliability Coordinators, MISO Seams Administration	1 month after notification
Determines needed operational procedures and studies.	MISO Reliability Coordinator	1 month after notification
MISO determines required studies and whether Market Participant needs to submit transmission service request on MISO OASIS.	MISO Transmission Provider	1 month after notification

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Develops reimbursement agreement if Local Balancing Authority / Transmission Operator needs to allocate any costs associated with Pseudo-tie implementation in accordance with the Transmission Customer Obligations section of the MISO Tariff.	Local Balancing Authority / Transmission Operator	2 months after notification
Provides MISO evidence of agreement with MISO Local Balancing Authority to install necessary measurements to capture Pseudo-tie flows in accordance with MISO tie-line measurement requirements outlined in the following:  BA Agreement Section 4.5, RTO-SPEC-005, RTO-SPEC-006, NERC BAL-005, MISO BPM 005 – Market Settlement, MISO BPM-010 – Network and Commercial Models – Existing BA Tie-Line Requirements	Market Participant	TBD based on Local Balancing Authority measurement lead-time
Agrees to provide MISO primary tie-line MW and MWH measurements. BA Agreement Section 4.5, MISO BPM-010 – Network and Commercial Models – Existing BA Tie-Line Requirements	Local Balancing Authority	3 months after notification
Agrees to provide MISO secondary tie-line MW measurement. BA Agreement Section 4.5, MISO BPM-010 – Network and Commercial Models – Existing BA Tie-Line Requirements	External Balancing Authority	3 months after notification

## Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules

BPM-030-r6

Effective Date: JUL-01-2024

Transmission Service Evaluation	Responsible Party	Due Date
New Pseudo-tie requests require Long-Term Firm Transmission Service to be maintained for the entire duration of Pseudo-tie from the Generator to the sink Balancing Authority or from the source Balancing Authority to the Load.	Transmission Customer	To be determined as part of Project Timeline
Any Transmission Service Reservation (TSR – new, existing, or redirected) used for a new Pseudo-tie must include evaluation from source to sink.	Transmission Customer	To be determined as part of Project Timeline
Redirection of TSR used for Pseudo-tie not allowed for period Pseudo-tie remains in effect.	Transmission Customer	To be determined as part of Project Timeline
TSR used for Pseudo-tie source and sink representation must match EMS model source and sink representation. Request must be unit-specific into or out of MISO.	Transmission Customer	To be determined as part of Project Timeline
MISO conducts System Impact Study and identifies constraints in MISO system. For identified constraints, MISO Transmission Provider will perform the required facility study to estimate the cost/schedule to upgrade the transmission element. MISO will notify external Transmission Provider of constraints found on external Transmission Provider system.	MISO Transmission Providers	To be determined as part of Project Timeline
External Transmission Provider conducts System Impact Study and identifies constraints in external Transmission Provider system. For identified constraints, external Transmission Provider will perform the required facility study to estimate the cost/schedule to upgrade the transmission element. External Transmission Provider will notify MISO or MISO Transmission Planner of constraints found on MISO's system.	External Transmission Provider	To be determined as part of Project Timeline

## Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules

BPM-030-r6

Effective Date: JUL-01-2024

Transmission Service Evaluation continued	Responsible Party	Due Date
MISO will perform additional studies using criteria or assumptions required by the external BA market rules (deliverability analysis / contingency list / Flowgates). Transmission Customer pays for initial study and associated upgrades.	MISO Transmission Planner	To be determined as part of Project Timeline
Transmission Customer agrees to have identified upgrades in-place and in-service prior to Pseudo-tie activation.	Transmission Customer	To be determined as part of Project Timeline
If a Grandfathered Agreement (GFA) is being used and turned into a TSR, the Market Participant is required to confirm all parties to the GFA are aware of the request and approve it.	Market Participant	To be determined as part of Project Timeline

# Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules

BPM-030-r6

Effective Date: JUL-01-2024

Conditional Approval	Responsible Party	Due Date
Sign and send Pseudo-tie Agreement documents to <a href="mailto:Pseudo-TieSupport@misoenergy.org">Pseudo-TieSupport@misoenergy.org</a> .	Market Participant	Agreed upon Conditional Approval deadline
Distribute legal documents to Balancing Authorities, source Transmission Operator, sink Transmission Operator, Market Participant, and Reliability Coordinators.	MISO RTO	Agreed upon Conditional Approval deadline
Parties agree to proceed with Pseudo-tie implementation (native BA/RC, attaining BA/RC, source TOP, sink TOP, Market Participant).	All	Agreed upon Conditional Approval deadline
Registration	Responsible Party	Due Date
Entity submits new Pseudo-tie request for inclusion in MISO's Commercial Model via MP application (new Applicants only). In addition, entity submits a Model Change Request (MCR) in the MISO Model Manager tool.  Send documentation to <a href="mailto:help@misoenergy.org">help@misoenergy.org</a> . Once MISO Model Manager is designated the tool of record, utilize MCR to submit the information to MISO.	Market Participant	<a href="#">MISO Public Website → Markets and Operations</a> Network and Commercial Model Schedule
Register according to the guidelines of the external Balancing Authority.	Market Participant	External Balancing Authority Timeline

# Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules

BPM-030-r6

Effective Date: JUL-01-2024

Implementation	Responsible Party	Due Date
Review requested Pseudo-tie and parameters. Confirm parameters with external Balancing Authority and external Reliability Coordinator.	MISO Modeling	<a href="#">MISO Public Website → Markets and Operations Network and Commercial Model Schedule</a>
Identify and finalize Market-to-Market Reciprocally Coordinated Flowgates. Work with external Reliability Coordinator to benchmark shift-factors.	MISO Seams Administration	2 model updates prior to activation
Confirm TSR source and sink are consistent with both Reliability Coordinators' Network Model company representations.	MISO Generation & Interchange, Modeling	2 months prior to network model update with model containing Pseudo-tie
Add Pseudo-tie to MISO Models (Markets, Reliability, and Planning)	MISO Modeling	<a href="#">MISO Public Website → Markets and Operations Network and Commercial Model Schedule</a>
Review and confirm Commercial Model posted on MISO market portal.	Market Participant	By requested confirmation deadline
Confirm measurements fulfill Local Balancing Authority obligations and measurements are configured, tested, and ready for activation. Once MISO Model Manager is designated system of record, all telemetry updates must be submitted via this path.	Local Balancing Authority	No earlier than 60 days prior to effective date
Register Pseudo-tie with NAESB webRegistry.	Market Participant	No earlier than 60 days prior to effective date

# Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules

BPM-030-r6

Effective Date: JUL-01-2024

Implementation continued	Responsible Party	Due Date
Review/Approve Pseudo-tie with NAESB webRegistry.	MISO Modeling, Generation & Interchange	Within ten (10) days of received submission
Release Commercial Model to Production.	MISO Commercial Modeling	7 – 10 days prior to Topology effective date
Create Financial Contract in DART for scheduling and reporting real-time actual flow.	MISO Market Settlements	7 – 10 days prior to Topology effective date
Activation	Responsible Party	Due Date
If needed, attaining Balancing Authority hosts conference call with Market Participant to support cutover.	Attaining Balancing Authority	Cutover
Retirement / Change	Responsible Party	Due Date
Changes subject to Pseudo-tie notification and Pseudo-tie registration requirements.	Market Participant	<a href="#">MISO Public Website → Markets and Operations Network and Commercial Model Schedule</a>
Retirements subject to Attachment Y notification requirements in accordance with Section 38.2.7 Generation Suspension, Generation Retirement, and System Support Resources of the MISO Tariff.	Generator Owner	See Generation Suspension, Generation Retirement, and System Support Resources section of the MISO Tariff



## Appendix B – Dynamic Interchange Schedule Implementation Process



Action	Responsible Party	Due Date
<b>Notification</b>	<b>Responsible Party</b>	<b>Due Date</b>
Market Participant also submits a Dynamic Transfer request through MISO's Help Center. MISO responds to Market Participant with proposed Dynamic Interchange Schedule activation schedule	Market Participant MISO	MISO – 1 year prior to activation Note: Non-MISO entities may require notification beyond 1 year. 1 month after notification
<b>Pre-Assessment</b>	<b>Responsible Party</b>	<b>Due Date</b>
Determines needed operational procedures and studies.	MISO Reliability Coordinator	1 month after notification
MISO determines required studies and whether Market Participant needs to submit transmission service request on MISO OASIS. Note: Non-firm service is acceptable for a Dynamic Interchange Schedule.	MISO Transmission Provider	1 month after notification
Agrees to provide MISO ICCP object IDs BA Agreement Section 4.5, MISO BPM 010 – Network and Commercial Models – Existing BA Tie Line Requirements, MISO BPM-031 ICCP Data Requirements – Real-time Market Input Data	Local Balancing Authority	1-3 months after notification, depends on Quarterly Model Update Schedule

# Dynamic Transfers: Pseudo-ties and Dynamic Interchange Schedules

BPM-030-r6

Effective Date: JUL-01-2024

Transmission Service Evaluation		
New Dynamic Interchange Schedule requests require Transmission Service (Firm or Non-Firm)	All	Customer will submit Firm and/or Non-Firm transmission requests in accordance with the timing listed in the MISO Tariff, Attachment J. MISO must confirm transmission requests prior to use in a Dynamic Interchange Schedule.
Conditional Approval	Responsible Party	Due Date
Parties agree to proceed with Dynamic Interchange Schedule implementation (MISO and external BA/RC, Market Participant)	All	Agreed upon Conditional Approval Deadline
Implementation	Responsible Party	Due Date
Review requested Dynamic Interchange Schedule and parameters. Confirms parameters with external Balancing Authority		MISO Network Model Update Submission Deadline
Adds Dynamic Interchange Schedule to MISO Models, if required	MISO Modeling	<a href="#">Network and Commercial Model Update Schedule</a>
Confirms measurements fulfill Local Balancing Authority obligations and measurements are configured, tested, and ready for activation.	Local Balancing Authority, MISO Modeling	30 days prior to activation date
MISO Models released to production.	MISO Modeling	Upon Quarterly Model Update Schedule
Activation	Responsible Party	Due Date
If needed, MISO and external Balancing Authority hosts conference call with Market Participant to support cutover.	MISO and external Balancing Authority	Cutover to activation