



Joint and Common Market

ITEM 4 – PSEUDO TIES



Agenda

1.	Overview
2.	Background
3.	PJM Update
4.	MISO Update
5.	Congestion Overlap Solution
6.	Next Steps

Overview

Purpose

- Provide a status update on MISO-PJM pseudo ties

Goals

- Implement near-term pseudo-tie administration enhancements
- Address long-term enhancements/alternatives for pseudo tie challenges

Key Takeaways

- MISO and PJM implementing enhanced pseudo-tie administration processes
- PJM enhancing pseudo-tie capacity requirements
- MISO and PJM jointly developing solution for congestion overlap to resolve Section 206 Complaints

Background

- PJM and MISO have reliably administered a significant increase in pseudo-ties (2061 MW) for 2016-2017 planning year
- Congestion Overlap issue has led to FERC complaints
- Additional administrative enhancements being implemented for 2017-2018 planning year and beyond
- Long term goals address all pseudo-ties and pseudo-tie processes

Common Issues

Reliability

- Local reliability concerns (MISO)
- Increased interregional outage coordination (PJM)
- EMS modeling (PJM)

Markets

- Pseudo-Tie Congestion Overlap (PJM and MISO)

MISO Pseudo Tie Administration Update

- MISO's Pseudo-tie Agreement will be filed at FERC in the near term
- Agreement outlines requirements between market participants and MISO for pseudo-ties
- Pseudo-tie Business Practice Manual is available on the MISO website in the under review section

MISO Remaining Issues

Reliability

- Host RTO / RC may be unable to effectively control its transmission system without sufficient generation control

Markets

- Out-of-merit dispatch for local reliability concerns

Planning

- Transmission service request evaluation process
- Unit retirements

Compliance

- NERC, NAESB, JOA and Tariff implications

PJM Overview: Main Challenges

- Network Model Expansions - EMS and Markets Modeling Challenges adhering to NERC and FERC compliance standards
- Planning Analysis – External entity planning analysis comparability to PJM planning criteria
- Congestion Management – Local and Regional external system Congestion Management challenges



PJM Pseudo Tie Administration Update

PJM has proposed the following for the treatment of new external resources.

Modeling Requirements

- Limitation on the electrical distance a resource can be from PJM and be able to provide capacity.
- Network models for PJM and external area need to be aligned for potential coordinated flowgates.

Deliverability Analysis

- Require that external capacity resources have firm transmission service that was studied using the standards that PJM applies for internal resources.

Market Requirements

- Require that for external capacity resources, PJM obtains firm rights for its impacts.
- Require that resource does not result in less than optional dispatch, as a result of being the only resource with any impact on additional coordinated flowgates. (1.5% Test)

PJM Pseudo Tie Administration Update (cont.)

PJM has proposed the following for treatment of existing external resources*

- External resource owners with long term contracts with PJM load may be permitted to participate for the life of the asset
 - Evidence needed of a long-term contract or equivalent documented agreement with internal PJM load to sell the capacity and energy of the external resource 10 years or longer and was entered into on or before June 1, 2016
- External resource owners without long term contracts with PJM load may be permitted to participate for the next two RPM auctions (thru 2021/2022 Delivery Year)

*Subject to Operational Deliverability

PJM Status Update

- PJM Stakeholders approved proposed rules for treatment of new pseudo-tie requests but did not approve proposed rules for treatment of existing pseudo-tie requests
- PJM to seek Board recommendation for FERC filing
- Pending FERC approval, PJM will apply the new rules effective with the May 2017 Base Residual Auction
 - PJM is also pursuing a requirement for pseudo-tie resources and external balancing authorities to sign a pro-forma pseudo tie agreement, which is currently under current review, to be filed with FERC.

Congestion Overlap: Overview

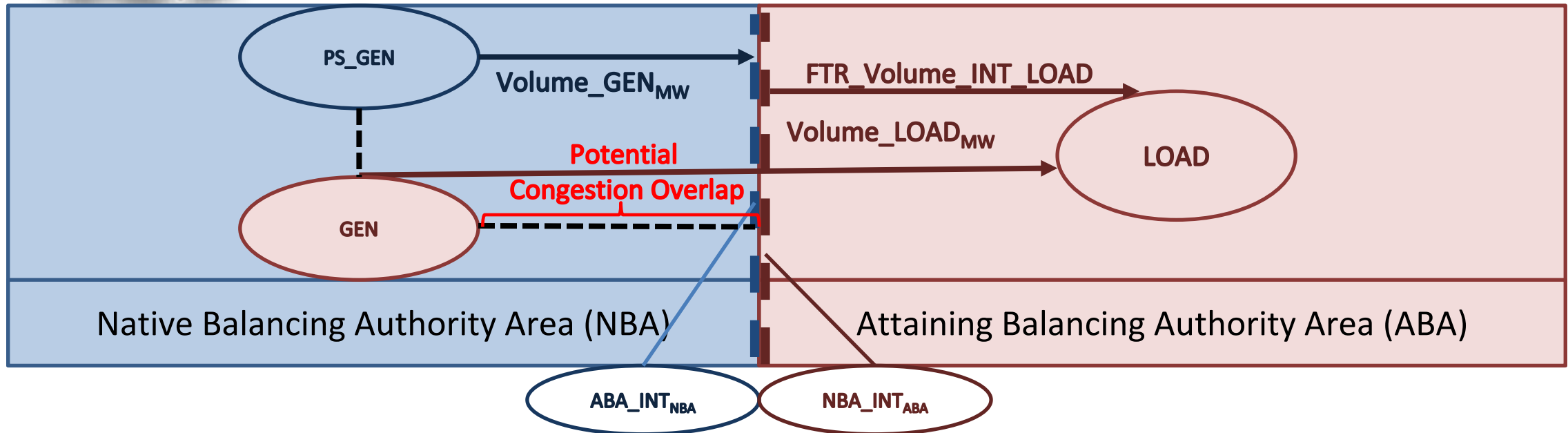
➤ Purpose

- Explain the issue
- Explain the solution
- Discuss path forward

➤ Key Takeaways

- MISO and PJM have developed short-term and long-term solutions to address the congestion overlap in the associated markets and in Market-To-Market coordination and associated settlements.
- Solutions provide rebates in appropriate markets for congestion overlap, adjusts market-to-market settlements better to reflect charges, and enhances pseudo-tie scheduling and settlements to improve market administration and alignment of congestion charges and rebates.

Congestion Overlap: Issue Explanation



Transmission Congestion Charge: The NBA assesses explicit congestion charges based on the transaction volumes and the Marginal Congestion Components (MCCs) at the source Generator and the ABA Interface. Charges are currently based on Real-Time LMPs.

Transmission Congestion Rebate: To the extent the Market Participant holds FTRs in the NBA's market, the NBA allocates congestion rebates based on the MCCs at the source and the ABA Interface. Rebates are based on Day-Ahead LMPs.

Transmission Congestion Charge: The ABA assesses congestion charges based on MCCs at the source Generator and the Load. This includes congestion costs associated with the path between the source Generation and the NBA Interface, the source of the Congestion Overlap. The charges may be based on either Day-Ahead or Real-Time, depending on when the generation is scheduled.

Transmission Congestion Rebate: To the extent the Market Participant holds FTRs in the ABA's market, the ABA allocates congestion rebates based on the MCCs at the NBA Interface and the Load. Rebates are based on Day-Ahead LMPs.

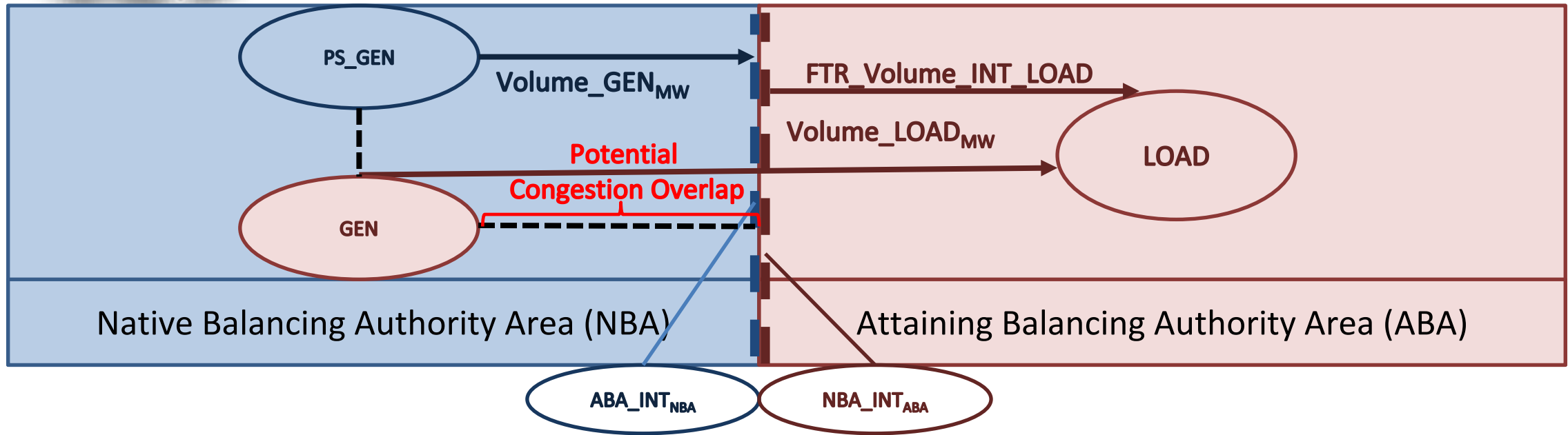
Potential Congestion Overlap: Market transactions/offers may face overlapping congestion charges between source Generation and ABA Interface.

Congestion Overlap: Issue Elaboration

Pseudo-Tie Discussion

- Generation resources that implement interchange via pseudo-tie between the Native BA and Attaining BA schedule and/or offer only in the ABA energy market. The transactions or offers are assessed charges based on the scheduled volume/offer and the Marginal Congestion Component (MCC) for the locational marginal prices (LMPs).
- Native BA assessed Transmission Usage Charges are comparable to those assessed to dynamic scheduled interchange. Pseudo-tie Transmission Customers are afforded the similar treatment as dynamic schedules with respect to Transmission Rights.
- The Congestion Overlap occurs on the pseudo-tie transaction path between the source Generation and sink Interface for congestion associated with Reciprocal Coordinated Flowgates coordinated between the RTOs under Market-To-Market.
- For Market-to-Market Coordination, the Pseudo-Tie transaction is included in the Market Flow calculation of the Attaining BA, and therefore may result in payments from the ABA to the NBA for congestion relief.

Congestion Overlap: Solution



Phase 1 (Tentatively June 1, 2017)

- The RTOs will adjust Market-to-Market settlement rules to account for Market Flows associated with the pseudo-ties from the source Generator to the Interface, this will ensure the Attaining BA has sufficient revenue to provide refunds.
- To address the Congestion Overlap, the Attaining BA will provide a rebate of congestion between the source Generator and the Interface associated with M2M constraints when the M2M constraint binds in both the Native and Attaining BA.

Phase 2 (Tentatively June 1, 2018)

- Future systems, Tariff and JOA enhancements will allow for scheduling and settlement of pseudo-tie transactions in the Native BA's Day-Ahead Market, in order to more effectively coordinate, administer markets, and align congestion charges with available hedges.

Simplified Examples

		Dynamic Schedule	Current Pseudo Tie	Proposed Pseudo Tie
LMP	NBA Gen	\$25.00	\$25.00	\$25.00
	NBA Interface	\$35.00	\$35.00	\$35.00
	ABA Gen	N/A	\$25.00	\$25.00
	ABA Interface	\$35.00	\$35.00	\$35.00
	ABA Load	\$44.00	\$44.00	\$44.00
Schedule/Volumes				
	Schedule/ Offer Volume	100	100	100
	NBA FTR Gen-Int Path	100	100	100
	ABA FTR Int-Load Path	100	100	100
NBA – Settlements				
	LMP @ Gen	\$(2,500.00)	\$(2,500.00)	\$(2,500.00)
	LMP @ Interface	\$3,500.00	\$3,500.00	\$3,500.00
	Congestion Charge (Credit)	\$1,000.00	\$1,000.00	\$1,000.00
	FTR Congestion Rebate	\$(1,000.00)	\$(1,000.00)	\$(1,000.00)
ABA – Settlements				
	LMP @ Load	\$4,400.00	\$4,400.00	\$4,400.00
	LMP @ Interface	\$(3,500.00)	\$(2,500.00)	\$(2,500.00)
	Congestion Charge (Credit)	\$900.00	\$1,900.00	\$1,900.00
	FTR Congestion Rebate	\$(900.00)	\$(900.00)	\$(900.00)
	Proposed Congestion Rebate	\$-	\$-	\$ (1,000.00)
	Total MP Compensation	\$-	\$1,000.00	\$-
M2M				
	M2M Settlement	N/A	\$1,000.00	\$-

Next Steps

- RTOs discuss solutions with Section 206 parties to explore resolution outside FERC
- RTOs to continue solution development and share details with stakeholders

Possible Next Steps Timeline

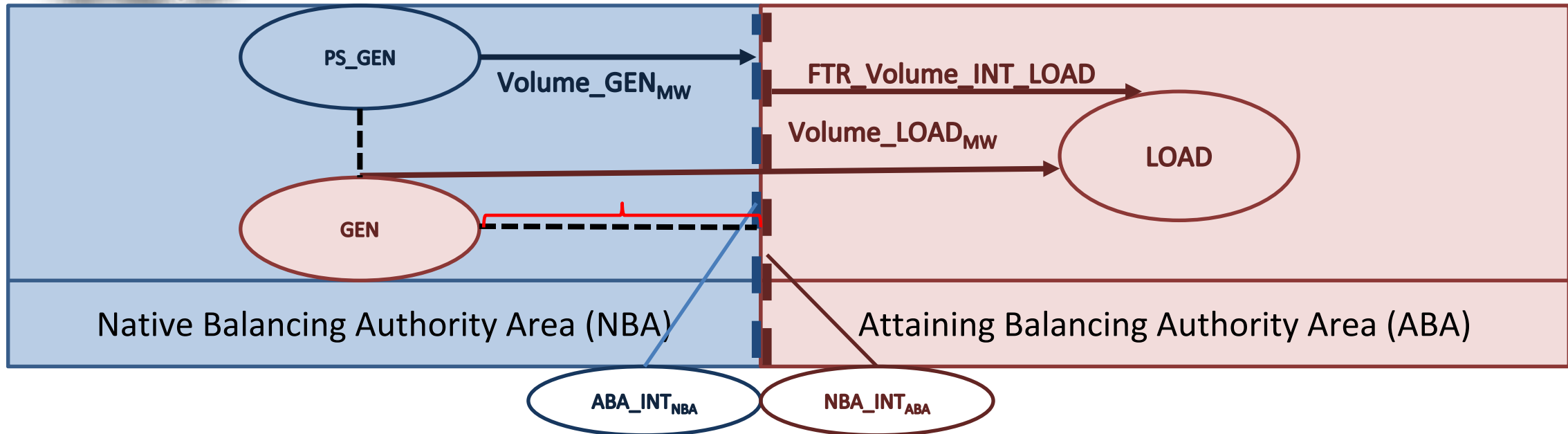
Due Date	Who	Action
March 1, 2017	MISO, PJM	Develop Short-Term and Long-Term solution to Congestion Overlap.
April 1, 2017	MISO, PJM, Stakeholders	MISO and PJM complete work with stakeholders, including Complainants on Solutions to Congestion Overlap and Double Charge. File Tariff and JOA changes with FERC as appropriate.
May 1, 2017	MISO, PJM	Deliver changes to JOA and Settlement Systems with a target implementation of June 1, 2017
June 1, 2017	MISO, PJM	Implement Short Term Solutions
June 2017– May 2018	MISO, PJM	Deliver and implement Long Term Solutions
June 2017– May 2018	MISO, SPP	Deliver Short and Long Term Solutions

Contacts

Stakeholder feedback – send comments to:

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Appendix: Congestion Double Counting



Transmission Congestion Charge NBA GEN_TUC_{CG} = Volume_PS_GEN_{MW} * (MCC_{ABA_INT} - MCC_{PS_GEN})

Transmission Congestion Rebate NBA FTR Allocation = FTR_Volume_GEN_INT * (MCC_{GEN} - MCC_{ABA_INT})

Transmission Congestion Charge ABA LOAD_TUC_{CG} = Volume_LOAD_{MW} * (MCC_{LOAD} - MCC_{GEN}) or

Transmission Congestion Charge ABA LOAD_TUC_{CG} = Volume_LOAD_{MW} * { (MCC_{LOAD} - MCC_{NBA_INT}) + (MCC_{NBA_INT} - MCC_{GEN}) }

Transmission Congestion Rebate ABA FTR Allocation = FTR_Volume_INT_LOAD * (MCC_{NBA_INT} - MCC_{LOAD})

Where:

- MCC_{PS_GEN} Is the Marginal Congestion Component of LMP for the Pseudo-Tie Generator's Commercial Pricing Node in NBA
- MCC_{ABA_INT} Is the Marginal Congestion Component of LMP for NBA's ABA Interface Commercial Pricing Node
- MCC_{NBA_INT} Is the Marginal Congestion Component of LMP for ABA'S NBA Interface Commercial Pricing Node
- MCC_{GEN} Is the Marginal Congestion Component of LMP for the Pseudo-Tie Generator's Commercial Pricing Node in ABA
- MCC_{LOAD} Is the Marginal Congestion Component of LMP for the Load's Commercial Pricing Node in ABA