

Pseudo-tie Congestion Overlap

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- Pseudo-Tie Market-to-Market congestion overlap between two RTOs is a complex issue and has led to FERC Complaints
- RTO Joint Operating Agreements (JOAs) and included Market-to-Market coordination and settlement rules may not appropriately accommodate the unique modeling, implementation and settlement circumstances associated with Pseudo-Tie Assets (Load or Generation)
- MISO and PJM are working to better administer Pseudo-Ties as well as mitigate modeling and market impacts that have been identified

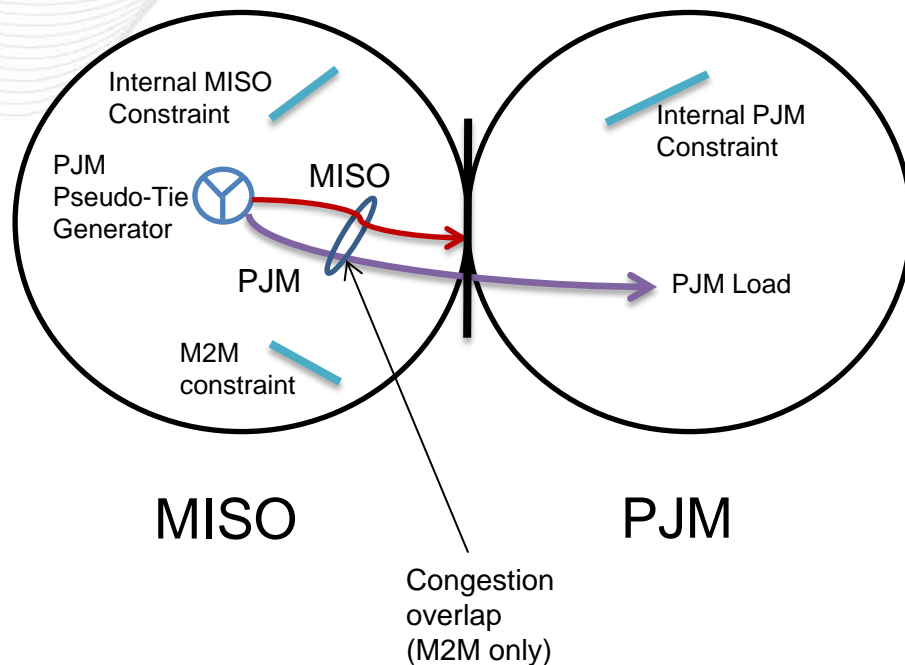
What is Pseudo-Tie Congestion Overlap?

MISO Market

- MISO collects Real-time Explicit Congestion (M2M and Internal MISO constraints)
- MISO collects excess congestion via M2M payment from PJM (PJM receives no FFE)

PJM Market

- PJM collects Day-ahead congestion on entire path (M2M and Internal PJM constraints)
- Unhedged congestion for partial path from unit to interface

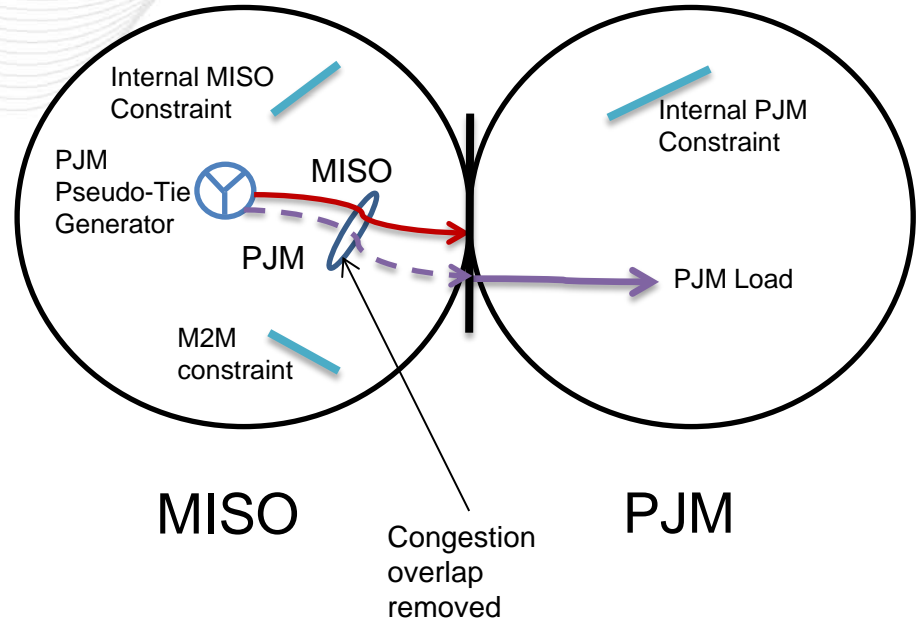


MISO Market

- MISO collects RT Explicit Congestion (M2M and Internal MISO constraints)
- MISO excess congestion removed from M2M payment (PJM M2M flow reduced) (Phase 1)
- MISO allows pseudo-virtual in DA to align with RT (Phase 2)

PJM Market

- PJM DA M2M congestion removed for path from unit to interface (Internal PJM congestion remains) (Phase 1)
- PJM provides FTR eligibility for entire path (Phase 2)
- PJM credits/charges will be issued based on DA vs. RT deviations



Phase 1 JOA language filed in December 2017 and tentative effective date is on March 1, 2018

- The RTOs will coordinate and model firm flows impacts before the Day-ahead run so that the congestion and the Day-ahead LMPs for the Pseudo-Tie Resources will better reflect expected Real-Time congestion. This removes the majority of overlapping congestion.
- In RT, Market-to-Market settlements will be adjusted to account for Pseudo-tie impacts. This will ensure the Attaining BA receives credit for Pseudo-tie resource flow from the unit to the interface.
- FERC issued deficiency notice on 12/28/17 with response due in 30 days.

Phase 2: June 1, 2018

Pseudo-tie Out of PJM

- Ability to submit Day-ahead pseudo-tie transactions in order to hedge Real-time explicit congestion charges.

Pseudo-tie into PJM

- Pseudo-tie node will be available in ARR/FTR markets for hedging purposes.
- Pseudo-tie owner will be refunded/charged for deviations between Day-ahead and Real-time.

Definitions to be added to OA and Tariff

- “Day-ahead Transaction for Pseudo-Ties” shall mean a transaction scheduled in the Day-ahead Energy Market to the PJM-MISO interface from a generation resource within the PJM balancing authority area that Pseudo-Ties into the MISO balancing authority area
- “M2M Flowgate” shall have the meaning provided in the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C

Real-Time Explicit Congestion Hedging Mechanism (Native BA)

- Schedule 1 Section 1.10.1A of OA & Attachment K in Tariff
 - Rules surrounding how a market participant can submit a day-ahead transaction in PJM to hedge Real-Time congestion for pseudo-ties out of PJM

Mechanism to charge or credit RT deviations

- Schedule 1 Section 3.8 & Attachment K in Tariff
 - Real-Time Market credits/charges will be issued to Pseudo-Tie Transactions based on deviations from Day-ahead schedule transactions.

- First read: January MIC and MRC
- Endorsement: February MIC and MRC, March MC

Implementation timeline: (Tentative pending FERC approval)

- Phase 1: March 1, 2018
- Phase 2: June 1, 2018

Detailed spreadsheet example provided with August 2017 JCM materials

- Allows for user “Plug and Play” to measure impacts of solution (Phase 1 and Phase 2)
- <http://www.pjm.com/-/media/committees-groups/stakeholder-meetings/pjm-miso-joint-common/20170822/20170822-dcpt-phase-2-example.ashx>