

Interface Pricing on PJM–MISO Seam

**WPPI Response to Potomac Economics,
MISO and PJM Presentations**

PJM–MISO Joint and Common Market Stakeholder Forum

January 24, 2014

Steve Leovy

Background

Both MISO and its IMM have presentations posted for the January 24, 2014 PJM-MISO Joint & Common Market Meeting:

Respectively,

https://www.misoenergy.org/_layouts/MISO/ECM/Redirect.aspx?ID=168578 &
https://www.misoenergy.org/_layouts/MISO/ECM/Redirect.aspx?ID=168600

IMM presentation, partially echoed by MISO's, mischaracterizes some key issues and WPPI's proposal (https://www.misoenergy.org/_layouts/MISO/ECM/Redirect.aspx?ID=162291)

This presentation provides my response, as well as comments on PJM's presentation (https://www.misoenergy.org/_layouts/MISO/ECM/Redirect.aspx?ID=168569)

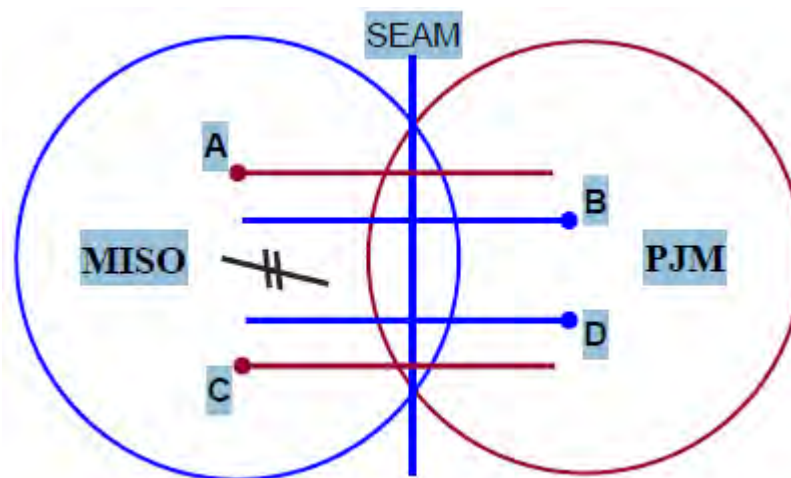
Proper Interface Pricing Involves Two Related but Distinct Issues

1. Ensure that total payment to transaction schedules equals Marginal Value of schedule to combined region (Double-Counting Issue)
2. Ensure that *each RTO's* payment to transaction equals Marginal Value of schedule *to that RTO* (Revenue Adequacy Issue)

Assuming only two RTOs, satisfaction of Issue 1 is a necessary but not sufficient condition for satisfaction of Issue 2

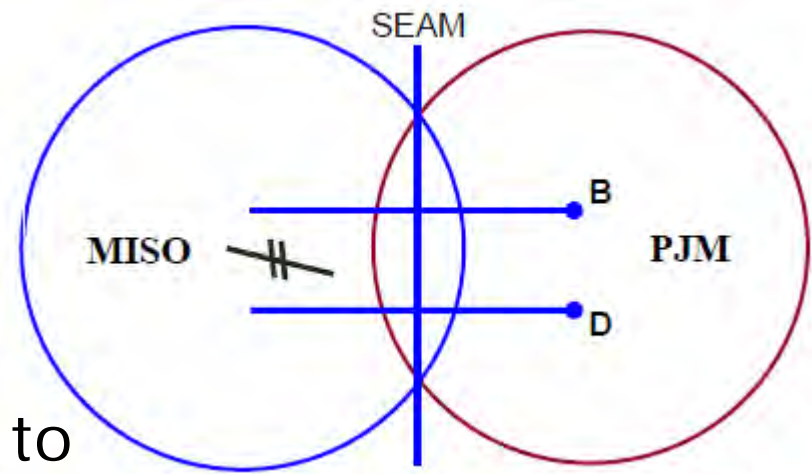
Double Counting

- I generally agree with MISO's IMM that:
 - (i) *"Under the current market, the full effect of the transaction on the MISO [Market-to-Market] M2M constraint is modeled by both RTOs;"*
 - (ii) that this leads to improper compensation to transaction schedules; and (iii) that the RTOs should therefore reduce the separation between their Interface definitions



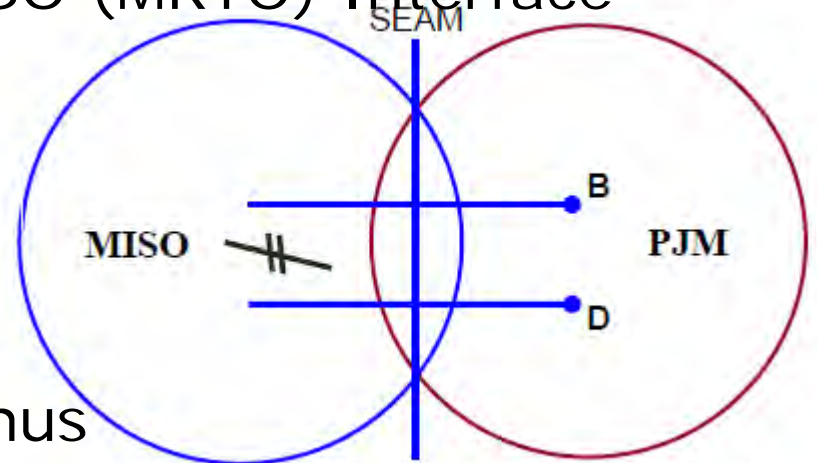
Potomac Economics' Proposal

- Potomac Economics suggests that eliminating external-constraint congestion from non-Monitoring RTO's (NMRTO's) price will result in congestion being counted exactly once
- This would be the case if NMRTO adopted MRTO's Interface definition (similar to WPPI Proposal), but I understand IMM's proposal to be that NMRTO Interface should be based on Reference Bus for apportioning LMP into Energy, Congestion & Loss components
- Resulting separation between Interface definitions means congestion will generally still be over- or under-counted to some extent



Does Potomac Economics' Proposal Yield Proper Price?

- Choice of Reference Bus is arbitrary, but I understand both RTOs use load-weighted distributed Reference Bus
- It's reasonable to expect a MISO (MRTO) Interface consisting of multiple PJM generator nodes to be closer to a PJM (NMRTO) Interface formed from load-weighted PJM Load nodes than to one made of 9 MISO generators, thus IMM proposal is probably superior to status quo
- However, Reference Bus is still arbitrary, subject to revision and liable to change with each dispatch interval
 - Does not appear to be "*Optimal*" as described by MISO



Revenue Adequacy

- Revenue Adequacy issue is satisfied when each RTO's Interface Price matches Marginal Value of incremental Interchange which, in turn, depends on the allocation of cost responsibility for re-dispatch to manage congestion caused by that incremental Interchange
 - MISO and its IMM propose an MRTO price that reflects entire cost of managing congestion
 - But this is not consistent with MRTO's share of cost responsibility for managing congestion under JOA
- Alignment of Interface price with re-dispatch responsibility is required for Revenue Adequacy under any proposal, including Potomac Economics'
- It is not sufficient that "*settlement reflects the [MRTO's] valuation [] of the constraint;*" it must also reflect assignment of re-dispatch responsibility

M2M Shadow Prices

- Potomac Economics suggests (at 7) that, in WPPI's proposal, when the RTOs have different Shadow Prices for M2M constraints, the compensation to transaction schedules will be incorrect
- This is not the case — IMM error lies in assuming MRTTO bears full cost of incremental congestion
- As long as same Interface definition is used for calculation of both RTOs' Interface Prices and for allocation of both RTOs' re-dispatch responsibility, each RTO's Interface Price will correctly reflect its own marginal value of incremental interchange
- It is true, however, that equal M2M Shadow Prices are a prerequisite for optimal joint dispatch

Non-M2M Constraints 1

- Potomac Economics says (at Slide 7) that, under WPPI's proposal, "*Non-M2M constraints will not be efficiently settled because the effects of the transaction from the seam into PJM will be missing*"
- This exaggerates the difference between the proposals
- PJM's MISO definition already consists of nodes near the physical seam, and MISO proposes to redefine its PJMC definition in a similar manner, without raising Potomac Economics' concern
- It should be straightforward to develop a common Interface definition that is similar to existing definitions from perspective of non-M2M constraints

Non-M2M Constraints 2

- Generally, constraints should be non-M2M constraints only if they are not significantly impacted by NMRT0 dispatch
- For such constraints, dispatch from NMRT0 generators to a common interface definition near the physical seam should have little impact
- Non-M2M constraints that are significantly impacted by NMRT0 dispatch will lead to inefficient joint dispatch even without interchange
 - Interchange effects are thus a second-order concern
- PJM and MISO have the opportunity to select a common Interface definition that minimizes the impact of non-M2M constraints, and this is an appropriate criterion for selecting Interface definition

PJM Proposal: Generally Sound

- Interface nodes need not be on NMRTO side of significant constraints
 - Interface definition should be used to allocate re-dispatch responsibility associated with incremental interchange, as well as to calculate Interface Prices, and should be designed to provide reasonable allocation
 - As noted above, it does make sense to select nodes that minimize the impact of non-M2M constraints, but this does not necessarily point to NMRTO side of constraints
- I generally agree with PJM and Potomac Economics on non-contiguous Interfaces
 - Ideally, these should be eliminated entirely
 - Effective M2M & Interchange Optimization between MISO and PJM should make IESO-PJM or NYISO-MISO transactions superfluous

Summary I

- Effective Interface Definitions resulting from Potomac Economics' proposal would likely be "closer," and thus better, than in the status quo, however:
 - Assuming intent is that elimination of external congestion be based on distributed Reference Bus — IMM proposed fix would fall short of the theoretically ideal characteristics of identical Interface definitions
 - It would not, by itself, necessarily better align Interface Prices with individual-RTO marginal costs. For Revenue Adequacy, a separate effort to align Interface Price with re-dispatch responsibility is necessary in any approach
 - IMM proposal would appear to require non-trivial changes to the RTOs' RT, DA & FTR software
 - ~ Could these be implemented in a timely manner?

Summary II

- WPPI's proposal does not have the deficiencies attributed to it by MISO and its IMM. It would:
 - More precisely eliminate the Double Counting problem than Potomac Economics' proposal
 - Would provide correct pricing even when M2M shadow prices are not the same
 - Deal with non-M2M constraints approximately as well as the existing Interface definitions that Potomac Economics proposes to retain for the MRTO, and allow adjustment of Interface definitions to minimize this problem
- In addition, it could be implemented solely through change to the Interface definitions, with no other system changes required

Recommendations I

1. Both RTOs should develop common Interface Definition to settle interchange transactions
 - i. Use same Interface Definition to allocate responsibility for managing constraints (Market Flow calculation)
 - ii. Definition change should not necessarily extend to other uses (e.g. loop-flow modeling for FTR Market)
2. Could initially consist of 18 already-identified nodes (9 in PJM, 9 in MISO), for June 2014
3. Future improvements might minimize influence of non-M2M constraints, and could improve inter-RTO equity

Recommendations II

4. RTOs should consider directly scheduling interchange rather than paying third parties for transactions that RTOs could implement for free
5. Fix Interface Prices not only on PJM-MISO seam, but also on PJM-NYISO & MISO-SPP seams
6. Settlement Interfaces for non-adjacent regions (e.g. PJM-IESO, or MISO-NYISO) appear unnecessary and should be discouraged

Steve Leovy — WPPI Energy

(608) 834-4564 — sleovy@wppienergy.org