
**MISO AND PJM
INTERFACE PRICING ERROR**

Prepared by:

**POTOMAC
ECONOMICS**

**MISO-PJM Joint and
Common Market Meeting**

September 20, 2013

A. Summary

We have investigated MISO and PJM's methodology for determining their respective interface prices and concluded that they contain a substantial error when a market-to-market constraint is binding in both markets.

The interface prices posted for both MISO and PJM include the marginal effects of the external transactions on all binding constraints. For example, when MISO calculates its interface price for PJM (used to settle all imports from and exports to PJM), it models how the injections in one area and withdrawals in the other area are likely to affect all binding constraints in MISO.

Therefore, transactions that would *aggravate* a constraint will incur a congestion charge (i.e., by being paid less for an import or charged more for an export), while those that *relieve* the constraint will receive a congestion payment (i.e., by being paid more for an import or charged less for an export). In most cases, this is efficient because the settlement with the participant will reflect the marginal congestion benefit or cost caused by the transaction.

The error arises when a market to market constraint is binding in both the MISO and PJM markets. In this case, when a transaction is scheduled that involves both RTOs, the transaction will be paid or charged by both RTOs. The problem with this is that the payment by the monitoring RTO fully and efficiently compensates the transaction for the flow relief it provides. Therefore, *every dollar paid by the non-monitoring RTO for the same relief is redundant with the payment made by the monitoring RTO*. There is not justification for the non-monitoring RTO to make an additional payment or impose an additional charge on the transaction.

Additionally, the non-monitoring RTO has no funding source for these payments so these costs will ultimately be uplifted to the non-monitoring RTO's customers as:

- Negative excess congestion fund (ECF) in MISO;
- Balancing congestion in PJM; or
- FTR underfunding (MISO and PJM).

The next section provides an excerpt from our 2012 State of the Market Report that provides a numerical example of these error and our estimates of the uplift costs it generates.

B. 2012 MISO SOM Report Excerpt: Overpayment and Overcharging of Congestion in Interface Prices

It is appropriate for external constraints to be reflected in MISO's internal LMPs because market flows are most efficiently limited through binding in the MISO dispatch.¹ This enables MISO to respond to relief requests under the PJM JOA for market-to-market constraints and TLR obligations for other external constraints.

However, MISO is not obligated to pay participants to schedule transactions that relieve constraints in external areas. In fact, the effects of real-time physical schedules are excluded from MISO's market flow so they would not be credited as relief being provided by MISO.² In most cases, these beneficial transactions are already being fully compensated by the area where the constraint is located. For example, when PJM market-to-market constraints bind and are activated in the MISO market, both RTOs pay (or charge) the transaction for the estimated effect of the transaction on the constraint. Since the constraint is active in both markets, both RTOs follow the process described above for setting the interface prices.

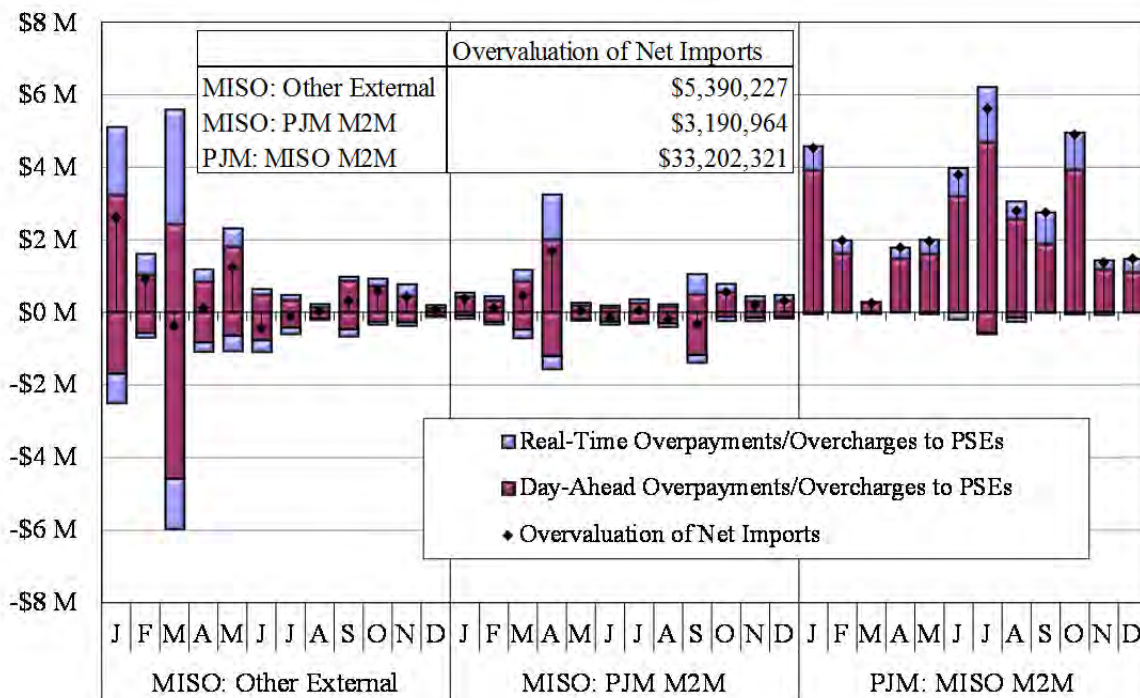
To establish whether this double settlement exists, we identified hours when no constraints were binding in PJM or MISO except one market-to-market constraint. By focusing on the prices in these cases, it is relatively straightforward to evaluate this issue because the congestion component of the interface prices in both PJM and MISO will solely reflect the estimated effects related to the single binding market-to-market constraint. In the example below, we show an example of an hour where the only binding constraint was a MISO market-to-market constraint. The example then shows the settlements that would result for a transaction scheduled from IESO to PJM (wheeled through MISO). This transaction would help relieve the MISO constraint so it would receive congestion payments from MISO and PJM.

To better understand the prices and settlements, we show each interface LMP along with the congestion component of the LMP and the Generation Shift Factor (GSF). The GSF indicates

-
- 1 Market flows are the flows that MISO generation and load cause on external constraints and are the basis for MISO's obligations to alter its dispatch under the market-to-market agreements and under TLRs.
 - 2 Likewise, transactions scheduled in MISO's day-ahead market and cut via TLR on an external flowgate are compensated by MISO as if they are relieving the constraint even though this effect is excluded from MISO's market flow calculation.

congestion payment will be collected from its customers as an uplift charge.³ In MISO, this charge would be categorized as negative Excess Congestion Fund (“ECF”). Likewise, MISO congestion payments made to real-time external transactions associated with PJM market-to-market constraints would be collected from MISO’s load-serving entities through the real-time balancing congestion component of Revenue Neutrality Uplift. Figure 1 shows the total overpayments by both MISO and PJM over the past two years. These overpayments cause increased negative ECF costs and market-to-market settlement costs.

Figure 1: Overvaluation of Net Imports
MISO and PJM



In addition to the overpayments for transactions that are expected to help relieve the constraint, this issue causes transactions to be overcharged for congestion when they are expected to aggravate a constraint. Although this effect will not result in uplift, it serves as an economic barrier to efficient external transactions.

3 Since PJM’s generation levels can affect its market flows on the constraint, the transaction could have a secondary effect on its market-to-market settlements (positive or negative) that are not quantified.

MISO's overpayments to external transactions for relief of external constraints also raise uplift costs to MISO's consumers. For example, when SPP invokes TLRs to solicit relief from MISO on its constraints, MISO activates the constraints and MISO's interface prices will adjust to account for the effects of the external transactions on the SPP constraint. Although the payments embedded in the interface prices will motivate participants to schedule transactions to relieve these constraints, MISO receives no reimbursement or other credit for this relief since these commercial flows do not impact its market flow-based obligation and constraint management. Instead, it generates costs that must be collected from its customers as uplift. For example, net real-time transactions affecting SPP flowgates (predominantly Iatan-Stranger) accounted for \$10.5 million in negative ECF accruals during the 2011-2012 time period.

Therefore, we recommend modifying interface pricing to produce more efficient signals to facilitate physical scheduling. One approach to satisfy this objective would be to eliminate the congestion components associated with external constraints for its interfaces.