

Alignment of MISO and PJM's Intra-hour Scheduling Rules

Introduction

To schedule interregional transactions between MISO and PJM, the participants have to submit E-tags through a common portal and each RTO would approve these E-tags separately based on its own scheduling rules. Each RTO set its scheduling rules to ensure system reliability and market fairness, and at the same time provide participants flexibility, mainly based on its own stakeholders' preferences. As a result, these rules are different between RTOs. However, a transaction has to satisfy both sets of rules and the combined effect of the individual RTOs' rules is more restrictive than each RTO's individual design and may deviate from RTOs' original goals to maximizing participants' flexibility while maintaining system reliability and market fairness.

Currently, MISO requires schedules to be submitted 30 minutes prior to start of the schedule and does not allow intra-hour schedules. Minimum schedule duration in MISO is 15 minutes. On the other hand, PJM currently requires schedules to be submitted 20 minutes prior to start of the schedule and allows intra-hour schedules. However, the minimum schedule duration in PJM is 45 minutes. The resulting combination of the rules for schedules between MISO and PJM are effectively 30 minutes prior to start, no intra-hour schedule and 45- minute minimum duration.

Both MISO and PJM recognize the issue and are working together to align their scheduling rules to provide more flexibility to participants. While the aligned rules would continue to ensure system reliability and market fairness, the two RTOs have agreed on two goals for this effort: to maximize the ability to retain flexibility and to minimize any impact to system control. These two objectives could counteract under the current market constructs including the hourly settlement process so the two RTOs are working for a compromised solution that would best fit for both RTO's needs.

Origin of the Intra-hour Scheduling Rules

Before the current rules took effect, both RTOs had allowed intra-hour schedules with minimum 15-minute duration. Under these rules, participant scheduling practices evolved to the point where significant schedule changes for the last 15 minutes of a clock hour caused both RTOs' operators control issues and may have introduced market inefficiency while providing opportunity for financial profitability.

Since the interregional transactions are settled hourly based on the average of 5-minutes LMPs during the hour, participants may predict the profitable direction of transactions between MISO and PJM based on published LMPs for the first part of the hour and, if permitted, schedule intra-hour transactions for the later part of the hour to make almost guaranteed profits. For example, if MISO's price is \$1000 higher than PJM's price during the first quarter hour, a participant may schedule a transaction from PJM to MISO for the last quarter hour to take advantage of the hourly settlement rule. Ignoring the cost of transmission charge, the transaction would be profitable as long as MISO's price is not more than \$333 lower than PJM's price in average during the last three quarter hours. This activity would caused market volatility that caused both operators to experience system control issues both when the transactions were initiated as well as when they were curtailed by the participants, as well as caused increased short-term commitment costs due to the need to call on physical resources for very short durations. In addition, MISO believes that allowing scheduling participants to be settled partially on known market prices introduces economic inefficiency and is also unfair to other market participants.

To prevent the control and efficiency issues described above, MISO and PJM adopted their individual current rules independently as developed through their individual stakeholder processes.

Options to Align Intra-hour Scheduling Rules

Adopting 5-minute settlement on schedules would be able to solve the problem and provide maximum flexibility in scheduling. This might be the eventual long-term solution for the issue. In the meantime, a short-term solution could be identified. Before an alternative solution emerges, the RTOs are evaluating the option that both RTOs adopt either the current MISO rules or the current PJM rules.

The following table compares the two set of rules.

		Flexibility	Better Control	Easy to Administer
MISO	do not allow intra-hour schedules	Limited – does not allow reaction to price changes within the current operating hour	Yes	Yes
	minimum 15 minutes duration	Yes – shortest schedule duration that generally meets participant need	No	
PJM	allow intra-hour schedules	Yes - allows reaction to price changes within an hour	No	Difficult to enforce given the ability to schedule transactions in the opposite direction
	minimum 45 minutes duration	Limited – minimum schedule duration could be longer than desired by participants	Yes	

The difficulty in ensuring efficient intra-hour scheduling rule with the 45 minute minimum duration requirement can be explained with the same example introduced earlier. If in the first quarter hour, MISO’s price is \$1000 higher than PJM’s price, at 10:15, a participant could schedule a 100 MW transaction from PJM to MISO for 10:45 – 11:30. The participant could schedule another transaction from MISO to PJM for 50 MW for the next hour from 11:00 to 12:00 to cancel the undesired portion of the original transaction. The cancellation is based on effective transaction MWh integrated over the operating hour, which is 50MWh in this example.

Path Forward – Options to Reduce Inflexibility

The two rules together compound the inflexibility for participants wanting to schedule transactions between MISO and PJM. As a result, it will be beneficial for the participants if both RTOs can at least adopt either of the two rules based on the options



currently available. MISO and PJM are open to adopting each other's method in order to facilitate reduction of scheduling inflexibility while retaining system control and market efficiency and with adequate attention to administration requirements. Here are the options to consider:

1. Both RTOs adopt current MISO rules

The MISO rules may delay the participants' ability to respond to changing interface price differentials. However, the MISO rules have better controls and are easier to administer. PJM proposed adoption of MISO's rules to their stakeholders in May 2012 and observed opposition from some stakeholders. MISO and PJM are open to further discussing the merits of the opposing arguments.

2. Both RTOs adopt current PJM rules

The PJM rules do allow some ability to respond to changing interface price differentials within the hour but they do require longer minimum duration. Also, these are more difficult to enforce given the ability to schedule transaction in the opposite direction as described above. Additional monitoring or mitigation process might be needed for both RTOs to adopt PJM's rules and MISO is strongly concerned about this requirement.

3. Alternative Stakeholder proposal

MISO and PJM are also open to evaluating other alternative proposals that can be clearly demonstrated to be superior to the available options by providing more scheduling flexibility without adversely affecting system control and market efficiency.