

Five Minute Dispatch and Settlements IMM Package

MIC

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IMM



Monitoring Analytics

Dispatch and Pricing as Price Formation

- **Dispatch and pricing issues are fundamental price formation issues.**
- **Failure to correct dispatch and pricing distorts fast start pricing.**
- **Failure to correct dispatch and pricing distorts market outcomes under the ORDC and reserve market changes.**
- **The interaction of these issues with the ORDC and reserve market changes have not been discussed.**
- **All price formation issues should be considered before proceeding.**

Stakeholder Process

- **The IMM introduced the problem statement in May 2019 to address issues identified based on five minute settlements.**
- **PJM and the IMM worked together to understand the issues, articulate the issues, and formulate solutions.**
- **FERC directed PJM to work through the stakeholder process to reach a solution prior to fast start pricing.**
- **PJM and the IMM presented a joint package on March 31, 2020, but disagreed on implementation timing.**
- **PJM withdrew from the joint package on April 15, 2020.**
- **The joint package is now the current IMM package.**

Differences Between Packages

- **IMM proposes changes to dispatch, SCED calculations, and settlements.**
- **PJM only proposes to make the settlements changes.**
- **Both proposals would required a phased implementation.**
- **The difference is the level of commitment to making the changes.**
 - **IMM package commits to all changes.**
 - **PJM packages does not commit to all changes.**

Importance of Resolving the Issues

- **Aligning dispatch and settlements is required for accurate compensation for resources.**
- **Accurate compensation for resources and charges for load are required for market efficiency and correct market incentives.**
- **More accurate SCED calculations will improve reliability.**
- **Market transparency is lacking when operators dispatch the market irregularly and prices do not reflect the market dispatch.**

IMM Proposed Changes to Dispatch Timing

- **Default process**
 - **Automatic execution of RT SCED once every five minutes**
 - **Dispatch interval is the subsequent five minutes**
 - **Approval of an RT SCED case once, and only once, every five minutes**
 - **Approval and dispatch signals occur at the beginning of the dispatch interval**
- **Exceptions to the default process**
 - **Multiple RT SCED case approvals are minimized**
 - **Missed RT SCED case approvals are minimized**
 - **Reasons for exceptions are provided**



Dispatch Timing Issues Under PJM Proposal

- **Default process (PJM/status quo)**
 - Automatic execution of RT SCED cases at 4 minutes does not align with pricing, settlements, ramp time, or load forecasts.
 - Multiple approved cases mean that many dispatch instructions are not priced or settled.
 - Timing of case approval is not aligned with intervals.
- **Exceptions to the default process (PJM/status quo)**
 - Missed RT SCED approvals mean that market conditions are not consistently reflected in dispatch or pricing and settlements.
 - **No transparency**

IMM Proposed Changes to RT SCED Calculations

- **Ramp time**
 - **Reduced from 10 to 5 minutes**
- **Starting point for resources**
 - **The last approved RT SCED case dispatch point**
 - **Adjustments for feasibility based on state estimator data**
 - **Currently only using state estimator**
- **Input from offers and ASO**
 - **Use the offer prevailing during the dispatch interval**
 - **Use the ASO regulation or reserves commitment that exists during the dispatch interval**

RT SCED Calculation Issues Under PJM Proposal

- Resource ramp time, at 10 minutes, does not align with 10 to 14 minute time to target load (status quo)
- Starting point for resources uses only state estimator (status quo)
 - The RT SCED case does not use information about the dispatch of resources that are moving while the case is solving.
- Input from offers and ASO
 - PJM proposes to use the offers effective in the five minutes ending at the target dispatch time.
 - At times these offers will differ from the offers prevailing when the resource receives the dispatch signal.

IMM Proposed Changes to Pricing and Settlements

- **The five minute settlement interval is the same five minutes as the dispatch interval.**
- **LPC provides prices for the aligned dispatch and settlement interval based on the single approved RT SCED case with a target time at the end of the interval.**
- **Uplift payments use the same RT SCED case to calculate payments for the interval.**
- **Reserves payments use the same RT SCED case to calculate payments for the interval.**

Pricing and Settlements Issues Under PJM Proposal

- **The five minute settlement interval is not the same as the dispatch interval.**
- **LPC provides prices for the five minutes preceding the SCED case target time.**
 - **By default, resources will be following a new and different dispatch signal during the pricing interval.**
- **Uplift and settlements use the SCED case with a target time at the end of the five minute interval.**
 - **By default, resources following dispatch will be producing MWh and providing reserves based on a different SCED case than that used by settlements.**

Fast Start Pricing under PJM Proposal

- **FERC has ruled that fast start pricing cannot proceed until these issues are resolved.**
- **Fast start pricing uses different, but connected, calculations: dispatch run and pricing run.**
- **Issues with PJM proposal under fast start pricing:**
 - **Dispatch runs that included the dispatch of a fast start unit may never be used in a pricing run or settled.**
 - **Price signals lag dispatch signals.**
 - **Inaccurate five minute uplift payments (using mismatched dispatch timing and settlement intervals)**

ORDC Under PJM Proposal

- **Shortage prices increase with the ORDC.**
 - **PJM has failed to price shortages on critical days.**
 - **PJM does not commit to addressing this issue.**
- **Five minute uplift payments for lost opportunity costs**
 - **The dispatch signal and the uplift payment occur in different intervals currently and under PJM's proposal.**
 - **Inconsistent with dispatch following, like fast start.**
- **The issues should all be resolved prior to implementation of the ORDC.**
- **The IMM proposal is necessary to resolve the issues.**

Example Five Minute Uplift Issues

- **Five minute uplift payments are used for both fast start pricing and the ORDC and reserve market changes.**
- **The IMM provided an example to the MIC on May 1, 2020.**
 - [Link to prior presentation](#)



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