

# Five Minute Dispatch and Settlements IMM Package

MIC

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IMM



Monitoring Analytics

# 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)**

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