Five Minute Dispatch and Settlements IMM Package

MIC Special Session

May 1, 2020

IMM

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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.**

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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.**

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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**

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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**

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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**

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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.**

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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.**

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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.**

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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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Monitoring Analytics, LLC

2621 Van Buren Avenue

Suite 160

Eagleville, PA

19403

(610) 271-8050

MA@monitoringanalytics.com

www.MonitoringAnalytics.com

Monitoring Analytics