

Dispatch and Pricing Issues IMM Proposal

MIC Special Session
January 29, 2020

IMM



Monitoring Analytics

Identified Issues

- **RT SCED runs every 3 minutes; LPC runs every 5 minutes.**
- **RT SCED uses a ramp time that does not match the time to the target dispatch.**
- **RT SCED ignores dispatch instructions from previous RT SCED case.**
- **LPC prices do not apply to interval for which RT SCED dispatched.**
- **As a result, energy and reserve prices are arbitrary since they do not correspond to the dispatch for that interval.**

Example Timeline: SCED and LPC

Event	Time (HH:MM:SS)	Relative to SCED Target
State Estimator Snapshot	11:50:00	(T - 15 mins)
SCED Executed	11:51:00	(T - 14 mins)
SCED Solved	11:52:01	(T - 13 mins)
SCED Approved (Dispatch signals sent)	11:52:34	(T - 12.5 mins)
LPC Executed	11:56:30	(T - 8.5 mins)
LPC Solution	11:57:49	(T - 7 mins)
LPC Pricing Interval	11:55:00 to 12:00:00	(T - 10 mins to T - 5 mins)
SCED Target Time (T)	12:05:00	

- **SCED uses a ramp time of 10 minutes to dispatch resources to meet load at target time.**

Dispatch Not Reflected in Prices

- **RT SCED cases approved more frequently than one for every five minute target time.**
- **All approved RT SCED cases are used to dispatch energy and reserves.**
- **Only one approved RT SCED case is selected for pricing each five minute interval.**
- **In 2019, PJM sent dispatch signals on 147,243 instances (number of approved SCED cases), but used 91,777 of them for prices (62.3 percent).**

Dispatch Not Reflected in Prices

Approved SCED Cases Used for Dispatch



Inefficient Compensation

- **Compensation not consistent with dispatch instructions.**
- **Consistently incorrectly compensating resources, and consistently incorrectly charging load.**
- **Compensation does not reflect the value provided by resources.**
- **Erodes market confidence.**
- **Erodes incentive to follow dispatch.**

Lack of Transparency

- **No documentation in Market Rules of:**
 - **Timing of SCED and LPC execution.**
 - **SCED case approval process.**
 - **SCED and LPC target intervals.**
- **Lack of documentation of the details of the inputs to SCED and LPC.**
- **Lack of documentation of manual operator inputs to SCED and LPC.**
- **No documentation of the use of SCED and LPC in settlements.**

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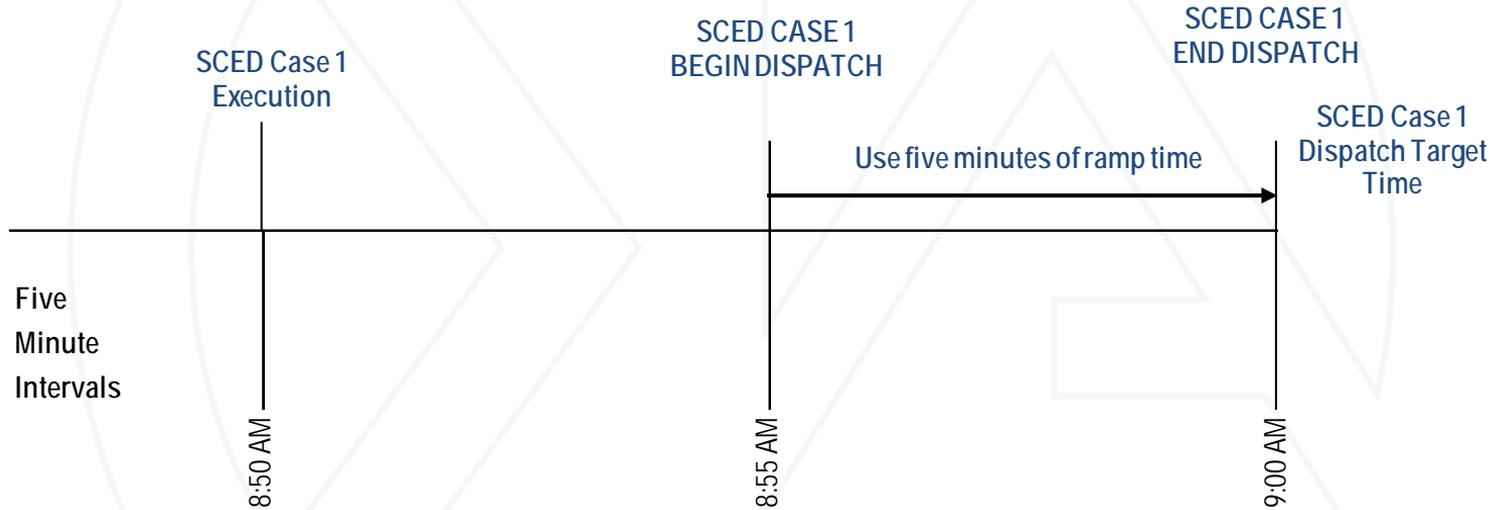
- **Based on MISO/SPP/CAISOs' dispatch and pricing method.**
- **One SCED case solved every 5 minutes, with three load bias sensitivities.**
- **SCED case executed approximately 10 minutes prior to dispatch target time.**
- **One SCED case approved every 5 minutes, approved 5 minutes prior to dispatch target time.**
- **Uses data from previously approved SCED case as the beginning of dispatch.**
- **Uses 5 minute ramp time for optimization to meet target load.**

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- **LPC uses the approved SCED case for the target time to calculate LMPs.**
- **Energy settlements to use LMPs for the five minute period ending at the target time.**
- **Solves the issue of ramp time misalignment.**
- **Solves the issue of dispatch and pricing misalignment.**
- **Solves the issue of inefficient compensation.**
- **Solves the issue of not pricing all dispatch instructions.**

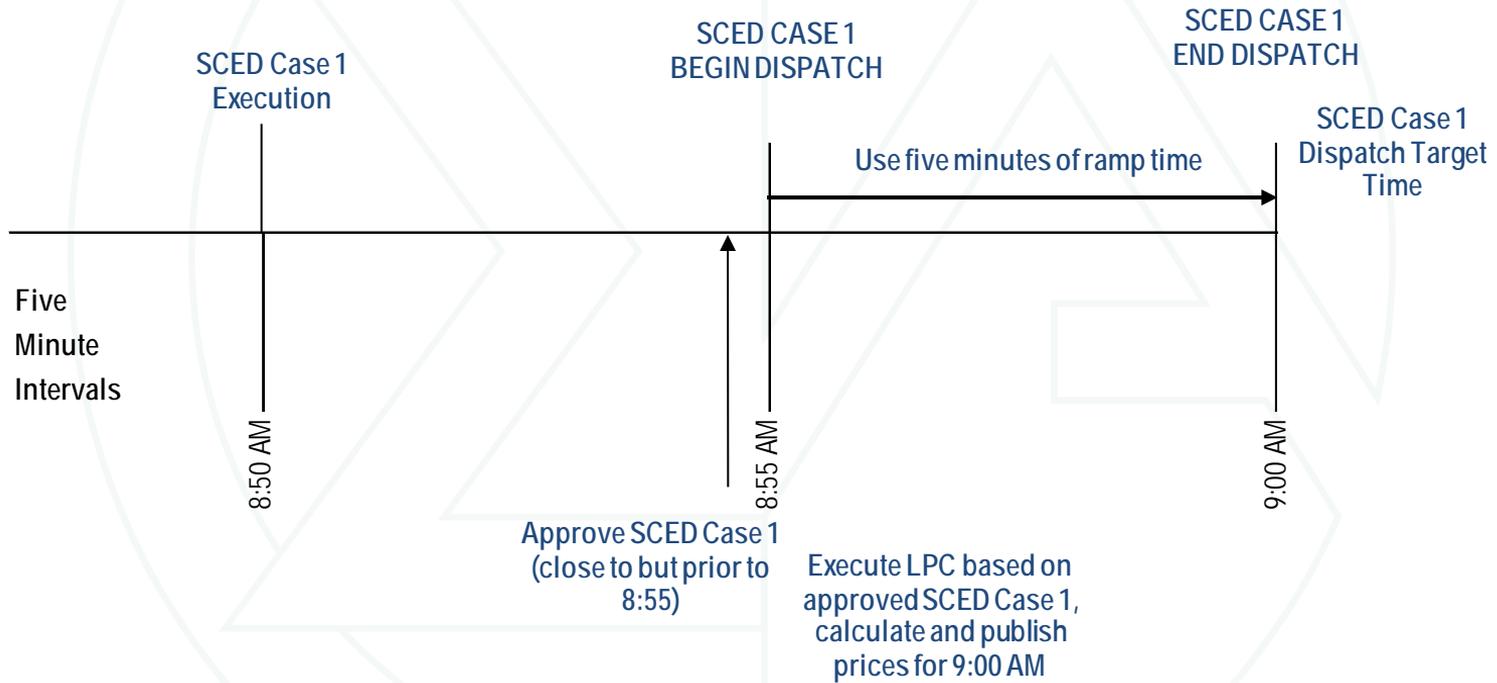
IMM proposal

Resource initial status comes from previously approved SCED case, adjusted for feasibility



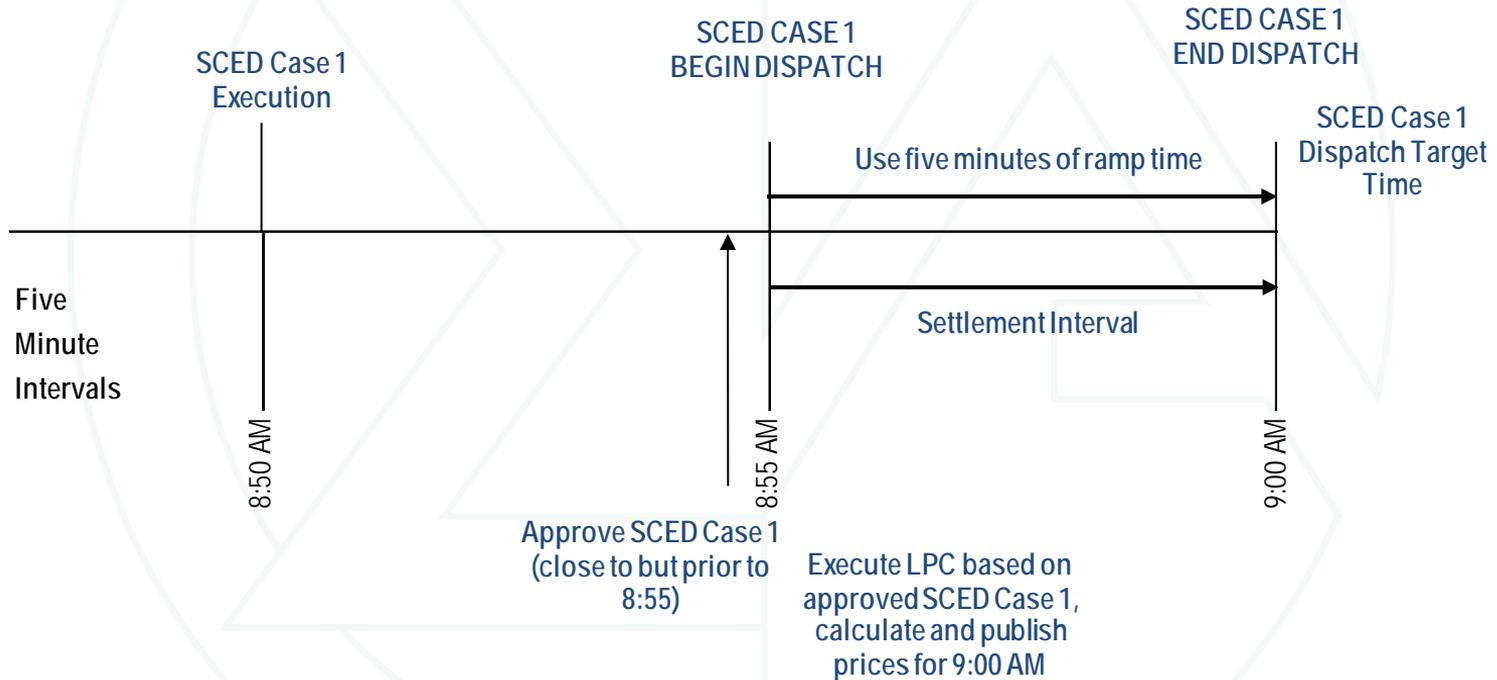
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Monitoring Analytics, LLC

2621 Van Buren Avenue

Suite 160

Eagleville, PA

19403

(610) 271-8050

MA@monitoringanalytics.com

www.MonitoringAnalytics.com

