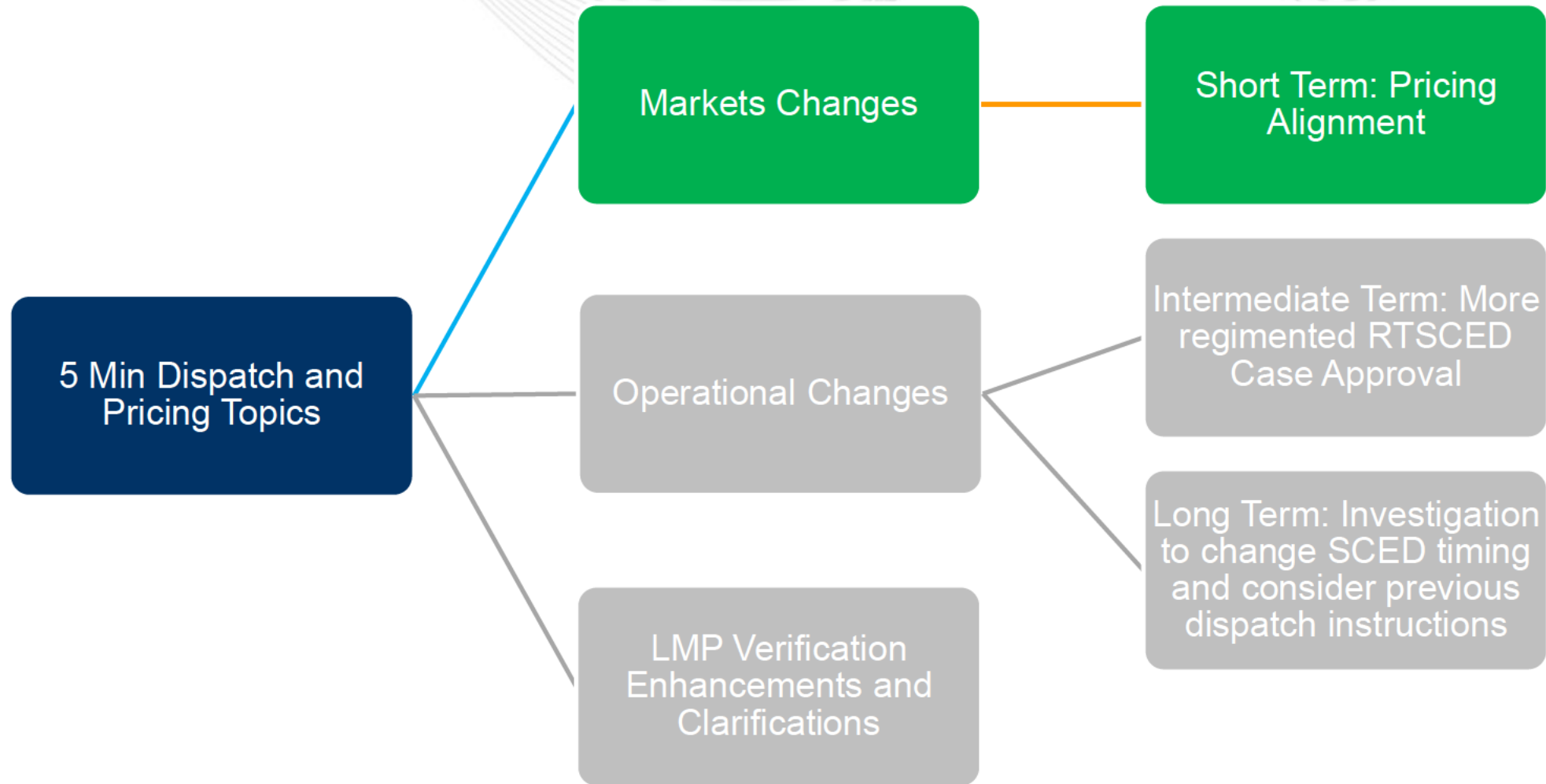


PJM Package Highlights: 5 Minute Dispatch and Pricing

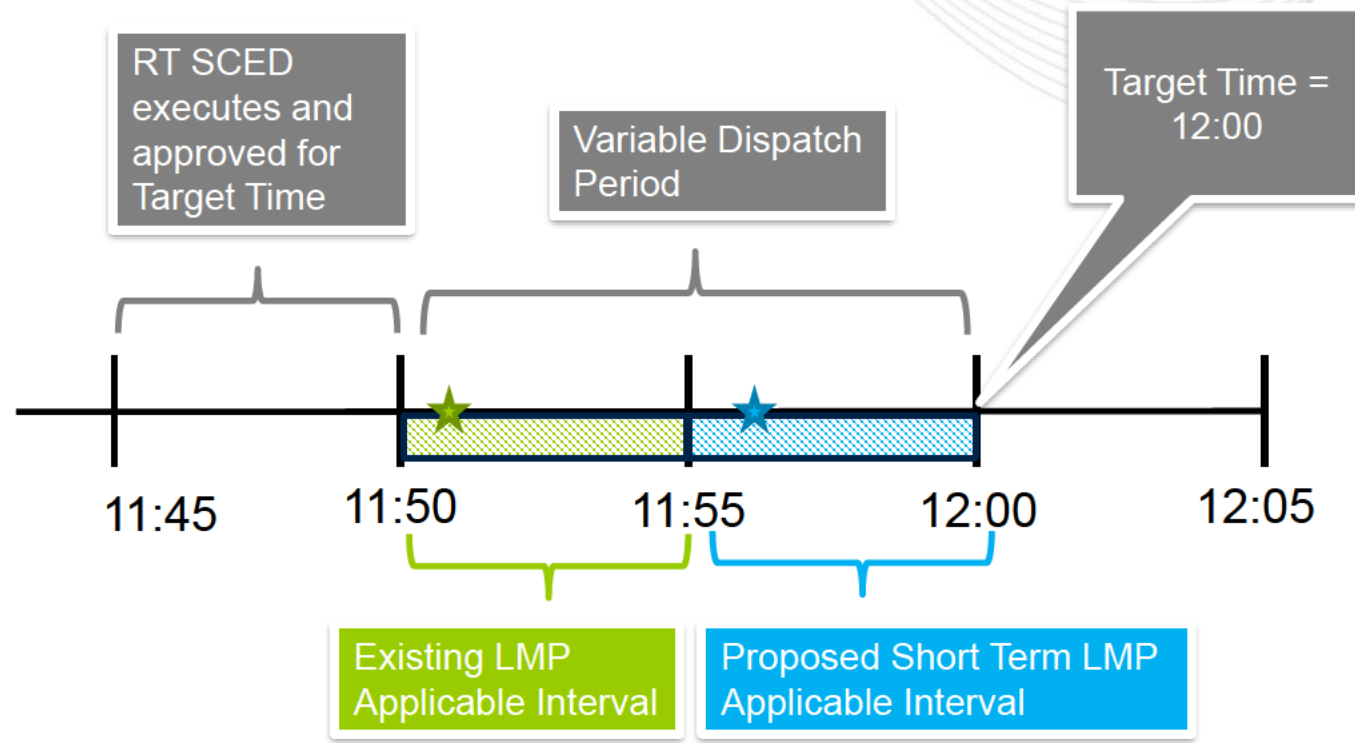
Tim Horgler and Vijay Shah

Markets and Reliability Committee
July 23, 2020



- Vote is only for benefit of filing and implementing of short-term changes to the PJM market
- Vote is not with regard to whether the short-term change addresses the issues raised by the IMM in the Fast-Start pricing docket
 - FERC will ultimately decide in Fast-Start docket
 - Vote indicates your support for the short-term change
 - While PJM believes this change would satisfy the concerns raised in the Fast-Start proceeding, stakeholders will have the opportunity to state their position on this issue in the Fast-Start docket when PJM makes its informational filing
- If short-term changes are approved, PJM will file with FERC and also indicate the current state of the intermediate term changes

- **Align LPC to use the reference RTSCED case for the same target time**
 - Example: LPC calculates prices for interval from 11:55 to 12:00 using RT SCED solution with target time 12:00
 - Execute LPC cases every five minutes after the start of dispatch interval. Therefore, a delay of approx. 5-6 minutes will occur between when the RTSCED case is approved and priced
- **Resource Offers, Parameters and Ancillary Service assignments corresponding to the interval ending at the target dispatch time are used as input to the RTSCED Case**
 - Example: Offers for 11:00 to 12:00 will be effective up to and including the 12:00 target time, Offers 12:00 to 13:00 will be applied to dispatch target time of 12:05
- **LPC will use the most recently approved RTSCED case prior to target time if no approved RTSCED case exists for the same target time**



- ★ Existing LPC case execution time
- ★ Proposed LPC case execution time

SCED Changes:

- Hourly Offer Curves for 11:00 hour used instead of 12:00 hour
- Inflexible Sync Reserve and Regulation awards determined by ASO for 11:00 hour instead of 12:00 hour

LPC Changes:

- Align LPC to use the latest approved RT SCED case for the same target time (interval ending)
- LPC case executed at a predefined time, shortly after the start of dispatch interval
 - I.e. the LMP for 11:55 - 12:00 is calculated at 11:56:30



**Alignment
of pricing
and dispatch**

SHORT TERM

STATUS

**MRC and MC vote
7/26/20
Effective Nov. 2020
pending approval**



**Execute and approve one
Real-time SCED case for each
5 minute dispatch target time
subject to minimal deviations**

INTERMEDIATE

STATUS

Already moved to 5 minutes and
actively evaluating (Additional tools to
be added for operators)



**Investigation to change *
SCED timing and consider
previous dispatch instructions**

LONG TERM

STATUS

*2020–2021 Initiative: PJM needs to
evaluate and qualitatively measure
the pros/cons of different methods*

***Note:** *Impacts operator behavior and dispatch process*

- PJM has implemented intermediate term changes effective 6/23/20:
 - Multiple tests in June for 5-minute auto case execution was successful and PJM currently plans to permanently keep in place.
 - Actively monitoring
 - Additional tools to be added for operators
- PJM reviewing if any manual changes are necessary to implement the intermediate term changes

Period	Approved cases priced
1/1/20 – 6/22/20	76%
6/23/20 - 7/13/20	90%

Short Term Timeline

Committee	Action
May MIC	1 st Read
June MIC	Vote
June MRC	1 st Read
July MRC/MC	Vote
November 2020	Tentative implementation pending FERC approval

- Today - Vote on Short Term Changes
- Updates on Intermediate changes and progress
- Continue to pursue LMP Verification and Transparency Enhancements
- Evaluate Long Term changes

Appendix A

Long-Term Changes Evaluation

- Strong desire from members to evaluate/enhance the dispatch algorithm
- PJM is dedicated to working with stakeholders on this issue
- Propose to hold the discussion as a working issue at the MIC with reports provided to the OC
- Start detailed discussion at the September 2020 MIC(?)

PJM is looking for feedback on this approach.

Side-by-side comparison of the different methods in use today
MISO/SPP, CAISO, ERCOT and PJM

Determine a process by which to qualitatively measure the pros/cons of each method

Build software to simulate selected model(s)

Run models in parallel with production

Assuming a change is beneficial

Develop a cutover plan

Cutover to new dispatch and pricing process

Determine a method to measure benefits

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5 Minute Dispatch and Pricing



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