

# 5 Minute Dispatch and Pricing: Short Term Package Draft OA and Manual 11 Changes

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- 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 from previous target time if no approved RTSCED case exists for the same target time

- Schedule 1, Section 2.5 Calculation of Real-time Prices.

(e) During the Operating Day, the calculation set forth in (a) shall be performed every five minutes, using the Office of the Interconnection's Locational Marginal Price program, producing the Real-time Prices based on **forecasted** system conditions and the latest approved PJM security-constrained economic dispatch solution with target time ~~during the preceding interval.~~ at the end of the current five minute interval. If no security-constrained economic dispatch solution was approved for the target time at the end of the current five minute interval, the Locational Marginal Price program will use the most recently approved security-constrained economic dispatch solution with a target time prior to the end of the Locational Marginal Price program five minute interval. If a technical problem with or malfunction of the security-constrained economic dispatch or Locational Marginal Price software programs exists, including but not limited to program failures or data input failures, the Office of the Interconnection will utilize the best available RT SCED solution to calculate LMPs.

- Sections 2.1 Overview of PJM Energy Markets, 2.2 Definition of Locational Marginal Price
  - Added clarifying changes for RT SCED and provided reference to Section 2.5 where more details on RT SCED are found
  - Updated to clarify real-time LMPs are based on forecast system conditions and RTSCED solution
  - Provided reference to Section 2.7 where more details for LPC are found
  - Added clarification that Transmission Constraint Penalty Factors can set congestion price.

- Section 2.4 Real-Time Locational Marginal Price (LMP) Calculations
  - Minor clarification changes to remove “real-time sequence” terminology

- Section 2.5 Real-Time Market Applications
  - Clarifications to RT SCED description
    - Added 10 minute look-ahead period timing
    - Defined Future Dispatch Target time as 10 minutes in future, rounded up to nearest 5 minute interval
    - Added language to explain the use of resource offers with respect to dispatch time and provided an example.
    - Clarified inputs to RT SCED
    - Clarified outputs of RT SCED

- 2.6 PJM State Estimator
  - Clarified language to update State Estimator Solution as an input to RTSCED
  - Update the frequency for how often State Estimator solution is provided to RTSCED
- 2.7 Locational Pricing Adder (LPC)
  - Clarifications to LPC description
    - Clarified LMPs and Regulation and Reserve Clearing Prices are based on the latest approved RT SCED case for the same target time
    - Clarified how LPC deals with cases when no RT SCED cases have been approved for the target time
    - Clarified how LMPs are applied to settlement intervals (interval ending)



- 2.9.2 Determination of a Reserve Shortage
  - Clarified the RT SCED solution used by LPC is an input to whether LPC will implement shortage pricing
- 3.1 Overview of the PJM Regulation Market, 4.1 Overview of the Synchronized Reserve Market, 4.1b, Overview of the Non-Synchronized Reserve Market:
  - Clarified RT SCED includes Regulation and Reserve assignments in the joint optimization and included a reference to Section 2.5 for more information.
  - Clarified LPC calculates Clearing Prices and included reference to LPC section for more information.



- These draft changes will be included in the PJM package for the 5 Minute Dispatch and Pricing topic

Committee	Action
May MIC	1 <sup>st</sup> Read
June MIC	Vote
June MRC/MC	1 <sup>st</sup> Read
July MRC/MC	Vote

Questions?