



RT Secondary Reserve Opportunity Costs in Settlements - Identification of Offline Generation Resources

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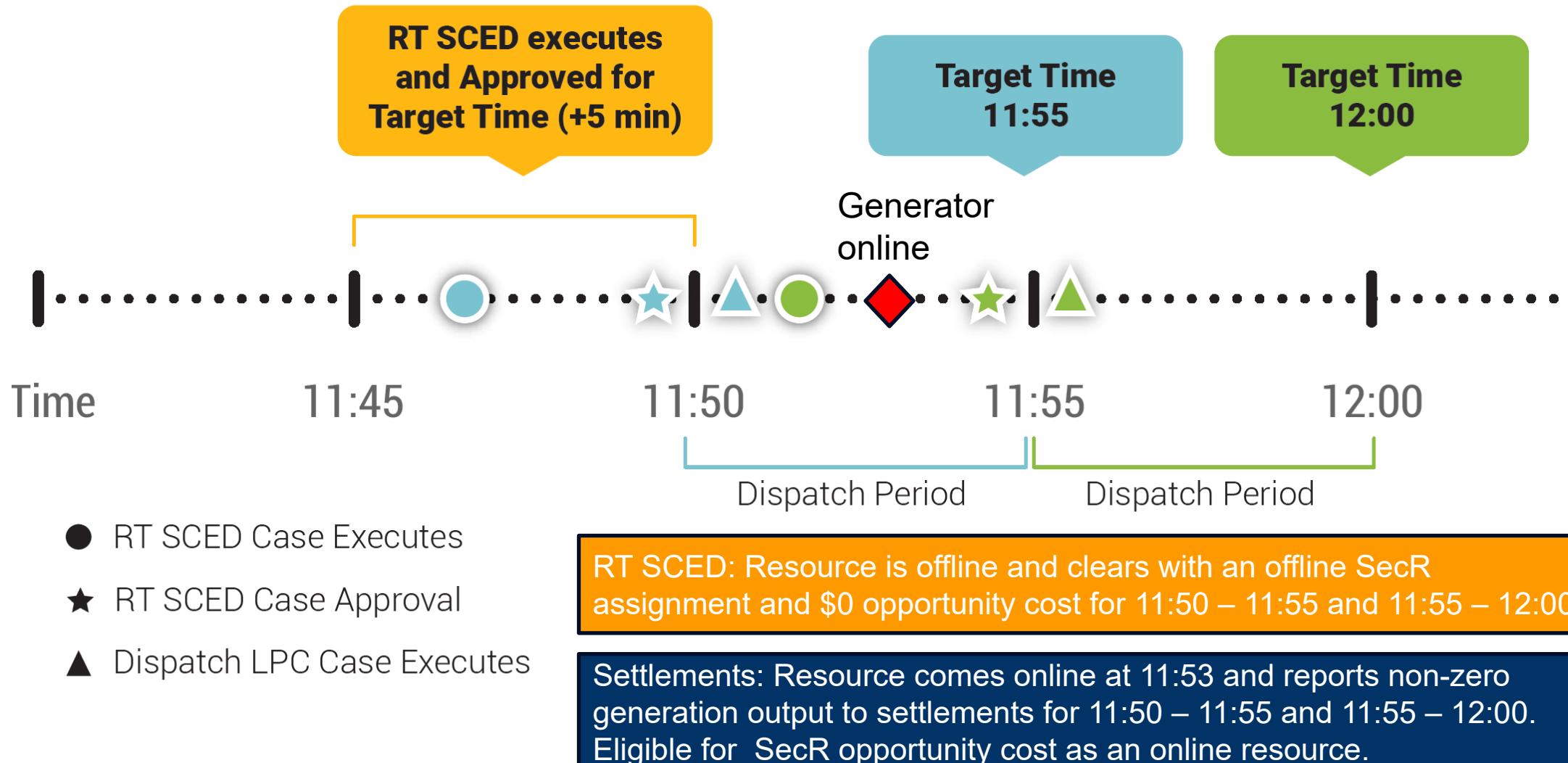
Market Settlement Development

Markets and Reliability Committee

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- Tariff, Attachment K-Appendix, Section 3.2.3A.01(f)(v) and the parallel provisions in Schedule 1 of the OA state that Secondary Reserve market opportunity costs for generation resources not synchronized to the grid, such as offline resources, should be zero.
 - (f)(v) The opportunity costs for Economic Load Response Participant resources **and generation resources not synchronized to the grid shall be zero**, except that Economic Load Response Participant resources may have a day-ahead opportunity cost as determined in subsection (f)(i) above.
- Neither the tariff nor the manuals specify how the online/offline determination should be made for clearing or settlement.
- Current Secondary Reserves rules implemented on 10/1/2022.

Secondary Reserves Offline RT Opportunity Cost	
Market Clearing (RT SCED)	Settlements
<ul style="list-style-type: none"> Executes on a <u>ten minute ahead</u> basis Calculates energy dispatch and RT Secondary Reserve assignments based on inputs <u>at time of case execution</u>. Source for generator online/offline status is the real-time output from the state estimator application Offline generators with Secondary Reserve assignments have zero opportunity costs in clearing. 	<ul style="list-style-type: none"> Settlements are conducted using generator revenue quality meter data reported via Power Meter (“Revenue Data for Settlements”). Source for generator online/offline status is the Revenue Data for Settlements Offline generators with Secondary Reserve assignments have zero opportunity costs in settlements.
Problem/Opportunity: <ul style="list-style-type: none"> Timing and source data differences have resulted in resources being cleared as offline with zero opportunity costs, however non-zero real-time opportunity costs were calculated in settlements if the resource came online in the intervening ten minutes as reported via Revenue Data for Settlements. PJM is proposing to define and enhance the settlements methodology used to identify resources as offline. 	

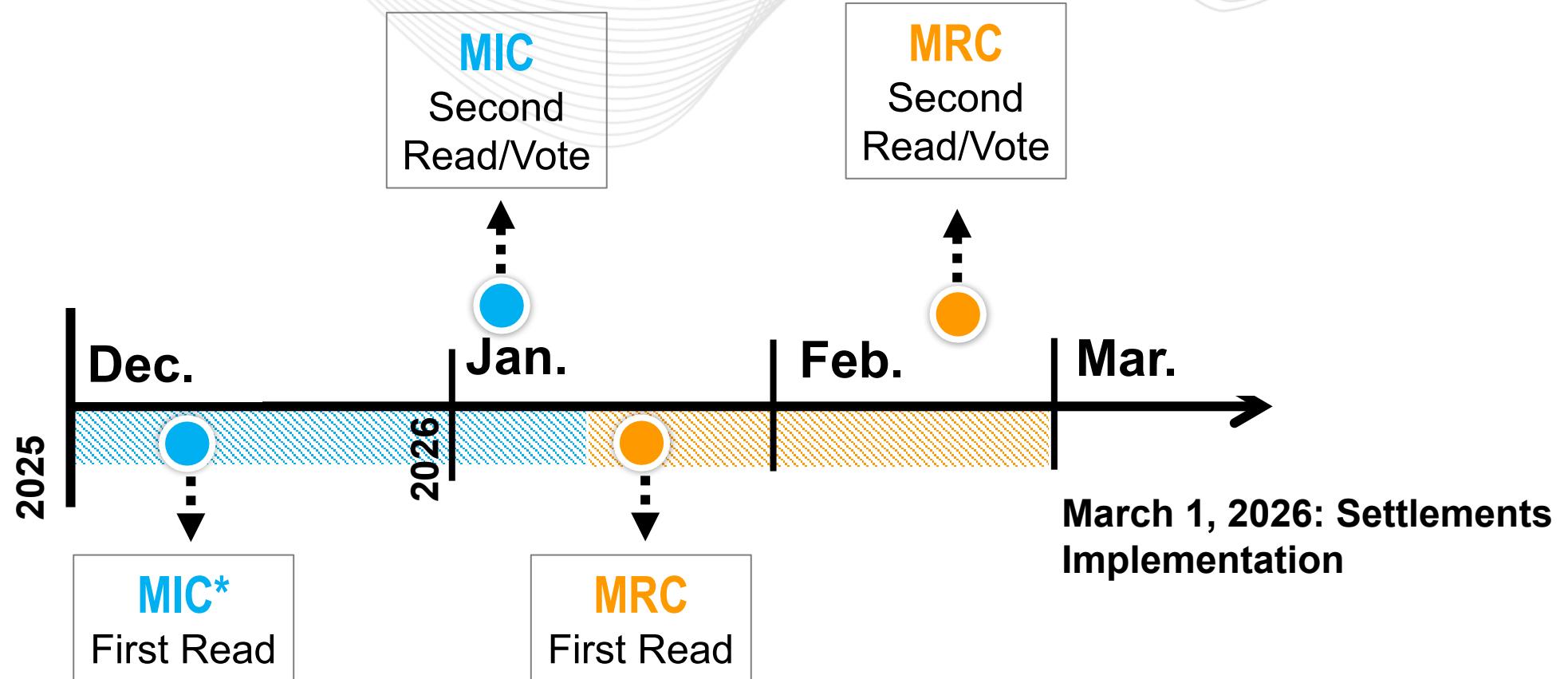


- PJM proposes to enhance the settlement methodology used to identify generation resources as offline for the purposes of calculating RT Secondary Reserve opportunity costs.
 - Use RT SCED data in settlements to identify a resource as offline. Provides a consistent approach to offline status between market clearing and settlements.
 - Define settlements methodology in Manual 28

- Manual 28, Section 19.2.3

- For the following resource types, the Real-time Secondary Reserve Opportunity Cost is calculated as follows:
 - Resources providing secondary reserves in synchronous condensing mode without a Real-time Synchronized Reserve assignment = ((Real-time Condense Energy Use – Day-ahead Condense Energy Use) * RT LMP at the generation bus) + any additional Condense Start-up Cost in excess of Day-ahead Condense Start-up Cost
 - Resources providing secondary reserves in synchronous condensing mode with a Real-time Synchronized Reserve assignment = \$0
 - Resources with a Real-time Secondary Reserve assignment that were cleared and committed as offline resources ~~in offline mode~~ = \$0

Review/Endorsement Timeline



1	2	3
<ul style="list-style-type: none">Scenarios identified where generators cleared as offline with \$0 opportunity costs for RT Secondary Reserves, but due to timing differences were treated as online and eligible for RT Secondary Reserve opportunity costs in settlements.	<ul style="list-style-type: none">Opportunity to define and enhance settlements methodology	<ul style="list-style-type: none">PJM proposes settlements enhancement to use RT SCED case data to determine offline status consistent with market clearing for purposes of calculating RT Secondary Reserve opportunity costs.

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**RT Secondary Reserve Opportunity Costs in
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Resources**



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Acronym

Term & Definition

RTSced

Real-Time Security Constrained Economic Dispatch is the application used to dispatch in Real-Time. It's based on the least costly means of serving load and meeting reserve requirements at different locations in the PJM Region based on forecasted operating conditions on the power grid.

[PJM Glossary](#)

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