



Enhanced Modeling of Combined Cycle Generators (IR002) Project Update

Market Subcommittee

October 8, 2020



Purpose & Key Takeaways



Purpose:

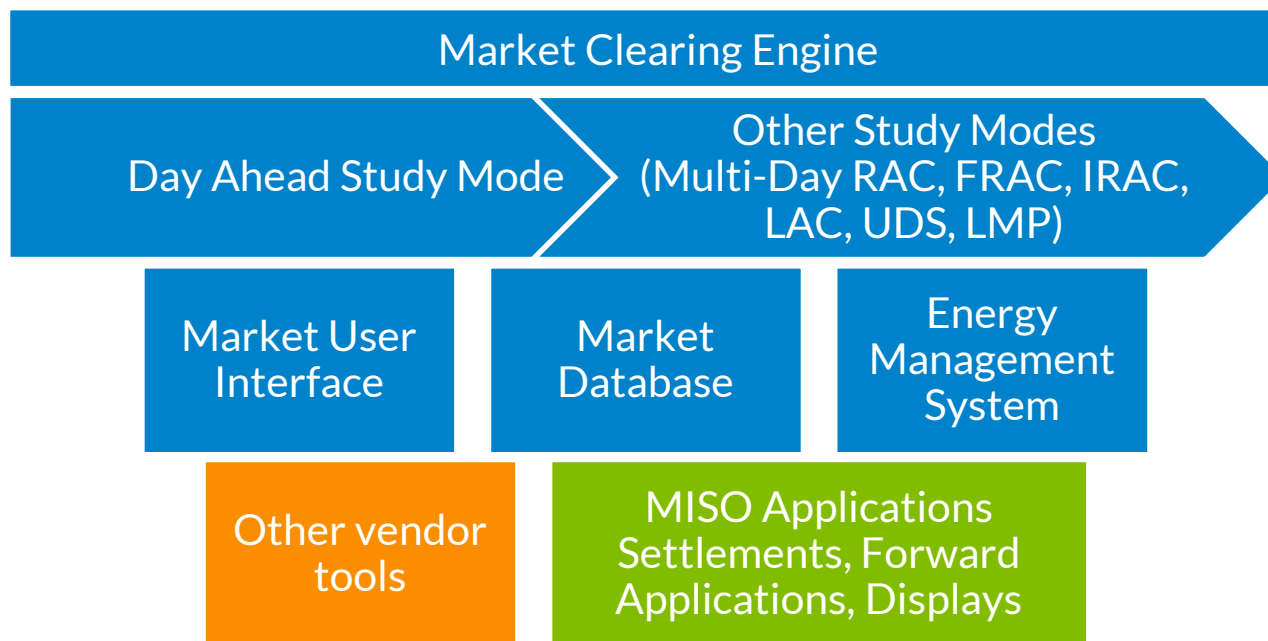
Provide update on implementation plans for Multiple Configuration Resources (MCR) for enhanced modeling of Combined Cycle generators.

Key Takeaways:

- As indicated in June, MISO has reviewed GE's whitepaper and is continuing to collaborate with the new market system consortium to determine the best implementation approach
- Based on current delivery plans for integrated roadmap products and updated schedule for new market system, MISO believes additional delay of MCR implementation is likely
- MISO is continuing to make progress by drafting Tariff revisions and developing software changes, as resource availability permits

MISO has revised the MCR implementation approach to align with the GE whitepaper proposal

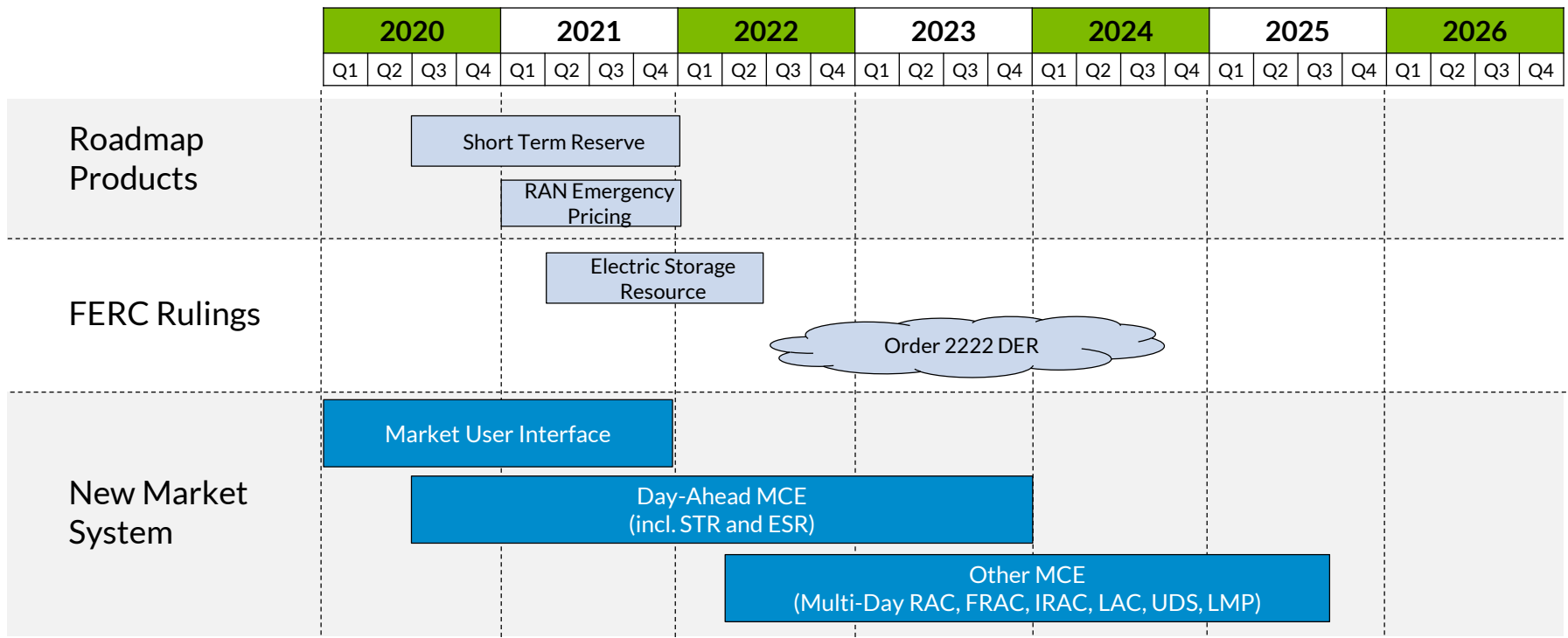
- GE whitepaper proposed to implement a common framework in the core Market Clearing Engine largely based on MISO's Enhanced Combined Cycle conceptual design
- MISO will need to implement additional changes in order to fully meet required functionality for production use



Based on project complexity and the evaluation of alternative options, MISO is delaying MCR implementation beyond 2023

- MCR implementation is more complex than any market enhancement projects since launch of Ancillary Services market in 2009
 - Impacts majority of market and reliability processes and tools
 - Adds significant computation intensity to the optimization problem for generation commitment process and requires new solver
 - Adds complexity to settlement calculations for the combined cycle generators
- MISO Subject Matter Experts are fully allocated to existing priorities for the next 3-4 years, which will be further stressed by FERC Order 2222
- MISO evaluated alternative options to minimize delays but identified significant risks and concerns

MISO staff resources are committed to delivering current roadmap products and new market system



- Delivery of roadmap products were impacted as a result of delays in the Order 841 Electric Storage Resource compliance proceedings
- Order 2222 DER Final Rule implementation is anticipated to be relatively complex

Alternative paths are not practically feasible

Options	Full Legacy	Hybrid
Description	<ol style="list-style-type: none"> 1. Implement all Market Clearing Engine (MCE) changes first in Legacy platform and go-live when ready 2. Add MCE changes to new system after base implementation of Day Ahead MCE and Other MCE 	<ol style="list-style-type: none"> 1. Implement Day Ahead MCE changes in new system, all other MCE study modes in Legacy platform and go-live when ready 2. Add all non-Day Ahead study to new system after base implementation of Other MCE
Reason for not selecting the option	<p>No longer feasible – work to implement and transition to new Day Ahead MCE is already underway</p>	<ul style="list-style-type: none"> • Requires new solver in Legacy platform further increasing complexity and risks to current production operation • Delays delivery of new market system by 1-2 years • Major increase of project cost and demands on already constrained resources

MISO is continuing to make progress

- Drafting Tariff revisions and preparing for stakeholder workshop in November 2020
- Initiating prototype development for an analytical tool that is used to support Day Ahead market clearing process
- GE will design and include MCR functionality in Day Ahead Market Clearing Engine

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Questions