



**SPP Roadmap Initiative Education:
MCR Design Expansion and Enhancements**

03.18.20

SPP Roadmap Initiative # 24:

- Expand utilization of the Multi-Configuration Combined Cycle Resource (MCR) design to non-combined cycle resources
 - Ex: coal, simple cycle gas, others?
- Enhancements to current MCR design

Current MCR Design

- Intended to provide improved modeling of plant capabilities
- Multiple units or plants can be aggregated (or divided) into feasible yet separate modes of operation (configuration)
- Allows for more flexibility using multiple modes of operation
- Limited to three (3) configurations
- Each configuration must be able to start up and shut down
- Registration limited to combined-cycle resources only

Benefits of Current MCR Design

- Additional transparency of operational capabilities
- Increased accuracy of operational costs
- Efficiency in unit commitment and dispatching processes
- Market offers more closely align with physical operations
- Reduction of annual production costs

MCR Opportunities for Non-CCs

- Peak firing
- Power augmentation
- Inlet conditioning such as coolers, chillers, and foggers
- Secondary fuel use
- Low coal
- Increased accuracy for clearing ancillary services

Potential MCR Design Enhancements

- Increase the number of allowable configurations
 - Current limit is three (3)
- Eliminate self-commitment limitation
 - Allow economic evaluation of higher configurations (if available)
- Allow transitions between any available configuration
 - Currently limited to transition matrix definitions
- Revise/eliminate individual configuration start up/shut down requirement

Benefits of Expansion/Enhancements

- No market design changes required for expansion
 - Registration limited by current tariff and protocol language
- Further efficiency of unit commitment and dispatch
- Additional transparency of physical resource capabilities
- Increased reliability
- Ability for resources to offer additional flexibility
- Additional production cost savings

SPP Market and Member Impacts

- Voluntary resource participation
 - Re-registration required for resources electing to become an MCR
 - Submittal of additional DA/RT/mitigated offer information
 - Update data in the Market Monitoring Portal (MMP)
- Potential Markets UI and API changes

Potential Risks

- Additional costs to implement design enhancements
- Implementation of some enhancements may be complex
- Market Clearing Engine (MCE) performance degradation
 - SPP staff already investigating possible impacts via MWG AI #394:

Agenda Item 14 – Potential use of MCR logic for “low coal” operations

Action Item: SPP staff to research and facilitate further discussion on how the MCR logic may be used for other types of Resources and to understand what the MCE saturation point might be when adding varying types of Resources so as to not adversely impact solve time. As part of this research, SPP will provide details on transition cost and how difficult it would be to add a minimum threshold for Resource output where transitions occur above that threshold (allowing transitions on a SELF-committed MCR).

Potential Impacts – SPP Assessment

- **Potential System Impacts:**
 - CMT, DA, MCE, MDB, M2M, MMU Process, MOI, OCC, Settlements, RTBM
- **Potential MCE Performance Impact:**
 - Medium
- **Potential Complexity:**
 - Design: Medium
 - Implementation: Medium
- **Market Philosophy Impacts: Price Formation, Price Convergence, Market Efficiency, Market Transparency, Market Reliability**
 - Market Efficiency, Market Reliability

