Performance Impact of multi-schedule model in Market Clearing Engine (MCE) in nGEM Enhanced Combined Cycle (ECC) and Energy Storage Resource (ESR) models

Issue Source

Issue charge being brought forth by PJM.

Issue Content

Address the performance impact due to multi-schedule model in the MCE with nGEM ECC and ESR model.

Key Work Activities and Scope

1. KWA#1: Review previous education on existing multi-schedule model treatment and impact to performance in MCE. (completed on 10/20/2022 as part of Combined Cycle Modeling Education Workshop)
2. Provide education on current schedule selection process, when market-based offers are used, when cost-based offers are used, when market-based parameter limited offers are used, and the Day-ahead and Real-time market criteria for choosing among eligible schedules.
2. 3. KWA#2: PJM to publish a paper with technically feasible solution options to select the schedule for commitment and dispatch purpose outside of the MCE to reduce performance impact due to multi-schedule model in MCE.
3. 4. KWA#3: Review and discuss proposed solutions as described in KWA#2.
4. 5. KWA#4: Refine proposed solutions defined in KWA#2.

Areas in scope:

a. Perform the schedule selection process for commitment and dispatch for Day-ahead and Real-time energy market for all resource types outside of the MCE.
b. Solutions as detailed I Section VII – In-scope options of the PJM options paper, including the following:
    i. Schedule selection based on a predefined formula with parameters and offer structures as status quo.
    ii. Consider only parameter-limited schedules during emergency conditions such as Hot Weather Alert (HWA)/Cold Weather Alert (CWA)/Maximum Generation Alert conditions.
    iii. Allow one set of operating parameters, incremental energy offers, Start-Up and No-load Costs.
    iv. Allow only cost-based schedules with one set of parameters.
    v. Allow only parameter-limited schedules with one set of parameters.
    vi. Create a "new preferred schedule" from all available schedules.

Areas not in scope:

a. Detailed ECC, ESR, and Hybrid model requirements.
b. Increase in Day-ahead market clearing time window.
c. Changes to Three Pivotal Supplier (TPS) test.

    d.   Requirement that parameters be mitigated during emergencies and hot/cold weather alerts.

    e.   Cost Development Subcommittee issues: OA Schedule 2, Manual 15: Cost Development Guidelines,

    f.   Unit specific parameter review and standards.

    e.g. Cost-based Start-Up and No-Load Cost rules.

Expected Deliverables

1. Determine a process to perform the schedule selection outside of the MCE such that only one schedule will be passed to the MCE for commitment and dispatch purposes to address the performance impact.
2. Changes to manual and governing document revisions for approved solution as necessary.

Decision-Making Method

Tier 1, consensus

Stakeholder Group Assignment

MIC – Special Sessions if needed

Expected Duration of Work Timeline

6 months. The work will begin as soon as the Issue Charge is approved. A solution is needed by the end of Q2 2023 in order to develop the detailed requirements for nGEM ECC model and implement coincident with the Real-time nGEM MCE production deployment.

Start Date	Priority Level	Timing	Meeting Frequency
2/1/2023	☒ High	☒ Immediate	☐ Weekly
	☐ Medium	☐ Near Term	☒ Monthly
	☐ Low	☐ Far Term	☐ Quarterly

Charter

(check one box)

☐	This document will serve as the Charter for a new group created by its approval.
☒	This work will be handled in an existing group with its own Charter (and applicable amendments).

More detail available in M34; Section 6