

Regulation for Virtual Combined Cycles

Problem / Opportunity Statement

Combined Cycle units that are “virtually” modeled by PJM sometimes receive Regulation awards from the market clearing engine that vary across units, which can be operationally difficult or impossible to achieve.

“Virtual” (or equivalently “Pseudo”) modelled combined cycles mean that combustion turbines can be modeled as separate Market Units, where the steam turbine is split evenly and modeled as part of the combustion turbines. In the absence of more robust combined cycle modelling, this modelling convention can offer more flexibility in the energy market than modeling the combined cycle as one unit with different configurations. Virtual modeling is one of the two methods that PJM uses to model combined cycles, at the resource owner’s election. The IMM has opined that the virtual/pseudo unit modeling is the superior option.¹

- The variation of regulation awards across units at a given plant despite the inability to operate in that way is a disincentive for combined cycles to offer regulation, when those units are both a typical and cost-effective source of regulation. If combined cycles do not offer regulation, then the Regulation need will be served by higher cost resources and customers will pay more for Regulation.
- PJM has at times offered various means of addressing this issue, such as:
 - allowing resources to call dispatch to request the awards be evened out between multiple units while keeping the total award the same (note that this is no longer permitted),
 - allowing resources to call dispatch and request that one unit be decommitted for Regulation, in the circumstance where not all units at a given combined cycle plant are committed for Regulation, and
 - allowing resources to group units into Performance Groups, which attempts to even out the Regulation Performance Scores between units, such that they start out each day with the same performance scores, but those can diverge as the day progresses.
- None of the currently available solutions offer a consistent fix.
 - For instance, declining to provide Regulation just because only one unit received a commitment means that the resource is reducing its opportunities to provide market products and services, and thereby making itself less competitive.
 - Performance Groups have helped reduce the frequency of uneven regulation awards, but have not eliminated the issue.
- This is a specific technical issue rather than a broader policy issue.

¹ <https://www.pjm.com/-/media/committees-groups/committees/mc/2021/20210222-webinar/20210222-item-06-imm-report.ashx>

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- If no action is taken, then combined cycles that are modelled virtually may decide not to offer to provide Regulation until PJM implements the nGEM software upgrade that will provide generally enhanced combined cycle modeling capabilities.