Problem/Opportunity Statement

Operating Reserve Clarification for Resources Operating as Requested by PJM

Summary

PJM pays energy uplift to market participants under specified conditions in order to ensure that competitive energy and ancillary service market outcomes do not require efficient resources to operate for the PJM system at a loss.[1] Uplift payments are intended to function as one of the incentives for generation owners to offer their energy to the PJM energy market for dispatch based on short run marginal costs and to operate their units as directed by PJM operators. Balancing Operating Reserve credits, which are one component of uplift in the PJM market, are a primary means of ensuring resources are not economically disadvantaged for following dispatch instructions in the real-time energy market. These credits are available to resources committed by PJM to run in the real-time energy market in order to provide assurance that their operating costs will be covered when they run at PJM's direction, regardless of the LMP. The governing section of PJM's tariff (OATT Attachment K – Appendix, Section 3.2.3(e)[2]) states that PJM pays Balancing Operating Reserve Credits "for each synchronized pool-scheduled resource of each Market Seller that operates as requested by the Office of the Interconnection".

Opportunity

There is an opportunity to clarify the definition of "operating as requested by PJM" in both the OATT and PJM manuals. It lacks the type of systematic approach found in the definition of "following dispatch", which is used in assessing Balancing Operating Reserve deviation charges.[3] The lack of specificity in the definition of "operating as requested by PJM" leaves the definition open to interpretation and has been the subject of disagreement between PJM and the IMM.[4] An algorithmic method to identify units that are not operating as requested by PJM will reduce opportunities for differing interpretations.

Second, as the resource mix in the PJM RTO continues to transition to a heavier concentration of intermittent resources, such as wind and solar, flexible resources capable of following PJM dispatch signals and instructions are increasingly critical to system reliability. As this topic is explored, there is an additional opportunity to strengthen incentives for resources to follow dispatch instructions during real-time operations, improving reliability and system pricing. For example, while resources that deviate from PJM's dispatch instructions are assessed Balancing Operating Reserve deviation charges, these resources often simultaneously receive Balancing Operating Reserve Credits. In some cases, the credits received far outweigh charges assessed, even when the resource significantly deviates from PJM's real-time instructions. The payment of Balancing Operating Reserve Credits to resources deviating from PJM's dispatch instructions, and the MW level to which they are made whole, should be further evaluated.

Prior to Capacity Performance, CTs were not required to have a dispatchable range and were therefore not required to follow the dispatch signal. With Capacity Performance, frame/industrial CTs are required to have a dispatchable range and are required to follow the dispatch signal. CTs are required to ramp down when the LMP does not support operating at full output, or forgo any uplift credits if they do not follow. However, PJM's rules for calculating Balancing Operating Reserve credits for

[1] Loss exists when gross energy and ancillary services market revenues are less than short run marginal costs, including all elements of the energy offer, which are startup, no load and incremental offers.
[2] There is also a parallel provision in Operating Agreement, Schedule 1, section 3.2.3(e)
[3] OATT Attachment K – Appendix, Section 3.2.3(o)
[4] See 2021 Quarterly State of the Market Report for PJM: January through September, Section 4: Energy Uplift - Recommendations

CTs have not been updated to reflect this flexibility. CTs are made whole to actual MW output.[5] Whereas, other more historically flexible resource types are made whole to the lesser of actual or the PJM-desired MW output. There is an opportunity to update these rules to recognize the flexibility that many CTs now possess and provide stronger incentives for these resources to follow PJM's dispatch signal.

[5] Manual 28, Section 5.2.1 states 'For Combustion Turbine units, operating at PJM Direction, the actual five minute interval real-time output is used as the Operating Reserve Desired MW Value.'