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August 24, 2017

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COMMENTS ON 8/10 MSC DISCUSSION OF AGC ENHANCEMENT

ESA will best be able to understand and provide useful input to MISO with provision of more information on its AGC Enhancement proposal. AGC Enhancement is a necessary and important step to enabling greater grid flexibility, and at a general level, we favor MISO's intent to enable faster response of all resources. However, the details of that implementation will have significant impacts on whether advanced energy storage is able to be fully utilized, given its uniquely fast response and ramp capabilities, as well as whether existing market products are sufficient to take advantage of that AGC Enhancement.

To that end, ESA's comments can be summed up most simply as generally supportive of MISO's direction but unable to provide a better judgment until more information is available.

I. What do you think about Fast First design?

ESA is aware of the tradeoffs of a longer development cycle for the implementation of new logic "from scratch" for a fast signal design, compared to utilizing elements of the existing system. ESA supports moving forward through modification to existing elements, though only if MISO offers stakeholders more information about design details and makes available sample data.

Based on the limited information that has been made available, ESA supports the direction of MISO's Fast First design. ESA is supportive of the elements of deploying/undeploying first, replacing fast with slow, and the alignment of the direction of the fast and slow signal with total deployment, as we understand them to be improvements upon current design. That said, more information is necessary to inform stakeholders on the details of the design, ideally with attendant sample AGC data such as was used to determine the benefit/cost study discussed in the 8/10 MSC presentation. This will help ESA and other stakeholders to investigate the design parameters in the Fast First design and provide insight on if the Fast First design is "fast enough." ESA is eager to learn not only whether the enhanced signal is fast enough, but also whether it moves frequently enough to utilize the fast response and ramp capabilities of advanced energy storage for MISO benefit. Additionally, an appropriate AGC Enhancement should utilize fast resources regularly and throughout all hours and seasons, not just during certain times of the day (e.g., ramping hours).

The notion of permissive charging needs clarification. Increased information on how MISO will determine when resources will undergo permissive charging would allow stakeholders to determine

whether the design will take full advantage of the capabilities of storage resources. It is important to also clarify how MISO will coordinate the parameters necessary especially in the case of owners managing the resource state of charge.

II. What should be the Fast Ramp Resource qualification standard?

ESA recommends using a metric composed of ramp rate as the primary metric adjusted by a secondary metric consisting of the accuracy of the resource of following the enhanced AGC signal. Simply worded this can be described as “ramp rate adjusted by accuracy.” Qualification for the fast group should be determined in a technology-neutral fashion, using a “ramp rate adjusted by accuracy” threshold characteristic of resources able to follow the AGC signal precisely and consistently; doing so will assure that the most capable resources are available for the system.

Regarding non-performance and settlement threshold for fast resources, ESA does not recommend tightening these for fast resources as they should be subject to the same rules for performance as traditional resource. (For example, the settlement performance threshold for resource is currently 70% - we do not recommend the threshold be higher for fast resources.)

III. What should be the allocation method for Fast Resources?

ESA recommends ramp rate as the primary metric, which is more critical than response time for ongoing short-term response to the AGC signal. Utilization of the cleared MW should be taken into account in a secondary manner, as relying on cleared MW solely would not always assure that the faster responding resources would be available to the system accordingly. That said, ESA requests more information on how energy level deviation from neutral state would be used to assist with understanding the implications of this allocation method.

ESA looks forward to learning more details and assisting MISO with improvement and progress of its AGC Enhancement project. Thank you for your consideration of this input.

Respectfully submitted,



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