Comments of Arizona Public Service
Energy Storage and Distributed Energy Resources Phase 4 –Workshop
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Submitted by	Organization	Date Submitted
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Arizona Public Service (APS) appreciates the opportunity to comment on the Energy Storage and Distributed Energy Resources (ESDER) Phase 4 - Workshop that was held on June 27, 2019. APS submits the following comments for the CAISO's consideration.

Default Energy Bids for Energy Storage

APS does not support the CAISO's current approach to default energy bids (DEB) for energy storage resources. As discussed at the Workshop, the CAISO proposes to not calculate DEBs for storage resources, regardless of whether these resources experience parasitic losses, cycling costs and/or opportunity costs.

Battery cells degrade with each "cycle" they run in accordance with maintenance and warranties on units. Cells may degrade more with "deeper" cycles requiring modeling to align with contractual limitations on units. These are precisely the types of costs should be included in a DEB. APS recognizes that including these costs may make it inefficient for storage resources to capture small price spreads, thus limiting availability to the market. However, APS believe there needs to be a mechanism to properly recover the costs of these resources.

APS agrees with the Department of Market Monitoring (DMM) that if no DEB is calculated for Storage Resources, then there must be a mechanism to recover cost for certain types of explicit maintenance and charging expenses including, depth of discharge, parasitic loads, explicit replacement costs, and extreme levels of charge or discharge. In addition to the recommendations explicitly outlined by the DMM, APS urges the CAISO to consider to changes to the market power mitigation process with more reliable price forecast and ambient temperature modeling.

Furthermore, APS agrees with Southern California Edison (SCE) that more work is required to accurately model resources in order to allow entities to make appropriate economic decisions.

NGR State-of-Charge Parameter

Non-Generator Resources (NGR) have the capability to serve as both generation and load and can be dispatched to any operating level within their capacity range. APS future Energy Storage facilities will be a mix of hybrid and standalone resources. CAISO's current State-of-Charge

(SOC) parameter mapping model will not be sufficient for APS in market operations. APS does not agree that SOC parameters should take precedence over economic outcomes in the market optimization for units with potentially limited bid segments. There must be a mechanism to recover costs on NGRs when dispatched uneconomically.

APS agrees with the efforts by CAISO to expand the Real Time market optimizations beyond the 4.5-hour window for the benefit on the operations of NGR amongst other resources.

Conclusion

APS appreciates the CAISO's consideration of these comments and looks forward to working with the ISO on this effort.