



February 27, 2019

California Independent System Operator
Via Email: Initiativecomments@caiso.com

RE: Comments on Issue Paper for Energy Storage and Distributed Energy Resources Initiative: Phase 4

Dear Staff:

NextEra Energy Resources Development, LLC (NextEra) appreciates the opportunity to comment on the proposed scope of issues to be incorporated in Phase 4 of the Energy Storage and Distributed Energy Resources initiative (ESDER Phase 4).

NextEra recommends that the scope of ESDER Phase 4 be expanded to address any technical and market-related issues necessary to facilitate the efficient participation in the CalISO markets of hybrid variable energy and storage resources using DC coupled designs. Specifically excluded from the foregoing are issues related to resource adequacy eligibility and capacity counting rules, which are currently being addressed in Track 3 of the Resource Adequacy Rulemaking pending at the California Public Utilities Commission (R.17-09-020).

Bloomberg New Energy Finance recently estimated that half of all front-of-the-meter utility-scale hybrid solar and storage systems commissioned in 2021 will utilize DC coupled configurations and that such designs will be the standard within 1 to 2 years thereafter. Bloomberg described AC coupled hybrid resources as being similar to a “marriage with a prenup,” in which the two components maintain a good deal of independence. In contrast, while there are several variants of DC coupled designs, each moves towards greater integration of the energy and storage systems. The reason for movement towards DC coupling is straightforward - greater synergy between the photovoltaic and storage systems in DC coupled designs offer the potential for lower costs and benefits to the customer for the same level of performance as AC coupled designs. The CalISO market processes should not be the barrier to adoption of such innovation. If changes are needed, and assuming an approximately one-year implementation, then identification of such modifications need to occur now in ESDER Phase 4 to be ready to accommodate the arrival of DC coupled designs in 2021.

Currently, the CalISO’s treatment of hybrid resources is largely set forth in its informative October 19, 2016 Technical Bulletin on Implementation of Hybrid Energy Storage Generating Facilities. It is likely that the more integrated the renewable generator and storage system become under evolving DC coupled designs, the more the combined resource will be required,

as a practical matter, to use a single Resource ID. The Technical Bulletin notes that under such circumstances, the resource would operate under the Non-Generating Resource (NGR) model, but lose its status as a Eligible Intermittent Resource or Participating Intermittent Resource (PIR) and therefore forego its optimized real-time dispatch that relies on the use of an CalISO forecast. The primary reason referenced by the Technical Bulletin is the inability for the CalISO to provide an accurate forecast for the integrated resource given the latter's control over the timing of charging and discharging. Treating the hybrid resource as fully dispatchable may be an appropriate outcome under some DC coupled designs, depending on factors such as the relative size of the storage to generation or the dc/ac ratio of the generation. But in other, and perhaps the majority of, designs, the loss of PIR status will likely be a sufficient disincentive to preclude their viability and thereby impeded customers from realizing the cost savings of DC coupling.

While certainly not an exhaustive list, the movement towards DC coupling requires the CalISO to address or revisit issues such as hybrid resource forecasting, including integration of state of charge information, greater optimization timeframes (as is already included in the scope of ESDER Phase 4), and providing greater flexibility between toggling between NGR and PIR models or the creation of a new model. NextEra believes these topics should be included in ESDER Phase 4, rather than merely through revision to the Technical Bulletin, to better gain the benefit of transparency and comprehensive stakeholder consideration and input.

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