BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap	Rulemaking 15-03-011 (Filed March 26, 2015)

REPLY COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION ON THE STATION POWER JOINT REPORT AND STAFF PROPOSAL

Pursuant to the January 10, 2017 Administrative Law Judge's Ruling Seeking Comments on Joint Report and Staff Proposal ("Joint Report"), the California Independent System Operator Corporation ("CAISO") respectfully submits these Reply Comments.[1]

As a preliminary matter, the CAISO notes that while CAISO staff worked with Commission staff to prepare and submit the Joint Report together, the CAISO alone submits these Reply Comments to supplement the record on issues where the CAISO can provide clarity on its positions and wholesale issues. These Reply Comments reflect the views of the CAISO alone, and should not be interpreted as a supplement to the Joint Report.

[1] Capitalized terms not otherwise defined herein have the meanings set forth in the CAISO tariff. Unless otherwise indicated, references to specific sections, articles, and appendices are references to sections, articles, and appendices in the current CAISO tariff including revised or proposed sections, articles, and appendices.

I. METERING

As the CAISO noted in Phase 2 of its ESDER initiative,[2] the CAISO continues to believe that a two-meter-minimum mandate is imprudent at this time.[3] Instead, the CAISO believes that local energy providers and storage resources should be allowed to come to a mutually agreeable metering and settlement construct within the station power rules for storage devices.[4] The CAISO expects that in many cases this will consist of two meters; however, as many commenters to the Joint Report noted, trying to meter station power load and charging load separately may be impossible in many cases. Tesla's Comments, for example, detail how proposed energy uses cannot be metered separately from wholesale energy uses.[5] Assuming that the Commission wants to maintain separate retail and wholesale treatment for certain storage functions, a mandate for at least two meters or separate metering is not feasible. For this reason, the CAISO believes that if the Commission believes that storage devices and generators should be charged retail rates for station power load, then it should be open to the use of agreed-upon calculations to determine station power load when storage devices charge (e.g., X% of total load, where X can

[2] The ESDER Initiative is the result of a 2013-2014 stakeholder initiative clarifying interconnection rules for storage, and the 2014 CAISO/CPUC/CEC California Energy Storage Roadmap. http://www.caiso.com/informed/Pages/StakeholderProcesses/EnergyStorage_AggregatedDistributedEnergyResources.aspx.

[3] This discussion relates to resources in front of the meter. The CAISO agrees with the Joint Report that wholesale treatment for behind-the-meter resources requires at least one additional sub-meter (and therefore at least two meters) to distinguish the wholesale resource activity separate from the location's retail load.

[4] The CAISO would assume that the Commission would resolve any dispute where a mutually agreeable solution could not be reached.

[5] *See* Tesla Motor Inc.'s Comments in Response to Joint Report.

vary depending on station power load related to performance).[6] This flexibility will especially be beneficial to small storage resources who may view the costs of additional meters as insurmountable barriers to entry.

II. WHOLESALE TREATMENT FOR STATION POWER

The CAISO takes this opportunity to note that a simple, elegant solution to all of the issues in the Joint Report, is the solution proffered by Calpine, Tesla, and others: wholesale treatment for station power. As Calpine notes "virtually all station power used at a typical conventional generation plant or IFOM storage facility is necessary to operate a conventional generation or storage resource, including loads that ostensibly involve consumption. Because these loads exist for no other reason than to supply wholesale products, they constitute sales for resale and should be subject to a wholesale rate."[7] The CAISO agrees that there is little meaningful difference between the retail electrons "consumed" to provide the thermal regulation and software systems to operate a battery or generator safely, and the wholesale electrons used to charge a lithium-ion battery or consumed to power pumps to move water for pump storage. All are essential to the supply of energy, yet their rate treatment is bifurcated somewhat arbitrarily. While treating all energy used to supply energy and ancillary services as a sale for resale (under a wholesale rate) could shift some of the reduced retail charges to ratepayers, it is difficult to argue that it is not a fair and simple solution to very complex issues.

[6] In other words, calculations should be able to reflect that station power load probably will not be a constant—it will vary according to what the storage device is doing.
[7] Calpine Comments at 3.

III. NETTING

A number of comments sought clarification on the Joint Report's proposal that "[i]nsofar as a resource withdraws energy or injects energy subject to a CAISO dispatch at a greater capacity than its consumption, that consumption should be able to be netted against the response to the CAISO dispatch, just as it is for conventional generators." Those comments proffered various reasonable interpretations. The CAISO takes this opportunity to advocate how it feels the Joint Proposal should be interpreted.[8]

Conventional generators operate at a Pmin well above 0 MW. Once they reach their Pmin plus their station power load, they are able to self-supply generation to meet their station power load, thereby avoiding retail charges at the cost of reduced wholesale settlement for supply. They are thus able to "net" their station power load such that they effectively "pay" a wholesale rate for station power. In fact, operating above their Pmin plus their station power load is essentially the only way conventional generators operate to provide supply and ancillary services.[9]

Energy storage resources, by contrast, can have a Pmin of 0 MW. More importantly for our purposes here, energy storage resources can provide grid services (such as regulation) *well below an output of 0 MW*. A storage resource with smart charging capability could provide regulation, for example, by fluctuating between –10 MW and –9MW. Another storage resource could

[8] In other words, the CAISO is *not* clarifying what the Joint Report meant or any definitive original intention.
[9] Non-spinning reserve being an obvious exception.

provide regulation between –2 MW and + 2 MW. As the belly of the duck curve continues to grow in California,[10] these negative generation or net 0 MWh dispatches in a settlement interval may be exactly what the grid needs to operate reliably in a given settlement interval. Yet because station power load can be subsumed by positive generation, but is additive for negative generation, the former is effectively charged a wholesale rate and the latter a retail rate. Thus, without the comparable ability to self-supply like a conventional generator—avoiding retail treatment for station power load—an energy storage resource will be more incentivized to supply energy (positive generation) above its station power load. Southern California Edison and others correctly note that price signals already will encourage bi-directional market services.[11] In other words, obviously negative LMP will drive all storage devices to charge. It is the hours where LMP is *approaching* a low or negative LMP (or rising from one) that are the issue. Without wholesale treatment for their station power load, storage resources will continue to discharge as long as possible—so that they can self-supply their station power and avoid higher retail rates—before switching to charging as LMP approaches 0.

As such, the CAISO favors the comparable ability to "net" station power load during periods of negative generation. So long as the resource is a dedicated, "24/7," wholesale resource, and its positive and/or negative performance are greater than its station power load, that station power load

[10] *See, e.g.,* Greentech Media, *The California Duck Curve is Real, and Bigger than Expected*, Nov. 3, 2016, https://www.greentechmedia.com/articles/read/the-california-duck-curve-is-real-and-bigger-than-expected.
[11] SCE Comments at 2.

should be charged a wholesale rate. Whether the resource is performing pursuant to dispatch, self-schedule, or under Regulation Energy Management would be immaterial, but the CAISO agrees with NRG that if the Commission approves the general approach in the Joint Report, details such as treatment during uninstructed deviation intervals should be addressed.

Respectfully submitted,

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