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Stem and eMotorWerks appreciate the opportunity to comment on the Third Revised Straw Proposal in Phase 2 of the ESDER Initiative. These comments focus primarily on the Load Consumption discussion but also suggest further NGR enhancements for ESDER Phase 3.

1. Distinguishing between Charging Energy and Station Power

**Comments:**

D.17-04-039 ("the Decision") adopted by the CPUC on April 27 regarding station power issues for energy storage left open ambiguities with respect to the rules regarding behind-the-meter (BTM) storage[1] participating in wholesale markets. Stem and eMotorWerks offer comments here on those ambiguities to help inform the ISO's consideration of tariff changes and metering solutions with respect to charging energy and station power.

For background, one of the key issues with BTM storage participation in the Distributed Energy Resource Provider (DERP) construct is that all energy used to charge an Non-Generating Resource (NGR) participating in a DERP is assessed the Locational Marginal Price (LMP). If that NGR is behind a customer meter, the resource is also paying the applicable retail rate for the

[1] For purposes of these comments, "BTM Storage" shall include stationary storage and aggregations of electric vehicle service equipment which operate batteries when connected.

charging energy drawn through the retail meter. The storage provider and host customer are then paying double for each KWh used to charge the storage system ("double-payment problem").

Theoretically, the solution to this problem should be that charging energy that is later exported back to the grid for wholesale purposes is subject to the wholesale tariff only, while charging energy that is discharged to serve on-site, behind-the-meter load is subject to a retail tariff only. The challenge lies in distinguishing these two types of charging energy by associating a "charging KWh" with the relevant "discharging KWh".

This issue is murky with respect to station power rules because the station power definitions do not clearly distinguish between energy used to support the operation of the generation/storage device from energy used to serve on-site building load. While the Decision ostensibly defers the consideration of station power rules for BTM storage in a wholesale must offer context, it is ambiguous with respect to whether the first two "principles" apply to both BTM and front-of-meter storage.

- The first principle states "All energy that is used for purposes other than for supporting a resale of energy back into the wholesale markets is station power and inherently retail, subject to the CPUC's rules regarding netting of energy consumption."

This principle appears to classify charging energy that is later discharged to serve retail load as "station power". If true, this has implications for the ISO tariff definition and well as metering solutions related to commingling concerns.

- The second principle states, "All energy drawn from the grid to charge energy storage resources for later resale, including energy associated with efficiency losses, should be subject to a wholesale tariff."

This principle appears to resolve the double-payment problem for charging energy if interpreted to say that charging energy for later resale is subject **only** to a wholesale tariff and other charging energy is subject to **only** the retail tariff. Both implications potentially require changes at the ISO with respect to metering and settlement of BTM storage. This implies that the ISO must agree with the LSE on a methodology for designating which charging energy was discharged for wholesale vs retail purposes and settling accordingly. The BTM storage customer's retail bill will need to net out the retail charges for wholesale energy and the

wholesale market settlement will need to net out the wholesale charges for energy used for retail consumption.

As these questions have not been discussed sufficiently in either the CPUC Storage OIR or the ESDER stakeholder process, detailed solutions are not available for ESDER Phase 2 inclusion. However, Stem and eMotorWerks recommend that treatment of station power issues within Phase 2, at a minimum, clearly acknowledge that the rules do not address BTM storage at this time and the issues will be addressed in Phase 3.

2. Increase Load Consumption as Demand Response Enhancement

**Comments:**

The discussion regarding Load Consumption in Section 6.1.4 of the Third Revised Straw Proposal (" 3rd Proposal") mischaracterizes the discussion in the Load Consumption Working Group (LCWG) and comes to an unsupported conclusion that retail rate impacts are a significant barrier to creation of a load consumption product in PDR. The LCWG stakeholder process was inexplicably delayed, unreasonably pushing the load consumption progress out of ESDER Phase 2. Thus, the ISO should immediately re-constitute the LCWG to work on a minimum viable load consumption product well ahead of the proposed Phase 3 Issue Paper timeline.

The 3rd Proposal states that "The LCWG recognizes significant policy issues exist around retail rates and their impact and interaction with wholesale-directed load consumption." This statement mischaracterizes the progress made by LCWG, overgeneralizing the feedback from one set of stakeholders to the conclusions of the entire working group. On the contrary, the LCWG proposal in the Second Revised Straw Proposal ("2nd Proposal") described a structure that separated wholesale from retail settlement and affirmed that legal counsel confirmed that this separation avoided jurisdictional issues. The updates described in Section 4.2.1 of the 2nd Proposal stated "A general consensus as well as an opinion from the CAISO legal department that the wholesale and retail components of PDR consumption as discussed are properly separated. "

The 3rd Proposal then describes feedback from the PG&E Excess Supply Pilot as evidence that "participants are concerned about rate impacts and ratcheting demand charges". We are unaware of this feedback being discussed in the LCWG, and the Excess Supply Pilot may very

well have not included BTM storage participants. Thus, the concerns about rate impacts and demand charges are limited to a small subset of the market and cannot be generalized to all potential participants in a load consumption product.

For a robust, effective stakeholder process that addresses urgent grid needs in a timely manner, the ISO should not delay progress on valuable market enhancements because some barriers remain for a subset of potential participants. The BTM storage industry has operational resources that could help with the "belly of the duck" and other overgeneration conditions today if the PDR mechanism included load consumption. BTM storage does not require any change to retail rates or demand charges in order to participate with the megawatts that are in operation in California now. These installed resources are charging on their own schedule now, while their discharging behavior is integrated in to the ISO market already. All these resources need is an economic signal to shift their charging behavior to better help the ISO managed grid.

Case in point regarding market enhancements, the ISO made rapid progress with creating the DERP mechanism for aggregation of NGRs even though significant barriers remained for a major segment of the target market – BTM storage. The DERP is not viable for BTM storage for several reasons discussed below under the ESDER Phase 3 heading. However, this did not delay the ISO in creating the DERP and achieving approval from FERC.

Thus, although BTM storage could theoretically participate in load consumption using the NGR model, the practical barriers result in a CAISO tariff that unreasonably restricts competition. The FERC NOPR on Energy Storage and Distributed Energy Resource Aggregation issued in 2016 as well as the February ruling on MISO vs Indiana Power & Light both affirm that wholesale market operators should allow and encourage energy storage to provide all the services that that the technology is technically capable of providing. BTM storage can clearly provide increased load consumption and none of the "issues that need investigation" listed on page 24 of the 3rd Proposal need to be resolved before a viable, successful load consumption product can be launched within the PDR construct.

Stem and eMotorWerks acknowledge that other barriers unrelated to rate impacts and demand charges may remain, including the concerns about market inefficiency and distribution grid impacts raised by the IOUs. However, these issues can be tackled immediately in the ESDER process without waiting for potentially multi-year rate case discussions.

Stem and eMotorWerks recommend that the ISO focus on creating a load consumption energy product ahead of solving the frequency regulation issues, since, as proposed in the 2nd Proposal, the load consumption energy product can be quickly adapted from the existing rules for demand response. With the "duck chart" arriving years ahead of expectations and multiple days of more than 10GWh of renewables curtailment this spring, the ISO should not wait for retail rate changes to modify demand on the grid. Widespread adoption of time-variant rates that align with real-time wholesale prices may help direct load consumption, but this change will occur slowly and a rates-solution alone lacks the flexibility and certainty provided by active participation in a wholesale market product.

## 3. ESDER Phase 3

**Comments:**

As discussed above, the DERP/NGR construct is currently not a practical path for BTM storage resources to participate in the ISO markets. When created, the DERP was ostensibly designed to accommodate smaller, distributed BTM storage installations, but several significant barriers remained, resulting in the current reality, where as far as Stem and eMotorWerks are aware, the only BTM storage resources using the DERP mechanism are special case pilot projects such as the LA Air Force Base. Stem and eMotorWerks recommend that in ESDER Phase 3 the ISO address these barriers to the extent issues are within its jurisdiction, but also use the ESDER forum to collaborate with all stakeholders to drive needed change at the Public Utilities Commission.

A primary barrier to BTM storage participation in the DERP is the 24x7 settlement of NGR activity. BTM storage resources that participate in the ISO markets will invariably be operating in a Multi-use Application (MUA), where the resource will be operating for the end customer benefit completely distinct from wholesale market participation. In the current NGR model, such customer-beneficial activity may be penalized as uninstructed energy by the ISO. This fundamentally prevents or severely restricts multi-use, and without multi-use, the BTM storage provider has little reason to install energy storage behind the customer meter or cannot rely on wholesale market participation as a component of total lifetime economic benefits of installation.

The second major barrier concerns the double-payment problem discussed within the Station Power context above, specifically with respect to the energy used to charge BTM storage. The solution likely requires a further decision in Track 2 of the CPUC Storage OIR, but the ISO could

make significant progress in establishing the metering configurations, accounting methodologies and IT systems to support a range of possible policy decisions.

Finally, parties have expressed in numerous forums that the costs and timelines involved in interconnection of small resources within the utilities' Wholesale Distribution Access Tariffs (WDAT) are prohibitive. By definition, BTM NGR's that will be exporting to the grid (outside of a NEM tariff) are subject to WDAT interconnection. In addressing the WDAT, the ESDER initiative should consider the process by which individual or an aggregation of non-exporting BTM storage resources can be eligible to provide resource adequacy, as existing methods for DG deliverability may not be appropriate or applicable.

The ESDER would seem to be the most appropriate existing forum for addressing these barriers to DER participation in the wholesale market.