

unwilling to unbundle charging from retail load for settlement. The CAISO addressed these issues and explained its views at length in its request for clarification and rehearing on Order No. 841. The CAISO's compliance filing is consistent with the relief the CAISO requested in its request for clarification and rehearing. The CAISO does not reiterate those full discussions here.

I. Behind-the-Meter Storage

Tesla,³ the California Energy Storage Alliance ("CESA"),⁴ and Advanced Energy Economy ("AEE")⁵ argue that the CAISO's compliance filing is deficient because the CAISO has failed to offer a Non-generator Resource ("NGR") participation model that does not settle storage resources behind the meter if their utility distribution company refuses to exempt them from retail charges. They argue that using the CAISO's metering generator output methodology for demand response resources with behind-the-meter generation is insufficient. The CAISO sought clarification and rehearing on this issue before its compliance filing. The CAISO's compliance filing was consistent with its requested clarification.

Commenters' arguments suffer from some false premises regarding behind-the-meter storage participation. First, commenters seek to solve a problem that generally does not exist in California. In 2017 the California Public Utilities Commission ("CPUC") determined that "[a]ll energy drawn from the grid to charge energy storage resources for

³ Tesla Comments at p. 20.

⁴ CESA Comments at pp. 9 *et seq.*

⁵ AEE Comments at pp. 6 *et seq.*

later resale, including energy associated with efficiency losses, should be subject to a wholesale tariff.”⁶ The CPUC directed its jurisdictional utilities—including the CAISO’s three large investor-owned utilities—to modify their distribution/retail tariffs to conform to this ruling. As such, the utility distribution companies that serve a significant percentage of California load cannot refuse or otherwise be unable to extract behind-the-meter storage charging from retail settlement. A behind-the-meter storage resource participating in the CAISO markets would therefore be settled to charge at wholesale rates only.

Second, commenters overstate the barriers that behind-the-meter resources’ face to participate in the CAISO markets using the NGR model (or any model). AEE, for example, states that “CAISO (like other RTOs/ISOs) has not fully explained how [Energy Storage Resources] that are connected to the distribution grid or behind the meter will be able to fully participate in the wholesale markets.”⁷ To the contrary, the CAISO explained in its compliance filing that the CAISO does not discriminate based on the level of interconnection.⁸ To the extent any resource meets the minimum technical criteria to participate in the CAISO energy and ancillary services markets, they can

⁶ *Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program*, “Decision on Track 2 Energy Storage Issues,” pg. 37, CPUC Docket No. R.15-03-011 (May 8, 2017).

⁷ AEE Comments at p. 1.

⁸ See, e.g., CAISO compliance filing at p. 6 (“resources capable of receiving, storing, and later injecting energy onto the grid—regardless of interconnection level or technology—participate in the CAISO markets today in a manner consistent with Order No. 841”); p. 3 (“Over 200 MW of greenfield energy storage projects have interconnected to the CAISO transmission system since 2016, and even more storage has interconnected to the distribution grid. Both distribution connected resources and transmission interconnected resources are able to participate in the CAISO’s markets”).

participate.⁹ These criteria do not include a requirement to interconnect to the transmission grid. The CAISO has numerous distribution-connected generators, and nothing prevents them from using storage or participating via the NGR model. Resources may do so as individual resources or as distributed energy resource aggregations (“DERAs”).¹⁰ The CAISO established the DERA model without a requirement to interconnect through a wholesale distribution access tariff specifically to allow the smallest and behind-the-meter resources to participate.¹¹

Most behind-the-meter resources elect *not* to participate in the CAISO markets as NGRs because it is more economic for them to participate in net energy metering programs that assign retail value to their exports to the grid. Moreover, behind-the-meter storage resources may not in all cases meet the CAISO’s 100 kW minimum capacity requirement, and elect to aggregate into demand response resources rather than distributed energy resource aggregations. They do so for two reasons, neither of which pertains to the CAISO tariff. First, as demand response resources, they are eligible to provide Resource Adequacy capacity in California. The CPUC has yet to determine rules concerning whether distributed energy resource aggregations can qualify to provide Resource Adequacy qualifying capacity, which is outside of the CAISO’s control. Second, as demand response resources, behind-the-meter storage

⁹ See CAISO compliance filing at pp. 12 *et seq.*

¹⁰ See Section 4.17 of the CAISO tariff.

¹¹ See *California Independent System Operator Corp.*, 155 FERC ¶ 61,229 (2016) (“We agree with CAISO and SolarCity that it would be unduly discriminatory to require all distributed energy resources to interconnect through a WDAT when the WDAT interconnection rules do not apply to some distributed energy resources, such as dispatchable demand response resources. Accordingly, we find that CAISO’s proposed language is reasonable because it does not limit or expand upon the scope of entities that must interconnect through a WDAT”).

resources paired with conventional generation (e.g., solar PV) can still participate in net energy metering programs, which provide retail value for energy exports to the grid. The DERA model expressly prohibits resources participating in net energy metering programs because those these resources already receive retail value for the excess energy they export to the grid.¹²

Third, commenters seem to impose their own wishes on Order No. 841, which in no way requires the CAISO to create a customized NGR model that pays for discharging but not for charging. Order No. 841 requires “each RTO/ISO to prevent resources using the participation model for electric storage resources from paying twice for the same charging energy.”¹³ The CAISO has done so through its metering generator output methodology, which it developed with the storage community specifically for behind-the-meter storage participation. This methodology and the NGR model thus provide resources with options based on how their utility distribution company accounts for their charging.

In Order No. 841, the Commission clearly states that it “does not preclude an RTO/ISO from structuring its markets based on the technical requirements that a resource must meet to provide needed services. It simply requires that each RTO/ISO establish a participation model that ensures eligibility to participate in the RTO/ISO markets in a way that recognizes the physical and operational characteristics of electric storage resources.”¹⁴ In fact, the Commission noted that “where an RTO/ISO already

¹² See section 4.17.3(d) of the CAISO tariff.

¹³ Order No. 841 at P 326.

¹⁴ Order No. 841 at P 51.

has a separate participation model that electric storage resources may use . . . we are not requiring the RTO/ISO to consolidate that participation model with the participation model for electric storage resources”¹⁵ The NGR model is a wholesale market participation model that allows the CAISO to optimize, dispatch, meter, and settle storage devices. The metering generator output methodology complies with Order No. 841 because it is purposely designed for wholesale participation and enabling *retail* metering, accounting, and settlement. The CAISO provides behind-the-meter resources the ability to elect which model is optimal for them.

II. Transmission Charges on Charging

Pacific Gas & Electric (“PG&E”) argues that the CAISO failed to comply with Order No. 841 where the CAISO proposed to treat charging pursuant to dispatch as a service such that the storage resource should not be assessed transmission charges.¹⁶ PG&E recognizes that the CAISO sought clarification and rehearing on this issue, but argues that the CAISO’s compliance filing is “procedurally improper” because PG&E believes that the Commission’s examples in Order No. 841 limit such treatment to ancillary services.¹⁷ PG&E fails to cite any statute, regulation, or Commission precedent for this procedural argument. In any case, the CAISO, its stakeholders, and other commenters¹⁸ substantively disagree with PG&E’s views on storage resources’ charging, transmission cost allocation, and Order No. 841. The Energy Storage

¹⁵ Order No. 841 at P 55.

¹⁶ PG&E Comments at pp. 3 *et seq.*

¹⁷ *Id.*

¹⁸ AEE, ESA, and CESA all argued against PG&E’s comments in their comments.

Association (“ESA”) noted in its comments that the CAISO’s compliance filing was consistent with Order No. 841, as evidenced by the fact that the Southwest Power Pool, ISO New England, and the New York ISO took similar approaches.¹⁹ Charging during periods of low prices and discharging during periods of high prices is the most important service storage resources provide. This type of dispatchable demand greatly mitigates the “duck curve” issues the CAISO regularly faces: mitigating the reliability risks presented by a significant evening ramp, and reducing the curtailments and negative pricing necessitated by oversupply. The CAISO addressed this issue extensively in its request for clarification and rehearing and in its compliance filing.

III. Other Issues

Some commenters address issues tangential to the CAISO’s compliance with Order No. 841. First, ESA recognized that “[w]hile Order 841 is intended only to address the participation model for electric storage resources, ESA notes that storage is increasingly likely to be co-located with generation at a shared point of interconnection (known as ‘hybrid resources’).”²⁰ ESA states that “CAISO’s filing does not address the myriad ways in which Order 841 compliance affects the market participation of hybrid resources that include electric storage.” ESA asked the Commission to “open a new docket to address this matter” for all RTO/ISOs.

The Commission should reject ESA’s request. ESA itself admits this claim is outside of the scope of Order No. 841 and outside of the scope of the CAISO’s

¹⁹ ESA Comments at p. 3.

²⁰ ESA Comments at p. 4.

compliance filing. In any case, ESA's claim is inaccurate. In 2016 the CAISO published a lengthy, detailed technical bulletin on the myriad ways interconnection customers can elect to pair storage to traditional resources.²¹ Order No. 841 does not affect customer options, and many market participants have expressed that they will elect to have separate resource IDs for their generation and storage because doing so will be the most efficient (and profitable) for bidding and optimization.²²

Second, Calpine notes that storage resources must be able to provide continuous energy for four hours to be eligible to provide Resource Adequacy capacity in California.²³ Calpine states this requirement was "based on a convention that was originally implemented for non-storage resources."²⁴ Calpine then "urges the Commission to direct the CAISO to ensure that counting methods are based on sound analysis and appropriately reflect the reliability contributions of duration-limited resources, or otherwise ensure that RA resources effectively meet the CAISO's reliability needs."²⁵

The CAISO agrees with Calpine that sound analysis is prudent in establishing Resource Adequacy requirements. The CAISO shares Calpine's concern regarding over-reliance on availability limited resource adequacy resources. But these issue are not relevant to the CAISO's compliance with Order No. 841. More problematically, the

²¹ CAISO, "Implementation of Hybrid Energy Storage Generating Facilities," October 9, 2016, available at <https://www.caiso.com/Documents/TechnicalBulletin-ImplementationofHybridEnergyStorageGeneratingFacilities.pdf>.

²² Customers could elect to have the storage and generator considered a single resource as well.

²³ Calpine Comments at p. 4.

²⁴ *Id.*

²⁵ *Id.*

CAISO does not set the rules for Resource Adequacy eligibility, which is a state jurisdictional issue. The CAISO can only set the Resource Adequacy counting rules for local regulatory authorities that fail to establish their own rules, which are few in the CAISO. Calpine admits as much in its own footnote, stating, “The [Resource Adequacy] requirement mirrors the California Public Utilities Commission’s RA counting rule for storage. The CPUC is the largest Local Regulatory Authority within CAISO and sets the RA counting rules for most of the load in CAISO.”²⁶

Third, Calpine also states that it “is concerned about treating storage as demand response for the same reasons we have raised with respect to demand response generally, *i.e.*, that baselines can be gamed and that the combination of wholesale compensation at the LMP and avoided retail payments may lead to excessive total compensation without appropriate netting of wholesale and retail settlements.”²⁷

Calpine admits that “the CAISO has generally addressed these issues carefully in its [Energy Storage and Distributed Energy Resource (ESDER)] initiatives,” but still “urges the Commission to ensure that the CAISO’s methodology safeguards against over-recovery by behind-the-meter storage systems.”²⁸

This comment does not pertain to the CAISO’s compliance with Order No. 841. Order No. 841 was clear that it “does not preclude electric storage resources from continuing to participate in demand response programs,”²⁹ and that “existing

²⁶ *Id.* at p. 4 n. 15.

²⁷ Calpine Comments at p. 5.

²⁸ *Id.*

²⁹ Order No. 841 at P 56.

participation models for demand response that already have well-established rules that are in some cases unique to demand response and we do not want the requirements of this Final Rule to disrupt or otherwise conflict with those rules.”³⁰

Fourth, AEE states:

CAISO (similar to many other RTOs/ISOs) does not propose any changes to its market power mitigation provisions associated with its proposed ESR participation model, including any changes to the procedures CAISO uses to calculate resource default energy bids. In maintaining the status quo, CAISO ignore that opportunity costs are a key component of an ESR’s default energy bid. Failing to properly account for an ESR’s opportunity costs in its default energy bid could result in CAISO inappropriately mitigating the ESR to a default energy bid below its true short-run marginal cost.³¹

This argument is misleading. In the CAISO, NGRs are not currently subject to local market power mitigation. For this reason NGRs neither have, nor require, default energy bids at this time. AEE’s allegation that the CAISO would inappropriately mitigate a storage resource currently is impossible because the CAISO does not mitigate NGR bids. Moreover, nothing in Order No. 841 required the CAISO to change its practice. On the contrary, Order No. 841 expressly said that “each RTO/ISO *may consider* whether it is appropriate to update and/or apply existing market power mitigation processes to electric storage resources to alleviate market power concerns.”³² The CAISO did not feel it was appropriate to do so through its compliance filing, and has

³⁰ Order No. 841 at P 32.

³¹ AEE Comments at p. 7.

³² Order No. 841 at P 97 (emphasis added).

instead included this issue for consideration in phase four of its ESDER stakeholder initiative.³³

IV. Conclusion

For the reasons stated herein, in the CAISO's compliance filing, and in its request for clarification and rehearing, the Commission should approve the CAISO's compliance filing with Order No. 841.

Respectfully submitted,

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³³ CAISO, ESDER Phase 4 Issue Paper, p. 6, Feb. 6, 2019, *available at* <http://www.caiso.com/Documents/IssuePaper-EnergyStorage-DistributedEnergyResourcesPhase4.pdf> ("Currently, the CAISO does not mitigate NGRs for local market power. However, with increasing numbers of energy storage resources participating in the market, the CAISO must consider potential market impacts and mitigation tools applicable to storage resources").

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for the above-referenced proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, CA this 27th day of February, 2019.

/s/ Anna Pascuzzo

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