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 on March 26, 2015)

PETITION FOR MODIFICATION OF DECISION 17-04-039 OF THE CALIFORNIA ENERGY STORAGE ALLIANCE TO ADDRESS HYBRID AND CO-LOCATED RESOURCES

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In accordance with Rule 16.4 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the California Energy Storage Alliance ("CESA") hereby submits this *Petition for Modification of Decision 17-04-039 of the California Energy Storage Alliance to Address Hybrid and Co-Located Resources* ("Petition") seeking modifications on Decision ("D.") 17-04-039 issued on May 8, 2017 in Rulemaking ("R.") 15-03-011.

In D.17-04-039, the Commission adopted rules regarding the treatment of station power for in-front-of-the-meter ("IFOM") energy storage devices, but since the issuance of that decision, the state has seen a proliferation of renewable resources (*i.e.*, mostly solar) paired with energy storage devices, referred to by the Commission and the California Independent System Operator ("CAISO") as hybrid or co-located resources. Given the significant levels of procurement of these resource types and the material impacts of the application of station power rules and treatment for hybrid and co-located resources, clarification from the Commission is urgently needed and requested by this Petition.

I. INTRODUCTION.

With declining battery energy storage technology costs, federal tax incentives to pair energy storage with solar generation, and the additional reliability benefits provided, California is witnessing a proliferation of solar-plus-storage projects in recent load-serving entity ("LSE") procurements as well as in their share of the interconnection queue capacity. According to CESA's tracking of recent procurement announcements, a non-exhaustive list of solar-plus-storage projects expected in the next two to three years is presented below:

Table 1: LSE Procurement of Solar-Plus-Storage Projects Expected Online in 2021-2023

LSE	Project Name	Solar Capacity (MW)	Paired Storage Capacity (MW)	Commercial Online Date
CPA	High Desert Solar + Storage	100.0	50.0	Aug 2021
	SF Azalea LLC	60.0	38.0	Dec 2022
	Rexford 1 Solar & Storage Center	300.0	180.0	Oct 2023
	Chalan Solar + Storage	64.9	25.0	Dec 2023
	Daggett Solar + Storage 3	123.0	61.5	Mar 2023
	Arlington Energy Center II	233.0	132.0	Aug 2022
	Estrella Project	56.0	28.0	Dec 2022
EBCE	EPPR CA Solar Park VI LLC	100.0	30.0	Dec 2022
	Raceway Solar 1, LLC	125.0	80.0	Dec 2022
MCE	Daggett Solar + Storage 3	110.0	55.0	Dec 2022
3CE	Cal Flats BESS LLC	280.0	60.0	Aug 2021
	Yellow Pine Energy Center II	75.0	39.0	Dec 2022
	Aratina Solar Center 1A	120.0	30.0	Jun 2023
PG&E	Blythe Energy Storage 110		63.0	Jul 2021
SJCE	EDPR CA Solar Park VI LLC	100.0	10.0	Dec 2022
SVCE	Yellow Pine Energy Center II	50.0	26.0	Dec 2022
SVCE/3CE	Rabbitbrush Solar + Storage	100.0	20.0	Jun 2022
	Aratina Solar Center 1B	80.0	20.0	Jun 2023
SCP	Proxima Solar	50.0	5.0	Jul 2023
SCE	Blythe Energy Storage 2	131.1	115.0	Aug 2021
	Blythe Energy Storage 3	136.8	115.0	Aug 2021
	SP Garland Solar Storage	185.1	88.0	Aug 2021
	McCoy Energy Storage	250.0	230.0	Aug 2021
	Edwards Sanborn Storage 1	300.0	50.0	Aug 2021
	SP Tranquility Solar Storage	205.3	72.0	Aug 2021
SDG&E	Bright Canyon Energy Storage		10.0	Jun 2022
VCEA	Putah Creek Solar	3.0	3.0	Sep 2021
	Gibson Renewables	20.0	6.5	Sep 2022
	Resurgence Solar I	90.0	75.0	Dec 2022
		Total 2021 COD	846.0	
		Total 2022 COD	549.5	
		Total 2023 COD	321.5	
		Total 2021-2023	1,717.0	

Going forward, the CAISO interconnection queue data in Queue Cluster ("QC") 13 portends significant levels of energy storage capacity paired with generation, representing 57% of all active applications and 15,142 MW of paired storage capacity to either solar or wind generation (or close to 28% of total generation or energy storage capacity submitted in the queue).[1] Increasingly, energy storage is being added to generation facilities to enhance the flexibility or firmness of the otherwise standalone generator, provide incremental services in the CAISO wholesale market, or provide incremental capacity to periods of need, such as the net load peak. Storage additions may also provide smart use or appropriation of available deliverability from resources that may have declining RA values, benefiting customers. The current and future prevalence of generation paired with energy storage thus requires the Commission's urgent and timely action to consider the appropriate station power rules and treatment.

With the influx of resources pairing generation and storage technologies, the Commission and the CAISO have sought to rapidly update regulations, processes, and rules to reflect the capabilities of these resources in the planning space as well as in operationalizing them in the CAISO's markets. The CAISO launched and finalized proposals in the Hybrid Resources Initiative to establish market participation and forecasting models and interconnection and metering requirements for hybrid and co-located resources, where the former involves two or more resources operating under a single resource ID and the latter involves two or more resources operating under their own separate and individual resource IDs. The CAISO is also working through how hybrid and co-located resources would be valued in their proposed unforced capacity ("UCAP") methodology in the Resource Adequacy ("RA") Enhancements Initiative. Similarly, in the Resource Adequacy ("RA") proceeding (R.19-11-009), the Commission issued D.20-06-031

[1] *See* CAISO Resource Interconnection Management System (RIMS) data accessed February 18, 2021: https://rimspub.caiso.com/rims5/logon.do#

that aligned the Commission's and the CAISO's definitions for hybrid and co-located resources and established qualifying capacity ("QC") methodologies for IFOM hybrid and co-located resources, taking an additive approach for the individual QC counts and accounting for the available charging energy from the onsite generation.[2] Finally, in response to a system reliability need identified for the 2021-2023 period, the Commission issued D.19-11-016 in the Integrated Resource Planning ("IRP") proceeding (R.16-02-007), where the Commission observed that it anticipates "hybrid generation and storage projects will fare well in competitive solicitations for system reliability resources and should be strongly considered,"[3] likely because energy storage attachments to generation facilities can deliver immediate and economic incremental capacity, especially as the Commission was anticipating the development of capacity counting methodologies that would fully recognize their reliability contributions.

As hybrid and co-located resources continue to be procured, built, and operationalized, the Commission may potentially encounter additional rules, regulations, and processes that need to be updated, clarified, or developed. Such is the case with the current state of ambiguity around the station power treatment and rules for hybrid and co-located resources. Without clarification and modification, these station-power related rules and matters will be interpreted and applied for hybrid and co-located resources on a case-by-case basis by each investor-owned utility ("IOU"). If inappropriately and inconsistently applied, or applied in ways that may uneven the playing field for the treatment of station power some resources compared to others, progress may be impeded, and sub-optimal resource selection outcomes could occur.

[2] *See* D.20-06-031 at FOF 10 and OP 11-12.
https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M342/K083/342083913.PDF
[3] *See* D.19-11-016 at 44.
https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M319/K825/319825388.PDF

If unaddressed and left ambiguous, a potential outcome could be that hybrid and co-located resources may be assessed retail charges for loads at the combined generating facility, which are not only discriminatory but could also significantly harm the economic viability of these projects. In addition to retail treatment for loads that warrant wholesale treatment if station power rules are inappropriately applied, hybrid and co-located resources could also bear excessive metering costs that are not needed to delineate between wholesale and retail energy. With several hybrid and co-located projects already operational and close to 2,000 MW of paired storage capacity coming online over the next three years, including a substantial portion in the coming summer months, CESA urges the Commission to timely respond to and provide the relief requested in this Petition.

II. SUMMARY OF REQUESTED RELIEF.

CESA respectfully requests that the Commission issue a Proposed Decision as soon as possible to modify D.17-04-039 and D.18-01-003 as follows:

- Affirm that the rules for standalone IFOM energy storage, including the permitted netting rules, apply equally to hybrid and co-located resources.
- Affirm that hybrid and co-located resources have the right to self-supply their internal power needs, including station service, and avoid retail energy charges, as is the case with any conventional generator.
- Affirm that a single 'high-side' meter is sufficient for the purposes of delineating between wholesale and retail electricity draws.

The above request is summarized with specific recommended modifications to the Findings of Fact ("FOF"), Conclusions of Law ("COL"), and Ordering Paragraphs ("OP") to D.17-04-039 and D.18-01-003 (as proposed in Appendix 1 of this Petition) and is justified on the grounds that similarly situated customers must be treated similarly,[4] which served as the basis for adopting the

[4] 16 U.S.C. § 824d(b) and Calif. Pub. Util. Code § 453.

various rules in D.17-04-039 for standalone IFOM energy storage resources. Rather than creating resource-specific approaches, a level playing field is needed for hybrid and co-located resources, as is consistently done for conventional generation facilities and standalone IFOM energy storage resources. Fortunately, the Commission can leverage the existing rules and tariffs in place for generation resources and modify D.17-04-039 and D.18-01-003 to achieve this level playing field. As Section VI of this Petition explains, the rules and tariffs, if modified in accordance with this Petition, reasonably address every "operational mode" of a hybrid and co-located resource, ranging from onsite charging only, net injection to the grid, net draw from the grid, and idling.

In sum, by granting the requested relief above, the Commission will ensure a level playing field, avoid "overbilling" of station loads where permitted netting and self-supply applies, and avoid unnecessarily burdensome metering requirements. Hybrid and co-located projects will also have the clarity needed to move forward to address California's known near-term reliability challenges. To this end, given the critical importance of having these projects come online in the coming months and years, CESA requests an expeditious resolution of this Petition via Decision.

III. BACKGROUND.

Generating facilities include a number of "loads" behind the point of interconnection ("POI") that require distinctions between energy drawn from the grid for later resale, which, under the Federal Power Act, is a wholesale Federal Energy Regulatory Commission ("FERC") jurisdictional activity, and energy consumption such as station power that is a retail Commission-jurisdictional activity. Given the charging loads of energy storage facilities, the Commission considered the ambiguities of station power treatment in Track 2 of the Energy Storage Rulemaking (R.15-03-011). Building off the definition in Appendix A of the CAISO Tariff, the Commission ultimately issued D.17-04-039 that defined station power as all energy that is used

for purposes other than for supporting a resale of energy back into the wholesale markets and thus subject to retail rate treatment, subject to the Commission's rules regarding netting of energy consumption. By contrast, 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. Recognizing that energy storage can provide grid services in both directions (*i.e.*, charge and discharge), that energy storage charging in response to a CAISO dispatch represents "negative generation," and that certain charging loads are integral to the "production" of energy back to the grid in storage discharge mode, the Commission delineated the specific loads that should be defined as wholesale power versus station power,[5] which has implications for the rate treatment of these various loads.[6]

Importantly, D.17-04-039 adopted a rule that ensures standalone IFOM energy storage resources are granted equal treatment with conventional generation. At the time, the Commission recognized that the CAISO Tariff allowed for netting of consumption against output within a five-minute interval for conventional generation facilities, such that station power is only measured as the amount of consumption that exceeds output within a five-minute interval.[7] Similarly, the Commission determined that, insofar as an energy storage resource withdraws energy (charges) or injects energy (discharges) subject to a dispatch at a greater absolute value of energy than its station power consumption, that consumption should be able to be netted against the response to the dispatch, within a 15-minute settlement period, just as it is for conventional generators (referred to as "permitted netting"). The only exception to these permitting netting rules is in instances where

[5] Wholesale power includes: charging energy; resistive losses, pumps (flow batteries and pumped hydro); power conversion system; transformer; battery management system; thermal regulation; and vacuum (flywheels). Station power includes: IT and communications; lighting; ventilation; and safety.
[6] D.17-04-039, *Decision on Track 2 Energy Storage Issues*, issued on May 8, 2017 in R.15-03-011 at Ordering Paragraph ("OP") 8.
[7] CAISO Tariff Sections 10.1.3, 10.2.9.2, and 10.3.2.2.

the energy storage resource is "idling" or, in other words, not responding to a CAISO dispatch.[8] Collectively, these rules were implemented in storage-specific station power tariffs.[9] Nonetheless, D.17-04-039 did not explicitly address hybrid and co-located resources since such resource types were not deployed sufficiently at the time to warrant the Commission's detailed attention.

Furthermore, all three IOUs have established tariffs for station power self-supply that allow generation facilities to self-supply their station loads from onsite generation and avoid retail energy charges, which is applicable to customers who have generating units operating under the CAISO's Station Power Protocol.[10] These tariffs and schedules were implemented via advice letter pursuant to determinations made by FERC that found that self-supply does not involve a retail sale of transmission and thus could not treat self-supply as a retail sale of energy.[11] Furthermore, they were modified to implement permitted netting in a given 15-minute interval where energy deliveries are greater than station power usage and when the energy in that interval was supplied by a unit behind the meter and no grid-supplied energy was used.[12]

Self-supply provisions were understandably not addressed in D.17-04-039, which focused on standalone IFOM energy storage resources without onsite generation to self-supply their station load needs. With the only energy source coming from the grid, the consideration of self-supply provisions was not relevant to the determinations made leading up to D.17-04-039. However, in

[8] D.17-04-039 at 53-54 and OP 8.
[9] *See, e.g.,* SCE Schedule SPESD: Station Power for Energy Storage Devices: https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/other-rates/ELECTRIC_SCHEDULES_SPESD.pdf
[10] *See, e.g.*, SCE Schedule SPSS Station Power Self-Supply: https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/other-rates/ELECTRIC_SCHEDULES_SPSS.pdf
[11] *See, e.g.*, SCE Advice 2576-E-A Supplement to Tariff Revisions to Accommodate Customer Participation in the California Independent System Operator Corporation Station Power Protocol submitted on November 18, 2011 and approved by the Commission Energy Division on September 2, 2014.
[12] *See, e.g.*, PG&E Advice 3951-E-B submitted on October 25, 2013 and approved by the Commission Energy Division on August 22, 2014 at 7-8.

the case of hybrid and co-located resources, onsite generation sources are available by their nature, where the self-supply provisions should come into effect. Though self-supply tariffs for generation facilities should logically apply to hybrid and co-located resources, CESA understands that there are ambiguities inherent in direct applicability of tariffs to these resources, leading to case-by-case determinations where these resources may be inappropriately subject to retail energy charges when onsite generation is self-supplying the station loads of the paired energy storage facilities.

Finally, D.17-04-039 deferred issues regarding specific metering configurations and/or alternative measurement approaches as it relates to delineating station power treatment for energy storage resources.[13] Subsequently, in a decision addressing multiple-use applications ("MUAs"), D.18-01-003, the Commission declined to adopt specific metering arrangements, leaving it to the IOUs and storage providers to bilaterally negotiate their "desired metering configuration."[14] With further "implementation experience" on hybrid and co-located resources,[15] however, CESA contends that it is necessary to reconsider these issues for hybrid and co-located resources, where a specific metering configuration (*i.e.*, a single high-side meter) would address station power treatment for these resource configurations.

As explained further below, CESA believes that the station power rules for standalone IFOM energy storage resources, as adopted in D.17-04-039, and the station power self-supply tariffs in place can be clarified to apply to hybrid and co-located resources, so long as the Commission provides explicit clarifications and modifications to D.17-04-039 in a Decision in response to this Petition to address any ambiguities and support uniform and consistent interpretation and application of existing rules and tariffs. The ambiguity created by the lack of

[13] D.17-04-039 at 54-57.
[14] D.18-01-003, *Decision on Multiple-Use Application Issues*, issued on January 17, 2018 in R.15-03-011 at 22-23. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M206/K462/206462341.pdf
[15] D.18-01-003 at FOF 5.

explicit reference to the applicability of station power rules adopted in D.17-04-039 and the station power self-supply tariff provisions for hybrid and co-located resources is, however, needlessly leading to project disputes on appropriate rate treatment for various loads and the necessity and merits of metering configurations. CESA members report that disputes can result in project delay and/or materially impact the economic viability of hybrid and co-located projects, which is concerning given the looming need for these projects to address near-term reliability challenges.

IV. THE RELIEF REQUESTED FALLS WITHIN THE SCOPE OF THIS PROCEEDING.

R.15-03-011 was tasked with considering a wide range of issues related to the Energy Storage Framework, including procurement best practices, energy storage targets pursuant to Assembly Bill ("AB") 2514 and D.13-10-040, resource eligibility, MUAs, and the treatment of station power as it applies to energy storage.[16] As the successor to the first Energy Storage Rulemaking (R.10-12-007), this proceeding was also launched to consider the various recommendations of the California Energy Storage Roadmap,[17] which, among other things, noted that "developers are pursuing siting energy storage together with renewable generation sources":[18]

> "A gap that began to emerge during the roadmap effort involved the ability for a resource to be modeled as part of an aggregation with other resources. For example, developers are pursuing siting energy storage together with renewable generation resources. This has been referred to as a hybrid configuration and includes a broader set of combinations, including combinations with demand response. Beyond ISO market modeling, the ***CPUC should assess how each utility considers hybrid configurations based on its procurement targets and needs***. In addition, where

[16] *Assigned Commissioner and Administrative Law Judges' Scoping Memo and Ruling Seeking Party Comments* issued on June 12, 2015 in R.15-03-011 at 5-12.
https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M152/K484/152484522.PDF
[17] *Ibid* at 3.
[18] "Advancing and Maximizing the Value of Energy Storage Technology: A California Roadmap," published by the Commission, CAISO, and California Energy Commission in December 2014 at 15. https://www.caiso.com/documents/advancing-maximizingvalueofenergystoragetechnology_californiaroadmap.pdf

> appropriate, the ISO should consider expanding options to current ISO requirement and rules for aggregations of distributed storage resources. Because the scope of possible multiple use and hybrid configurations is potentially quite large, stakeholders suggested that it would be useful to identify and prioritize storage configurations. For the higher priority configurations, the ISO or CPUC can identify key requirements and drivers and determine how best to support these configurations." [***emphasis added***]

A subsequent Scoping Memo in R.15-03-011 also reaffirmed "several of the items identified in the Storage Roadmap" will be considered within the scope of this proceeding. Using the California Energy Storage Roadmap as guidance on the issues to be considered in R.10-12-007 and R.15-03-011, CESA believes that hybrid and co-located resources are well within the scope of this proceeding, especially as such "configurations" were identified as use cases that could be pursued to meet the targets of the Energy Storage Framework. Furthermore, in the decision that adopted the procurement targets, grid domains, use cases, and other procurement parameters for the Energy Storage Framework, D.13-10-040 explicitly identified "Co-Located Energy Storage" as an example of a use case to meet the transmission grid domain targets, such that R.15-03-011 was established to consider a broad range of grid-connected energy storage issues,[19] including hybrid and co-located resources, not just standalone energy storage resources.

No other proceeding has addressed station power treatment for hybrid and co-located resources. The Renewable Portfolio Standards ("RPS") Rulemaking, R.18-07-003, is an open proceeding that "provides a home for all the elements of the ongoing administration of the RPS program that require recognition or action in a formal Commission proceeding,"[20] where hybrid and co-located resources could fall within this broad scope where RPS-eligible generation is paired with energy storage, especially when the Commission has explicitly identified how this proceeding

[19] *See* Table 1 of D.13-10-040 at 14.
[20] *Assigned Commissioner's Scoping Memo and Ruling* issued on November 9, 2018 in R.18-07-003 at 3. https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M237/K661/237661362.PDF

must be closely coordinated with others, including R.20-05-003 and R.15-03-011.[21] However, the RPS proceedings have historically focused on procurement- and evaluation-related issues in the RPS Program. Furthermore, while much of the recent procurement of hybrid and co-located resources pursuant to D.19-11-016 in R.16-02-007, resource-specific and station power issues have not been addressed in the IRP proceedings. Instead, broader planning, modeling, procurement, and cost allocation issues have been the purview of the IRP proceedings.

Most importantly, the Energy Storage Rulemaking, R.15-03-011, explicitly addressed the station power rules for standalone IFOM energy storage resources, via D.17-04-039. If modified and applied in tandem with the self-supply provisions in place for generation resources, the Commission can clarify the applicability of station power treatment for hybrid and co-located resources. As such, this Petition is in scope of this proceeding since it directly addresses modifications to D.17-04-039 but also because hybrid and co-located resources were always contemplated within R.15-03-011.

V. THE TIMING OF THE PETITION CAN BE ATTRIBUTED TO THE FACT THAT HYBRID AND CO-LOCATED RESOURCES WERE NOT ANTICIPATED AS PRESENTING ISSUES AT THE TIME OF THE DECISION.

With D.17-04-039 issued on May 8, 2017, more than three years have elapsed with the submission of this Petition. According to Rule 16.4(d), parties are required to explain why the petition could not have been presented within one year of the effective date of the decision. This Petition is being filed and served at this time for the following reasons.

First, at the time of issuance of D.17-04-039, the volume of hybrid and co-located resource procurement was much smaller. Pursuant to D.13-10-040, the IOUs procured entirely standalone energy storage resources to meet their biennial and cumulative targets, such that clarifications

[21] *Ibid* at 6-7.

regarding the treatment of station power for hybrid and co-located resources was not exigent to support the success of the Energy Storage Framework. In addition to technology costs and federal tax incentives (as explained in the Introduction), the declining capacity value of standalone solar resources as measured by effective load carrying capability ("ELCC") approaches and as adopted by the Commission for the purposes of the RA Program[22] has created policy drivers and economic incentives to develop more solar and wind resources with storage attachments over the past several years. Overall, state regulations and wholesale market participation rules across a broad spectrum of issues have been pressed to be updated and "keep up" with the rapid growth of this resource configuration, rather than being anticipated in advance with rules and regulations in place before their proliferation. Treatment of station power rules for hybrid and co-located resources also fall within this spectrum of issues for the Commission, CAISO, and other agencies.

Second, since the issuance of D.17-04-039, CESA and developers presumed that the current rules provided in D.17-04-039 for standalone IFOM energy storage resources and the existing station power self-supply tariff provisions for generation-only facilities could be readily applied to hybrid and co-located resources without modifications to these adopted rules and tariffs. Whether a hybrid or co-located resource, operational differences are irrelevant in terms of how station power should be assessed and how permitted netting provisions would apply, as rules were seemingly in place to govern the individual components using existing rules and tariffs and because the individual components operate in coordination as a single asset in the CAISO market. However, this presumption has not borne out as developers have negotiated with the IOUs regarding metering configurations and the identification and treatment of station power loads

[22] *See* D.17-06-027 at 21 and Appendix A. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M192/K027/192027253.PDF. *See also* D.19-06-026 at 46-49 and Appendix A. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M309/K463/309463502.PDF

under hybrid or co-located resource configurations. Disagreements on the interpretation of the existing station power and self-supply rules as it applies to hybrid and co-located resources have led to unanticipated, material impacts on project costs and development timelines. With these negotiations typically occurring late in the interconnection process and with most hybrid and co-located resource projects coming online over the 2021-2023 period, the realization was reached at the time just before and at the submission of this Petition, more than three years after the issuance of D.17-04-039, regarding the ambiguity and disagreements related to the station power issue for hybrid and co-located resources.

For these reasons, CESA believes that the timing of this Petition is justified and the submission of this Petition more than a year after the issuance of D.17-04-039 should not be grounds for denying this Petition.

VI. THE PROPOSED MODIFICATIONS TO THE RULES AND TARIFFS ADDRESS EVERY OPERATIONAL MODE AND CONFIGURATION OF HYBRID AND CO-LOCATED RESOURCES WHEN METERING RETAIL AND WHOLESALE ELECTRICITY DRAWS AT THE "HIGH-SIDE" METER.

In this section, CESA examines each of the various operational modes of hybrid and co-located resources and illustrates how the proposed modifications to the existing station power rules pursuant to D.17-04-039 combine with self-supply provisions in place for generation resources to appropriately assess station power for hybrid and co-located resources. A case-by-case assessment of operating modes of hybrid and co-located resources will reveal that no differentiation is needed based on the hybrid versus co-located resource market participation configuration and how the existing rules and tariffs apply readily to ensure appropriate delineation of wholesale and retail energy.

Table 2: Summary of Station Power Treatment of Storage-Related Station Loads, by Metering Configuration and Hybrid versus Co-Located Resource Model

	Hybrid Resource		Co-Located Resource	
Operating Mode	**High-Side Meter Read**	**Low-Side Storage Meter Read Only**	**High-Side Meter Read**	**Low-Side Storage Meter Read Only**
Onsite charging only	No grid-supplied energy, so no charges for storage station loads in line with self-supply provisions	Combined resource seen as idle and self-supplied storage station loads assessed retail charges despite no grid-supplied energy	No grid-supplied energy, so no charges for storage station loads in line with self-supply provisions	Storage component seen as idle and self-supplied storage station loads assessed retail charges despite no grid-supplied energy
Net injection to grid from storage	Combined resource responds to CAISO dispatch, and permitted netting rules apply for discharge in excess of storage station loads and self-supply generation station loads		Storage component responds to CAISO dispatch, and permitted netting rules apply for discharge in excess of storage station loads and self-supply generation station loads	
Net injection to grid from onsite generation	Combined resource responds to CAISO dispatch and net injection to grid means that storage station loads are self-supplied by onsite generation		Storage component seen as idle but net injection to grid means that storage station loads are self-supplied by onsite generation	Storage component seen as idle despite combined resource response to CAISO dispatch and self-supplied storage station loads assessed retail charges despite no grid-supplied energy
Net draw from grid	Any draw from the grid to serve station load in response to CAISO dispatch subject to permitted netting rules and wholesale rates			
Idling	Any draw from the grid to serve station load not in response to CAISO dispatch subject to retail rates	Any draw from the grid to serve station load not in response to CAISO dispatch subject to retail rates but distinctions are not made for idling versus onsite charging only	Any draw from the grid to serve station load not in response to CAISO dispatch subject to retail rates	Any draw from the grid to serve station load not in response to CAISO dispatch subject to retail rates but distinctions are not made for idling versus onsite charging only or self-supply when storage component is narrowly viewed as idling

Whereas today's rules and tariffs apply more neatly for generation-only or storage-only resources, CESA seeks modifications to D.17-04-039 from the Commission to broaden the station power rules to apply to not only standalone IFOM energy storage resources but also hybrid and co-located resources that combine generation and storage resources behind a single POI. While seemingly more complex at first glance, CESA demonstrates in this Petition how a single high-

side meter is sufficient for the purposes of delineating between wholesale and retail electricity draws for assessing station power loads, upon which the station power rules provided by D.17-04-039, as modified, and related self-supply tariff provisions can readily apply. Unnecessary and inappropriate retail charges, however, come into play when there is excessive low-side metering of various energy storage loads that does not capture the net CAISO dispatch response of the combined resource and narrowly looks at whether the storage is idling. As a result, contrary to the self-supply tariff provisions in place for conventional generating facilities,[23] hybrid and co-located resources could be subject to retail charges for station power loads that can be clearly and easily demonstrated as *not* being supplied by the grid if a single high-side meter is used.

A. Onsite charging only; no grid charging

In intervals where the storage component of the hybrid or co-located resource is not charging from the grid and only charging from the onsite generation, self-supply provisions from the onsite generation should govern the treatment of station loads. In other words, station loads during these intervals should *not* be assessed retail charges since there is no "purchase" of grid-supplied energy where distinctions for either wholesale or retail treatment needs to be made. In this operating mode, distinctions between hybrid and co-located resources are unnecessary. Hybrid resources will operationalize onsite charge during particular intervals through the CAISO's dynamic limit tool ("DLT"), which will reflect the hybrid resource's reduced dispatch capability to meet internal storage charging

[23] Not unlike hybrid and co-located resources, conventional generation facilities typically have multiple resource IDs for each unit (*e.g.*, turbine) that are subject to self-supply provisions where one generating unit could self-supply and avoid retail charges for the station loads of another generating unit. The same rules should apply to hybrid and co-located resources. *See* CAISO Net Qualifying Capacity List: http://www.caiso.com/Documents/NetQualifyingCapacityList-2021.xlsx

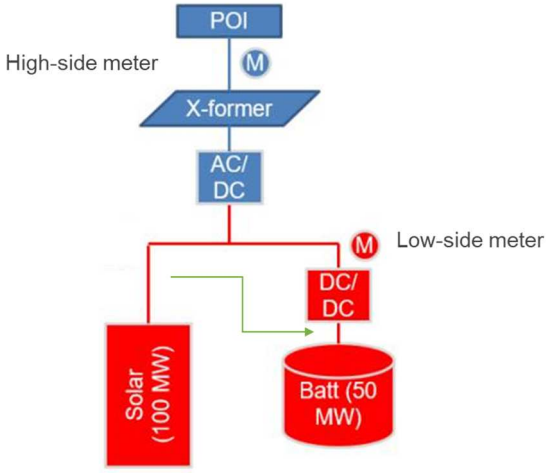
schedules.[24] By setting the DLT to ensure no net injection or draw from the hybrid resource, the high-side meter will read no grid-supplied energy to assess station loads despite the hybrid resource being in an "idle" state (*i.e.*, no CAISO dispatch). By contrast, resources configured as co-located, meaning two separate resources with distinct resource IDs, are viewed and optimized by the CAISO with individual resource IDs, albeit subject to the aggregate capability limit.[25] Through this, onsite-charging-only is operationalized through the bidding and scheduling of the separate generation and storage component resources so the high-side meter will again read no grid-supplied energy to assess station loads.

However, even though the above descriptions clearly illustrate how station loads during these onsite-charging-only intervals should *not* be assessed retail charges, the installation of low-side meters to delineate various station power and storage-related loads cause hybrid and co-located projects to face the risk of paying retail rates for energy that never comes from the bulk system and is self-supplied by the onsite generator. Low-side meters narrowly focus on the storage component, not the combined resource operations. Since the energy storage component will be seen as "idle" in these intervals, the low-side meter will not distinguish between self-supplied and grid-supplied energy to serve station loads and thus lead to the inappropriate and unfair assessment of retail charges for station loads that are self-supplied by onsite generation, which is not comparable to the treatment of conventional generating facilities. A simple reading and assessment of station loads at the high-side meter would capture when the hybrid and co-located resource is both idle in

[24] *Hybrid Resources Draft Final Proposal* published by the CAISO on October 16, 2020 at 9-10. http://www.caiso.com/InitiativeDocuments/RevisedFinalProposal-HybridResources.pdf
[25] *Ibid* at 14-16.

the settlement interval *and* taking grid-supplied energy to avoid retail energy charges on self-supplied station loads.

Figure 1: Hybrid or Co-Located Resource with Onsite Charging and Metering Configuration[26]



Importantly, in cases where the hybrid or co-located resources are not allowed to charge from the grid, pursuant to their executed interconnection agreement, whether by physical relays or firmware/software controls (*e.g.*, via the inverter), the station power issue should be moot. None of the storage charging is coming from the bulk grid, so there is no "purchase" of energy where distinctions for either wholesale or retail treatment needs to be made. The self-supply provisions should apply where the onsite generation can supply the station loads and avoid retail charges.

Simply put, if the hybrid or co-located resource is not using the grid, whether in the particular netting period or as a result of interconnection limitations, there should be no

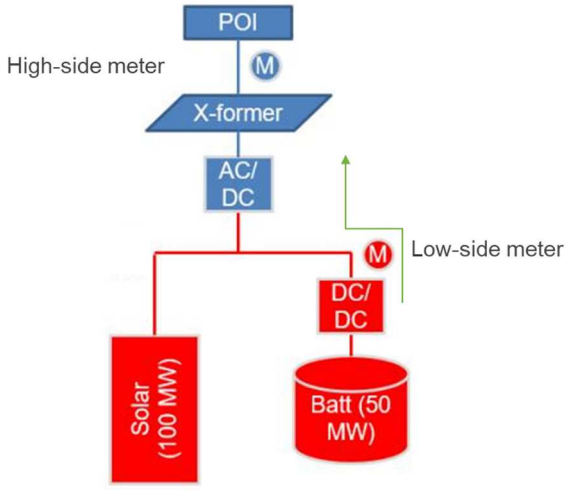
[26] This diagram, and all that follow, illustrate a DC-coupled hybrid or co-located resource, but the Commission should understand that the rules should equally be applicable to AC-coupled systems. There is no difference between DC-coupled and AC-coupled hybrid or co-located resources when it comes to station power treatment and self-supply provisions. The diagrams above and throughout the Motion are being sourced from the CAISO's Hybrid Resources Initiative and DC-coupled diagrams are used for consistency purposes. CESA sees no need to reproduce the same diagrams with AC-coupled diagrams as the DC- versus AC-coupled distinction is not significant regarding this issue.

payment of either wholesale or retail energy as no energy is being drawn from the grid to meter and pay for.

B. Net flow in of electricity or injection onto the grid

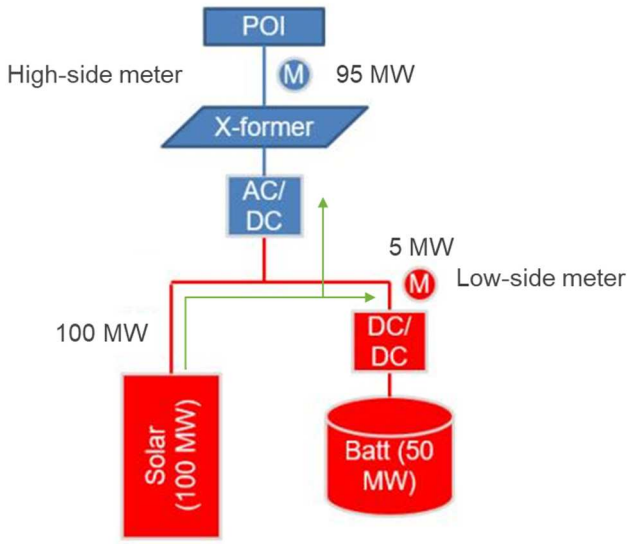
In intervals where there is net flow of electricity or injection onto the grid, the permitted netting rules for conventional generating facilities and for standalone IFOM energy storage resources should apply. When this net injection comes from the energy storage component, the hybrid or co-located resource will look like any generating or standalone storage resource. In D.17-04-039, netting for station power when the storage device is discharging was not the subject of detailed discussion as this operating mode obviously warranted such treatment to establish a level playing field between generating facilities and storage facilities operating like a generator when in discharge mode. Yet still, explicit clarification will be helpful to affirm this interpretation. In this discharge mode, if the paired energy storage is serving the station load of the onsite generation, then the self-supply provisions should similarly apply and not be assessed retail charges.

Figure 2: Hybrid or Co-Located Resource with Net Injection from Storage and Metering Configuration



The other operating mode where net injection onto the grid is possible is where the onsite generation is producing energy that is both injected into the grid and supplying energy to charge and/or self-supply storage-related station loads. Under a hybrid model, the onsite generation will be generating (injecting into the grid) in response to CAISO dispatch signal and subject to the DLT, where the permitted netting rules should apply (*i.e.*, all dispatch should be netted at wholesale, including for station loads) since the onsite generation and storage is operationalized as a single resource. Netting should thus be done on the combined response of the hybrid resource comparable to other conventional generating facilities. Whether an energy storage resource is idle and does not respond to CAISO dispatch signal in excess of station load is thus irrelevant as separate netting for the individual components is not applied under a hybrid resource configuration. Whenever there is a net flow of electricity onto the grid at the interconnection injection point, then there is no consumption of retail power to bill since the hybrid resource would not be idling. This appears to be an area that readily and obviously applies the existing rules.

Figure 3: Hybrid or Co-Located Resource with Net Injection from Onsite Generation and Metering Configuration



Under a co-located resource model and in periods where injection occurs in the manner described above, the station power treatment is slightly more complicated since the storage component is viewed by the CAISO as an individual resource with its own resource ID, leading to the potential for storage-related station loads to be inappropriately assessed retail charges as the storage component would be viewed by the CAISO as idling. Under the co-located model, each component resource behind the common POI has its own resource ID, along with its own set of bidding rules and responsibilities. Even though storage charging from on-site generation will self-supply station loads, it will be seen as idle because it is not responding to CAISO dispatch signals. However, retail charges for storage-related station loads that are self-supplied from onsite generation would be inappropriate and run afoul of the self-supply provisions in place for other generating facilities. On the other hand, assessing whether self-supply provisions should be in play can be readily addressed by measuring the net response at the high-side meter. Whenever there is a net flow of electricity onto the grid at the interconnection injection point, there is no consumption of retail power to bill for. For example, if the onsite generation resource ID produces 100 MW and the storage resource is being self-supplied its station loads at 5 MW, the high-side meter should read 95 MW of net injection on the high-side meter, where wholesale treatment should be applied to the 95 MW under the permitted netting rules provided in D.17-04-039. The high-side meter reading would thus capture the fact that the co-located resource is responding to CAISO dispatch signals (and therefore not idling) and automatically "net out" the self-supplied storage-related station loads.

However, as with the above operating mode of onsite charging only, metering at the low-side meter for the storage component could lead to the inappropriate assessment

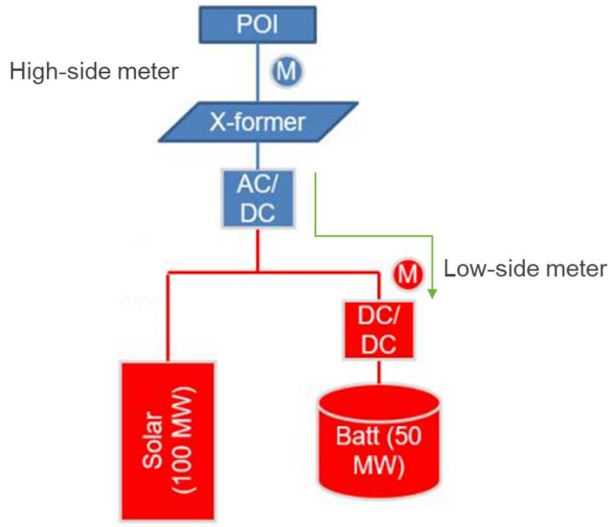
of retail charges for station loads that are self-supplied by the onsite generation. Even as the co-located resource is "net injecting" into the grid in response to CAISO dispatch and *not* taking grid-supplied energy to serve the station loads, a low-side meter would not be able to distinguish between grid-supplied and self-supplied energy. With the storage component under a co-located model operating as its own resource, subject to the aggregate constraint, the paired storage resource will be viewed as idling in this situation, leading to the permitted netting rules *not* applying in these intervals. This would be inappropriate given the self-supply provisions in place for conventional generating facilities. A simple reading at the high-side meter would avoid these inappropriate and unjust outcomes where self-supplied energy is assessed retail energy charges. It also avoids the unnecessary metering requirements and costs on the low side, as the high-side meter is sufficient to capture when CAISO dispatch occurs and when station loads are being supplied by the grid.

C. Net flow of electricity or draw from the grid

In intervals where there is net flow of electricity or draw from the grid (*e.g.*, storage charging), D.17-04-039 has established clear rules for when permitted netting rules apply for both hybrid and co-located resources. Since the onsite generating resource component is incapable of charging in response to a CAISO dispatch signal, D.17-04-039 covers all situations where a hybrid or co-located resource operates in charging mode in any market interval, similar to standalone IFOM energy storage. If in response to CAISO dispatch, all charging (negative generation) in excess of station load should be netted. If idling and thus any net draw from the grid is *not* in response to CAISO dispatch, all charging should be

treated as retail sales. This appears to be an area that clearly applies the existing rules and ensures that station loads are appropriately assessed wholesale or retail treatment.

Figure 4: Hybrid or Co-Located Resource with Net Draw from Grid and Metering Configuration



No distinctions need to be made for hybrid or co-located resource configurations; even in the latter situation where the storage component has its own resource ID and is optimized for charging subject to an aggregate capability constraint, the high-side meter would clearly capture when there are net draws from the grid in excess of station loads as well as when such draws are in response to CAISO dispatch.

D. Idling

D.17-04-039 clearly outlines that permitted netting is not applied to intervals when the storage device is idle (*i.e.*, neither charging or discharging), where any draw from the grid to serve storage-related station load should be assessed retail charges.[27] These rules

[27] When idling, a clear process is also needed where any draws from the grid to service storage-related station loads are not double billed by the IOU and by the CAISO. Currently, as CESA understands it, storage-related station loads are overbilled with both wholesale and retail charges when permitted netting does not apply, with no process in place to reconcile or net out the wholesale charge from the retail bill.

can readily apply to hybrid and co-located resources, but as explained above, whether the combined resource is idling must take into account whether there is a net draw of electricity at the high-side meter – *i.e.*, not narrowly focus on whether the storage component is idling or on whether there is any charge measured on the low-side meter alone. Otherwise, station loads may be inappropriately assessed where self-supply from onsite generation should be allowed, such as when there is onsite charging only (described in Section VI.A) or when the onsite generation is net injecting to the grid while self-supplying station loads (described in Section VI.B).

VII. CONCLUSION.

CESA appreciates the opportunity to submit this Petition and respectfully requests that the Commission grant the requested relief as soon as possible.

Respectfully submitted,

Jin Noh
Policy Director
CALIFORNIA ENERGY STORAGE ALLIANCE

Date: March 19, 2021

This is a billing, systems, and process issue that requires consideration outside of this narrow Motion seeking clarification or interpretation of rules and tariffs, especially if it may require new processes and/or IT systems to be put into place. CESA raises it, however, to the Commission's attention for future reference.

Appendix A:
Proposed Modifications to D.17-04-039

Proposed Modifications to D.17-04-039

Note that edits, additions, or removal are **bolded** and underlined.

Findings of Fact

16. Electric energy drawn into storage resources for later resale **or self-supplied from onsite generation** is not station power.

20. There are multiple options for self-supply of station power loads, including contracting for remote resources, or having other generation on-site, thus, if an energy storage resource is idle **without self-supply from onsite generation**, its onsite load is retail.

New Findings of Fact

25. The station power rules for standalone in-front-of-the-meter energy storage, including the permitted netting rules, apply equally to hybrid and co-located resources.

Conclusions of Law

9. All electric energy drawn into storage resources for later resale **or self-supplied from onsite generation** is not station power, and therefore should be purchased according to a wholesale rate such as the CAISO locational marginal price.

New Conclusions of Law

13. Hybrid and co-located resources have the right to self-supply their internal power needs, including station service, and avoid retail energy charges, as is the case with any conventional generator.

14. All electric energy for the generation facility self-supplied by onsite energy storage is not station power, and therefore should be purchased according to a wholesale rate such as the CAISO locational marginal price.

15. A single high-side meter is sufficient for the purposes of delineating between wholesale and retail electricity draws for hybrid and co-located resources.

Order

8. No later than 30 days after the effective date of this decision, Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company must file advice letters to establish energy storage station power tariffs to:

- Confirm that all energy used for purposes other than for supporting a resale of energy back into wholesale markets is station power and inherently retail, subject to California Public Utilities Commission rules regarding netting of energy consumption;
- Confirm that all energy **self-supplied by onsite generation or** drawn from the grid to charge energy storage resources for later resale, including efficiency losses, should be subject to a wholesale rate;
- **Confirm that all energy self-supplied by onsite storage to serve station loads for the generation facility should be subject to a wholesale rate;**
- Define wholesale uses as charging energy, resistive losses, pumps (flow batteries and pumped hydro), power conversion system, transformer, battery management system, thermal regulation, and vacuum (for flywheels);
- Define Station Power uses as information technology and communications, lighting, ventilation, and safety; and
- Allow consumption **that is not self-supplied** to be netted against the response to the dispatch within a fifteen-minute settlement period, when a storage resource withdraws energy (charges) or injects energy (discharges) subject to a dispatch at a greater absolute value of energy than its station power consumption.
- **Allow the use of a single high-side meter for hybrid and co-located resources to delineate between wholesale and retail electricity used to charge the energy storage system.**

Appendix B:
Declaration of Jin Noh in Support of Petition for Modification of Decision 17-04-039 of the California Energy Storage Alliance to Address Hybrid and Co-Located Resources

DECLARATION OF JIN NOH IN SUPPORT OF PETITION FOR MODIFICATION OF DECISION 17-04-039 OF THE CALIFORNIA ENERGY STORAGE ALLIANCE TO ADDRESS HYBRID AND CO-LOCATED RESOURCES

I, Jin Noh, am the Policy Director for the California Energy Storage Alliance (CESA). Having worked for CESA for over five years, I am currently managing policy and regulatory affairs for CESA and its over 100 member companies. My business address is 2150 Allston Way, Suite 400, Berkeley, CA 94704. I declare under penalty of perjury that the foregoing facts in this document are true and correct.

Executed on March 19, 2021 at Berkeley, California.

Jin Noh