

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking on the Commission's
Own Motion to Improve Distribution Level
Interconnection Rules and Regulations for Certain
Classes of Electric Generators and Electric Storage
Resources.

R.11-09-011
Filed September 22, 2011

**RESPONSE OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
TO JOINT MOTION SUPPORTING REVISIONS TO STREAMLINE RULE 21 FOR
BEHIND-THE-METER, NON-EXPORTING STORAGE DEVICES**

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Pursuant the California Public Utilities Commission (“Commission”) Rules of Practice and Procedure, the California Energy Storage Alliance (“CESA”)¹ provides this response to the *Joint Motion Supporting Revisions to Streamline Rule 21 for Behind-The-Meter, Non-Exporting Storage Devices*, filed November 18, 2015 (“Joint Motion”) filed in response to the *Ruling Setting Dates for Filing Motions and Granting Motions for Party Status*, issued by Administrative Law Judge (“ALJ”) Maribeth A. Bushey, on August 19, 2015 (“ALJ’s Ruling”),

¹ 1 Energy Systems Inc., Abengoa, Advanced Microgrid Solutions, AES Energy Storage, Aquion Energy, ARES North America, Brookfield, Chargepoint, Clean Energy Systems, CODA Energy, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, Duke Energy, Dynapower Company, LLC, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, ELSYS Inc., Energy Storage Systems, Inc., Enersys, EnerVault Corporation, Enphase ENERGY, EV Grid, Flextronics, GE Energy Storage, Green Charge Networks, Greensmith Energy, Gridtential Energy, Inc., Hitachi Chemical Co., Ice Energy, IMERGY Power Systems, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Invenergy LLC, K&L Gates, LG Chem Power, Inc., LightSail Energy, Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Manatt, Phelps & Phillips, LLP, Mitsubishi Corporation (Americas), Mobile Solar, NEC Energy Solutions, Inc., NextEra Energy Resources, NRG Solar LLC, OutBack Power Technologies, Panasonic, Parker Hannifin Corporation, Powertree Services Inc., Primus Power Corporation, Princeton Power Systems, Recurrent Energy, Renewable Energy Systems Americas Inc., Rosendin Electric, S&C Electric Company, Saft America Inc., Sharp Electronics Corporation, Skylar Capital Management, SolarCity, Sony Corporation of America, Sovereign Energy, STEM, SunEdison, SunPower, Toshiba International Corporation, Trimark Associates, Inc., Tri-Technic, Wellhead Electric. The views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (<http://storagealliance.org>).

as supplemented by ALJ Bushey's email granting request for additional time to file the Joint Motion issued October 30, 2015.

I. INTRODUCTION.

CESA has been an active participant in this proceeding through informal discussions, workshops and filed comments to improve the interconnection process for non-exporting energy storage devices. During the September and October 2015 workshops, CESA worked to improve energy storage load interconnection review principles and processes in collaboration with the investor-owned utilities ("IOUs") and other parties. CESA generally supports the Joint Motion as an incremental improvement in creating increased transparency and streamlining of energy storage load interconnection review. Specifically, CESA supports:

1. Prioritization of load impacts before generation impacts in cost allocations for system upgrades.
2. The Advice Letter procedure to create an expedited interconnection process for certified, standard non-exporting energy storage applications and to create an advanced inverter functionality.

While CESA appreciates the IOUs' effort to engage stakeholders and to incorporate the above principles and processes into the Joint Motion, CESA determined not to join as a party to the Joint Motion because CESA believes that there are several key areas regarding the proposed next steps in the Joint Motion for which further clarification and specificity is needed. There are several elements of the Joint Motion that CESA could only partially support as well, which are discussed further in Section II, III, and IV of this response.

Furthermore, CESA believes that there are a number of unaddressed energy storage interconnection issues that were not discussed during the September and October 2015

workshops. While these unaddressed issues raised by CESA and other parties were listed in Appendix C, CESA believes that the Joint Motion should have provided a procedural path forward to address each of these issues in either a successor distributed generation and energy storage interconnection proceeding or in other appropriate Commission proceedings. In this response, CESA's comments are primarily focused on discussing the elements that CESA supports or does not support, but also outlining outstanding energy storage interconnection issues and proposed procedural "homes" for these issues.

II. CESA SUPPORTS SOME OF THE CLARIFICATIONS OF RULE 21 REGARDING TREATMENT OF LOAD RELATE TO ENERGY STORAGE.

In previous comments, CESA raised concerns about applying Rule 21 screens to review interconnection energy storage load, which could potentially increase the complexity and timeline for load review. CESA observes that there are a number of conventional or grid-responsive customer-controlled devices and appliances such as electric vehicle charging stations, electric water heaters, and managed air conditioners that are not subject to interconnection review, thereby causing energy storage loads to be discriminatorily reviewed under Rule 21. The Joint Motion does not clearly justify why energy storage loads should be differentiated from traditional loads. According to the IOUs, unlike conventional loads, energy storage loads may modestly or significantly alter the customer's onsite load or demand. However, CESA believes that loads, for example, from electric vehicle charging also change the load shape but are, not reviewed under Rule 21. Furthermore, energy storage loads are highly controllable and can be dictated by time-of-use rates and other smart rate designs, which should alleviate load impact concerns to a similar or even greater degree than conventional loads. With the development of the Integrated Capacity Analysis ("ICA") tools and outputs from the Distributed Resources Plan

(“DRP”) proceeding (R.14-08-013), the load impact concerns of energy storage at specific sites could be further mitigated as compared to conventional loads.

If load is to be reviewed under Rule 21, as stated in the Joint Motion, CESA would support a more efficient load review that occurs concurrently with, and within the same time frame as, generation-side Rule 21 interconnection review. CESA also believes that energy storage load review should not be treated any differently from review of other types of “traditional” load, which the Joint Motion clarifies in Section III.B. In this regard, CESA supports the consistency in energy storage load review with that of traditional load as laid out in the Joint Motion and appreciates the IOUs’ effort to explicitly include this in Rule 21 tariff revisions.

III. CESA DOES NOT SUPPORT THE LACK OF SPECIFIED THRESHOLDS FOR “CURSORY” REVIEW.

CESA has historically taken the position that energy storage load interconnection review should not be necessary for energy storage devices that are sized under Rules 2 and 3 thresholds constituting material change. If above this threshold, Rules 2 and 3 require customers to notify their servicing IOU. CESA and other energy storage-interested parties aimed to get the IOUs to specify a threshold within Rule 21 in which energy storage loads would bypass load review, for example, by importing Rules 2 and 3 thresholds for material change into Rule 21 energy storage load review. However, during the workshops, the IOUs argued that Rules 2 and 3 were outside the scope of this proceeding.

Following the September 22, 2015 workshop, the IOUs and energy storage-interested parties had agreed upon a “No Review Necessary” (“NRN”) option if energy storage loads did not constitute a material change. In an amended joint IOU proposal presented during the October 21, 2015 workshop, the IOUs made it clear that all energy storage loads should need

“ cursory review ” at minimum because all interconnecting energy storage loads would require modifications to the host facility electrical system or facility operations, which would constitute a “ material ” change. The IOUs added in Section III.C that such cursory review is needed because thresholds are dependent on location and system conditions. Overall, CESA maintains the position that the NRN option should be available for energy storage systems under a certain defined energy storage threshold and for energy storage systems operating under standardized operational modes – for example, by not charging during a range of time periods. Under the NRN option, applicants would be allowed to interconnect and notify the servicing IOU, but not have to undergo any cursory review to receive Permission to Operate (“ PTO ”). This position is consistent with the materiality threshold of Rules 2 and 3 and with the goal of simultaneously minimizing load impacts on the grid and creating a “ plug and play ” infrastructure.

If all interconnecting energy storage systems were to be required to undergo cursory review at minimum as outlined in the Joint Motion, CESA believes that size thresholds and voltage limits should be clearly defined to ensure that energy storage systems with minimum load impacts to the grid undergo an expedited load interconnection review process. For the Non Grid Charging and Peak Shaving operational modes, PG&E and SCE identified size thresholds and voltage limits for energy storage systems that would qualify for cursory review in the amended IOU proposal, but such thresholds are not clearly and explicitly stated in the Joint Motion. Each IOU’ representatives informally indicates that they plan to include this specific information in the proposed public Interconnection Guide (“ Guide ”), but CESA is concerned that non-IOU stakeholders should be able to provide comment and feedback on the thresholds and parameters identified in the Guide. CESA comments further on the Guide in Section V of this response.

IV. CESA DOES NOT SUPPORT CURSORY REVIEW APPLICATION ONLY TO THE NON-GRID CHARGING OPERATIONAL MODE.

Section III.D of the Joint Motion states that cursory review applies only to the Non Grid Charging operational mode, but such review does not automatically apply to the Peak Shaving operational mode as well. CESA believes that the Peak Shaving operational mode should also be subject to only cursory review because energy storage systems falling under this operational mode are not restricted by onsite generation and have the ability to charge during low-demand, off-peak periods, thereby creating less stress on the distribution grid and creating a natural load shift. Charging periods to avoid should also be specified during the Results Meeting and/or in the Interconnection Agreement between the IOU and the applicant, which would contractually commit energy storage systems to charge during periods of minimal impact to the grid. Given an opportunity to constrain the operational mode, CESA believes that Peak Shaving storage systems should be sufficiently reviewed under a cursory review without triggering the need for infrastructure upgrades.

The case for Non Grid Charging and Peak Shaving operational modes to be subject to the same level of review is underscored by the fact that the two operational modes often create the same *net* effect. For example, for a customer facility with a 100 kW solar system combined with energy storage, customer grid consumption could be reduced by 100 kW if all solar generation was consumed by the customer facility. If the customer were to instead divert 50 kW of the solar output to charge its energy storage system for use during non-solar generation hours, the customer facility would need to draw an additional 50 kW of energy from the grid to run its operations. When examining the entire metered load of the solar-plus- energy storage system, the net impact of the energy storage system under the Non Grid Charging operational mode could potentially be the same as the Peak Shaving operational mode in terms of charging from

the grid. Therefore, if the Non Grid Charging operational mode were to be subject to only cursory review, CESA believes that the Peak Shaving Charging operational mode should also be subject to only cursory review, which fact should be reflected in the proposed Guide.

Despite CESA's expressed concerns about how cursory review is applied across the operational modes, CESA supports how the Joint Motion provides transparency in timelines for the cursory and detailed energy storage load reviews that are tied to existing Rule 21 load review timelines for Fast Track Initial Review and System Impact Study, respectively. Overall, CESA believes that operational modes should be revisited when the ICA tools and outputs from the DRP proceeding (R.14-08-013) are finalized and approved. The ICAs should show operational modes and profiles at given locations where there is minimal impact on the system and where upgrades would not be triggered but rather deferred.

V. CESA SUPPORTS HAVING LOAD REVIEW PROCESSES THROUGH A PUBLIC INTERCONNECTION GUIDE TO SOME EXTENT.

Rather than proposing to revise the Rule 21 tariff to streamline load interconnection review of non-export storage, the Section IV.C of the Joint Motion proposes to develop a public Guide that outlines the load review screens and processes. To a certain extent, CESA supports the creation of the Guide to add transparency and provide flexibility in modifying the load review process, which would be more difficult to do through Rule 21 tariff revisions. CESA historically has supported the development of Rule 21 Business Practice Manuals ("BPMs"), which are akin to the California Independent System Operator's ("CAISO's") GIDAP BPM, to provide additional details on protocol and on the implementation of tariff language.

CESA is supportive of the Guide in principle, but is concerned about the fact that there is no explicit process for stakeholders to shape, change, or object to provisions of the Guide. The Joint Motion mentions that the Guide will include a proposed stakeholder engagement process,

but CESA recommends that the process should be deemed included by implication in the Joint Motion in some form. CESA also does not support lack of specificity of what will be included as proposed charging profiles in the Guide. Given these concerns about how the Guide will be developed and changed, as well as what will be included in the Guide, CESA recommends that the first version of the Guide be submitted via a Tier 2 Advice Letter to provide an opportunity for stakeholders to comment. Subsequent iterations of the Guide could likely be submitted via Tier 1 Advice Letters.

VI. A SUCCESSOR STORAGE INTERCONNECTION TRACK SHOULD BE IN THE SUCCESSOR TO THIS PROCEEDING IS NEEDED TO ADDRESS OUTSTANDING ISSUES.

There are a number of outstanding energy storage interconnection issues that warrant a separate track within a successor to this proceeding. While Appendix C of the Joint Motion provided an opportunity for stakeholders to list unaddressed storage interconnection issues, it did not include each party's recommended "venues/actions" to address these issues. One of the key reasons that CESA could not join the Joint Motion was that the Joint Motion created a path for interconnection for certain energy storage applications but failed to create that path for other applications and configurations.

The following interconnection issues were within the scope of the workshops but were not addressed due to limited time to discuss and collaborate on these issues, which is sufficient reason alone to open a successor track to follow up on these issues:

- **Relax or remove the disconnect switch requirement:** The requirement for a separate disconnect switch should be relaxed or eliminated for non-exporting energy storage. Location, access requirements, and signage for the disconnect switch need to be reasonable and standardized across utilities, and any technical

requirements need to be clearly documented in the Guide. CESA believes that the facility disconnect should be sufficient. This issue should be scoped into a new track of a successor proceeding that includes similar workshops to discuss and reach a consensus with IOUs and other stakeholders.

- **Create an overall Interconnection Guidebook for load and generation review:** The IOUs made steps towards creating a Guide for load side review, but one for the overall interconnection process (including generation) should be created to ensure and clarify the coordination between the two study processes, which should be occurring in parallel.
- **Remove anti-islanding test during PTO inspection:** The inspection process to obtain a PTO is inconsistent among the IOUs and often not timely. CESA recommends an opportunity at a workshop to discuss possible improvements to the PTO inspection, such as removing the anti-islanding test and specifying time frames in which PTO inspections must be completed. This issue should be scoped into a new track of the successor proceeding that includes similar workshops to discuss and reach a consensus with IOUs.
- **Streamline approval and validation processes to verify IOUs' load review:** Protocols on the approval and validation process need to be streamlined and coordinated in order to ensure that applicants do not incur unduly burdensome or unnecessary costs during the interconnection study process. Poor validation processes have led to delays and changes to previously approved installations for some developers.

There are several other energy storage interconnection issues that would have been outside of the scope of the workshops but still require attention and collaboration with the IOUs to ensure a transparent and streamlined interconnection process for energy storage systems.

- **Develop streamlined interconnection review process for energy storage systems with different operational profiles and configurations:** The Joint Motion focused on non-export energy storage systems with “physical impossibilities” but did not adequately propose, for example, an expedited process for exporting energy storage, wholesale participating storage, non-exporting storage with NEM-eligible renewables, or energy storage that does not export more than the currently allowable NEM-eligible renewable generation.
- **Resolve meter ownership issues for energy storage-related PDR:** The CAISO has deferred some of the metering issues related to Proxy Demand Response (“PDR”) resources to the “appropriate local regulatory authority,” which in the case of the IOUs refers to the Commission. As a result, CESA believes that the Commission must address this issue of meter ownership and certification requirements for meters used for CAISO settlement purposes since the CAISO has deferred this issue to the Commission for resolution. CESA recommends that this issue be scoped into the successor track of a new proceeding.
- **Define “station power” for energy storage devices:** The treatment of energy storage resources as station power must be corrected because resolution of this issue has metering and interconnection implications relevant to this and any future Rule 21-related proceedings. This issue also significantly impacts wholesale market treatment and the economics of distributed energy resources (“DER”)

aggregation. The Commission should formalize the rules for what qualifies as retail station power for energy storage devices, and memorialize metering and telemetry requirements for such station power that needs to be separately metered. Loads that are directly related to the throughput of the energy storage device should be considered part of roundtrip efficiency and therefore should not be separately metered. Systems that are not part of the energy storage device operation, such as lighting and HVAC for personnel, which do not affect the throughput of the device, which if turned off do not affect the operation physically, should be considered station power and therefore should be separately metered. While CESA acknowledges that this issue is scoped into the Energy Storage Rulemaking (R.15-03-011) Track 2, where rules and rate implications will be discussed, CESA continues to receive consistent industry feedback regarding the magnitude of this issue as an immediate business concern. CESA therefore encourages the Commission to begin addressing this issue as a priority area of industry concern, and to highlight that the issue does have a high level of relevance to Rule 21. Reconciliation of station power impacts that metering can have significant impacts on project design and interconnection (*e.g.*, single-line diagrams). CESA requests prompt and thorough resolution of this issue in any successor to this proceeding.

- **Establish transitions between Rule 21 and WDAT interconnection processes:**
The electrical location of where wholesale and retail meters are placed in an interconnection customer's one-line diagram impacts how each meter records load and generation. Coordination of retail metering placement with CAISO

wholesale metering is needed to prevent “double counting” of energy as both wholesale and retail. CESA believes that this issue could be scoped into Energy Storage Rulemaking (R.15-03-011) Track 2 where multi-use applications will be discussed, or alternatively in a successor proceeding.

- **Develop mobile inverter standards for interconnection:** A new section should be added to Section H.3 addressing acceptable EVSE mobile inverter technology. For example, when the standard is finalized, SAE Standard J 3072 certified mobile equipment should be deemed acceptable for interconnection under Rule 21. This issue has not yet been addressed in any proceeding and should be scoped into the successor track of any successor proceeding as well.
- **Remove “complex metering solution” classification for NGOM meter installations for customers with NEM-paired energy storage:** Additional meters are required for energy storage in these systems to separate meter NEM generators and paired energy storage systems, which are costly to add. Although this issue is being addressed elsewhere, resolution of this additional metering requirement could alternatively be addressed in a successor to this proceeding.

These energy storage interconnection issues could be addressed in other proceedings such as the Distributed Resource Planning (“DRP”) proceeding (R.14-08-013), but CESA believes that it is important to open a successor track to this proceeding because these other proceedings will not address all of the existing energy storage interconnection issues. At the same time, where possible and relevant, some of the above issues could and should be scoped into other proceedings, but that should not preclude the opening of a new successor proceeding to address the remaining unaddressed interconnection issues.

VII. CONCLUSION.

CESA appreciates the opportunity to submit this response to the Joint Motion, and looks forward to working with the Commission and stakeholders as this proceeding progresses.

Respectfully submitted,



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