

**UNITED STATES OF AMERICA  
BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**

Reform of Generator Interconnection Procedures and  
Agreements.

Docket No. RM17-8-000

**MOTION TO INTERVENE AND COMMENTS OF THE  
CALIFORNIA ENERGY STORAGE ALLIANCE**

The California Energy Storage Alliance (“CESA”) appreciates the opportunity to submit comments in response to the Federal Energy Regulatory Commission’s (“FERC”) notice of proposed rulemaking (“NOPR”) to revise its regulations and the *pro forma* Large Generator Interconnection Procedures (“LGIP”) and *pro forma* Large Generator Interconnection Agreement (“LGIA”).<sup>1</sup> CESA is primarily focused on California, the California Independent System Operator (“CAISO”), and related Western electricity markets.<sup>2</sup> CESA supports FERC’s efforts to improve certainty, promote more informed interconnection, and enhance interconnection processes, while ensuring, just, reasonable, and non-discriminatory generator interconnection processes. CESA also commends the CAISO for having already adopted many of the reforms proposed by FERC.

Electric storage developers in particular will benefit from enhanced interconnection processes that provide greater certainty and transparency. FERC appropriately proposes reforms that account for electric storage resources’ ability to be controllable and quickly interconnected and deployed, and recognizes that existing interconnection rules, studies, and processes do not

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<sup>1</sup> Notice of Proposed Rulemaking, *Reforms of Generator Interconnection Procedures and Agreements*, Docket No. RM17-8-000, January 13, 2017.

<sup>2</sup> CESA generally concurs with the substance of the comments filed by the Energy Storage Association (“ESA”) on this date.

always entirely capture the capabilities and benefits of electric storage resources. Given that the CAISO has already adopted many of the improvements in the overall interconnection process as proposed by FERC in the proposed rulemaking, CESA supports the extension of these ‘best practices’ to other regions through revisions to the *pro forma* LGIP and LGIA.

In these comments, CESA focuses on the proposed reforms related to electric storage resources. CESA strongly supports many of FERC’s proposed reforms but adds several recommendations to further enhance the certainty, transparency, and efficiency of the interconnection process.

## **I. BACKGROUND.**

Founded in 2009, CESA is a non-profit membership-based advocacy group committed to advancing the role of energy storage in the electric power sector through policy, education, outreach, and research. CESA’s mission is to make energy storage a mainstream energy resource which accelerates the adoption of renewable energy and promotes a more efficient, reliable, affordable, and secure electric power system. As a technology-neutral group that supports all business models for deployment of energy storage resources, CESA membership includes technology manufacturers, project developers, systems integrators, consulting firms, and other clean-tech industry leaders.

## **II. COMMUNICATIONS AND CORRESPONDENCE.**

Address all communications and correspondence concerning this proceeding to:

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### **III. MOTION TO INTERVENE IN THIS PROCEEDING.**

CESA is a non-profit membership-based advocacy group, membership which consists of 8minutenergy Renewables, Adara Power, Advanced Microgrid Solutions, AES Energy Storage, AltaGas Services, Amber Kinetics, Bright Energy Storage Technologies, BrightSource Energy, Brookfield, Consolidated Edison Development, Inc., Customized Energy Solutions, Demand Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, ElectrIQ Power, ELSYS Inc., eMotorWerks, Inc., Energport, Energy Storage Systems Inc., Enphase Energy, GE Energy Storage, Geli, Green Charge Networks, Greensmith Energy, Gridscape Solutions, Gridtential Energy, Inc., Hitachi Chemical Co., IE Softworks, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Johnson Controls, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Magnum CAES, Mercedes-Benz Energy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., NICE America Research, NRG Energy, Inc., OutBack Power Technologies, Parker Hannifin Corporation, Qnovo, Recurrent Energy, RES Americas Inc., Sharp Electronics Corporation, SolarCity, Southwest Generation, Sovereign Energy, Stem, Sunrun, Swell Energy, UniEnergy Technologies, Wellhead Electric, and Younicos. CESA's intervention in this proceeding is in the public interest, and CESA's interests will not be adequately reflected by any other party. CESA therefore respectfully requests that this motion to intervene be granted.

#### IV. COMMENTS.

**A. CESA supports the proposed revised definition of Generating Facility but requests that this not limit electric storage resources from providing transmission service.**

The current *pro forma* Small Generation Interconnection Procedures (“SGIP”) and Small Generation Interconnection Agreement (“SGIA”) includes electric storage resources in the definition of a ‘Generating Facility’ but does not do the same for *pro forma* LGIP and LGIA. CESA thus supports FERC’s proposal to revise the definition of “Generating Facility” to include electric storage resources to ensure consistent policies and treatment of electric storage resources of all sizes in interconnection processes and agreements.

To the extent that this revised definition may limit the utilization of electric storage resources as a transmission asset, FERC should provide clarity to ensure that inapplicable assumptions of generating technologies are not applied in these cases and interconnection procedures and agreements are not necessary when electric storage resources are deployed to strictly provide transmission service. For transmission solutions that do not export or consume electricity but merely deliver electricity through its ‘wires’, generator interconnection study processes are not necessary. Electric storage resources may respond to non-economic dispatch signals for transmission reliability. In these cases, electric storage resources are considered a transmission resource per Order No. 784 and as affirmed in a recently issued Policy Statement (Docket No. PL17-2-000). Meanwhile, electric grid resources are considered ‘generators’ only when they are responding to economic signals priced for wholesale market services (*e.g.*, energy, ancillary services), which is not the case when electric storage resources are interconnected to strictly provide transmission service.

The use of synchronous condensers to address short-term reliability issues due to the closure of the San Onofre Nuclear Generating Station (“SONGS”) serves as a relevant corollary

to the utilization of electric storage resources as a transmission asset.<sup>3</sup> A synchronous condenser, which adjusts conditions on the electric power transmission grid (e.g., voltage) using a free-spinning shaft, was identified as a transmission alternative in the 2013-2014 Transmission Planning Process (“TPP”) in the Huntington Beach area after the retirement of SONGS. This transmission resource was approved in the TPP, not the generator interconnection study process. Similarly, to ensure just, reasonable, and non-discriminatory treatment with traditional transmission and ‘wires’, a similar non-requirement for interconnection study should apply for electric storage resources as a transmission asset.

At the same time, CESA recognizes that generator interconnection procedures and agreements may be appropriate in multiple-use applications wherein the electric storage resource provides both transmission and market services. CESA understands that the details of the operational profile of such dual-use electric storage resources still require further discussion and development, as there are very few non-transmission alternatives in operation today. One consideration for FERC and the CAISO would be to develop an interconnection study approach that models such dual-use electric storage resource similar to a Non-Generator Resource (“NGR”) operating under the Regulation Energy Management (“REM”) option when providing a transmission reliability function, which returns the electric storage resource to its original energy set-point after having provided the transmission reliability service.

**B. CESA supports the allowance of interconnection service below the generating facility’s capacity.**

There no current provisions in the *pro forma* LGIP and LGIA to allow interconnection customers to request a level of interconnection service lower than the generating facility’s

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<sup>3</sup> *Puente Power Project: Synchronous Condenser Analysis*, CEC Docket Number 15-AFC-01. [http://docketpublic.energy.ca.gov/PublicDocuments/15-AFC-01/TN210450\\_20160218T120232\\_Synchronous\\_Condenser\\_Analysis.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/15-AFC-01/TN210450_20160218T120232_Synchronous_Condenser_Analysis.pdf)

capacity. The CAISO have allowed interconnection customers to limit injection rights in certain circumstances, but this provision has not been included in the *pro forma* LGIP and LGIA. CESA thus supports FERC's proposed reforms to allow interconnection service below the generating facility's capacity, so long as appropriate hardware and/or software is in place to prevent exceeding its interconnection service, and to revise the definition of "generating facility" based on the interconnection service rather than the generating facility's capacity.

As inverter-based resources, the interconnection customer's software controls can be readily verified by the transmission providers to ensure that a generating facility does not exceed its level of interconnection service. To the extent possible with software controls and appropriate penalty mechanisms in place, CESA recommends that FERC not impose overly burdensome protection system requirements that would potentially reduce the interconnection cost and process time savings as intended by this proposed rule. CESA notes that there is already equipment such as reclosers in place as required by utilities that could be used to interrupt service in a contingency or grid reliability event.

**C. CESA supports an expedited process for utilizing surplus interconnection service at existing generating facilities but recommends that FERC also direct the creation of a process for the utilization of full interconnection service at existing generating facilities.**

Related to the allowance of interconnection service below the generating facility's capacity, the utilization of surplus interconnection service by co-located electric storage resources is important in 'repowering' existing generating facilities and firming the capacity of renewable generators. CESA thus supports FERC's proposed reforms to require transmission providers to include in their tariffs and the *pro forma* LGIP an expedited process for interconnection customers to utilize or transfer surplus interconnection service at existing generating facilities. For electric storage resources 'repowering' existing generating facilities,

developers will be able to replace capacity at generating facilities without having to undergo interconnection studies and processes for interconnection service that has already been studied and accounted for. For electric storage resources co-located with a renewable generator, these proposed reforms will allow the combined resources to firm renewable capacity and utilize existing ‘interconnection rights’ of the renewable generator, rather than having to undergo unnecessary additional interconnection study and processes for the combined capacity of renewables generators and its paired electric storage resource. CESA therefore supports the FERC’s determination that this expedited process be available for both small and large generator interconnections.

The CAISO has been progressive regarding the treatment of electric storage resources to repower existing generating units.<sup>4</sup> Specifically, it allows for a portion of an existing unit’s capacity to be replaced with electric storage resources through a new Generator Interconnection Agreement (“GIA”) instead of having to re-submit an interconnection request in the next cluster study open window. However, one area of consideration for FERC would be to direct the creation of an expedited interconnection process by transmission providers for the complete replacement of an existing generating unit with interconnection service in place. At present in the CAISO, such repowering requests require an interconnection request in the subsequent cluster study window, which CESA finds unnecessary if the electric storage resource can be shown to preserve the deliverability of the existing generating unit.

Understandably, such a complete repowering of an existing generating unit will require some re-study to ensure that the electric storage resource’s charging behavior prevents ‘worst case’ impacts and avoids the need for network upgrades. The CAISO has processes in place to

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<sup>4</sup> CAISO Business Practice Manual for Generator Management, Section 12.1.3 Treatment of Energy Storage.

model the market impacts of repowered units depending on the ‘fuel source.’ Notably, partially repowered units that charge from the grid only are allowed and are modeled and treated as a non-generator resource (“NGR”). CESA therefore sees no need to distinguish between partially repowered and fully repowered units that charge entirely from the grid. This approach unnecessarily limits the use of an established interconnection service and raises costs for developers to have to re-enter the cluster study process without any material benefit to the grid. Further, as the electric resource mix changes for economic and policy reasons, there may be an increasing frequency at which these full repowering opportunities arise.

The creation of an expedited interconnection process by transmission providers as directed by FERC for the complete replacement of an existing generating unit with interconnection service in place would address these issues. FERC also posed questions regarding whether the interconnection agreement for surplus interconnection service should terminate upon the retirement of the existing generating facility, or whether there are circumstances under which the surplus interconnection service customer may operate its generating facility under terms of the surplus interconnection service agreement after the retirement of the existing generating facility. Creating the expedited process discussed above would address some of these concerns. At minimum, limited provisional interconnection service could be allowed as the CAISO and the interconnection customer undergo the process for reviewing and modeling full repowering of existing generating units.

**D. FERC should direct the transmission providers to consider an expedited interconnection process based on actionable hosting capacity data at the transmission level.**

While generally supporting an expedited process for utilizing surplus interconnection service at existing generating facilities, CESA believes that the expedited interconnection



process should not be limited to surplus interconnection service at an existing generating facility but to surplus interconnection capacity along any part of the transmission grid. Such an approach would facilitate greater ‘plug-and-play’ capability that reduces developer costs and system costs to the ratepayer. This type of process could mimic California’s Distributed Resources Plan (“DRP”) proceeding, which focuses on developing a methodology for hosting capacity data – known as the Integrated Capacity Analysis (“ICA”) – that identifies optimal locations on various circuits and lines with excess hosting capacity where distributed energy resources (“DERs”) could be sited. DERs interconnecting at ‘optimal’ locations are reviewed under an expedited California Electric Rule 21-type study and review process. There are still issues related to data presentation and access, computational efficiency, and hosting capacity data accuracy that must be worked out, but a similar interconnection process could be considered at the transmission level as well.

CESA understands that there are physical differences between transmission and distribution grids, and that such a process would require a significant amount of time, resources, and collaboration to implement such an interconnection process, develop an iterative methodology, and implement the information technology infrastructure. However, CESA is encouraged by the work being done in the DRP proceeding, and believes a similar approach could be considered by FERC and other ISOs/RTOs in the long run.

**E. CESA supports the requirement for transmission providers to evaluate their methods for modeling electric storage resources.**

As noted in the proposed rulemaking, the CAISO takes a ‘negative generation’ approach to interconnection studies of electric storage resources, which accounts for their charge and discharge capabilities and enables the use of existing generator interconnection procedures and agreements in a single study, rather than having to conduct separate studies for generation and

load impacts. Generally, CESA supports the CAISO's approach so long as the interconnection procedures reflect the full operational capabilities of electric storage resources while being consistent with the interconnection procedures for generators, particularly as it relates to the determination of Full Capacity Deliverability Status ("FCDS").

CESA thus supports FERC's direction to transmission providers to evaluate their methods for modeling electric storage resources. While generally supportive of the negative generation approach as a more streamlined process for interconnection for CAISO and potentially other regions as well, CESA maintains concerns regarding the CAISO's Deliverability Assessments as part of this process that determine whether generation resources qualify for Resource Adequacy ("RA") capacity payments. These Deliverability Assessments examine the maximum discharge capabilities of generation resources in 'worst-case' conditions for all generating facilities, but subject electric storage resources to a 'charging deliverability' study under which the CAISO studies the maximum megawatt charge during peak and off-peak periods to determine whether these incremental charging requirements drive the need for congestion management and thereby require network upgrades. Other traditional generators do not face similar 'fuel availability' requirements. Additionally, such charging deliverability studies are irrelevant for determining discharge capabilities to receive RA status and are unnecessary given the advanced controls and algorithms that govern the rate and timing of their charging mode. FERC's direction will therefore allow for a comprehensive evaluation of the modeling of electric storage resources in interconnection study processes and consider whether the modeling of electric storage charging behaviors are appropriately modeled. Considering the CAISO has been frequently cited by FERC for its best practices in terms of interconnection

processes, especially regarding electric storage resources, this evaluation effort at the CAISO will inform other regions on how to appropriately model electric storage resources.

CESA therefore requests that FERC apply the same requirements for electric storage resources as it does with traditional generators. If ‘fuel availability’ requirements are applied to electric storage resources through a charging deliverability study, CESA believes this requirement should be consistently applied to traditional generators as well – *e.g.*, by requiring gas fuel to be available for natural gas generation to ensure deliverability. If such fuel availability requirements are not required of traditional generators, CESA therefore requests that FERC direct transmission providers to not set charging deliverability studies as a requirement for interconnection to the transmission grid.

**F. CESA supports the extension of these proposed reforms to Small Generator Interconnection Procedures and Small Generator Interconnection Agreements.**

FERC requests feedback on whether the proposed rules should apply to the SGIP and SGIA, which affect generating facilities below 20 MW. CESA supports the consistent application across the SGIP and SGIA as well, which provides greater clarity and certainty to developers and avoids having to manage a separate set of rules and procedures. Small generating facilities would otherwise face discriminatory treatment in the interconnection process if the proposed reforms herein are not uniformly applied.

**G. FERC should direct an evaluation of the interconnection processes for standalone or aggregated distribution-level electric storage resources that want to participate in the RTO and ISO markets.**

At the Technical Conference in May 2016, FERC invited feedback and comments on the primary obstacles and potential solutions to interconnecting standalone or aggregated distribution-level electric storage resources that wish to participate in the RTO and ISO markets.

No consideration of these issues or proposed reforms is included in this proposed rulemaking. CESA believes that these issues must be addressed as distributed electric storage resources become a larger part of the grid and continue to develop the capabilities to aggregate their capacity and grid services to meet wholesale electric grid needs. As noted in Docket No. RM16-23-000, the predominant model for electric storage market participation barriers has been through wholesale demand response models (*e.g.*, Proxy Demand Response in the CAISO). Part of this is due to PDR being the most-readily available and accessible model for market participation (as opposed to other models that present limiting market rules), but it also stems in part from the interconnection barriers for distributed electric storage resources.

CESA finds the current suite of interconnection processes to be ill-suited for the size and scope of distribution-level electric storage resources, which have already undergone interconnection study and review for ‘worst case’ impacts under California’s Electric Tariff Rule 21 – the retail-level interconnection process in California. The cluster study process is designed for large-scale projects and requires significant study deposits that are disproportional to the small scale of distributed electric storage projects and economically non-viable. Meanwhile, a separate interconnection process under the Wholesale Distribution Access Tariff (“WDAT”), as proposed by several California utilities, for exporting distributed electric storage resources can be unduly burdensome and unnecessary for electric storage sub-resources within an aggregation that have already been studied under California’s Electric Tariff Rule 21. Rather, a fast-track or lower-intensity interconnection (such as a WDAT ‘lite’) process that bypasses WDAT interconnection review under a certain capacity threshold or within certain operational constraints would be more appropriate and limit the duplication of interconnection studies conducted under California’s Electric Tariff Rule 21.

Given the growing deployments of and the lack of appropriate interconnection options for distributed electric storage resources, CESA recommends that FERC direct an evaluation of the interconnection processes for standalone or aggregated distribution-level electric storage resources that want to participate in the RTO and ISO markets.

## V. CONCLUSION

Overall, CESA supports the proposed reforms regarding the revised definition of ‘generating facility’, allowance of interconnection below generating facility capacity, adoption of provisional interconnection service agreement process, expedited process for the utilization and transfer of surplus interconnection service, and evaluation of the modeling of electric storage resources. CESA also broadly supports the proposed reforms to the interconnection process at large that improves the certainty, transparency, and efficiency of the interconnection process, as it ensures a competitive market and mitigates discriminatory impacts and costs on different resources and developers.

While CESA commends FERC for its leadership, CESA recommends that the details of the discussion above are best addressed at the ISO/RTO level, given that each has its own unique market structures, policies, and grid needs. Therefore, with direction from FERC, CESA looks forward to collaborating with the CAISO and other key state stakeholders to develop the detailed interconnection processes and agreements.

Respectfully submitted,



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Counsel for the  
**CALIFORNIA ENERGY STORAGE ALLIANCE**

April 13, 2017

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served a copy of *Motion to Intervene and Comments of the California Energy Storage Alliance* on all parties of record in proceedings **RM17-8-000** by serving an electronic copy on their email addresses of record and by mailing a properly addressed copy by first-class mail with postage prepaid to each party for whom an email address is not available.

Executed on April 13, 2017, at Woodland Hills, California.

  
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Michelle Dangott

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