BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Consider Streamlining Interconnection of Distributed Energy Resources and Improvements to Rule 21.	Rulemaking 17-07-007 (Filed July 13, 2017)

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON ORDER INSTITUTING RULEMAKING TO CONSIDER STREAMLINING INTERCONNECTION OF DISTRIBUTED ENERGY RESOURCES AND IMPROVEMENTS TO RULE 21

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TABLE OF CONTENTS

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In accordance with Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the California Energy Storage Alliance ("CESA")[1] hereby submits these comments on *Order Instituting Rulemaking to Consider Streamlining Interconnection of Distributed Energy Resources and Improvements to Rule 21*, issued on July 21, 2017 ("OIR").

[1] 8minutenergy Renewables, Adara Power, Advanced Microgrid Solutions, AES Energy Storage, AltaGas Services, Amber Kinetics, American Honda Motor Company, Inc., 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, EDF Renewable Energy, ElectrIQ Power, eMotorWerks, Inc., Energport, Energy Storage Systems Inc., GAF, 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., Ormat Technologies, OutBack Power Technologies, Parker Hannifin Corporation, Qnovo, Recurrent Energy, RES Americas Inc., Sharp Electronics Corporation, SolarCity, Southwest Generation, Sovereign Energy, Stem, STOREME, Inc., Sunrun, Swell Energy, UniEnergy Technologies, Viridity Energy, Wellhead Electric, and Younicos. 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).

I. INTRODUCTION.

Distributed energy resources ("DERs") such as energy storage play a very significant role in California's electric grid by working to integrate clean energy resources and offering opportunities to reduce greenhouse gas ("GHG") emissions by capturing lower or zero emissions resources, enabling of customer choice and bill savings, and serving as potentially dispatchable and rampable resources in targeted locations. The importance of DERs in California's low-carbon future is reflected in the Commission's "DER Action Plan" that adopted long-term visions for rates/tariffs, distribution planning, and wholesale market integration, as well as continuing efforts and near-term actions to support the vision.[2] Specifically relevant to this proceeding, , the DER Action Plan highlights several vision elements and action items related to interconnection:[3] Since lengthy and low-transparency interconnection processes add costs and uncertainty to DER projects, improvements to streamline and standardize interconnections can reduce potential barriers to the deployment and customer adoption of DERs such as behind-the-meter ("BTM") energy storage. Developing streamlined interconnection processes is therefore vital to success of the vision to enable widespread DER deployment.

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[2] *California's Distributed Energy Resources Action Plan: Aligning Vision and Action*, November 10, 2016. http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Commissioners/Michael_J._Picker/2016-09-26%20DER%20Action%20Plan%20FINAL3.pdf

[3] Vision Element 2.E. Interconnection is facilitated by improving DER hosting capacity estimates to minimize the need for interconnection studies, and by ensuring greater cost certainty, streamlining utility application practices, and expediting resolution of disputes.

Continuing Element 3.B. Efforts to streamline interconnection of generation and storage facilities, including conducting a formal review of utility administration of Rule 21 to identify areas for process improvement.

Action Element 2.7. By 2018, the Commission will consider the use of Integration Capacity Analysis to streamline utility interconnection processes to accelerate DER deployment.

Vision Element 2.C. Wholesale market rules and interconnection tariffs support behind-the-meter DERs Action Element 3.3. By 2018, assess regulatory options to streamline Commission jurisdictional interconnection rules (Rule 21) and FERC interconnection rules such as Wholesale Distribution Open Access Tariff for behind-the-meter DERs.

Additionally, in collaboration with the California Independent System Operator ("CAISO") and the California Energy Commission ("CEC"), the Commission developed an Energy Storage Roadmap ("Roadmap") that identified needed actions and priorities to address issues related to expanding revenue opportunities, reducing costs, and streamlining policies and processes to create a marketplace for energy storage resources.[4] The action items identified in the Roadmap as within the Commission's jurisdiction and span of responsibilities include:

- Facilitating clarification by investor-owned utilities ("IOUs") of operational constraints that can limit the ability to accommodate interconnection on the distribution system

- Clarifying existing transmission and distribution interconnection processes, including developing integrated process flow charts and checklists

- Evaluating opportunities to coordinate between Rule 21 and Wholesale Distribution Access Tariff ("WDAT") to streamline interconnection processes and ability to efficiently move between processes

- Evaluating the potential for a streamlined or 'fast track' distribution interconnection process for storage resources that meet certain use-case criteria

CESA agrees with the Commission (as affirmed in a joint agency workshop on June 29, 2017) that reported on the status of several state-level energy roadmaps, that significant progress is still needed on each of these action items for energy storage interconnection and therefore appreciates the Commissions' inclusion of several of these items within the scope of this proceeding.[5] Progress on these issues has, of course, occurred in a prior interconnection proceeding (R.11-09-011) for certain non-export energy storage configurations. While this

[4] *Advancing and Maximizing the Value of Energy Storage Technology: A California Roadmap*, published in December 2014. https://www.caiso.com/Documents/Advancing-MaximizingValueofEnergyStorageTechnology_CaliforniaRoadmap.pdf

[5] *Energy Storage Roadmap Workshop Overview*, presented by Rachel McMahon of CPUC on June 28, 2017 in 17-IEPR-12. http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-12/TN219951_20170628T085456_Energy_Storage_Roadmap_Workshop_Overview.pdf

progress is commendable, this new Rule 21 interconnection-focused proceeding provides a timely and necessary vehicle to address multiple needed and unaddressed improvements to the interconnection processes.

Overall, CESA strongly supports the scope of this proceeding set forth in the OIR, as it builds on the progress made in R.11-09-011 as well as the Distributed Resources Plan ("DRP") proceeding (R.14-08-013). The numerous outstanding issues listed as within the scope of this proceeding indicate that more work is needed in streamlining and improving the interconnection processes for DERs such as energy storage. Many of the interconnection issues of concern to CESA and the energy storage industry are included in the preliminary scope of the OIR, and thus the focus of our comments is to elaborate on the importance and rationale for keeping these issues within the scope of this new proceeding. CESA also comments on the grouping of the issues, as well as coordination with other proceedings in effectively addressing each of these issues.

II. CLARIFICATION OF THE DEFINITION OF "COMPLEX METERING SOLUTIONS" WILL ENSURE DC-COUPLED STORAGE FACILITIES PAIRED WITH NET ENERGY METERING GENERATION FACILITIES ARE FAIRLY TREATED IN THE INTERCONNECTION PROCESS.

CESA supports inclusion and resolution of this issue as there is a lack of consensus and clarity on emerging configurations for energy storage systems paired with Net Energy Metering ("NEM") generation facilities. The OIR notes that some disagreement exists over the interpretation of the definition of complex metering solutions and how a more detailed definition is needed.[6] CESA agrees. A clearer definition of complex metering solutions would be beneficial as there are inconsistencies among the IOUs on whether complex metering occurs

[6] OIR, p. 8.

when systems are comprised of a single self-contained meter or more than two self-contained meters. This is important because it would potentially create discriminatory treatment of certain NEM-paired storage configurations by not having their metering fees capped.

Specifically, CESA believes that complex metering should be defined as NEM-paired storage systems behind more than two self-contained meters to ensure DC-coupled systems have their metering fees capped. While D.14-05-033 regrettably deferred adoption of a metering solution for DC-coupled NEM-paired storage systems, the standard metering options adopted in D.14-05-033 can be used for DC-coupled NEM-paired storage systems as well[7] to ensure that NEM credit can only be generated by eligible renewable electric generation – *i.e.*, to ensure "NEM integrity".

To the degree that being grouped in Track 1 indicates more near-term focus and resolution of the issue, CESA agrees that this should be a Track 1 issue as it does not require completion or coordination with another proceeding. As California shifts to time-of-use ("TOU") rates in the NEM Successor Tariff proceeding (R.14-07-002) and to default TOU rates for all residential customers in 2019, resolution of this issue will be important to provide customers with the DERs needed to support this near-term transition.

III. CLARIFICATION OF WHAT CONSTITUTES A "MATERIAL MODIFICATION" TO A PROJECT AND PROCEDURES FOR PROCESSING MODIFICATIONS IS NEEDED TO SUPPORT THE INTERCONNECTION OF ENERGY STORAGE SYSTEMS.

The OIR notes that there is some disagreement over the interpretation of the definition of "material modification".[8] CESA agrees that further clarification of the types of design changes

[7] For example, DC-coupled storage systems can utilize Option 2, which involves installing a meter on the load and a meter for total energy flows at the point of common coupling.

[8] OIR, p. 8.

allowed to pending applications is needed. CESA adds that the scope of this issue also includes consideration of whether retrofits or additions with energy storage systems merit triggering of a load modification study. Currently, some IOUs trigger a three-month load modification study for any possible increase in customer peak load from charging load, regardless of whether it has minimal impact on the grid. As long as there is a credible strategy for charging from the grid without increasing host peak load, the energy storage retrofit or addition should not be considered a "material change" in the host load. These re-study processes are cumbersome especially for smaller energy storage systems.

To the degree that being grouped in Track 1 indicates more near-term focus and resolution of the issue, CESA agrees that this should be a Track 1 issue as it does not require completion or coordination with another proceeding. This represents a revision of the general Rule 21 interconnection process that could address a range of DER projects.

IV. CONSIDERATIONS OF HOW TO FURTHER STREAMLINE THE FAST TRACK PROCESS FOR PROJECTS THAT ARE PROPOSED TO ENHANCE INTEGRATION CAPACITY AT A PARTICULAR POINT ON THE SYSTEM SHOULD BE INCLUDED IN THE SCOPE OF THIS PROCEEDING.

The OIR states that this issue is scoped into this proceeding to fulfill one of the key purposes of the DRP proceeding. CESA supports this coordination between the two proceedings and understands that the Integrated Capacity Analysis ("ICA") will identify locations where DERs can interconnect with minimal impact on the system – *i.e.*, with available hosting capacity. Currently, while CESA is generally supportive of the progress to date in the DRP proceeding, the ICA methodology development is limited to a focus on identifying optimal locations for distributed generation and load-modifying resources to connect to points on the distribution systems below the integration capacity. Critically missing, however, is how solar-plus-storage and standalone storage systems are counted against these ICA values, even as these projects have

the capability to increase hosting or integration capacity. CESA is and will continue to be an active participant in the DRP proceeding to continue to iterate on ICA methodology development to reflect these types of DER projects.

Similarly, CESA recommends that the Commission not only consider streamlining of the Fast Track process for projects that are proposed to interconnect at a particular point below the integration capacity, but also consider revisions to the Fast Track process for solar-plus-storage projects or standalone energy storage projects that are capable of enhancing integration capacity at a particular point on the distribution grid. Specifically, this proceeding should consider how to identify Fast Track review eligibility for such systems with a specific operational profile that can be demonstrated to increase hosting capacity on any given point on the distribution grid. For example, energy storage systems that charge from 12-5pm could potentially increase the hosting capacity on a high-solar circuit to allow for additional solar to be sited there, thereby increasing ICA values. These systems should be eligible for Fast Track review.

CESA agrees that this should be a Track 2 issue, as it will require completion of ICA methodology development before being taken up in this proceeding. To the degree that being grouped in Track 2 indicates a medium-term focus and resolution of the issue, CESA believes that this issue is properly grouped to await full ICA development in the DRP proceeding, upon which this issue can and should be immediately addressed in this proceeding.

V. A PLACEHOLDER IN THIS PROCEEDING IS NEEDED TO IMPLEMENT DECISIONS MADE IN R.15-03-011 ON MEASUREMENT AND METERING OF STORAGE FACILITIES.

CESA supports the OIR's placeholder for resolution of issues from the Energy Storage proceeding (R.15-03-011), which is developing metering, interconnection, cost recovery, and market participation rules for energy storage resources engaged in multiple-use applications

("MUAs"), as well as considering metering configurations to track station power. There will be important outcomes from R.15-03-011 on retail metering placement in relation to the CAISO wholesale meter in order to prevent 'double counting' of energy as both wholesale and retail. Any metering configurations adopted in R.15-03-011 may need to be implemented in this proceeding, or R.15-03-011 may ultimately defer the adoption of metering configurations to this proceeding. Similarly, any metering configurations for tracking station power adopted in R.15-03-011 or deferred by R.15-03-011 may need to be addressed in this proceeding.

Generally, CESA supports multiple metering options for energy storage systems, with the most and most cost-effective option depending on the use case and technology. However, there may still be some pre-approved metering options that parties may wish to be adopted, which may need to be addressed in this proceeding. To the degree that being grouped in Track 3 indicates a long-term focus and resolution of the issue, CESA recommends that this issue be instead placed in Track 2 as a placeholder until further guidance and direction from R.15-03-011 is provided. Once the needed determinations are made in R.15-03-011, this proceeding should address these metering issues in Track 2 as many MUAs can be ready for operation in the medium term.

VI. THIS PROCEEDING SHOULD YIELD RULES AND FAST TRACK PROCESSES THAT MAY SYNERGIZE WITH WDAT INTERCONNECTIONS, INCLUDING WHEN A PROJECT TRANSITIONS FROM A RULE 21 INTERCONNECTION TO A WDAT INTERCONNECTION AND VICE VERSA.

As BTM DERs increasingly participate in the CAISO wholesale market, such as through its Non-Generator Resource ("NGR") model, the OIR appropriately considers clarification of transfer rules between the Rule 21 and Wholesale Distribution Access Tariff ("WDAT") queues and processes. CESA believes it is reasonable and prudent to synergize Rule 21 and WDAT rules to allow an interconnection applicant to transfer smoothly from the Rule 21 distribution queue to the WDAT transmission queue if study results indicate that is appropriate, without

having to wait for the next open window. Conversely, if study results indicate that it is appropriate for an applicant to transfer to the Rule 21 queue from the WDAT queue it should be able to do so immediately without waiting for the next acceptance window to open. To the extent that study results from the Rule 21 interconnection study process and agreement can be imported into the WDAT interconnection process, this will greatly streamline review and avoid duplicative efforts

To allow for these transfers, CESA recommends best practices, study methodologies, and key applicant criteria be aligned between these two interconnection processes. While the WDAT process is not CPUC jurisdictional, this proceeding should serve as a vehicle to feature clear assessments of interconnection best practices. California's IOUs are well positioned to provide leadership in identifying and developing synergistic practices that may inform WDAT interconnections.

One issue that is not considered within the scope of the OIR is consideration of improvements how Rule 21 best practices may inform or facilitate IOU consideration of Fast Track WDAT processes for exporting non-NEM energy storage systems. CESA certainly recognizes that WDATs are within the jurisdiction of the Federal Energy Regulatory Commission ("FERC"). Generally, CESA believes at the same time that a 'WDAT-lite' could provide helpful market access for cases where BTM non-NEM DERs need only a modest WDAT study process, instead of the requisite fuller and more robust WDAT process. To the extent that Rule 21 considerations can contemplate helpful approaches for WDAT interconnection study processes, this proceeding can likely provide helpful guidance and applicability not only for projects that switch from a Rule 21 to a WDAT interconnection but also for subsequent or relevant WDAT reforms. For example, if exporting energy storage

systems stay within certain export limits or are sized under a certain MW threshold when aggregated, this proceeding's development of a record and solution for a streamlined and less burdensome interconnection process for exporting energy storage systems could serve to allow for synergy between Rule 21 and WDAT.

CESA agrees with this issue being a Track 3 issue as it is a long-term refinement topic that likely benefits from anticipated enhancements to the CAISO's market participation models, such as the NGR model. Once these enhancements are complete – and they are queued up for a CAISO stakeholder assessment this year – it will become even more critical for the Commission to identify synergies with any Fast Track WDAT processes for exporting non-NEM energy storage systems to avoid burdening BTM DERs with lengthy and costly interconnection processes beyond reason.

VII. APPROPRIATELY DEFINING THE CAPACITY OF MULTIPLE-DER FACILITIES FOR PURPOSES OF ASSESSING WHETHER A PROJECT EXCEEDS THE TELEMETRY THRESHOLD IS IMPORTANT TO ALIGNING WITH ACCURATE GRID IMPACTS.

CESA supports the scope of issues being considered under its review of telemetry requirements. Specifically, CESA supports consideration of how the IOUs should define the capacity of multiple-DER facilities when assessing whether a project exceeds the 1-MW telemetry threshold. The IOUs currently use the additive, rather than the net, nameplate capacity of solar-plus-storage systems to determine whether the threshold is exceeded and thus telemetry is required. Instead, the IOUs should look at the operational profile of the system. This should be re-visited and discussed in this proceeding as the costs of telemetry are very high, especially for small systems and represent a potential significant barrier to DER deployment.

The OIR includes consideration of telemetry requirements under Track 3, but CESA believes that it may be more appropriately considered a Track 1 or 2 issue, considering it does

not require coordination with other proceedings and represents a near-term challenge for DER projects.

VIII. THE COMMISSION SHOULD FURTHER STREAMLINE THE INTERCONNECTION PROCESS OF NON-EXPORT/INADVERTENT EXPORT SYSTEMS AND ASSESS THE FEASIBILITY TO MOVE TOWARD A NOTIFICATION ONLY PROCESS.

In R.11-0-911, the interconnection process was significantly streamlined including for non-exporting storage systems. Given the unique characteristics of non-exporting systems, there is further opportunity to simplify the interconnection process for these systems. Due to the almost non-existent impact a non-exporting system has on the grid, the system's operating characteristics should be considered when requiring interconnection screens. In the scope of this proceeding, the Commission should further value the need for going through the full interconnection process when a non-export system passes several initial screens instead of implementing a notification-only process which takes into consideration the system's operating characteristics.

IX. THERE MAY BE OTHER RULE 21 INTERCONNECTION ISSUES THAT NEED TO BE ADDRESSED IN TRACK 3 OR TRACK 4 OF THIS PROCEEDING.

CESA appreciates that the OIR includes provision for "other revisions to Rule 21 as necessary" in Track 3 of this proceeding. This is an important placeholder to keep in this proceeding because there are a number of other Rule 21 interconnection issues that may arise as new DER technologies, configurations, and business models are developed. For example, while no immediate-term and specific issues have come to CESA's attention at this time related to interconnection issues for State Zero Net Energy ("ZNE") build codes and for electric vehicles, CESA believes that new issues may arise given the potential intersections with energy storage technologies in each of these cases. Having a placeholder in the proceeding to open and address

these issues would greatly benefit timely consideration of these new market and policy developments.

X. CONCLUSION.

CESA appreciates the opportunity to submit these comments on the OIR and looks forward to working with the Commission and parties going forward in this proceeding.

Respectfully submitted,

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