

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

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local and Flexible Procurement Obligations for the 2016 and 2017 Compliance Years.

Rulemaking 14-10-010
(Filed October 16, 2014)

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON
RESOURCE ADEQUACY PHASE 3 FLEXIBLE CAPACITY AND
EFFECTIVE LOAD CARRYING CAPACITY WORKSHOPS**

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The California Energy Storage Alliance (“CESA”)¹ hereby submits these comments on the Resource Adequacy Flexible Capacity and Effective Load Carrying Capacity Workshops held in accordance with the *Assigned Commissioner and Administrative Law Judge Phase 3 Scoping Memo and Ruling*, issued September 13, 2016 (“RA Phase 3 Workshops”).

I. INTRODUCTION.

In these comments on the RA Phase 3 Workshops held by the Commission’s Energy Division Staff on November 9, 2016, and November 10, 2016, CESA stresses the need to

¹ 8minutenergy Renewables, Adara Power, Advanced Microgrid Solutions, AES Energy Storage, Amber Kinetics, Aquion Energy, Bright Energy Storage Technologies, Brookfield, California Environmental Associates, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, Electric Motor Werks, Inc., ElectrIQ Power, ELSYS Inc., Energy Storage Systems Inc., Enphase Energy, GE Energy Storage, Geli, Gordon & Rees, Green Charge Networks, Greensmith Energy, Gridscape Solutions, Gridtential Energy, Inc., Hitachi Chemical Co., Ice Energy, IE Softworks, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Invenergy LLC, Johnson Controls, K&L Gates, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Mercedes-Benz Research & Development North America, Nature & PeopleFirst, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., NRG Energy LLC, OutBack Power Technologies, Parker Hannifin Corporation, Powertree Services Inc., Qnovo, Recurrent Energy, RES Americas Inc., Saft America Inc., Samsung SDI, Sharp Electronics Corporation, Skylar Capital Management, SolarCity, Southwest Generation, Sovereign Energy, Stem, SunPower Corporation, Sunrun, Swell Energy, Trina Energy Storage, Tri-Technic, UniEnergy Technologies, Wellhead Electric, 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. 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>).

evaluate how the Resource Adequacy (“RA”) program affects California’s energy resource portfolio mix, how the development of a durable Flexible Capacity product will provide long-term reliability assurances, market signals and certainty, and how Effective Load Carrying Capacity (“ELCC”) should be implemented with an optional RA ‘count’ for solar paired with energy storage and wind paired with energy storage resources.

II. THE COMMISSION SHOULD DEFINE RESOURCE ADEQUACY AS A TOOL DESIGNED TO ENSURE RELIABLE GRID OPERATIONS THROUGH THE SPOT MARKETS ADMINISTERED BY THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR.

RA is a planning tool that should ensure both reliable operations and economic incentives for planning capacity, *i.e.*, capacity planning to participate in the grid to meet grid needs in an upcoming month or year. While RA payments have declined, these payments remain critical as incentives for *both* participation in the markets and for maintaining, building, managing, or upgrading generation to meet California’s needs.

Currently, the RA program may not guarantee reliability. For instance, the current RA program explicitly does not guarantee sufficient downward ramping capabilities because it lacks a ‘Flexible RA Down’ concept and flex down must-offer obligations. Further, the RA portfolio is not guaranteed to provide sufficient intra-hour ramping, a known and growing challenge. These deficiencies may create conditions where the California Independent System Operator (“CAISO”) needs to procure additional capacity pursuant to its Capacity Procurement Mechanism (“CPM”) authority. The CAISO may also be forced to use exceptional dispatch authority to direct resource movements. These CAISO actions can signal market inefficiencies and may require Federal Energy Regulatory Commission action or reviews.

CESA recommends the Commission undertake a definition establishing process in order to develop the needed RA tools in useful and principled ways. Differing understandings of RA

may be creating uncertain or unclear design efforts. For instance, CESA believes that opposition to Flexible RA Down may exist based on a concern that it will be costly and that such payments are not appropriate as market signals. This perspective leads to a view that RA should be used to provide the minimum payments needed to keep generation resources operating. CESA disagrees with this view as it risks reliability and promotes inadequate investment and participation through weakened price signals. California's Public Utilities Code requires that RA should serve to "[f]acilitate development of new generating capacity and retention of existing generating capacity that is economic and needed."² This definition clearly expresses the purpose of the Commission's RA program (with an eye towards CAISO needs) should focus heavily on steering the fleet to provide the needed service in addition to ensure retention of existing generation resources that are needed.

The approach of believing that downward flexibility needs will be addressed without explicit contractual RA control would risk repeating past mistakes during which reliability was compromised because generators did not participate as hoped for in spot energy markets. The implications of this approach, if taken with system or local capacity, could be very risky. Due to Renewables Portfolio Standard procurement and other policy factors, the grid's needs and generation resource fleet are changing, and the RA program will need to evolve accordingly to consider downward flexibility. There is now a diminishing guarantee that downward flexibility will be sufficient in the future simply because it has been so in the past.

Assertions that downward flexible needs are 'just operational' may not reflect an understanding of the needs of the grid in the future nor of the role of economic incentives in

² California Public Utilities Code, Section 380,
http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=2.3.&article=6.

managing, upkeeping, and designing generation resources, including energy storage. Correctly defined RA product requirements – including flex down capability – will influence the portfolio in the near, medium, and long-term. Capacity values are a key revenue source for many grid resources. These resources can adjust their capabilities, plan upgrades, bid differently, and take many actions to fashion their resource to provide services needed by the grid. For example, if a resource operator knows that it can qualify for a higher value planning capacity product with a modest change, economic interest will direct that resource to make such a change. Medium-term, resources may invest in key capabilities to position themselves to provide more valuable RA services. Long-term, signals for the ‘right’ types of planning capacity will without question influence new capacity decisions for the state.

III. CONCERNS ABOUT COMPLEXITY IN RA SHOULD NOT DE FACTO REDIRECT OR LIMIT RESOURCE ADEQUACY DESIGNS AND PRODUCTS.

If additional RA complexity yields more efficient portfolios, the benefits of some incremental complexity should be worth the investment. CESA anticipates that some higher level of complexity may be unavoidable to ensure reliability as the grid adjusts to changes such as large baseload generator retirements, increases in penetrations of variable energy resource and distributed generation, and changes in climate and hydro conditions.

Proposals for simplified RA rules, including Flexible RA rules, may not address the core purpose of RA if they overlook the signaling role of economic incentives. Instead, simple RA rules may result in an insufficient generation resource fleet, under the assumption that some issues can be resolved through grid operations or through patch fixes, *i.e.*, ‘cures’ to the portfolio. This could lead to increased risk-of-retirement payments, use of the CAISO’s capacity procurement mechanism, exceptional dispatches, and other signs of market inefficiency.

CESA welcomes further information on the complexity challenges which some stakeholder seek to avoid or address. For instance, complexities relating to contracting or scheduling units or managing resources Must Offer Obligations (“MOOs”) should be clarified. Information on these complexities will help in the assessment of whether avoided complexities are ‘worth it’.

IV. SHORTER DURATION FLEXIBLE RESOURCE ADEQUACY PRODUCTS SHOULD BE CONSIDERED TO BETTER ADDRESS OPERATIONAL REALITIES.

In the RA Phase 3 Workshop, both the CAISO and the CAISO’S Department of Market Monitoring (“DMM”) offered presentations and findings indicating the current Flexible RA counting approach of a ‘3 hour ramp’ yields resources that, due to operational realities, can be unable to provide flexibility in spot markets.³ Both the CAISO and The DMM have noted a resource’s start up time as a factor. CESA thus recommends considerations of start-up times for determinations of Flexible RA eligibility. One approach might be to link eligibility with a start-up time shorter than or equal to the outlook duration of the CAISO’s algorithm for Real-Time Unit Commitment (“RTUC”). For example, resources unable to be committed by RTUC for flexibility needs could be considered ineligible.

Additionally, measuring Effective Flexible Capacity (“EFC”) based on a shorter duration of ramping may be appropriate, e.g. based on two hours rather than the current three hours. This way, the Flexible RA product better addressed the CAISO’s needs for shorter-duration ramping.

³ See Commission and DMM proposals, November 9, 2016.

V. **THE COMMISSION SHOULD STUDY THE POTENTIAL MARKET BENEFITS OF A FLEX DOWN PRODUCT.**

Based on CESA's definition of the RA tool, the RA fleet should ensure the CAISO has adequate downward flexibility and does not rely inappropriately on *ex post* out of market adjustments or on inefficient reliability curtailments. Reliability curtailments may signal reliability risks and poorly functioning markets. In some cases, a reliance on Reliability Curtailments may harm renewable generators who are not paid for reliability curtailments (but would be paid for economic curtailments) in the CAISO's spot markets.

Overgeneration is a foreseeable problem which can and should be addressed through use of the RA tool. CESA recommends the Commission study Flexible RA Down to see what must-offer obligations might be required for such capacity. Additionally, the Commission should study the market transformation effects of a RA price signal, which will likely inform generator behavior, investments, contracts, re-contracting, etc.

The Commission should also note that a Flexible RA Down might improve reliability with very little incremental cost. Renewable generators willing to provide curtailments in the CAISO's spot market are effectively providing Flexible RA Down 'for free'. Presumably, these types of providers will continue to accept curtailments, but a Flexible RA Down would guarantee the CAISO has the tools to manage the grid reliably and could avoid exceptional dispatch curtailments

Capacity products should work in concert with spot markets, and the Commission should recommend that the CAISO lower its bid floor to better support overgeneration solutions. CESA is working with the CAISO to consider a lower bid floor to address overgeneration and Flexible RA Down needs.

VI. EFFECTIVE LOAD CARRYING CAPACITY STUDIES SHOULD INCLUDE SOLAR PAIRED WITH ENERGY STORAGE AND WIND PAIRED WITH ENERGY STORAGE ‘COUNTING’ VALUES.

In cases where ELCC values change the counting of a RA resource in material ways, the Commission should offer a pathway for improving the counted capacity. ELCC studies should thus include solar paired with energy storage and wind paired with energy storage values, so that resource operators can decide whether adding energy storage (with appropriate dispatch plans for the energy storage device) should be pursued.⁴ Past studies by the Commission have shown that, in some cases, a relatively small window of low generation by a renewable resource can lead to much lower ELCC ‘counting’ value. As such, a resource augmented with a modest amount of energy storage could greatly improve its counting value.

CESA recommends that the Commission review ELCC studies for solar and for wind resources and determine a reasonable level of energy storage that should be added. A study of resource ELCC with the added increment of energy storage should then be used to establish counts for ‘storage plus’ resources. Functionally, in cases where a resource adopts a ‘plus storage’ ELCC, the energy storage device should have neither its own stand-alone role as a scheduling coordinator nor its own stand-alone EFC or net qualifying capacity (“NQC”), but should instead be ‘deemed’ as part of the renewable energy resource, boosting the ELCC.⁵ Any new ‘storage plus’ ELCC values will provide important optionality to resources facing material cuts to their counted capacity. The Commission may wish to consider a shorter-duration energy

⁴ A recent NREL study highlights how major additions of energy storage to the grid will be needed under a high-solar 50% RPS portfolio. For RA purposes, this study highlights how solar plus energy storage may be an important tool in high RPS environments, justifying ELCC values for energy storage plus renewables. *Energy Storage Requirements for Achieving 50% Solar Photovoltaic Energy Penetration in California*, National Renewable Energy Laboratory, Denholm and Margolis, August, 2016.

⁵ The CAISO has been developing protocols for additions of storage to existing generation. See, CAISO Bulletin for Hybrid Energy Storage Systems: <http://www.caiso.com/Documents/TechnicalBulletin-ImplementationofHybridEnergyStorageGeneratingFacilities.pdf>

storage paired with solar and wind and a longer-duration solar paired with energy storage and wind plus energy storage, so that resources have more choices in how much energy storage to add. Longer-duration energy storage services may provide different solution capabilities to flexibility needs in some instances, so considering both shorter and longer duration options is reasonable.

VII. DECOUPLING FLEXIBLE AND STANDARD RESOURCE ADEQUACY 'COUNTING' SHOULD BE ALLOWED.

CESA supports proposals by the California Large Energy Consumers Association, Joint Demand Response Parties, and Shell Energy North America to separate flexible and standard RA 'counting' requirements for the 2017 RA compliance year. The current coupling requires a NQC to receive an EFC, which cannot exceed the NQC. De-coupling these two measures, and thus unbundling the sale of System RA from Flexible RA, can provide two significant benefits: (1) allowing easier transactions with smaller resources; (2) broadening the pool of Flexible RA resources (including any related MOOs) to include resources that do not seek to provide System RA services, and (3) transparency between the values offered .

Unbundling these two RA capacity products would allow flexible resources to be more clearly and fully valued for providing increasingly critical ramping capabilities for the grid. A durable flexible product that compensates for downward flexibility-related benefits in capturing excess renewables will accurately reflect the value of energy storage resources. An important first step in this effort is to allow resources to receive an NQC different from and/or less than their EFC, and to decouple these two capacity measures. This differs from the concept of 'unbundling' which by some is defined as being able to sell a flexible and system attributes of a single unit of capacity to different buyers.

VIII. CONCLUSION

CESA appreciates the opportunity to submit comments on the RA Phase 3 Workshops, and looks forward to working with the Commission and parties on the further development of a durable and robust RA program.

Respectfully submitted,



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