

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

Order Instituting Rulemaking to Enhance the Role of
Demand Response in Meeting the State's Resource
Planning Needs and Operational Requirements.

Rulemaking 13-09-011
(Filed September 19, 2013)

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
ON ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING COMMENTS ON
2015 CALIFORNIA DEMAND RESPONSE POTENTIAL STUDY DRAFT REPORT ON
PHASE TWO RESULTS AND NOTICING A MARCH WORKSHOP TO
DEVELOP NEW MODELS OF DEMAND RESPONSE**

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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 *Administrative Law Judge’s Ruling Requesting Comments on 2015 California Demand Response Potential Study Draft Report on Phase Two Results and Noticing a March Workshop to Develop New Models of Demand Response*, issued by Administrative Law Judge Kelly A. Hymes on December 15, 2016 (“Ruling”).

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, National Grid, Nature & PeopleFirst, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., NRG Energy, Inc., 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. (<http://storagealliance.org>).

I. INTRODUCTION.

CESA supports the Commission’s efforts to enable new and advanced demand response (“DR”) products and programs to help meet California’s need for future capacity, energy, and ancillary services. Energy storage technologies have the advantages as a DR technology as being dispatchable, scalable, sustainable, and instantaneous, while minimizing customer attrition and being capable of multiple starts. The potential for energy storage as the “perfect” DR technology was recognized in the Lawrence Berkeley National Laboratory’s (“LBNL’s”) *2015 California Demand Response Potential Study Draft Report on Phase Two Results* (“Draft Report”) as long as the technology costs of fall below a specified cost threshold.² Given this potential for energy storage to provide advanced, fast-response DR, CESA focuses its comments here on how new and existing DR models should consider the physical and operational characteristics of energy storage and how these models can ensure that these resources participate and be fully compensated for their services.

II. THE COMMISSION MUST ADDRESS DEMAND RESPONSE BARRIERS RELATED TO INTERCONNECTION, BASELINES, MULTIPLE MARKET PARTICIPATION, AND NON-EXPORT CONSTRAINT.

CESA responds to the questions posed in the Ruling as follows:

Question 1: What risks, opportunities, barriers, etc., to Shift and Shimmy should the Commission consider or address in regard to program design and implementation, enabling demand response technology, market transformation, etc.?

CESA’s Response:

CESA believes that the greatest opportunities for DR services are Shift and Shimmy DR, which was also a conclusion of the Draft Report. As California moves toward a higher

² Draft Report, pp. 5-22, 5-53, and 7-12.

Renewables Portfolio Standard (“RPS”), the need for Shift will increase due to greater solar overgeneration during the midday (*i.e.*, leading to a deepening of the ‘duck curve’).³ Energy storage technologies in this situation have the full capability to charge during the midday to maximize these renewables investments and ensure that this clean generation is not curtailed, and discharge during the evening peak load to discharge cleanly charged energy and potentially avoid greenhouse gas (“GHG”) intensive generation resources. Likewise, as more variable and intermittent renewables come onto the grid, the need for Shimmy DR will increase to smooth out their production.⁴ But as the Draft Report states, the markets for the Shift and Shimmy DR products have yet to be realized.⁵

CESA therefore supports the California Independent System Operator’s (“CAISO’s”) current work on enabling bidirectional Proxy Demand Response (“PDR”) to provide load consumption services as well as ancillary services, such as Regulation. In working groups in the Energy Storage and Distributed Energy Resources (“ESDER”) Phase 2 Initiative, CESA has worked with the CAISO and other stakeholders to allow PDR resources to place bids for both demand curtailment *and demand consumption*. To do this, a load consumption baseline methodology with Metered Generator Output (“MGO”) adjustments will be authorized for measuring demand increases. This builds on the already approved methodologies for measuring PDR demand reduction. Additionally, CESA is collaborating with stakeholders to develop avenues for PDRs to participate in the Regulation market through a Zero-Net Energy (“ZNE”) dispatch and energy settlement. Such a product, which will function akin to the Regulation Energy Management (“REM”) function for Non-Generator Resources (“NGRs”), fits well with

³ Draft Report, p. 2-5.

⁴ Draft Report, p. 5-54.

⁵ Draft Report, pp. 1-10, 5-24.

the limited energy resource capabilities of PDRs. Progress is being made on both fronts, and CESA therefore urges the Commission to support these market product development efforts.

Despite these promising areas of progress, several barriers remain to fully enabling the Shift and Shimmy DR products, as noted in the Draft Report as well.

Interconnection: Streamlined interconnection that avoids unnecessary review and study processes will be a key factor in unlocking the value of new DR resources. Interconnection requirements may constitute a significant share of resource development costs, and innovative ways to reduce or avoid this burden should be explored by the Commission.

For supply-side resources, a streamlined process needs to be developed and consolidation or avoidance of certain review processes should be considered for PDRs that interconnect at the distribution grid level but also participate in wholesale markets. For sub-resources within a distributed energy resource (“DER”) aggregation, having to complete a full Wholesale Distribution Access Tariff (“WDAT”) interconnection process is in many cases unnecessary. Many customer-sited and distribution-connected energy storage resources are already interconnected under the Commission’s retail interconnection Rule 21 tariff, but DERs also participating in wholesale markets is required to have a WDAT interconnection to earn Resource Adequacy (“RA”) capacity payments.⁶ Non-exporting behind-the-meter energy storage resources in particular should not require the WDAT process since these resources function as load from a system perspective, while exporting energy storage resources participating in the wholesale market should be required to interconnect under WDAT tariffs, albeit, at reduced levels of review and/or as part of a fast-track WDAT review process because these resources

⁶ RA capacity payments are needed to cover interconnection costs, as energy-only settlements alone are not sufficient to offset these costs.

represent such small loads from a system perspective. As for a Shift DR resource co-located with a solar photovoltaic (“PV”) generator, an interconnection study may not be necessary as there would be local PV curtailment. In other words, only in cases where Shift/Shimmy DR resources clearly show the need for a full WDAT review process (*e.g.*, due to worker/grid safety, system upgrade study purposes, deliverability assessments) should the full WDAT process be required.

Multiple DR participation: The Draft Report focused on DR resources providing a single type of DR service and did not explore how a DR resource could provide value in multiple markets and result in a resource portfolio. The authors of the Draft Report cited issues with “multiple program participation, potential complications in program baseline rules, and ultimately, the availability of DR services.”⁷ While the potential for multiple market and program participation was not considered in the Draft Report, it represents a significant opportunity for the state to benefit from resources that can maximize its capacity and provide multiple grid services from the same resource. Energy storage technologies are especially well-suited for such multiple market and program participation, by, for example, providing local Shed DR during one period of the day and providing Shimmy DR during other parts of the day. As it stands today, this kind of multiple market and program participation is not allowed to take place. For example, participation in the Demand Response Auction Mechanism (“DRAM”) pilots is contingent on un-enrolling resources to be bid into the Request for Offers (“RFOs”) from load-modifying DR programs.

These kinds of restrictions may be unnecessary since there are other means to determine whether DR services are distinct and incremental. Furthermore, while the focus of the Draft

⁷ Draft Report, p. 2-15.

Report was on the potential for energy storage as DR resources when costs come down, attention should also be paid to optimizing utilization of energy storage resources by allowing for multiple market and program participation that increases their value in terms of net benefits.

Baselines for frequently-dispatched resources: Unlike traditional DR resources, energy storage is a flexible resource that can provide multiple services in addition to being dispatchable and instantaneous DR. Being able to provide multiple grid services maximizes the capacity of an energy storage device, but also can present settlement challenges for DR services making it difficult to establish a ‘counterfactual’ using the traditional ‘10-in-10’ baseline approach. The baseline methodology leads to multiple-use energy storage resources to be significantly under-compensated when baselines are established as they are providing other grid and/or customer services.

The baseline approach may not always be necessary to determine load reduction when sub-metering (as made available through the CAISO’s MGO output option) meters discharge data to calculate wholesale capacity delivery. Given that this accurate meter data is available, the use of baselines for energy storage resources providing any of the DR services may not always be necessary and is usually best suited for traditional DR resources. While the CAISO makes the MGO output option available under the PDR model, utility DR programs generally do not offer this option.

Exporting energy storage: Currently, the PDR rules do not allow for exporting PDRs. However, CESA believes that this non-export constraint presents a barrier to providing Shift/Shimmy DR services and that rules for net-exporting of PDRs modified.⁸ Some potential

⁸ CESA notes that the CAISO is currently in the process of authorizing the provision of Regulation services from non-exporting PDR resources.

PDRs may have resources capability of physically exporting electricity to the grid, and as noted above, the CAISO is exploring PDRs with Regulation service under a ZNE framework, which sets start and finish load set points, similar to how Regulation Energy Management (“REM”) is structured. As long as PDRs are not exporting in net and comply with all requirements (*i.e.*, for baselines and/or sub-metering), CESA does not see why exporting PDRs should not be precluded from providing Shimmy DR services. In these cases, the Commission should consider whether WDAT process requirements should apply.

The non-export constraint also presents a barrier for Net Energy Metering (“NEM”) customers with energy storage from participating as PDRs. For example, when an energy storage system is paired with a rooftop PV system and installed on a NEM meter, any export from the PV results in a value of zero for Settlement Quality Meter Data. These energy storage systems as a result may not have recognized their demand consumption during solar overgeneration periods to provide Shift DR. Furthermore, given that these NEM-paired storage systems will have already been studied in the NEM interconnection review process, energy storage exports up to the amount authorized for the NEM interconnection can be accommodated. Concerns over affecting the deliverability status of other resources can be reasonably addressed through existing studies and interconnection processes.

Question 2: What policy or other barriers to Shift and Shimmy exist within Commission jurisdiction and how should the Commission address them?

CESA’s Response:

In this question, the Ruling seeks party input on how the Commission can directly help overcome some of the barriers to Shift and Shimmy DR. Rate design and co-investment programs were specifically cited, which CESA agrees are areas where the Commission can

directly and more immediately provide support. CESA also adds that the Commission can facilitate the market development of Shift and Shimmy DR by establishing clear interconnection requirements for supply-side DR resources, and by explicitly allowing multiple DR market and program participation.

Rate design: The Ruling states that parties have recommended that the Commission consider rate designs and demand charges to enable the Shift product. CESA agrees that current rate schedules should be revised to ensure that rates and time periods are aligned with grid conditions and provide sufficient rate differentials that actually incent energy storage DR resources to provide load reduction or consumption at the appropriate times. As a result, the Commission should not approve proposals for non-coincident demand charges or other rate elements that do not align with distribution grid needs or costs.

For storage-enabled Shift DR, the Commission should consider creation of a very low-cost charging schedule to encourage these resources to shift off-peak charging energy (*e.g.*, 12 am to 6:00am, or 2:00 pm to 5:00 pm) to on-peak discharging energy (*e.g.*, 6:00 to 9:00 pm). This rate schedule could be required of a new DR program or be added to an existing DR program to encourage Shift DR. LBNL in particular highlighted a pilot electric vehicle (“EV”) charging schedule by SDG&E that includes night-time charging.⁹ Furthermore, with storage-enabled Shift DR, the shaping of the load using time-of-use (“TOU”) rates and/or critical peak pricing (“CPP”) may not be “slow changing” as the Draft Report states.¹⁰ As dispatchable resources, energy storage should be able to quickly adapt and respond to new rate structures.

⁹ Draft Report, p. 7-15.

¹⁰ Draft Report, p. 3-14.

Co-Investment: The Ruling also comments on parties’ position that co-investment of DR and energy efficiency technologies should be supported, given the significant co-benefits. CESA agrees, but also urges the Commission to also consider the co-benefits of solar-plus-storage technologies. The Draft Report assumed a co-benefit of 50% for solar-plus-storage, which generated additional Shed DR value along with customer bill savings and resilience, particularly in the residential customer sector.¹¹ Therefore, any discussion of new models of DR should consider how to facilitate DR participation of such solar-plus-storage resources. One means to facilitate this co-investment would be to enable NEM-paired storage to participate in the DRAM.

Interconnection: The Commission should coordinate with the CAISO and distribution utilities to explore whether lower-intensity studies and deliverability allocation methods can be developed. For example, a “WDAT lite” or WDAT fast-track process option could import the study results from the Rule 21 interconnection study process to streamline review and avoid duplicative efforts. Alternatively, within a specified cap, exemptions to the WDAT review process could be made for aggregated resources under a certain megawatt capacity (of course, the appropriate studies would need to be conducted to set such a threshold).

Furthermore, sub-resources within an aggregation should be allowed to submit a single WDAT rather than having each resource submit WDATs separately. In practice, these sub-resources are also developed and come online at separate times, not all at once, and therefore processes to add sub-resources to an existing WDAT is needed.

Multiple DR participation: The Commission should revise the current Rule 24 and Rule 32 tariffs regarding dual DR participation requirements for DRAM participants. Specifically, as

¹¹ Draft Report, pp. 4-6, 5-29, 6-3.

it stands today, customers on an existing load-modifying DR tariff are required to un-enroll from the load-modifying program in order to enroll in the DRAM. This condition for DRAM participation represents a major barrier to robust customer enrollment in the DRAM. Instead, so long as accounting conventions or controls prevent inappropriate double-counting or double-payments for DR actions and the value provided is distinct and incremental, DRAM customers should be allowed to remain on their load-modifying DR tariff.

The Commission should direct that steps be taken to explore or authorize ways in which customers on load-modifying DR programs and rate-structures could, without risk of double-compensation, participate frequently in wholesale markets. Currently, commercial and industrial customers enroll in load-modifying DR programs, such as the Critical Peak Pricing (“CPP”) program, who are prohibited from staying on an existing load-modifying price-responsive DR tariff while also participating in the DRAM, under the current Rule 24 and Rule 32 tariff and registration process. In contrast, there is inconsistency in how dual DR participation requirement rules are applied in that CPP customers are allowed to maintain their dual participation in the Capacity Bidding Program (“CBP”), a utility-run capacity program for DR resources. For customers with energy storage resources installed that could provide both load-modifying and supply-side DR services, this rule for the DRAM is unduly restrictive and unfair, and prevents full participation in wholesale markets. These customers may be unwilling to un-enroll from the load-modifying price-responsive DR tariff to participate in the DRAM. As a result, energy storage participation in the DRAM pilot would be unduly limited.

So long as accounting methods can prevent inappropriate double-payments for a single DR behavior, participation in the DRAM by customers on load-modifying DR tariffs or in load-modifying programs should have access to both the wholesale market and DRAM participation.

CESA does not support rules that could allow for inappropriate double-payments, but there are accounting solutions or other controls can be developed so that load-modifying DR resources can also participate (with unused or available capacity) in providing wholesale market services while preventing potential double-payment.

NEM-paired storage participation in DRAM: NEM-paired storage systems face barriers in participating as supply-side DR capacity in the DRAM due to the way in which PDR rules are currently structured. In procuring RA capacity, resources in the DRAM will be subject to must-offer obligations (“MOOs”), which have RA availability windows that coincide with solar production hours, preventing NEM-paired storage systems from physically reducing load. As a result of these MOO requirements, NEM customers experience negative net-loads that are not recognized in the current PDR structure and are therefore prevented from participating in the DRAM - which reduces market participation and efficiency of providing capacity through DR. This is one area where the Commission can consider changes to how NEM-paired storage systems can participate in the DRAM and begin discussions regarding barriers to their participation in DR-related workshops, such as those scheduled for the week of March 13, pursuant to the Ruling. At these workshops, CESA also encourages the Commission to consider whether double payment issues exist for NEM-paired storage systems as PDR resources, and how rules can be developed to avoid inappropriate/unearned double payments.

Question 3: What concerns or needs do the Draft Report findings raise for demand response program administrators, implementers, and others concerning current or new models of demand response?

CESA’s Response:

CESA generally agrees with the Draft Report’s findings that there are challenges for DR administrators and providers in terms of customer market education, metering and telemetry

requirements, and lack of rules around multiple-use applications. As highlighted in CESA's responses to Question 1 and Question 2, above CESA presents other concerns and needs that must be addressed in discussions of DR models.

Question 4: The Draft Report concludes that system-wide peak Shed demand response is unlikely to provide significant value to the grid but local Shed can provide value. Do you agree with these findings? Should the Commission transition from system wide peak Shed demand response to local Shed demand response? Based upon the Draft Report, how should the Commission pursue this transition?

CESA's Response:

While the Draft Report finds that system-wide Shed DR has limited or no value,¹² CESA believes it may be premature for the Commission to completely eliminate or phase out system Shed DR programs in favor of local Shed DR at this time. It may be prudent for the Commission to further vet LBNL's analysis before transitioning to only local Shed DR programs. Local Shed DR has the potential to provide significant value, as seen by the Aliso Canyon emergency procurements for demand response and storage-enabled demand response. With the potential permanent closing of the Aliso Canyon gas storage facility, there may be greater need for local Shed DR to offset what would have been provided by gas generation plants that relied on Aliso Canyon's gas storage.

Combined with significant energy efficiency investments that modify the system load curve, the expectation is that there will be sufficient generation available during net load peak times to meet system-wide demand, and therefore no opportunity for accounting for value from avoided investment in new capacity, (i.e. the avoided cost of a CT generation plant). (1-8)

¹² Draft Report, pp. 1-9, 2-4.

However, there may well be many other unforeseen scenarios in which local capacity is constrained, thereby creating many opportunities for local Shed DR resources.

III. THE COMMISSION SHOULD FIRST ADDRESS THE THRESHOLD QUESTION OF WHETHER EXISTING MODELS CAN INTEGRATE AND ENABLE NEW AND ADVANCED DEMAND RESPONSE, OR WHETHER NEW DEMAND RESPONSE MODELS ARE IN FACT NEEDED.

Question 5: How can the results of the Report be used to begin the discussion of new models of demand response?

CESA's Response:

The Draft Report should be used as a preliminary goal for DR in California. In other words, CESA recommends that the Commission and stakeholders engage in a discussion of how to achieve the identified DR potential in California, given the projection estimates provided in the Draft Report. With the Draft Report having completed a cursory review of the barriers preventing various DR resources from realizing this potential, the next step in this proceeding should be to fully catalogue all the participation barriers and to create tracks or working groups in this proceeding to tackle each one of these barriers.

Question 6: Are Commission facilitated workshops the appropriate venue for designing new models of demand response? If not, what other venues should the Commission explore?

CESA's Response:

Yes, Commission-facilitated workshops would be helpful. CESA recommends workshops to explore streamlining interconnection requirements for supply-side DR resources and to discuss whether and/or how to accommodate exporting PDRs.

Question 7: What, if any, are the policy questions that the Commission must address before designing new models of demand response?

CESA's Response:

The first order policy question that must be addressed is whether existing DR models can accommodate the new and advanced DR services as identified in the Draft Report. Before considering entirely new DR models, CESA believes it is more prudent to identify the market and program participation barriers in today's existing DR models, as noted in the response to Question 6 above. If the barriers are not addressable, or if the barriers are too numerous, then the Commission may be better suited in considering new DR models.

IV. CONCLUSION.

CESA appreciates the opportunity to submit these comments on the Ruling and hopes that it will serve to help guide next steps in this proceeding. CESA believes that these advanced forms of DR are critical to California's future electricity grid needs and it is therefore vitally important to intelligently develop correspondingly advanced models to enable technologies capable of providing these advanced forms of DR. CESA looks forward to working with the Commission and stakeholders as this proceeding progresses.

Respectfully submitted,



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