

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

Order Instituting Rulemaking to Create a Consistent
Regulatory Framework for the Guidance, Planning,
and Evaluation of Integrated Demand-Side Resource
Programs.

R.14-10-003
October 2, 2014

**RESPONSE OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
TO ORDER INSTITUTING RULEMAKING**

Donald C. Liddell
DOUGLASS & LIDDELL
2928 2nd Avenue
San Diego, California 92103
Telephone: (619) 993-9096
Facsimile: (619) 296-4662
Email: liddell@energyattorney.com

Attorney for the
CALIFORNIA ENERGY STORAGE ALLIANCE

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The California Energy Storage Alliance (“CESA”)¹ hereby submits these comments pursuant to the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), and the *Joint Assigned Commissioner and Administrative Law Judge’s Ruling Requesting Responses to Questions*, filed on April 14, 2015 (“Ruling”).

I. INTRODUCTION.

CESA commends the Commission for initiating this overarching proceeding to understand, plan for and manage the role of demand-side resources in California. Integrating

¹ 1 Energy Systems Inc., Abengoa, Advanced Microgrid Solutions, AES Energy Storage, Aquion Energy, ARES North America, Brookfield, Chargepoint, Clean Energy Systems, CODA Energy, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, Duke Energy, Dynapower Company, LLC, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, ELSYS Inc., Energy Storage Systems, Inc., Enersys, EnerVault Corporation, Enphase ENERGY, EV Grid, Flextronics, GE Energy Storage, Green Charge Networks, Greensmith Energy, Gridtential Energy, Inc., Hitachi Chemical Co., Ice Energy, IMERGY Power Systems, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Invenergy LLC, K&L Gates, LG Chem Power, Inc., LightSail Energy, Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Manatt, Phelps & Phillips, LLP, Mitsubishi Corporation (Americas), Mobile Solar, NEC Energy Solutions, Inc., NextEra Energy Resources, NRG Solar LLC, OutBack Power Technologies, Panasonic, Parker Hannifin Corporation, Powertree Services Inc., Primus Power Corporation, Princeton Power Systems, Recurrent Energy, Renewable Energy Systems Americas Inc., Rosendin Electric, S&C Electric Company, Saft America Inc., Sharp Electronics Corporation, Skylar Capital Management, SolarCity, Sony Corporation of America, Sovereign Energy, STEM, SunEdison, SunPower, Toshiba International Corporation, Trimark Associates, Inc., Tri-Technic, Wellhead Electric.

these resources will provide an unmatched opportunity to leverage the investments of hundreds of thousands of households, businesses, third party developers, as well as an exponentially growing fleet of electric vehicles, to reduce greenhouse gas (“GHG”) emissions in California’s electric power system. Creating the right incentives and procurement mechanisms with a clear understanding of the costs and benefits of highly dispatchable resources such as energy storage will help unlock the value of Governor Brown’s energy goals for all ratepayers. CESA looks forward to participating in this proceeding.

II. RESPONSES TO QUESTIONS REGARDING DEFINITION AND GOAL

- 1. The workshop participants developed several definitions for the integration of demand-side resources or integrated demand-side management (see pages 4 through 5 above). These definitions have similarities and differences. Is there one definition that stands out as the most appropriate to be used or do you suggest a different definition? Should the Commission define both the integration of demand-side resources and integrated demand-side management? If so, please comment on both terms.**

CESA Response: CESA supports several definitions on the list, however none of them capture the goals that are excellently outlined in the workshop document at pages 6 and 7:

To create a framework to support the accelerated contribution of distributed energy resources, [add: “including energy storage,”] to reduce greenhouse gas emissions.

- Sub-goal 1: To enable customer awareness, choice and ease of participation in distributed energy resources by giving them improved cost and value signals, and infrastructure.

- Sub-goal 2: To create a distribution system market that facilitates and accelerates third party provision of one-touch services and products, and that functions as the sole location for compensation for the diverse values of distributive energy resources.

This sub-goal raises a number of critical issues for energy storage developers. The current barriers that are preventing behind the meter projects from delivering distribution level services to the grid are:

- Telemetry and metering costs are prohibitive for smaller and aggregated behind-the-meter projects. There are several immediate roadblocks that need to be addressed in Proxy Demand Response (“PDR”), Reliability Demand Response Resources (“RDRR”), and Non-Generating Resources (“NGR”) to unlock these critical resources. One of the objectives of this sub-goal should be to find alternatives to arbitrary baseline calculation methods, inconsistent aggregation rules, and unjustified fees that are currently paralyzing these resources.
- Interconnection and generator study processes are costly, slow, and inefficient with multiple touch points and roadblocks for third party developers. The Integrated Demand Side Management (“IDSM”) and DRP proceedings provide the opportunity to reverse the interconnection process, from a one-way developer “poke in the dark” approach to a collaborative approach that highlights grid pain points. Creating a supervised space for utilities to share their needs and procure critical distribution support services should be one of the goals of this proceeding.

CESA also believes it is premature to include “sole location for compensation” and encourages the commission to remove it. Currently, the most viable method for compensation to DERs is in the wholesale market through the CAISO’s Proxy Demand Response Function, and the CAISO is actively working to expand the services that aggregated DERs can provide the wholesale market. Further, while CESA strongly supports the creation of a distribution system market that captures the complete range of value that DERs can offer the bulk transmission and local distribution systems, continued legal challenges of FERC Order 745 at the Federal level have resulted in ongoing uncertainty as to the ultimate framework that will enable provision of a full range of benefits from DERs. As a result, CESA encourages caution not to unnecessarily rule out alternate DER market participation mechanisms too early in the process.

- Sub-goal 3: To enable transmission and procurement planning processes to rely upon distribution system market and on distributive energy resources.

Energy storage can be a least cost solution to meet T&D needs, and the Commission should ensure that utilities fully evaluate non-wires alternatives when seeking to upgrade system infrastructure. During evaluation, utility planners should do more to consider third party-owned energy storage solutions, as well as other distributed energy solutions as potential alternatives to more traditional investments in utility-owned infrastructure. Utilities should also view market services from energy storage as an added source of ratepayer benefits when evaluating alternatives.

CESA also offers an alternative definition to the integration of demand-side resources: Create an outstanding user experience as well as clear valuation and procurement mechanisms that increase the use of utility, customer, and third-party owned demand side management programs and technologies, such as energy storage, to achieve California's state energy policy goals and build a cleaner, more efficient, cost-effective, and reliable electric power system.

2. Should the Commission adopt more than one definition for the integration of demand-side resources and why or why not?

CESA Response: The Commission should adopt one definition for the integration of demand-side resources.

3. The workshop participants developed several goals for the integration of demand-side resources (see pages 6 through 7 above). Should the Commission consider having one overarching goal or it should it have several goals? Why?

CESA Response: CESA's position is that there should be five main objectives to this overarching proceeding.

First, increase knowledge, engagement mechanisms, and participation rewards, for all electric customers and third party developers to encourage widespread use of distributed energy resources ("DERs") such as energy storage to reduce the costs and environmental impact of energy generation and distribution for all ratepayers.

Second, accelerate market transformation by creating clarity and removing market participation barriers for cost-effective DER such as energy storage:

- Work with system operators and load serving entities (“LSEs”) to create clear and detailed product characteristics (duration, location, ramp rate, load carrying capability, *etc.*) with associated long term revenue streams that encourage third party investments in products and services such as energy storage that meet existing and future system needs.
- Establish a variety of contracting mechanisms for demand side management programs to allow for business model neutrality, and a full array of tariffs, and other incentive mechanisms.
- Create procurement mechanisms that reduce the soft costs of demand side management technology such as energy storage. This should include removing minimum procurement amounts and encouraging a diversity of business models and contractual frameworks.
- Expand the dispatch windows and allow demand side management resources to provide year-round resources when they are cost-effective and compete with using fossil fuel alternatives.

Third, support policy transformation that integrates DERs such as energy storage in the planning, management and operation of the electric power system. The Commission and stakeholders should explore appropriate incentives and penalties for these resources to be dispatched in accordance with California’s energy policy goals. Failure to include IDSM in long-term planning would necessarily result in a significant amount of that value going unrecognized and essentially force ratepayers to procure duplicative resources.

Fourth, in close coordination with the interconnection (Rule 21) rulemaking (R.11-09-011), collaborate with system operators and LSEs to adapt interconnection processes to streamline interconnection processes for demand-side resources meeting the characteristics and

operational requirements such that DERs become “plug-and-play” on the grid, provided they meet local and system constraints identified in the interconnection process by the system operators and LSEs. For example, interconnection requests in the future could start with the ISO/LSE identifying operational constraints & characteristics that would be required for a basic interconnection with minimal upgrades. Interconnection customers could then design a system at that single interconnection point, inclusive of all types of DERs such as solar PV, energy storage, electric vehicles, etc., that would manage generation, load, and ancillary services provided to the grid based on the identified operational characteristics & constraints.

Finally, in close coordination with the distributed energy resources (“DER”) rulemaking proceeding, the goal of this proceeding should be to augment ongoing cost-effectiveness modeling, tools and help stakeholders understand and capture all of the costs and benefits of demand-side resources, building on the current efforts underway in other active Commission proceedings such as Demand Response (“DR”) rulemaking (R.13-09-011), the Energy Storage rulemaking (R.10-12-007), and the DER rulemaking (R.14-08-013). These benefits should include non-energy benefits and, rather than making these critical non-energy benefits optional inclusions for lack of clear methodology, the Commission should use this proceeding to develop a methodology for estimating the costs and benefits of these inputs and make them a mandatory element of the evaluation framework.

In an effort to quantify the system impacts of distributed energy storage, CESA recently modeled the electric power system with and without 412.5 MW of two-hour energy storage (the minimum duration requirement for Self Generation Incentive Program (“SGIP”) eligibility). The results and quantified system benefit impacts were impressive. A small amount of energy storage (representing a fraction of less than 1% of California’s generation fleet capacity) reduced

costly annual generation starts by 7% and reduced annual renewable curtailment by 6%. The unified cost-effectiveness methodologies that are developed in this proceeding and in related proceeding must include short term and long term true costs and benefits to serve by time and location, including timeframes as granular as minutes or seconds and locations as specific as neighborhoods or city blocks.

- 4. If the Commission selects one goal for the integration of demand- side resources, what should that goal be? Remember that a goal or goals should be broad, generic, long-term, and not strictly measurable or tangible.**

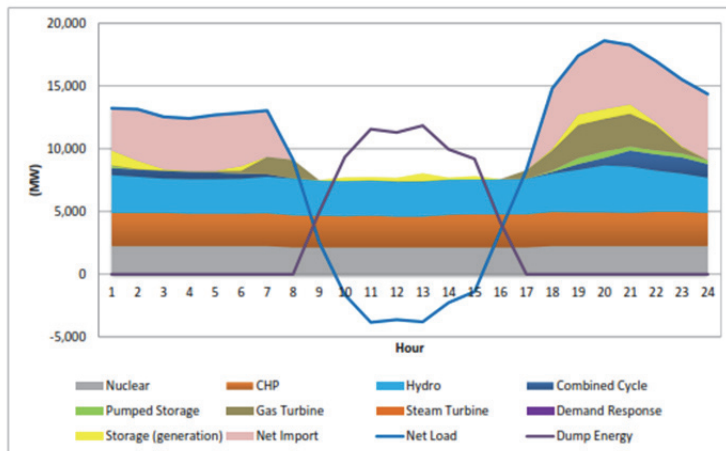
CESA Response: The goal of IDSM should be to create tools and rewards that maximize the use of existing and future demand side management assets, such as energy storage, to avoid or delay the need for new generation, transmission, and distribution infrastructure. Beyond supplying cost-effective, reliable, and viable resources to customers, the programs should help support state policy goals: provide low-cost electricity services; improve system efficiency and resource diversity; ensure reliability and resiliency; reduced greenhouse gas emissions; allow the integration of more renewable energy, and the promotion of Zero-Net Energy buildings.

- 5. If the commission determines that it needs several goals for the integration of demand-side resources, what should the structure of these goals entail? For example, should there be an overarching goal with sub-goals or should there be several goals based on categories? Please explain why.**

CESA Response: Given the broad scope of this proceeding, it would be preferable to create an overarching goal and sub goals for each category of stakeholders, as discussed above. These goals could be articulated around a percentage of peak load for California IOUs. Resource specific goals should be tied to clearly articulated grid needs. For example, creating a framework for ten percent of peak load to be met by highly dispatchable demand side management resources such as those currently being deployed by energy storage developers

throughout California would contribute substantially to some of the emerging overgeneration issues highlighted in the recent CAISO modeling efforts illustrated hereafter.²

Ramping process of March 24, 2024 – 40% RPS scenario no curtailment sensitivity case



* Net Load = Total Load – Renewable – DG PV Generation
 ** Total Load includes energy consumed by pumped storages to pump water and by batteries to charge

6. If the Commission determines it should have an overarching goal with sub-goals, what should these be and why?

CESA Response: The overarching goal and sub-goals are discussed above in response to Question Number 3.

7. If the Commission determines it should have several goals based on categories, what should the categories be and what should the goals be based on the category and why?

CESA Response: The sub-goals based on categories are discussed above in response to Question Number 5.

² CAISO Study of 2014 LTPP No Renewable Curtailment Sensitivity Cases presented on May 14, 2015.

III. QUESTIONS REGARDING THE BREADTH OF THIS PROCEEDING

- 1. Are the descriptions of each of the seven problems provided above on pages 8 and 9 accurate? What additions or clarifications are needed?**

CESA Response: CESA agrees with the prioritized problems. One additional issue that should be addressed in this proceeding relates to over generation and creating a framework for dispatchable resources to receive incentives for increasing load when system efficiencies justify it. Energy storage and electric vehicles will play a valuable role in addressing potential over generation – most specifically, by introducing the concept of shifting and adding load when it is most advantageous to the electric power system overall. One of the priorities that needs to be addressed in this proceeding is how to use dispatchable load such as energy storage to support California ratepayers’ investments. Achieving the Governor’s goal of 50% renewable generation without energy storage would result in very high marginal overgeneration rates.³

- 2. Following workshop discussions on the problems with current integration efforts, related questions and working toward solutions, the workshop participants reprioritized the identified problems. Do you agree with the final prioritization of problems and why? How would you prioritize the identified problems and why?**

CESA Response: CESA agrees with the prioritized problems.

- 3. Some of the definitions, goals, and objectives suggested by parties imply that the effective integration of demand-side resources requires demand-side resources to be better integrated with utility system planning, investment, and operation, as well as CAISO planning and operations. Is this correct? Do you agree? Should this broad challenge be addressed in this proceeding? Why and how?**

CESA Response: As IDSM resources such as energy storage enter the utility planning toolkit and move beyond their initial purpose of providing reliability in emergency events, demand and supply side resources will essentially become equivalent to grid operators and utility for system planning purposes. This proceeding provides an opportunity to explore how, under

³ See, *Investigating a Higher Renewables Portfolio Standard in California*, Energy and Environmental Economics, Inc., January 2014, p.124.

very specific conditions, a utility could earn a rate of return on their procurement of IDSM resources to replace their investment in sub-optimal fossil fuel alternatives. The current utility business model has very few financial incentives to procure these types of resources and put them to work.

- 4. If identified as an objective of this proceeding, how should system planning and benefits be considered in a way that does not duplicate what is being considered in the distribution resources plans (or long-term planning process) proceedings?**

CESA Response: The goal of the DER proceeding is to create a distribution grid that is “plug-and-play” for DERs and look at the long-term effects of DER adoption. The DER proceeding will enhance the tools available for IDSM and help guide customers to the most cost-effective configurations, applications and locations.

- 5. Should policies supporting the integration of demand-side resources maximize system benefit, including greenhouse gas reductions, maximize customer participation and benefits, or some combination of the two? In the integration of demand-side resources, how can we harmonize the needs and wants of customers with system needs, including greenhouse gas reductions? Should financial benefits and/or customer incentives for the integration of demand-side resources be uniform across the state and/or service territory or differentiated by locational value?**

CESA Response: The IDSM product characteristic developed in this proceeding will allow customer and system benefits to align and build a solid foundation to achieve the Governor’s goals. By promoting performance standards rather than programs, customers will have a natural incentive to participate.

- 6. Should the Commission shift from the current framework of encouraging the integration of demand-side resources through individual customer revenue streams from bill reductions and utility incentive payments to a different framework in which those benefit streams can be commoditized (bought and sold) to meet system needs (e.g., MW, MWh, flexible resource adequacy, greenhouse gas reductions)? Should the Commission create an open procurement or similar framework through which the integration of demand-side resources meets system needs? How can such a framework reflect customer needs, wants and benefits? How can such a framework encourage integrated customer actions?**

CESA Response: CESA encourages adoption of both models. Direct customer revenue streams and programs have played a critical role in growing participation in existing DR programs. CESA thus encourages utilities and DR aggregators to continue their work in that framework and capitalize on the progress achieved thus far. However, traditional customer revenue streams have traditionally fallen short in providing granular dispatch instructions that align with real time market and system needs. In the medium to long term, the most cost-effective solutions to distribution grid support should be market based and CESA urges the Commission to make progress in that direction. Ultimately, integrating distribution support information with existing California Independent System Operator (“CAISO”) market mechanisms could yield the highest value by allowing these resources to participate in distribution and system support functions while sourcing the most cost-effective solutions.

7. How can the long run benefits of distributed energy resource investments be monetized and captured in an environment where ownership and occupancy of residential and commercial buildings changes in a much shorter time frame than the life cycle benefits of those investments?

CESA Response: There are several options to capture the value of DER in residential and commercial buildings. The most critical issue that needs to be addressed is creating clear long-term revenue streams to encourage third party financing that will result in lowering the cost of these investments for all California ratepayers.

8. How can the various benefits of distributed energy resource investments that are considered in a complete cost-effectiveness evaluation be converted into financial benefits that flow to those who finance such investments (which may or may not include onsite customers receiving the energy service)?

CESA Response: Bill crediting to the host customer is a preferred method of compensation. However, complexities develop when value streams are unknown, constantly changing, detached from the host customer, or a mix of all three. CESA envisions three possible remedies:

1. Enable market certainty and multi-year visibility of compensation values for customers and developers. Then provide those values to the host in the form of a bill credit.
 - a. This would allow the financier/operator/aggregator to structure a contract in a way that takes into account the extra value streams from the demand side resource. The system owner can then adjust the payments of the host to reflect these values in a way that is tax efficient.
 2. Create tradable DER credits that represent the relevant value streams of the resource.
 - a. Once clear and specific product characteristics (duration, location, ramp rate, load carrying capability, *etc.*) are determined with associated long term revenue streams, the Commission can create a tradable credit for resources that produce those predefined benefits. In a manner similar to solar or wind resources that produce assignable renewable energy credits (“RECs”) to the financier, DER credits can flow from host to owner and then be retired for a monetary value. For example, if the Commission establishes a value for flexible ramping from a clean distributed resource it could set a price for each kW or kWh committed and verifiably used for that end. The financier/operator could then aggregate and sell those credits in an administratively efficient manner.
 3. Develop assignable incentives that encourage beneficial resource attributes.
 - a. The Commission can provide performance based incentives that flow through to the financier/operator based on verifiable resource operation. For instance, the Commission could set an incentive for certain grid services.
- 9. How can ratemaking better consider and reflect the value of the integration of demand-side resources? Are there any steps this proceeding could or should take on this issue? What level of priority should this issue be within this proceeding?**

CESA Response: For customer-sited technology, a new tariff/compensation structure that optimizes an energy storage system's benefits to the grid should be considered. The Commission should direct the utilities to develop bi-directional retail tariff options for DER. These designs should align pricing with local and bulk system conditions, such as dynamic DR-based pricing, or through bi-directional pricing that assists with static load shaping. The Commission should lead the country by putting in place an optional and complementary tariff for customer-sited energy storage. Moreover certain couplings could be encouraged, solar plus storage as a prime example.

The unique feature of energy storage is that it can be used for a variety of services and respond on a broad range of time intervals. In other words, if there is a clear price signal for a services or a number of services, some form of energy storage will be able to satisfy it. This proceeding should establish what beneficial services DER resources should provide, establish values for those services or at least placeholder values, and finally create straightforward compensation structures.

10. Is it important that any framework that emerges from this proceeding encourages third parties or utilities to deliver, and customers to take, integrated packages of technologies, at the same or within a limited time frame? How important is this (i.e., integrated demand-side management or actions) as compared to the integration of demand-side resources into system planning, etc., as discussed above? Should this proceeding take up both issues? Why or why not?

CESA Response: CESA recommends that the Commission balance market transformation objectives and the long-term integration of DER into system planning. Near term opportunities need to exist for technology and business models to mature. Also, near term pathways serve as a needed learning platform to identify challenges, opportunities, and verify costs and benefits. Ultimately DERs need to be fully considered in formal system planning because taken together DER can have important system wide impacts. For example, the

aggregation of energy storage resources can defer certain T&D upgrades. Similarly, sending ramping and capacity price signals can also defer investment in generation capacity. Allowing DER technology and markets to scale up will provide the Commission the data needed to evaluate the cost-effectiveness of the resources. Then formally integrating those DER technologies in a holistic resource planning context would help place all resources on a level playing field.

IV. CONCLUSION.

CESA appreciates this opportunity to comment on the Ruling, and looks forward to working with the Commission and stakeholders in this proceeding.

Respectfully submitted,



Donald C. Liddell
DOUGLASS & LIDDELL
Email: liddell@energyattorney.com

Attorney for the
CALIFORNIA ENERGY STORAGE ALLIANCE

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