

**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**

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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 *Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Demand-Side Resource Programs*, filed on October 2, 2014 (“OIR”).

¹ 1 Energy Systems Inc., Advanced Microgrid Solutions, AES Energy Storage, Alton Energy, American Vanadium, Amperex Technology Limited, Aquion Energy, ARES North America, Beacon Power, LLC, Bosch, Bright Energy Storage Technologies, Brookfield, CALMAC, Chargepoint, Clean Energy Systems, Coda Energy, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, DN Tanks, Duke Energy, Eagle Crest Energy Company, EaglePicher Technologies, LLC, East Penn Manufacturing Company, Ecoult, EDF Renewable Energy, Energy Storage Systems, Inc., Enersys, EnerVault Corporation, EV Grid, FAFCO Thermal Storage Systems, FIAMM Energy Storage Solutions, Flextronics, Foresight Renewable Solutions, GE Energy Storage, Green Charge Networks, Greensmith Energy, Gridscape Solutions, Gridtential Energy, Inc., Halotechnics, Hitachi Chemical Co., Hydrogenics, Ice Energy, Imergy Power Systems, ImMODO Energy Services Corporation, Innovation Core SEI, Inc (A Sumitomo Electric Company), Invenergy LLC, K&L Gates, KYOCERA Solar, Inc., LG Chem, LightSail Energy, LS Power Development, LLC, Mitsubishi International Corporation, NEC Energy Solutions, Inc., NextEra Energy Resources, NRG Solar LLC, OCI, OutBack Power Technologies, Panasonic, Parker Hannifin Corporation, PDE Total Energy Solutions, Powertree Services Inc., Primus Power Corporation, Recurrent Energy, Renewable Energy Systems Americas Inc, Rosendin Electric, S&C Electric Company, Saft America Inc., Samsung, SEEO, Sharp Electronics Corporation, SolarCity, Sony Corporation of America, Sovereign Energy, STEM, Stoel Rives LLP, SunEdison, SunPower, TAS Energy, Toshiba International Corporation, Trimark Associates, Inc., Tri-Technic, UniEnergy Technologies, LLC, Wellhead Electric. The views expressed in this response are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. See, <http://storagealliance.org>.

I. INTRODUCTION.

CESA sees this rulemaking proceeding as an opportunity to both clarify and improve upon existing demand-side management programs, and provide a platform on which to develop new programs, new cost-effectiveness tools, and ultimately better programs that encourage customer participation. Beyond supplying cost-effective, reliable, and viable resources to electrical corporations, 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; and the promotion of Zero-Net Energy buildings.

Demand management resources are in a transitional period. The Commission has recognized that there have been inconsistencies and competing goals in existing demand-side management programs that have hindered their development in California.² As these resources enter the utility planning toolkit and move beyond their initial purpose of providing reliability in emergency events, CESA believes that demand and supply side resources will essentially become equivalent to grid operators when and where the electric power system is in need. CESA looks forward to providing insights on how to resolve the current inequalities in treatment and valuation of these resources.

There are numerous barriers to healthy energy storage participation in demand-side management programs as illustrated in the following comments. First and foremost, the Commission needs to help stakeholders understand and capture all of the costs and the benefits of demand-side resources, building on the current efforts underway in Demand Response (“DR”) rulemaking proceeding (R.13-09-011), the Energy Storage rulemaking proceeding (R.10-12-007), and the Distributed Energy Resources (“DER”) rulemaking proceeding (R.14-08-013).

² *Order Instituting Rulemaking 14-10-003*, p. 3.

Establishing a comprehensive methodology for evaluating system benefits and non-monetized benefits at different locations and times of the day is a necessary effort that will result in higher participation. Fully dispatchable resources such as energy storage can play a critical role in increasing the value of other demand-side resources in congested distribution areas.

II. DEMAND SIDE RESOURCES SUCH AS ENERGY STORAGE CAN RELIABLY ACHIEVE DEMAND REDUCTION, LOAD SHAPING, AND PROVIDE DISTRIBUTION SUPPORT SERVICES

Demand-side resources such as customer sited energy storage systems can provide a variety of services from a variety of utility customers. Energy storage systems can be aggregated or standalone. The table below shows different combinations of services and customer types that are possible.

	Potential Storage Services							
	Bill Management - demand management	Bill Management – Energy Shifting	Demand Side DR	Supply Side DR	CAISO Market Participation	PLS – Electric	PLS - Thermal	Reliability
Service Type								
Service allows export?	No	Possible	No	Possible	Possible	No	No	No
Requires CAISO metering?	No	No	No	TBD	Yes	No	No	No
Customer Types								
C&I, Single Location	YES	YES	YES	YES	YES	YES	YES	YES
C&I, Aggregated	YES	YES	YES	YES	YES	YES	YES	YES
Residential, Single Location	YES	YES	YES	YES				YES
Residential, Aggregated	YES	YES	YES	YES	YES			YES
C&I Virtual Net Metering	YES	YES	YES	YES	YES	YES	YES	YES
Multi-Family Residential	YES	YES	YES	YES	YES			YES

In the California Independent System Operator's ("CAISO's") Energy Storage Roadmap effort CESA has prioritized barriers that are preventing contracts from being signed, or behind the meter projects from being built. These barriers are marked as "High" priority. This approach prioritizes those applications that are being developed today (see Appendix 1).

III. UNIFIED COST EFFECTIVENESS CALCULATIONS MUST INCORPORATE ALL COSTS AND BENEFITS OF DEMAND SIDE RESOURCES, INCLUDING NON MONETIZED BENEFITS.

The template for evaluating cost effectiveness of integrated demand side management ("IDSM") resources should be transparent and incorporate current and planned evaluation tools. Energy storage systems of all sizes can provide location specific value to the distribution system. In evaluating IDSM programs, CESA encourages the Commission to not presuppose the necessity of legacy operational characteristics such as the 24-hour DR dispatch window. CESA encourages the Commission to continue with the excellent work undertaken in the DR Rulemaking on cost-effectiveness³:

"The template will promote the transparency of the DR evaluation process and allow for more efficient review of proposed DR programs by the Commission and stakeholders. The templates will be preloaded with the following information:

1. Avoided Generation Capacity Costs
2. Avoided Energy Costs
3. Avoided Transmission and Distribution Costs for PG&E, SDG&E, and SCE
4. Avoided Environmental Costs for Greenhouse Gases (GHG)
5. Line Losses for PG&E, SDG&E, and SCE
6. Weighted Average Cost of Capital (WACC) for PG&E, SDG&E, and SCE

³ 2014 Revised Demand Response Cost Effectiveness Protocols, filed June 23, 2014.

The LSE will specify the following quantitative information relevant to the evaluation of each program, following the procedures outlined in these protocols:

1. Load Impacts, in MW
2. Energy Savings, based on expected call hours of the program
3. Administrative Costs
4. Participant Costs (for only those programs which are not using a percentage of incentives as a proxy measurement)
5. Capital Costs and Amortization Period, both to the LSE and to the Participant (should be specified for each investment)
6. Revenues from participation in CAISO Markets (such as ancillary services or proxy demand resource):
 - CAISO Markets Entered,
 - Average megawatts (MWs) and hours bid into those
 - Average market price received
7. Bill reductions and increases
8. Incentives paid
9. Increased supply costs
10. Revenue gain/loss from changes in sales (usually assumed to be the same as bill reductions and increases)
11. Adjustment Factors
 - Availability (A Factor)
 - Notification Time (B Factor)
 - Trigger (C Factor)
 - Distribution (D Factor)
 - Energy Price (E Factor)
 - Flexibility (F Factor)
 - Geographical/local avoided generation capacity (G Factor)”

CESA urges the Commission to allow *all* demand-side management resources to compete by establishing a set of operational characteristics for demand-side resources facilitated by energy storage to address clearly identified needs in this proceeding, including:

1. Establishing a value matrix for slow, fast, short, and long duration resources to provide clarity for the marketplace.
2. Not imposing multi-hour window participation requirements to enable multiple uses including customer bill management (*e.g.*, peak shaving), CESA would prefer DR windows to be as small and as specific as possible.

3. Rewarding “high-value” dispatchable resources such as energy storage appropriately.
4. Clarifying notification rules for market participants.
5. Including location value.

IV. THIS PROCEEDING SHOULD RESULT IN THE CREATION OF A CLEAR METHODOLOGY FOR EVALUATING AND INCORPORATING THE SYSTEM BENEFITS OF DEMAND-SIDE RESOURCES

CESA encourages the Commission to continue with the excellent work undertaken in the DR Rulemaking cost-effectiveness to include⁴:

“The LSE may also add the following optional inputs:

1. Social non-energy benefits, such as environmental benefits (in addition to the avoided greenhouse gas (“GHG”) cost included in the avoided cost calculator), job creation benefits, and health benefits.
2. Utility non-energy benefits, such as fewer customer calls and improved customer relations.
3. Participant non-energy benefits, such as improved ability to manage energy use and “feeling green.
4. Market benefits, such as market power mitigation and market transformation benefits.” (p. 36).”

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 evaluative framework. A recent AEE report highlighted several valuation options that could include using⁵: “1. Proxies; 2. Alternative benchmarks; 3. Regulatory judgment, and; 4. Multi-attribute decision analysis.”

⁴ 2014 Revised Demand Response Cost Effectiveness Protocols, filed June 23, 2014.

⁵ Benefit-Cost Analysis for Distributed Energy Resources, p. 36. [LINK](#).

V. **INTEGRATED DEMAND-SIDE MANAGEMENT GOALS CAN SERVE AN IMPORTANT ROLE IN DRIVING POLICY AND BENCHMARKING SUCCESS**

Although the details of any goals and how they are set would need to be developed through a robust and coordinated process, as a general matter, CESA believes goals are an important element insofar as they provide a basis to assess the success of policies in achieving intended aims. This can be critically important in efforts to develop and reform policies and also ensure that stakeholders and policymakers are more accountable for seeing programs succeed. For these reasons, CESA supports establishing meaningful IDSM goals and looks forward to working with the Commission on their development.

VI. **INTEGRATED DEMAND-SIDE MANAGEMENT RESOURCES SHOULD BE INCLUDED IN LONG TERM PLANNING.**

CESA fully supports the language in the OIR suggesting that IDSM resources should be factored into long-term planning. As evidenced by the efforts underway in R.14-08-013, there is increasing recognition of the significant potential of demand side resources to serve as an alternative to more conventional supply side investments. Ensuring ratepayers capture the full value of IDSM resources depends not insignificantly on ensuring that the full avoided costs embodied by these resources are realized. 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.

VII. **INTEGRATED DEMAND-SIDE MANAGEMENT RESOURCES SHOULD CAPTURE HIGHER VALUE IN DISTRIBUTION CONSTRAINED AREAS.**

Unified demand-side management cost-effectiveness methods must incorporate distribution resource plans (“DRP”s). While CESA recognizes the complexity involved in developing transparent and robust DRPs, a properly implemented DRP process, as envisioned

by AB 327, will enable distributed energy resource (“DER”) providers, including providers of energy storage, to offer need-based products to optimize distribution grid reliability, safety, resiliency, and cost-effectiveness while simultaneously maximizing progress toward achieving California’s energy and climate goals. At a minimum, the DRP criteria should include stakeholder access to transparent price signals for grid benefits and “non-wires” alternatives to distribution upgrades that incorporate each distribution system’s short term and long term true costs to serve in a temporal and locational framework.

Unified cost-effectiveness methodologies must include short term and long term true costs to serve by time and location, including timeframes as granular as minutes or seconds and locations as particular as neighborhoods or city blocks. These cost and price signals must be implemented in parallel with a market that allows for business model neutrality, and a full array of tariffs, contracts, and other incentive mechanisms.

VIII. CREATING INCENTIVES FOR MARKET PARTICIPATION AND CLEAR PROCUREMENT MECHANISMS WILL ACCELERATE DEPLOYMENT OF ENERGY STORAGE TO FACILITATE INTEGRATED DEMAND SIDE MANAGEMENT.

A. Need for Multi-Year Contracts.

This rulemaking proceeding was opened to encourage the use of IDSM resources to address resource planning needs and operational requirements as well as address the need for flexible capacity in California’s electric power system. Creating cost-effective products and services to address these urgent needs requires the ability to finance their deployment. As highlighted in the Commission’s Resource Adequacy (“RA”) rulemaking proceeding, R.11-10-023,⁶ extended time frames provide greater market certainty and will incent developers of all

⁶ *Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local Procurement Obligations*, filed October 20, 2011.

forms of IDSM resources, including energy storage, to pursue these market opportunities. CESA advocates at the Commission and elsewhere for establishment of multi-year contracting mechanisms for demand side management programs to incent many business models and various financing options. Minimum contract terms of at least five years would be ideal for energy storage resources deployed to facilitate demand side management.

B. Promote Many Procurement Mechanisms.

Behind the meter, aggregated, stand-alone, and existing energy storage-enabled resources vary in operational characteristics and may each require their own set of procurement mechanisms. Multi-year auctions, bilateral contracting, and traditional procurement processes should all be part of the toolkit available to ensure that cost-effective resources meet market opportunities.

Preferred resources such as DR will greatly benefit from flexibility in contracting options, including removing minimum procurement amounts such as those described in the recent report entitled “Challenges and Barriers Report,” published by the CAISO on January 24, 2014. CESA shares specific concerns expressed by Olivine, Inc.,⁷ for example, and urges the Commission to work with stakeholders to reform existing 100 kW proxy demand resource (“PDR”) minimum requirements. CESA thus supports a decision that would bring the minimum requirement to five kW (or as low as possible) to allow many behind the meter resources, including those facilitated by energy storage, to compete in the market.

⁷ *Response of Olivine to Ruling Providing Guidance For Submitting Demand Response Program Proposals*, filed March 3, 2014, p. 5.

C. Allow Integrated Demand Side Resources to capture Resource Adequacy Value.

Encouraging wholesale market participation in the PDR program and pursuant to Rule 24⁸ should not preclude participation in retail markets. However, while participating in such markets, IDSM resources need to be able to capture full RA value, including flexible capacity. In this regard, CESA encourages the Commission to coordinate this proceeding closely with policy development presently underway in R.11-10-023.

D. Expand the Dispatch Windows to Allow Demand Side Management Resources to Provide Year-round Resources.

The Commission's Proposed Long Term Procurement Planning Track 4 Decision⁹ clearly demonstrates the Commission's determination that demand reduction and load shaping will be a key part of California's future electric power system and will not only be needed during the summer peak, but throughout the year to help balance economic and emergency events. CESA strongly supports development of a variety of refined and new year-round demand-side management products; both supply resources and load modifying resources.

IX. THE COMMISSION SHOULD AUTHORIZE NEW DEMAND SIDE MANAGEMENT PILOT PROJECTS TO EVALUATE CHARGE AND DISCHARGE CAPABILITIES AS WELL AS NEW CONTRACTING MECHANISMS.

CESA supports the creation of the following IDSM pilot projects to evaluate new services and business models:

1. Test energy storage market participation for highly dispatchable DR resources in the following CAISO markets: day ahead energy, real times energy, spin / non-spin reserve, regulation up/regulation down.

⁸ See, Resolution E-4630 approving a new Electric Rule 24.1 titled "Direct Participation Demand Response," and related documents, in compliance with Ordering Paragraph 35 of Decision (D.) 12-11-025, issued February 5, 2014.

⁹ Decision Authorizing Long-Term Procurement for Local Capacity Requirements Due to Permanent retirement of the San Onofre Nuclear Generating Stations, D.14-03-004 issued March 14, 2014.

2. Test market participation with charge and discharge capable energy Storage systems, capable of absorbing “excess supply” in different scenarios.
3. Test electric vehicle participation in DR, both demand-side as well as supply side Programs.

X. THE COMMISSION MUST RATIONALIZE CHARGING TARIFS TO INCENTIVIZE BEHIND THE METER CUSTOMERS TO PARTICIPATE

The specific details of wholesale versus retail charging rates needs to be clarified. The following table illustrates CESA’s recommendation for wholesale versus retail rate treatment.

Interconnection Type		Storage Input Energy Function	Wholesale vs. Retail	Comments
Transmission Connected	1	Storage charging during REM	Wholesale	Includes Round Trip Efficiency Losses
	2	Storage charging for Non-REM wholesale market functions	Wholesale	Includes Round Trip Efficiency Losses
	3	Storage charging for Transmission Support activities	Wholesale	Includes Round Trip Efficiency Losses
	4	Pre-chilling of a thermal resource that directly offsets chilling at a later time	Wholesale	
Distribution Connected	1	Storage charging for REM	Wholesale	Includes Round Trip Efficiency Losses
	2	Storage charging for Non-REM wholesale market functions	Wholesale	Includes Round Trip Efficiency Losses
	3	Storage charging for Distribution Support activities	Wholesale	Includes Round Trip Efficiency Losses
	3	Round Trip Efficiency Losses	Wholesale	
	4	Pre-chilling of a thermal resource that directly offsets chilling at a later time	Wholesale	

Behind the meter - Non NEM Tariff	1	Storage charging during REM	Wholesale*	See note (below)
	2	Storage charging for Non-REM wholesale market functions	Wholesale*	See note (below)
	3	Storage charging to offset customer load	Retail	
	4	Storage charging to provide Demand Side DR	Retail	
	5	Storage charging to provide Supply Side DR	TBD	
	6	Ancillary battery heating/cooling	Retail	
	7	Pre-chilling of a thermal resource that directly offsets chilling at a later time	Retail	
Behind the Meter - NEM Tariff	1	Storage charging during REM	Wholesale*	See note (below)
	2	Storage charging for Non-REM wholesale market functions	Wholesale*	See note (below)
	3	Storage charging to offset customer load	Retail	
	4	Storage charging to provide Demand Side DR	Retail	
	5	Storage charging to provide Supply Side DR	TBD	
	6	Ancillary battery heating/cooling	Retail	
	7	Pre-chilling of a thermal resource that directly offsets chilling at a later time	Retail	

XI. CONCLUSION.

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

Respectfully submitted,



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APPENDIX A:

**BEHIND THE METER BARRIERS DIFFERENTIATED BY
ENERGY STORAGE SERVICE**

Applicable Storage Service	Barrier	Current Proceeding (if any)	Proposed Solution	Priority
Charging Tariffs	Energy storage charging for wholesale market functions should be priced at wholesale rates. Rule 21 and PTO load interconnection tariffs should be revised to clearly define what functions of an energy storage resource constitute “load” vs. what is not considered end use load.	None	Charging with the intent of storing power for resale should be excluded from the definition of load because it is not an end use of power. This is a critical issue for energy storage due to the conflicting study processes and network upgrade cost allocation methodologies applicable to generation and load interconnection tariffs. See Appendix B to these Comments for a proposed solution.	High
CAISO market participation	CAISO metering costs are prohibitive for smaller projects/aggregations.	None	Secure IP should be implemented at the CAISO to enable reduced metering.	Medium
CAISO market participation	CAISO telemetry costs are prohibitive for smaller projects/aggregations.	None	Secure IP should be implemented to enable reduced telemetry.	Medium
CAISO market participation	Telemetry requirements for behind-the-meter frequency regulation are not determined.	None		Medium
CAISO market participation	CAISO single generator study process and cost is prohibitive for smaller projects/aggregations.	None	Future utility procurement should allow distributed aggregated resources to qualify as deliverable	High

	<ul style="list-style-type: none"> ▪ The \$50K per site deposit is cost prohibitive for smaller/aggregated systems. ▪ Single cluster study cycle per year creates significant delays and uncertainty for smaller projects. ▪ Current study process requires that the exact physical site of a facility be known to be part of a cluster, which creates challenges for distributed aggregated systems. This is a “chicken and egg” problem, where the resources cannot be sold or offered into a utility RFO without verifying that they will be deliverable, but they cannot be verified as deliverable until the exact customers and sites can be identified. Distributed solar developers would be willing to place a deposit on a study in a given area to allow them to develop the resource in that area, but the study process does not 		<p>through the Deliverability for Distributed Generation Process.</p> <p>The CAISO Cluster Study processes could be updated to allow a bundle of aggregated resources to apply for an interconnection study.</p> <p>Rules for deliverability of resources with certain capabilities within regions should be developed.</p>	
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	<p>currently allow this.</p> <ul style="list-style-type: none"> ▪ Proxy Demand Resources may not be subject to the same deliverability study requirements, confining storage to a PDR-only model would strand significant potential value to the extent the capacity of the system particularly in the residential context, exceeds the onsite needs in any given time interval. 			
CAISO market participation	Minimum size requirements within sub-laps for aggregated systems are too high to participate in the DR market.	None	Reducing minimum size requirements for aggregated systems within sub-laps.	High
CAISO market participation	Double billing issues should be resolved.	None	subtractive metering arrangements for wholesale/retail behind the meter systems should be addressed	High
Interconnection	Combined WDAT/Rule 21 interconnections with wholesale and retail functions are not addressed	CAISO/CPUC	Rule 21 should address systems providing both wholesale and retail functions at different times.	High
Behind the meter CAISO market participation	Settlement processes for mixed-use assets are unclear.	CAISO, Utilities	Settlement processes for mixed use assets should be clarified	Medium
Demand Response	In some cases, limiting PDR portfolios to a single LSE creates barriers to participation	CAISO	Consider reducing PDR minimum size. Alternatively, consider enabling PDR	Medium

	that are administrative in nature and not related to technical capability.		portfolios to serve multiple LSEs.	
Demand Response	DR programs for residential customers are very limited	CPUC DR	Enable new DR programs, including Supply Side DR	Medium
Demand Response	interactivity for DR has low value	CPUC DR	Enable new DR programs, including Supply Side DR	Low
Interconnection	Utilities assess costs associated with interconnecting storage and solar, which involves simply summing the inverter capacities of the solar and the storage system to assess the distribution capacity that is required to accommodate a project		Where there is a single point of interconnection for storage and generation, that point should be used to assess maximum output capacity of the paired system, rather than separately counting individual generator and storage capacities.	Low
Interconnection	Implementation of D.14-05-033 is problematic.	CPUC Interconnection	The CPUC should revise Rule 21 should be revised to make any necessary changes required to conform to the direction provided in D.14-05-033 to interconnection of energy storage paired with generation that is NEM-eligible, as well as generation paired with energy storage that does not operate under Schedule NEM.	
Interconnection	Non-Exporting Interconnection Agreements are not addressed.	CPUC Interconnection	Rule 21 should be revised to exempt behind-the-meter energy storage resources that either only operate when the grid is down or will never export energy to	

			the grid from signing interconnection agreements.	
Interconnection	Rule 21/WDAT Transitions should be streamlined.	CPUC Interconnection	The CPUC should address streamlining the interface between Rule 21 and WDAT queue management processes.	
Interconnection	Non-Exporting Interconnection Fees are too high.	CPUC Interconnection	The \$800 interconnection application fee for non-exporting energy storage should be cost-based at a considerably lower level and capped. See Appendix A to these Comments regarding recommended interconnection procedures by system type.	
Interconnection	Supply/Demand Side DR program rules are not finalized for energy storage.	CPUC DR	Continue addressing energy storage in Supply Side DR	
Interconnection	Lack of open standards relating to information models and communications protocols limits customer choice in purchasing energy storage systems and integrating them into their operations and increases non-recurring engineering costs	CPUC Interconnection		
Interconnection	Rule 21, Screen I, Options 3 & 4 and Screen J	CPUC Interconnection	These screens should be revised to allow for larger systems without non-export relays in view of non-export relay costs and the fact	

			that operation under Schedule NEM eliminates any economic incentive to export energy.	
Interconnection	Rule 21, Screen B	CPUC Interconnection	This screen should be revised to make UL 1741 listing clearly sufficient to meet all requirements, and that UL 1741 listing of individual generators is sufficient, and It should also be clarified that a bank of generators does not need to be UL Listed as such whether or not a group is separately packaged or further enclosed within an additional chassis.	
Interconnection	Rule 21, Screen I	CPUC Interconnection	<p>This screen non--- export path Option 3 should be revised to Increase the rating threshold to 50% rather than the current 25% of the service equipment.</p> <p>In the case of a 100 amp rated service equipment, a 25% limit would be 25 amps, which is equivalent to 6,000 watts at 240 VAC (25A x 240V = 6,000W). In cases where the customer is planning to use a battery inverter to supply the entire house load at times, a 6,000 W inverter may be too small.</p>	
Interconnection	Rule 21, Screen M	CPUC	The 15% peak load	

		Interconnection	limit of his screen should be modified for integrated storage/renewable energy projects with shaped dispatch.	
Interconnection	Interconnection processes are not harmonized between utilities.	CPUC Interconnection	Create clear processes that are consistent between utilities	High
Interconnection	Utility personnel are not aware of interconnection processes.	CPUC Interconnection	Conduct utility interconnection personnel training.	High