BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans	R.13-12-010 (Filed December 19, 2013)

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON PRELIMINARY SCOPING MEMO

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February 3, 2014

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Pursuant Rule 14.3 of the California Public Utilities Commission's ("Commission's") Rules of Practice and Procedure, and the *Order Instituting Rulemaking*, filed December 19, 2013 ("OIR"); the California Energy Storage Alliance ("CESA")[1] hereby submits these comments on the OIR.

I. INTRODUCTION.

This new rulemaking is a critical turning point for California, given the new forces that are shaping supply (integration of 33% renewable energy, OTC retirement and the permanent closure of SONGS) and demand (changing load shape due to electrification of transportation). CESA applauds the Commission's framing of the planning and procurement practices within the context of the Energy Action Plan, achieving AB 32 GHG goals, and AB 327. The tremendous

[1] The California Energy Storage Alliance consists of 1 Energy Systems, A123 Energy Solutions, AES Energy Storage, Alton Energy, American Vanadium, Aquion Energy, AU Optronics, Beacon Power, Bosch Energy Storage Solutions, Bright Energy Storage, BrightSource Energy, CALMAC, ChargePoint, Clean Energy Systems Inc., CODA Energy, Customized Energy Solutions, Deeya Energy, DN Tanks, Duke Energy, Eagle Crest Energy, EaglePicher, East Penn Manufacturing Co., Ecoult, Energy Cache, EnerSys, EnerVault, EVGrid, FAFCO Thermal Storage Systems, FIAMM Group, FIAMM Energy Storage Solutions, Flextronics, Foresight Renewable Systems, GE Energy Storage, Green Charge Networks, Greensmith Energy Management Systems, Gridtential Energy, Halotechnics, Hydrogenics, Ice Energy, ImMODO Energy Services, Innovation Core SEI, Invenergy, K&L Gates LLP, KYOCERA Solar, LightSail Energy, LG Chem Ltd., NextEra Energy Resources, NRG Energy, OCI Company Ltd., OutBack Power Technologies, Panasonic, Parker Hannifin, PDE Total Energy Solutions, Powertree Services, Primus Power, RedFlow Technologies, RES Americas, Rosendin Electric, S&C Electric Co., Saft America, Samsung SDI, SeaWave Battery Inc., Sharp Labs of America, Silent Power, SolarCity, Sovereign Energy Storage LLC, Stem, Stoel Rives LLP, Sumitomo Corporation of America, TAS Energy, Tri-Technic, UniEnergy Technologies, Xtreme Power, and Wellhead Electric Co. 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

challenges that California faces in the near, medium, and long term will require unprecedented collaboration both across proceedings within the CPUC and across state agencies, including those not traditionally deeply and directly involved with long-term procurement planning ("LTPP"), such as the California Air Resources Board ("CARB") and the California State Water Resources Control Board ("State Water Board"). California faces tremendous negative health consequences from air pollution and is now in the midst of one of its worst droughts in history.[2] All of these factors should be taken into account in the Commission's LTPP efforts going forward, especially given the obvious nexus between energy, water usage and air quality. In other words, this new OIR presents the opportunity for the Commission to lead California on a path to achieving the greenhouse gas "GHG") emission reduction goals envisioned in AB 32 and help ensure a higher quality of life for all ratepayers and citizens of California.

II. THE SCOPE OF THIS PROCEEDING SHOULD BE EXPANDED TO FOCUS ON SHORT, MEDIUM, AND LONG TERM CLIMATE GOALS, AND DIRECTLY CONSIDER THE IMPACT OF ELECTRIC GENERATION WATER USAGE.

Given the multi-dimensional challenges California currently faces, and the appropriately stated OIR goal to focus on public safety and health, CESA recommends that General Issue 1 for the 2014 procurement planning cycle be amended as follows:[3]

> Identify CPUC-jurisdictional needs for new resources to meet local or system resource adequacy (RA), operational flexibility, **integration and support of energy efficiency and renewables, short medium and long-term climate change objectives, water quality and/or conservation** or other requirements **or goals** and to consider authorization of IOU procurement to meet that need. This includes issues related to long-term renewable planning**, the evaluation and possible procurement of bulk energy storage resources larger than 50 MW to meet these goals,** and need for replacement generation infrastructure to eliminate reliance on power plants using OTC **and other considerations to ensure public safety and health**.

[2] In California, there are "~16,000 (4,800-29,600) premature deaths/year for PM2.5 plus O3," and "the total social cost due to air pollution mortality, morbidity, lost productivity, and visibility degradation in California is conservatively estimated to be $131 (39-296) billion/yr …" from *Evaluating the Technical and Economic Feasibility of Repowering California for all Purposes with Wind, Water, and Sunlight*, Jacobson *et. al*. (January 14, 2014), Pg. 24-25, available at http://www.stanford.edu/group/efmh/jacobson/Articles/I/CaliforniaWWS.pdf.

[3] OIR Section 3.1, Procurement Planning Proceeding Issues, page 7.

California Air Resources Board (CARB) GHG goals have historically been missing in state energy planning and procurement process, and are not being directly considered in any other procurement-related docket. GHG impacts are referenced in the OIR under Section 3.4, Procurement Oversight and Rules, as a broad policy issue related to procurement plans. See, item 6 "GHG Procurement Policy" as follows:

> **GHG Procurement Policy** –Consider any GHG product procurement policies to facilitate the implementation of California Air Resources Board's cap-and-trade program.

However, this directs parties to consider procurement that facilitates implantation of CARB's cap-and-trade program. Simply facilitating CARB's cap-and-trade program will likely not be sufficient to help ensure attainment of CARB's 2050 GHG goals given the dramatic impact the electric power sector has on air quality. CESA submitted the results of analysis performed by Alton Energy indicating that the 33% RPS and even a 40% RPS does not supply sufficient carbon free generation to meet CARB GHG emission reduction goals for 2024 and 2034 as interim check points on the path to 2050.[4] Further, it is important that this proceeding consider the impacts of 2040 and 2050, because any new gas-fired generation capacity entered into service today will operate for decades and may preclude procurement of cost-effective clean energy in the future.

Energy and Environmental Economics, Inc. ("E3") recently released a report ("E3 Report") which underscores the urgency of the situation near term.[5] The case modeled by the E3 Report identifies substantial over-generation of renewable resources once the State exceeds the 33% renewables portfolio standard ("RPS") targets, which it is well on the way to achieving when distributed rooftop solar is also considered. The over generation problem is summarized in the following chart from the E3 Report:[6]

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[4] *See*, *Post-Workshop Comments of the California Energy Storage Alliance*, filed January 8, 2014.

[5] *Investigating a Higher Renewables Portfolio Standard in California*, Energy and Environmental Economic, Inc. (January 2013) ("E3 Report"), available at http://www.ethree.com/documents/E3_Final_RPS_Report_2014_01_06_with_appendices.pdf.

[6] *See,* E3 Report, p. 14.

Overgeneration Statistics	33% RPS	40% RPS	50% RPS Large Solar
Total Overgeneration			
GWh/yr.	190	2,000	12,000
% of available RPS energy	0.2%	1.8%	8.9%
Overgeneration frequency			
Hours/yr.	140	750	2,000
Percent of hours	1.6%	8.6%	23%
Extreme Overgeneration Events			
99th Percentile (MW)	610	5,600	15,000
Maximum Observed (MW)	6,300	14,000	25,000

Energy storage, in all its forms, is an ideal resource to facilitate the growth of clean resources to achieve a significantly reduced GHG future including managing renewable integration.

Finally, another reason to specifically focus on RPS and CARB goals is the direct link to morbidity and health cost associated with poor air quality. According to Stanford University, 7% of California's gross domestic product ("GDP") is spent on managing the health impacts of poor air quality. Ozone, which is one of the primary pollutants from gas-fired power plants, is responsible for approximately 2,700 mortalities per year (range of 1,400-4,000/year), with an overall economic cost of $21.4 billion per year (range of $11.5-33 billion/year).[7]

According to the State Water Board, the calendar year 2013 closed as the driest year in recorded history for many areas of California, and on January 17, Governor Brown declared a drought state of emergency and directed state officials to "take all necessary actions in response."[8] However, many fossil fuel generation plants utilize vast quantities of water in the production of electricity – up to 3,057 gallons/minute, or 408 gal/MWh, for a wet-cooled 500-MW CCGT and up to 60-100 gallons per minute for a 50MW peaker. One peaker plant – the Orange Grove Peaker Project – requires water to be brought in by truck: "approximately one [6,500-gallon] truck per hour for fresh water and one truck per hour for reclaimed water during

[7] *Evaluating the Technical and Economic Feasibility of Repowering California for all Purposes with Wind, Water, and Sunlight*, Jacobson et. al. (January 14, 2014) available at http://www.stanford.edu/group/efmh/jacobson/Articles/I/CaliforniaWWS.pdf, pg. 24.

[8] http://www.water.ca.gov/waterconditions/

times when the plant is operational."[9] This water usage and its negative impact on ratepayers needs to be accounted for as part of the explicit costs of such resources, and considered in the Commission's LTPP processes accordingly.[10]

III. THE COMMISSION SHOULD CONSIDER NEW POLICIES AND RULES DESIGNED TO ENCOURAGE COMPETITIVE SOLICITATIONS AND MULTIPLE CONTRACTING MECHANISMS TO PROCURE ENERGY STORAGE RESOURCES.

As a GHG emissions-reducing and water-conserving alternative to new gas-fired peakers, CESA recommends that the Commission encourage all forms of energy storage procurement. In particular, (a) all-source requests for offers ("RFOs"), (b) storage-specific RFOs, and (c) bilateral contract negotiations may all be appropriate for procuring energy storage resources. The Commission should determine when and how each procurement method would be best used. For example, in the Commission's decision authorizing procurement of a minimum 50 MW of energy storage resources by Southern California Edison,[11] storage-specific RFOs are a default requirement, while bilateral contracts are also allowed "under specified circumstances," specifically "in solicitations where there is significant market power that would be detrimental to ratepayers" (p. 86), upon approved by the Commission. Each of these three procurement methods may be appropriate under various circumstances. For example, bilateral contracting may be more effective for very large scale procurement or for resources that have a very long development cycle, such as large scale pumped hydro projects. The Commission should simply clarify when and how each method should be used in a consistent and coordinated manner in all Commission-approved utility procurement plans.

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[9] http://www.energy.ca.gov/2009publications/CEC-800-2009-003/CEC-800-2009-003-CMF.PDF.

[10] Maulbetsch & DiFilippo *Cost and Value of Water Use at Combined-Cycle Power Plants*. Prepared for California Energy Commission, April 2006. http://www.energy.ca.gov/2006publications/CEC-500-2006-034/CEC-500-2006-034.PDF, Table 13, Pg. 36

[11] *Decision Authorizing Long-Term Procurement for Local Capacity Requirements*, D.13-02-015, issued February 13, 2013.

IV. THE COMMISSION SHOULD TAKE FULL ACCOUNT OF DEVELOPMENTS IN IMPLEMENTATION OF THE ENERGY STORAGE PROCUREMNT FRAMEWORK DECISION IN THIS PROCEEDING.

In D.13-10-040, the Commission established a clear framework for California's load serving entities to procure specified amounts of energy storage resources by 2020 (to be installed by 2024). Procurement efforts will begin with RFOs that independent developers and utilities may both bid into, with all projects fairly competing using essentially the same evaluation methodology. Each investor owned utility is expected to file an application on or before March 1, 2014, that will contain a proposal for the first procurement period and the first solicitation should occur in December 2014.

In D.13-10-040, the Commission stated that it "will allow storage projects authorized in other Commission proceedings [including LTPP] to count towards meeting the overall procurement targets if they meet the requirements listed above," which include installation timeline requirements and that "[t]he project demonstrates its ability to meet one or more of the following purposes: grid optimization, integration of renewable energy, or reduction of greenhouse gas emissions." (p. 32). The Commission should therefore establish a procurement framework in this proceeding that encourages deployment of energy storage resources that meet the requirements of D. 13-10-040, and clearly establish that all energy storage procurement, regardless of the method by which they are procured (*e.g*. within or outside of an RFO), will count toward compliance requirements.

Further, CESA recommends that this proceeding should build upon the procurement history and record established in LTPP Tracks 1 and 4 of R.12-03-014. The procurement methods and cost-effectiveness lessons learned will be invaluable for future energy storage procurement efforts. Of great concern to CESA is ensuring that (while each utility will likely employ its own cost-effectiveness modeling for energy storage) at a minimum, a common framework is used to ensure a complete valuation and determination of the costs, benefits and support of long term GHG, water usage and public health goals provided by energy storage projects. CESA specifically recommends that GHG emission impacts, related public health impacts and impacts to water usage should also be included as part of the energy storage cost-effectiveness evaluation process.

V. BULK STORAGE REQUIRES A SPECIFIC PROCUREMENT MECHANISM BECAUSE IT IS A NECESSARY, COST-EFFECTIVE MEANS TO ACHIEVE MEDIUM AND LONG TERM GREENHOUSE GAS EMISSION REDUCTION TARGETS.

Procurement of pumped hydro and other bulk energy storage options should be explicitly included in the Commission's LTPP process, and explicitly be allowed to participate in all-source RFOs. The best approach should allow an open and competitive process for pumped hydro and other bulk storage providers sized larger than 50 MW (including aggregated smaller resources that total more than 50 MW). These projects can: (a) materially impact the procurement procedure, (b) are narrowly defined, and (c) demonstrate consistency with the goals of this proceeding, thus meeting the "LTPP Scoping Standard." Although the Commission has not yet required any procurement of large pumped hydro energy storage projects, it has clearly recognized their value and has "strongly encourage[d] the utilities to explore opportunities to partner with developers to install large-scale pumped storage projects where they make sense within the other general procurement efforts underway in the context of the LTPP proceeding or elsewhere."[12] Further, it is very important to note that on January 16, 2014, the Commission hosted a technical workshop on pumped hydro storage at which cost-effectiveness findings from Argonne National Laboratory were presented. These findings indicated that all scenarios of advanced pumped hydro storage were found to be cost-effective with commensurate reductions in CO2 and NOx, and that the cost-effectiveness of these resources increased with increased penetration of renewable energy.[13]

CESA recommends that this proceeding clearly establish that bulk energy storage resources over 50MW should be allowed to participate in all-source RFOs alongside other distributed energy resources including distributed energy storage. CESA supports free market competition and under such an all-source solicitation, all resources can and should be treated in a fair, transparent, and nondiscriminatory way, resulting in the best fit, highest value options for ratepayers. Given that pumped hydro installations over 50 MW are ineligible to participate under D.13-10-040, and have been shown to be cost-effective particularly to aid renewable

[12] D.13-10-040, p.36.

[13] *See*, *CPUC Technical Workshop on Pumped Storage: Modeling and Analysis of Value of Advanced Pumped Storage Hydropower in the US*, January 16, 2014. Valdimir Koritarov.

integration, it would be reasonable for this proceeding to issue a competitive all-source procurement in which bulk energy storage projects sized over 50 MW could participate. .

VI. PROCUREMENT RULES SHOULD BE CLOSELY ALIGNED WITH NEW RESOURCE ADQUACY COUNTING RULES FOR ENERGY STORAGE

Current resource adequacy ("RA") accounting rules under-value the benefits and capabilities of energy storage. As such rules are determined for energy storage and energy storage coupled with generation resources, it is critical that this proceeding incorporate the value of these new accounting rules to more appropriately value the benefits of energy storage.

VII. STATEWIDE PROCUREMENT PLANNING ASSUMPTIONS, INCLUDING PLANNING HORIZON AND PROCUREMENT PROCESSES SHOULD BE CLARIFIED AND INTEGRATED.

It is presently unclear how the development of unified utility procurement planning assumptions will occur, and equally important, how they will be applied in the various active statewide planning processes at the Commission, the CAISO, and the CEC. There is significant "concern that the different state planning processes may arrive at different determinations for the same planning assumptions, which in turn will lead to inconsistent results."[14] The Independent Energy Producers Association raised these concerns, including the development of assumptions in separate proceedings and coordinating planning across agencies. CESA urges the Commission to clarify in the overall process for developing unified planning assumptions and scenarios and applying them uniformly, while complying with all applicable existing statutory requirements.

Further, a key impact of climate change is extreme weather – in particular, inconsistent rainfall which will cause extreme hydro conditions. Very wet to very dry conditions will make it difficult for California to control its grid and will increase the need for flexible resources to help mitigate these large seasonal hydro swings. CESA also recommends that this proceeding consider a longer planning time horizon – even beyond 2030 – to determine the amount of flexible resources that will be needed to ensure reliable control of the grid. In this regard, energy storage in all its forms will be tremendously valuable given its ability to provide both up and

[14] IEP letter to the Commission, January 23, 2014, p. 2.

downward flexible capacity/ramping as well as shifting of large quantities of energy from one time period to another.

Finally, it is certainly of critical importance that all benefits of energy storage should be accounted for in the development of evaluation criteria, including grid system, ratepayer, GHG emission reduction, public health and water conservation benefits.[15] CESA urges the Commission to work proactively with existing model developers (such as PLEXOS, EPRI and DNV KEMA), utilities, energy storage equipment manufacturers and other stakeholders to fully identify and account for all benefits of energy storage. Analysis used in RFOs' evaluation criteria must account for all of the costs (fixed, variable and indirect) and benefits of a particular project relative to other alternatives.

VIII. CONCLUSION.

CESA appreciates this opportunity to comment on the Scoping Memo, and looks forward to working with the Commission stakeholders throughout the entire proceeding.

Respectfully submitted,

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February 3, 2014

[15] *See*, e.g., *The Value of Energy Storage for Grid Applications, National Renewable Energy Laboratory*, May 2013 (http://www.nrel.gov/docs/fy13osti/58465.pdf).