BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement Targets for Viable and Cost-Effective Energy Storage Systems.	Rulemaking 10-12-007 (AYK) (Filed December 16, 2010)

COMMENTS OF SIERRA CLUB CALIFORNIA ON ADMINISTRATIVE LAW JUDGE'S JULY 21, 2011 RULING ENTERING DOCUMENTS INTO RECORD AND SEEKING COMMENTS.

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Sierra Club California ("Sierra Club") respectfully submits the following comments on the Administrative Law Judge's Ruling Entering Documents into Record and Seeking Comments, dated July 21, 2011.

The workshop and comment questions focus on the barriers to the widespread use of energy storage. Major impediments are the lack of procurement targets for energy storage and the lack of a methodology for valuing the costs and benefits of energy storage, both of which will be addressed in this proceeding. However, procurement targets will not be addressed until the end of the proceeding and the cost-benefit analysis and allocation will be addressed in the next phase of the proceeding, Phase 2.[1]

Sierra Club was heartened when the Public Utilities Commission ("Commission") opened this proceeding in December 2010 more than fourteen months before the statutory deadline of March 1, 2012.[2] Sierra Club had hoped that the Commission was signaling that it would aggressively address the implementation of AB 2514. For example, a final decision during 2012 on procurement targets could allow this proceeding's results to be incorporated into the next

[1] Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge (May 31, 2011) ("Scoping Memo"), pp. 3-6.
[2] Public Utilities Code section 2836(a)(1).

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Long-Term Procurement Proceeding facilitating better resource planning for integrating the 33% renewable energy portfolios required by 2020. Although the proceeding is currently ahead of the statutory schedule, Sierra Club is concerned about the proceeding's slow pace. For example, the first workshop in Phase 1 of the proceeding focused on only one of the eight topics raised in the Scoping Memo.[3]

Energy storage can and will play an important role in the California electric grid, and in achieving the state's environmental policy goals. The legislature found that the expansion of energy storage systems could assist load-serving entities in "integrating increased amounts of renewable energy resources into the electrical transmission and distribution grid in a manner that minimizes emissions of greenhouse gases," "optimize the use of the significant additional amounts of variable, intermittent, and off peak electrical generation from wind and solar energy," reduce "the need for new fossil fuel-powered peaking power plants," avoid or reduce peak load "from high carbon-emitting electrical generating facilities," and provide "ancillary services otherwise provided by fossil-fueled generating facilities" reducing the emissions of carbon dioxide and criteria pollutants.[4]

Yet, the current regulatory framework for energy policy in California does not recognize the benefits of energy storage. In fact, the legislature, when enacting AB 2514, specifically identified inadequate "regulatory support" as a barrier to obtaining the benefits of energy storage.[5] The successful completion of this proceeding--including the adoption of targets for load-serving entities to procure energy storage systems--will eliminate a major barrier to the deployment of energy storage in California.

[3] See Scoping Memo, pp. 3-4, No. 5.
[4] AB 2514, Stats. 2010, ch 469 Section 1(a-e).
[5] Id., section 1(f).

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1. Which barrier(s), either identified by the presenters or the CPUC, do you believe present the greatest impediment to more widespread usage of energy storage and development of ESS in California?

Within the framework of the workshop, Sierra Club agrees that the six issues presented by Commission staff could affect the widespread usage of energy storage and development of energy storage systems in California. These six issues are: 1) contract evaluation; 2) stand-by rates; 3) rate design; 4) avoided economic curtailment (intermittent renewables); 5) loading order connections (EE, DG, RPS, DR, etc.); and 6) resource adequacy and capacity values. Of those issues, rate design is the biggest and most immediate barrier, since storage will be built only if it is paid for. Without a mechanism for fitting energy storage into the existing regulatory and cost recovery structure, there will be regulatory barriers and inadequate methods for valuing and paying for energy storage.

a. The value of energy storage capacity is greater than the value of comparable natural gas or other traditional generation capacity.

Energy storage should be considered as a superior alternative to supporting the grid with natural gas plants because it can better achieve California's energy policy goals of integrating renewables into the grid. Achieving this goal of greater renewables integration reduces the need for natural gas power generation, thereby avoiding the greenhouse gas emissions of these plants and contributing to California meeting its AB 32 emissions limit. In addition, energy storage provides a wider range of services than natural gas plants. For example, energy storage as dispatchable load can absorb excess renewable generation at any time, and it can provide load following power supply in both peak and off-peak periods to balance intermittent renewables. The recently completed CAISO integration modeling in the current Long-Term Procurement Proceeding recognized this function of energy storage and relied on an energy storage

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placeholder to meet the load following violations that resulted from the modeling rather than recommending new fossil fuel infrastructure.[6] Energy storage systems possess attributes that can reduce the use and/or avoid the building of peaker power plants while simultaneously providing other essential services to the grid such as voltage regulation and the equivalent of spinning reserve. Reducing the use of peaker power plants also improves air quality and public health. Creating a rate design that gives the appropriate consideration to the value of energy storage's attributes and provides mechanisms to utilize them will provide long-term benefits to California's electric grid, energy supply and environment.[7]

Energy storage also provides greater benefits and value than traditional energy sources with respect to resource adequacy and capacity values. Staff's presentation expressed the concern that double counting of energy storage assets may occur, but double counting may be appropriate in certain circumstances when fully calculating the value of the variety of attributes of a specific energy storage system. For example, the deployment of always-available advanced energy storage systems could assist the functioning of the grid by providing for on-time delivery of variable renewable energy and balancing requirements. Also, the ability of storage to serve as a dispatchable demand load is an additional capacity value beyond its ability to dispatch electric power capacity. All of these features avoid potential use of other grid resources, especially generation capacity. If an energy storage system can provide resource adequacy and other separate attributes that serve the functioning of the electric grid, it may be appropriate to "double count" the stacked values of that system for the specific purpose of determining the economic

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[6] Track I Direct Testimony of Mark Rothleder on Behalf of the California Independent System Operator Corporation, Rulemaking 10-05-006 ("Rothleder Testimony"), p. 43 lns. 20-24 (**Q: "Do you anticipate any resource needs resulting from the observed shortfalls in downward load following capacity? A.** No, not necessarily for these particular scenarios. Based on the magnitude and frequency of the observed shortfalls, storage or curtailment opportunities should be considered in lieu of additional capacity.") (original emphasis).

[7] Addressing the issues of contract evaluation and stand-by rates are additional methods for providing value to the attributes of energy storage.

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value of storage. Counting the value of storage for economic and functional purposes may require a different type of assessment than is ordinarily used for resource adequacy, due to the unique characteristics of storage. These separate attributes should be assigned value in accordance with how they are used by the grid. Resource adequacy and capacity values should thus be addressed in a manner that is specifically appropriate to the multifunctional nature of storage systems when creating a rate design.

b. Energy storage reduces the risk of curtailment of renewable resources.

Avoided economic curtailment of intermittent renewables is another issue that the Commission should give priority in this proceeding.[8] With the passage of SBx 2, California now requires its electric utilities to increase their renewable generation portfolio to 33% by 2020. California has taken large strides in promoting an energy system based on renewable energy. It is incumbent on California to design an energy system and electric grid that maximizes the use of these resources. California should work to avoid the situation that occurred this year in the Columbia River basin where wind generators were forced to shut down because of excess hydropower due to increased water flow. Curtailing intermittent renewables wastes the ratepayers' investment in renewable energy, and it provides a disincentive to renewable energy developers to build projects. Additionally, economic curtailment of renewable energy resources may entail increased operation of fossil fuel generation, thereby replacing non-greenhouse gas emitting resources with generation that emits greenhouse gases and other pollutants. Devising policies that smooth and balance intermittent renewables with energy storage systems and promote the greenhouse gas reduction goals of the 33% RPS requirement should be priorities in this proceeding.

[8] See Rothleder Testimony, p. 43 lns. 20-24.

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c. The Commission should consider prioritizing energy storage in the loading order.

The question of where and if energy storage fits into the loading order is an issue that the Commission should evaluate in the proceeding. The multiple attributes of energy storage, including its ability to serve as a load and to reduce reliance upon the lowest resources on the loading order, require a careful analysis of how to best fit energy storage in the loading order. If placement in the loading order enhances the deployment of energy storage and reduces reliance upon fossil fuel, it should be included. However, the lack of inclusion in the loading order is not one of the primary regulatory barriers. Lack of procurement targets and a method to value energy storage are the major impediments to widespread deployment of energy storage systems.

d. Commission efforts on energy storage will be complementary to other regulatory efforts.

During the workshop, there was discussion of how decisions by both CAISO and FERC will also affect the deployment of energy storage. CAISO made a presentation on its current market design efforts.[9] In addition, in June 2011, FERC issued a Notice of Inquiry that seeks comment on two topics: "(1) existing restrictions on third-party provision of ancillary services, irrespective of the technologies used for such provision; and (2) the adequacy of current accounting and reporting requirements as they pertain to the oversight of jurisdictional entities using electric storage devices."[10] CAISO and FERC will play important roles in the deployment of energy storage systems. For example, CAISO Renewable Integration Modeling is expected to become much more informative as it develops consideration of integration resources other than the existing fleet of gas fired generation. However, their jurisdictions and roles in energy storage

[9] See Scoping Memo, Attachment B.
[10] Third-Party Provisions of Ancillary Services; Accounting and Financial Reporting of New Electric Storage Technologies, 76 Fed. Reg. 36400, 36401 (June 22, 2011).

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should not deter the Commission from addressing energy storage issues within its jurisdiction. Energy Division staff can play a role in ensuring that CAISO's and FERC's efforts enhance rather than detract from the Commission's rulemaking in this proceeding. In fact, the sooner the Commission makes decisions in the proceeding, the more influence it will have with CAISO because the Commission will be setting the State's regulatory policy for energy storage and creating the primary method for paying for that storage.

2. Are there other barriers that were not identified during the workshop? Please explain how these other barriers impede the usage or development of energy storage and whether they need to be resolved at the Commission or other forums. To what extent can the Commission assist in removing these barriers?

As discussed above, the greatest impediment to the deployment of energy storage that the Commission can address is the regulatory framework within its own jurisdiction, including the establishment of procurement targets, the creation of a valuation methodology for the costs and benefits of storage, and implementing actual payment for storage.

Although not a barrier per se, the various state legislation and commission policies for distributed generation, such as GoSolar, the RAM, the IOU PV program, as well as the Governor's overarching goal to develop 12,000 megawatts (MW) of distributed generation by 2020, is an issue that the Commission should address in this proceeding. Rather than backing up this new generation only with natural gas, the Commission should maximize the environmental benefits of the distributed generation goals and policies by encouraging the development of new energy storage systems that integrate this increase in distributed generation.

One barrier to the successful deployment of energy storage not identified at the workshop is the lack of information regarding the specific locational and operational needs of the electricity grid. The California Energy Commission has identified initial regional targets for the

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implementation of the Governor's 12,000 MW goal.[11] However, locational information regarding when and where storage capacity is needed for operational efficiency, displacement of peak fossil fuel generation, and regulatory compliance would maximize the benefits of energy storage in renewable integration and procurement planning. Greater transparency provided by CAISO and the utilities will allow the Commission to inform an analysis of energy storage's value. This type of locational and operational information should be compiled and considered in this proceeding in order to develop a map of the transmission and distribution system that examines the potential locational benefits of certain energy storage placement. This would enable the Commission to consider whether the placement of energy storage in certain locations provides greater services to the grid and, if so, to value that storage appropriately. For example, strategically located energy storage can allow for cost effective deferment or replace the need for transmission and distribution infrastructure upgrades, providing greater local reliability and capturing significant benefits for ratepayers, end users, and the environment.

Another barrier to the integration of renewables not identified at the workshop is the apparent inflexibility of the 4,000 MW of generating capacity available from California's existing pumped storage fleet. Existing pumped storage was designed to act as a scheduled fixed load during off-peak hours to match the output of existing fixed output baseload resources. Consequently, these existing storage systems are not designed or operationally available to absorb variable generation. However, in recent years the annual capacity factors for some pumped storage facilities are very low, in the single digits, resulting in apparent underutilization of large capital resources. The Commission should consider developing a method to evaluate if existing pump storage could be cost-effectively retrofitted and operated to provide needed

[11] California's Path to 12,000 Megawatts of Local Renewables, Governor's Local Renewable Power Working Conference, Segmenting the Governor's Localized Energy Goal Panel, Discussion Paper # 1, p. 4.

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capacity for support and delivery of variable generation from intermittent renewables. This effort could contribute to maximizing the use of 33% renewable energy required by 2020. However, existing energy storage should not be counted towards any procurement target adopted by the Commission.

3. In your opinion, are there certain barriers that need to be resolved first, and therefore have higher priority?

See discussion above.

Respectfully submitted,

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