

# DOCKET

11-IEP-1N

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May 9, 2011

California Energy Commission  
Docket Office, MS-4  
Re: Docket No. **11-IEP-1**  
1516 Ninth Street  
Sacramento, CA 95814-5512  
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re: Docket 11-IEP-1 Committee Workshop on Energy Storage for Renewable Integration

Dear Chairman Weisenmiller and Commissioner Douglas,

I am submitting these comments on my own behalf. I am a California resident and have worked in the electric power industry for nearly forty years. I am knowledgeable about many of the issues that have direct or indirect bearing on storage and its application for managing the variability and uncertainty around certain types of renewable energy resources. Although I have advised a number of the stakeholders who may have an interest in this topic over the course of my career, these comments reflect my views and I am solely responsible for them. I am sending copies of these comments to the California Public Utilities Commission, the California Independent System Operator, and Governor Brown's office (State Agencies), all of which may have similar investigations underway or may make proposals of their own at some point. My comments are focused primarily on the issue of subsidies, whether in the form of tax credits, outright grants, or a set-aside not unlike the renewable portfolio standard. Others are better qualified to address applications, barriers and other issues set forth in the Commission's agenda.

Advocates for both storage and renewable energy assert that storage is essential for integrating large amounts of renewable energy, and because it is essential, it deserves the same kind of support that has been provided to renewable energy via either some kind of subsidy, or a "storage portfolio standard". In prior storage workshops sponsored by this Commission and the CPUC, and in the CPUC's Permanent Load Shifting proceeding, a majority of the presentations appear to have been made by advocates for storage. There has been little meaningful discussion about how much storage is actually needed, its cost-effectiveness, whether subsidies will actually make a difference, whether there are credible alternatives, and whether subsidies for storage might adversely impact other policy priorities. State Agencies should develop a more complete record by probing these issues in detail before they propose or authorize expenditures of public funds.

Immediately prior to the April 28 workshop, I submitted several questions I hoped some of the parties that participated in the workshop would address, either in their presentations or in response to direct questions from one of you. These included:

1. Why is the current fleet of pumped storage plants, which amounts to something in excess of 3,000 MW state-wide, not adequate?

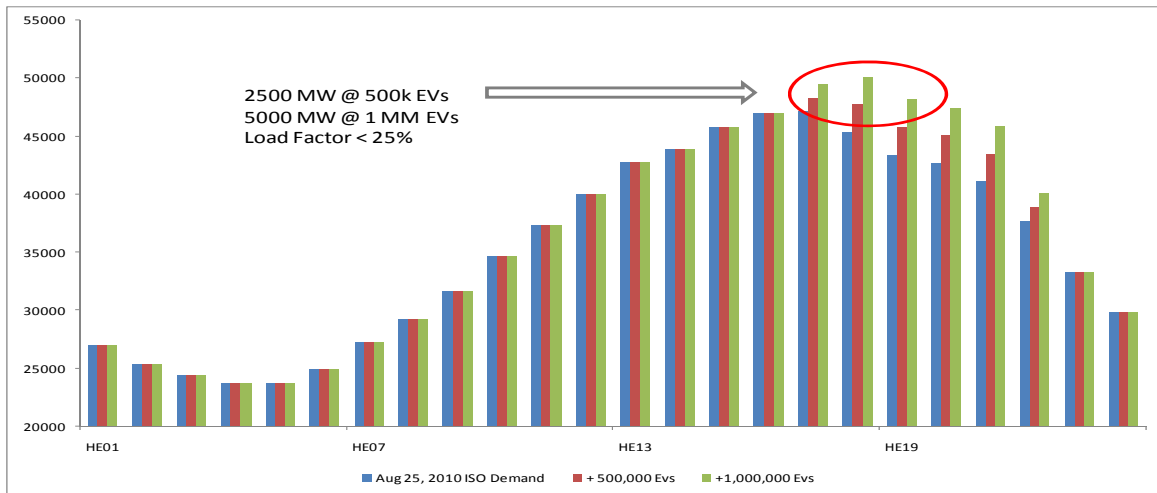
2. How will subsidies and set-asides for storage affect the availability of low-cost off-peak energy for EV charging and how might subsidized competition for that energy impact the need for additional generating capacity?
3. Other than subsidies or set-asides, what policy and wholesale market changes might help narrow the cost-value gap for storage?

It is critically important that these questions be addressed by parties, particularly in light of a statement made by Mr. Wishom during the first part of the workshop. When asked whether the high cost of storage could best be addressed by technology or manufacturing economies of scale, Mr. Wishom opined that technology was the principal barrier. His response suggests that efforts to lower the cost of storage by increasing production volumes are likely to be a poor use of public money at this point in time. If the State Agencies believe it is in California's long-term interest to develop cost-effective storage technologies for a variety of applications, it makes more sense to direct a limited amount of public support toward small-scale demonstrations programs that focus on cost reductions and technology improvements. Funding for successive stages of these programs would be tied to meeting cost reduction and operating performance targets.

The Stage Agencies should also bear in mind that subsidies for storage will undermine other energy policy priorities. Storage competes with demand response (more generally, price-responsive demand) and low cost charging for electric vehicles. To the extent subsidized storage reduces spot market volatility and brings off- and on-peak wholesale prices closer together, demand response will be more difficult to justify on economic grounds and customers will be less likely to participate without sizable incentive payments. Moreover, electric vehicle owners will likely face substantially weaker incentive for charging their vehicles when energy is cheapest rather than when they arrive home after work. As shown in the figure below, electric vehicle charging could require thousands of megawatts of new supply resources to meet the state's resource adequacy requirements, even at modest penetration levels, if charging begins around the dinner hour rather than in the middle of the night. To the extent charging loads are not coincident with low wholesale spot prices, they would further reduce annual load factors and further reduce the already poor average utilization of existing supply resources.

A set-aside mechanism would add to these impacts. Consumers could well find themselves paying for subsidized storage assets and then competing with those same subsidized assets for access to low cost energy. It's unlikely the legislature had such an outcome in mind when it passed AB 2514.

# Electric Vehicle Impact on Peak Demand



Storage advocates often note that it is difficult to monetize the many benefits of storage. There is a great deal of truth to this assertion as it applies to California, but the problem originates with an oversupplied market that results in low prices for ancillary services, low capacity payments for resources that are contracted to meet California's Resource Adequacy requirements, and narrow day-night price differentials. Subsidies and set-asides for storage will drive prices lower still, which will increase the gap between the cost of storage and its market value, which will also make alternatives less economically attractive and impose unnecessary costs on consumers. In effect, subsidies and set-asides will set off a vicious cycle that will ultimately defeat their intended purpose without providing much relief to already-stretched consumer pocketbooks. One of the most beneficial steps the State Agencies could take is to ensure Resource Adequacy requirements are more closely aligned with the economic consequences of supply shortfalls rather than on very conservative engineering criteria. Doing so will ensure that storage and its alternatives are supported in a self-sustaining manner by prices that are anchored in California's wholesale spot and long-term markets.

The State Agencies should also closely examine available alternatives that would allow consumers to save money by providing ancillary services. Any consumer with a refrigerator, electric hot water heater or air conditioning is a candidate for providing contingency reserves and regulation. Many of these end-use applications could also provide balancing energy. Electric vehicles could absorb unexpected generation surpluses from the grid during overgeneration conditions more cost-effectively than any other alternative. These ideas aren't just low-hanging fruit – they're fruit that's been lying on the ground and rotting for more than a decade in spite of California's purported policy priorities that favor demand management and energy efficiency. If the State Agencies feel subsidies are worthwhile, they should be directed first toward research and technologies that leverage latent demand flexibility to

make the grid more efficient and allow consumers to spend less without adversely affecting their lifestyles and businesses.

I would be happy to answer your questions, participate in future workshops, or meet with you directly if I can provide further clarification or information.

Very truly yours,

/s/ Jack Ellis