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 (Filed December 16, 2010)

COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC. ON THE ASSIGNED COMMISSIONER'S RULING

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Pursuant to the *Assigned Commissioner's Ruling ("ACR") Proposing Storage Procurement Targets and Mechanisms and Noticing All-Party Meeting*, dated June 10, 2013, the Interstate Renewable Energy Council, Inc. ("IREC") hereby timely submits its comments on the proposal outlined in the ACR.

I. IREC'S INTEREST IN THIS PROCEEDING

IREC is an Internal Revenue Code § 501(c)(3) non-profit organization that enables greater use of clean energy in a sustainable way by (i) introducing regulatory policy innovations that empower consumers and support a transition to a sustainable energy future, (ii) removing technical constraints to distributed energy resource ("DER") integration, and (iii) developing and coordinating national strategies and policy guidance to provide consistency on these policies centered on best practices and solid research. The scope of IREC's work includes incorporating DER growth into utility distribution system planning and operations.

An important link exists between distributed renewable generation and Energy Storage Systems ("ESS"), because the latter can provide a critical role in resolving the intermittent nature

of the former and can effectively address many of the current challenges of accommodating higher penetrations on the utilities' distribution systems of solar energy and other DERs. For these reasons, the June 10, 2013 ACR, which proposes to establish ESS procurement targets for California utilities, offers California a path-breaking, first-in-the nation new policy direction that could play a critical role in supporting the state's move to renewable energy. If adopted and implemented in the proper fashion, the targets proposed in the ACR can directly facilitate IREC's goal of increasing consumer access to renewable energy, and significantly buttress the policies of the State of California that favor a continuing and growing deployment of renewable resources, in particular on the distribution side of the electric system, and that will require a continuing reduction in the emissions of greenhouses gases ("GHG") in the state over the longer term.

II. THE PROCUREMENT TARGETS PROPOSED IN THE ACR ARE JUSTIFIED AND WELL-CONSIDERED, ALTHOUGH THERE ARE SEVERAL UNSTATED POINTS OF GENERAL POLICY THAT NEED TO BE CLEARLY ARTICULATED AND SEVERAL OF THE KEY DETAILS OF THE PROPOSAL SHOULD BE MODIFIED

IREC congratulates the Assigned Commissioner on crafting a proposal that is, in its main outlines, prudent, reasonable and progressive in its conscious consideration of the future needs of California for clean and sustainable energy resources. IREC is gratified that the ACR recognizes that ESS is a reliable and cost-effective renewable integration strategy that can provide an alternative to the state's retiring fossil-fuel-fired resources. However, as the Commission moves toward the issuance of a Decision in this proceeding, it needs to recognize as a matter of general policy that the value of storage is dependent on the services storage can provide, which will in most cases will depend on the physical location of the storage facility. Accordingly, storage procurement should be location-specific, with suitable locations chosen by the utilities based upon the needs

at particular locations. IREC accordingly recommends that any future Commission decision based on the ACR should consciously take the following considerations into careful account.

A. Procurement Should Be Weighted Toward Distribution-Interconnected Storage

The proposed Energy Storage Procurement Targets[1] are weighted in favor of installations on the transmission side of the electric power system, such that, after 2020, the SCE and PG&E systems should have installed 310 MW of ESS on the transmission side, but only 185 MW on the distribution side of their respective systems, while SDG&E should have installed 80 on the transmission side and 55 MW on the distribution side of its system. IREC believes that this allocation of storage projects needs to be amended to emphasize the particular value that storage can provide in helping to facilitate the ever-increasing penetration of residential and commercial photovoltaic ("PV") installations within the utilities' respective load pockets.

It is evident from the overall language of the ACR that the underlying purpose of the proposed Energy Storage Procurement Targets is to strongly encourage the utilities to facilitate the development and commercialization of new and advanced storage technologies, primarily (but not exclusively) advanced battery technologies. This is confirmed by the anticipated scale of the biennial procurement that the utilities are asked to engage in: from 7 to 23 megawatts for SDG&E and from 30 to 65 MW for PG&E and SCE on the distribution side, and from 10 to 33 MW for SDG&E and from 50 to 110 MW for PG&E and SCE on the transmission side. These are not large-scale projects, and even a 110 MW project would be a very small project on the transmission side, where the scale of existing pumped storage facilities (such as PG&E's Helms facility) exceeds 1,000 MW in size. Indeed, in view of the likely need for several thousands of megawatts of large-scale bulk storage in California to help integrate the power generation from

[1] *See*, ACR, at page 8.

large, utility-scale wind and solar projects that will be interconnecting to the CAISO-controlled grid, it would be in the best long-term interest of ratepayers, the utilities and the environment for the Commission to forego its targets for the transmission system at this time and, rather, to focus on utility procurement of ESS that can be installed at utility substations and facilities, and customer premises located on the distribution side of the power system.

Distribution-interconnected storage can provide a wide range of benefits. The ACR recognizes these benefits on pages 12 and 13, but unnecessarily allocates these various benefits among the different components of the grid. The fact is that distribution-interconnected storage can provide all of the following services to the utility distribution system, irrespective of whatever other components of the grid can also benefit from these services:

- Ancillary services, including fast regulation;
- Ramping;
- Black start;
- Real time energy balancing;
- Resource Adequacy;
- Intermittent resource integration for PV installations, including time shift, voltage sag, rapid demand support;
- Supply firming.
- Peak shaving;
- Peak capacity support (upgrade deferral);
- System operation support (short duration performance, inertia, system reliability);
- Voltage / VAR support);
- Outage mitigation;
- Time-of-use energy cost management;

- Power quality; and
- Back-up power.

The main problem here, as the ACR recognizes, is that the relative costs and benefits of ESS remain somewhat uncertain. This is, in large part, because of the limited deployment of ESS in the power grid of the United States, despite the multiple benefits that ESS can provide. Indeed, one of the key challenges faced by storage developers is quantifying the value of ESS. This challenge is magnified by the fact that the benefits of ESS are not fully captured within U.S. electricity markets. Moreover, a key recent study points out that there are important sources of value of ESS that have not been quantified in detail, such as the benefits of siting ESS on distribution networks.[2]

Given these significant uncertainties of the relative costs and benefits of ESS, given the generally small scope of the projects that will result from the implementation of the proposed Energy Storage Procurement Targets, given the continuing deployment of significant amounts of PV within the utilities' load pockets, and given the likely need for larger ESS projects on the transmission grid,[3] it makes sense for the focus of the proposed Procurement Targets to be on

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2 *See*, *e.g.,* The Value of Energy Storage for Grid Applications*,* Paul Denholm, Jennie Jorgenson, Marissa Hummon, Thomas Jenkin, and David Palchak, *National Renewable Energy Laboratory* Brendan Kirby, *Consultant,* Ookie Ma, *U.S. Department of Energy,* Mark O'Malley, *University College Dublin,* Technical Report NREL/TP-6A20-58465, May 2013, http://www.nrel.gov/docs/fy13osti/58465.pdf

3 Procurement of the 1,325 MW under the proposed Procurement Targets should be weighted toward distribution-interconnected storage, if for no other reason than there is likely to be a significant need for large-scale (*e.g.,* pumped storage) on the transmission side, in addition to the 1,325 MW that will be the subject of the proposed Procurement Targets. However, pumped storage projects to be owned by third parties would appear to be excluded from qualifying under the proposed Procurement Targets (*see*, page 17 of the ACR), and any major new pumped storage project would be so large that it would likely use up all or most of a utility's Target. Indeed, several commenters at the June 25, 2013 workshop that was noticed in the ACR pointed out that California is likely to need several thousand additional megawatts of large-scale storage, in addition to the 1,325 MW recommended in the ACR, in the timeframe contemplated in the ACR (*i.e.*, by 2020). All of these considerations militate in favor of having most of the proposed

distribution-interconnected storage rather than transmission-interconnected storage. IREC therefore recommends that in any Commission decision that follows on the ACR, the amount of the Energy Storage Procurement Targets allocated to distribution-interconnected storage should be increased, and the amount of the Energy Storage Procurement Targets allocated to transmission-interconnected storage should be decreased. Indeed, the most promising location for storage is at the distribution substation, where a single storage application, sized anywhere from 2 or 3 up to 30 or 40 megawatts, can provide a range of benefits, including the ability to firm variable generation on the distribution circuit and to facilitate high levels of renewable generation (especially PV) within the utility's load pocket.

Finally, IREC would note that in most cases, the co-location of storage and individually owned renewable generation (such as residential or small commercial PV installations) is unlikely to be a cost-effective solution. At this stage, ESS applications show the most promise when they are used to smooth out the variability of multiple small-scale generators (*e.g.*, several hundred residential customers with rooftop PV systems). Moreover, the deployment of a large number of very small storage facilities (*e.g.*, a 10-kilowatt, 50 kilowatt-hour system, which would be suitable for installation at an individual residence with rooftop PV) would be administratively much more difficult for the utility to manage than, say, several dozen 2-to-20 MW systems. It will be much more difficult for the utility to evaluate, measure and verify the costs and benefits of a large number of very small systems than for a more manageable number of larger systems. Accordingly, IREC recommends that the "Customer" use case category in the proposed Procurement Targets be reduced or eliminated.

Procurement Targets be dedicated to ESS that would be interconnected at the distribution level.

B. IREC Supports the Proposal for Utility-Owned Storage

IREC supports the proposition that the utilities should procure, own and operate much, if not all, of the distribution-interconnected ESS that will be procured under the proposed Targets. Indeed, in light of the location-specific nature of many of the ESS services that are likely to have the greatest system value, IREC is unsure whether it makes sense for third parties to own any of the ESS to be procured on the distribution system under the proposed Targets. Rather, IREC believes that the proposed 50% limit on utility ownership of such facilities[4] may not make practical sense.

The first two guiding purposes stated on page 6 of the ACR focus on the integration of renewable energy and optimization of the grid, specifically peak reduction, deferment of transmission and distribution ("T&D") upgrade investments and increased reliability. However, for storage interconnected at the distribution level, the ability of storage applications to achieve these goals is highly location-dependent. In particular, the ability for storage to offer a non-wires alternative to T&D must be assessed in distribution planning, where the feasibility and relative costs of wires versus non-wires alternatives can be effectively evaluated and compared. However, the ability and experience to conduct such evaluation is exclusively within the competence and expertise of the utility, which has the exclusive right to operate the distribution system within its service territory.

If storage options are not integrated into distribution planning, ratepayers may not receive the full benefit of the reduction in T&D cost that could be realized through proper planning. Accordingly, IREC supports the proposal for utility-owned storage alternatives to be considered in distribution planning activities, but questions the proposed 50% limitation on utility ownership

[4] *See*, ACR at page 15.

of distribution-interconnected storage.

C. The Commission Should Encourage Siting of Storage Near Areas of DG Growth

The Commission's stated policy goals include the facilitation of renewables integration and the reduction of greenhouse gas emissions.[5] IREC entirely supports these important policy objectives. However, the accomplishment of these goals necessarily triggers the recognition that the mechanism for deployment of ESS on the distribution system that will best achieve these goals will be to locate storage at distribution substations on circuits with high DG penetration. Accordingly, in the decision that follows upon the ACR, the Commission should direct the utilities to deploy storage in locations that would facilitate DG growth.

Such areas can be easily identified in the utilities' respective distribution system planning processes. Based on such identification, the utilities should plan for deploying distribution-interconnected ESS under the proposed Procurement Targets at the most cost effective locations in view of the overarching policy goals identified on page six of the ACR.

Moreover, if, in the end, notwithstanding our comments in subsection B. above, the utilities are limited to owning and operating only a certain percentage of distribution-interconnected ESS within their respective service territories, the utilities should retain the right to identify and specify the optimum locations for any third-party owned ESS that wins through a reverse auction (as is proposed at pages 16-19 of the ACR). The utilities could issue technology-neutral RFPs (as well as follow-on power purchase agreements) that would identify the minimum services that bidders must be able to provide given the identified need for storage services at the specific identified location. It may also make sense for the utilities to also retain the right to procure the land and oversee permitting and interconnection at these locations as

[5] *See*, ACR, at page 6.

well, but at a minimum the ability to name the specific location and the services needed seem to be necessary to ensure the proper services are provided where needed.

Only in this way can the Commission's overarching policy goals be squared with the desire of some parties to own and operate key facilities located on the utilities' distribution systems that will be indispensible components of the reliable operation of those systems.

III. CONCLUSION

IREC thanks the Commission and the Assigned Commissioner for the opportunity to address these important issues. For all the foregoing reasons, the Commission should adopt the targets proposed in the ACR, but with the revisions and clarifications recommended above.

Respectfully submitted,

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