

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking  
Regarding Policies, Procedures and Rules  
for the California Solar Initiative, the Self-  
Generation Incentive Program and  
Other Distributed Generation Issues.

Rulemaking 12-11-005  
(Filed November 8, 2012)

**COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC.  
ON THE ASSIGNED COMMISSIONER'S RULING  
REGARDING THE INTERCONNECTION OF  
ENERGY STORAGE SYSTEMS PAIRED WITH  
RENEWABLE GENERATORS ELIGIBLE FOR NET ENERGY METERING**

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Pursuant to the Assigned Commissioner's Ruling ("ACR") in the above-captioned proceeding that was filed and served on the parties on October 17, 2013, and the Assigned Administrative Law Judge's October 24, 2013 grant of an extension of time for the parties to respond to the ACR, the Interstate Renewable Energy Council, Inc. ("IREC") hereby timely submits its comments on the ACR.

**I. IREC'S INTEREST IN THIS PROCEEDING**

IREC is a U.S. 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 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.

## **II. IREC SUPPORTS THE ACR**

An important link exists between distributed renewable generation and energy storage systems, 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 of solar energy and other distributed energy resources on the utilities' distribution systems.

For these reasons, IREC strongly supports the ACR, and offers the following comments by way of suggestions as to how the Commission can most effectively implement both the letter and the intent of the ACR and help meet the State's policies in favor of expanded deployment of clean, safe renewable energy technologies and continued reductions in the emissions of greenhouse gases. In this regard, we would note that energy storage has an essential role to play in the evolution of California's energy infrastructure toward the effective and cost-effective achievement of these goals, a fact that is underlined by the Commission's recent adoption of storage procurement goals in D.13-10-040.

Even the state's investor-owned utilities, which have in recent months expressed concern about the potential impact to their business model of the deployment of storage combined with rooftop solar PV, have explicitly acknowledged the value of storage in this regard. For example, Mike Niggli, the President and Chief Operating Officer of San Diego Gas & Electric Company, has publicly called storage the "holy grail" of the electric power

business.<sup>1</sup> Mr. Niggli is entirely accurate in his assessment of the potential value of storage in meeting California's energy needs, and the ACR represents one valuable step forward in California's search to both reveal and embrace this Holy Grail. In this spirit, IREC offers the following observations.

**A. A Two-Year Evaluation Period Is an Optimal Balance Point**

The ACR proposes to exempt, until December 31, 2015, storage devices that would be installed in connection with small, distributed generation facilities that qualify under Net Energy Metering (NEM) tariffs (which would primarily consist of rooftop solar PV facilities) from standby charges, interconnection application and review fees, as well as from cost responsibility for any distribution system upgrades triggered by the installation of the storage device. This proposed two-year evaluation period is an appropriate balance between the competing interests of the emerging storage industry, which understandably needs time and the elimination of unnecessary regulatory and administrative barriers to demonstrate the value of small-scale storage installations, and of the utilities, which are concerned about the costs associated with the deployment of this promising new technology. A two-year evaluation period will provide the State with the opportunity to understand whether these costs are offset by the grid benefits potentially offered by these systems and will also offer insight into how those systems should be designed so that they will meet the statutory requirements for waiver eligibility.

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<sup>1</sup> Cost-effective electric storage is the holy grail for our business. If we can master storage at a reasonable price, then all of Mother Nature's resources can be harnessed for the betterment of our customers. See, <http://www.smartplanet.com/blog/takes/sdg-e-eo-mike-niggli-cost-effective-smart-grid-storage-the-holy-grail-for-utilities/8359>

This Commission has the heavy obligation to attempt to find the optimal balance point between the competing interests of the entities who are impacted by its decisions. In this case, the utilities are understandably concerned about the potential for lost revenues resulting from a preferential treatment of storage paired with renewable generation on their respective distribution systems. At the same time, given the State's tiered rate structure and widespread support for clean energy and advanced technologies, many utility customers understandably want to harness the benefits of the sun, and, as well, to bring the power that they can produce on their own into alignment with their electricity usage by the addition of appropriately sized electricity storage systems. Neither the concerns of the utilities nor those of the current customers of the utilities who are early adopters of on-site, especially solar PV, generation plus storage are misdirected, and the Commission should ideally find a path that accommodates the concerns of both of these important sets of stakeholders to the extent possible, while also complying with the NEM statute.

The proposed two-year evaluation period offers a balance between these legitimate, but potentially competing interests. It will provide time for the utilities and other concerned stakeholders to evaluate the real cost impacts of the deployment of distributed solar PV-plus-storage systems that qualify for NEM tariffs without rushing to judgment by allowing for the development a critical mass of relevant data points. It also avoids creating a *fait accompli*, under which distributed solar PV-plus-storage could claim entitlement to an exemption from interconnection fees and related charges without being sure that they are able to meet the statutory requirements for such a waiver.<sup>2</sup>

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<sup>2</sup> To qualify for the waiver, the storage system must be capable of storing energy generated exclusively by the associated NEM-qualifying renewable generation facility.

While IREC believes that it is appropriate to provide a period for evaluating the costs of extending this waiver so that the Commission can make informed decisions going forward, it is also clear that the waiver at issue is based in statutory language, such that storage technologies should be indefinitely eligible for the waiver so long as they meet the statutory definition. Thus, the central question that the Commission should be seeking to address here is whether solar PV-plus-storage systems can be structured to meet the definitions set out in the CEC Guidebook.

**B. A Proposed Limit on the Size of Storage Co-Located with NEM-Qualifying Generation is Appropriate and Will Address Multiple Concerns Addressed in the ACR**

As rooftop solar PV becomes more affordable, more customers can harness this highly promising resource. Moreover, as customers become aware of the possibility to co-locate storage systems with their rooftop generation systems, and costs of these storage technologies fall, more customers are likely to be incentivized to take advantage of the benefits of storage in addition to the already established benefits of distributed solar PV. The utilities are accordingly concerned that NEM customers could use storage devices to store off-peak grid energy and generate additional credits at full-retail value during high-value time periods.

In this regard, the ACR observes that preserving the integrity of NEM is an important goal, and to that end, correctly points out (at page 5) that NEM-paired storage systems that qualify under the proposal set forth in the ACR should be configured and metered in order to ensure that NEM credit can only be generated by the eligible renewable electric generation facility.□

The ACR (at page 9) also recommends storage sizing limits. In this regard, we

would note that the underlying purpose of the ACR appears to be to allow for the installation of storage devices that would qualify as part of a NEM-tariff-eligible renewable energy resource. Accordingly, the purpose of any storage size limitation adopted by the Commission should be to assure that the storage device would continue to qualify for such treatment.

The ACR points out that there are some technical challenges associated with this and poses three questions regarding potential metering requirements that could be imposed on NEM-paired storage systems.<sup>3</sup> In response to these questions, IREC recommends a hybrid approach that takes into account the concerns expressed in sections 3.2 (The Need to Preserve NEM Integrity) and 3.5 (Storage System Sizing Limits) of the ACR. Specifically, IREC recommends that the Commission address both of these concerns by the imposition of one single requirement, derived from the size of the associated storage system. However, such a size limit should be predicated on storage system net energy storage, rather than on system capacity.

## **1. Preserving the Integrity of NEM**

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<sup>3</sup> The questions posed in the ACR (at pp. 6-7) are as follows:

- 1. For single inverter systems, or other system configurations that do not allow NGOM, should the Commission consider estimated NEM generation as a means to limit NEM export credits during peak periods?
- 2. Storage devices sized below a certain limit could pose a de minimis risk of harming NEM integrity. Should the Commission consider a threshold storage capacity below which NGOM is not required for the NEM generator? If so, what is an appropriate threshold and should the threshold be based on absolute capacity or in relation to customer load and the NEM generator capacity?
- 3. Because storage devices increase total consumption, customers on non-time-varying rates have no financial incentive to export energy for NEM credit, should NGOM be required for customers who are not on time-varying rates?□

As a general principle, IREC agrees with the ACR that it is very important for the Commission to ensure the integrity of the current NEM tariff protocols. Thus, Net Generation Output Metering (NGOM) should be installed on all NEM-eligible generators that add storage capacity to their facilities where it is feasible to do so, and for facilities that do install NGOM, system output qualifying under the NEM tariff should be limited to the output of the generating facilities without reference to the capacity of the associated storage facilities. In this way, the installation by a customer of an oversized storage apparatus that would have the capacity to absorb non-NEM-qualifying generation from the grid would not benefit that customer by allowing the customer to “green-wash” such stored excess generation.

However, for customers with single inverter systems or other system configurations that do not accommodate NGOM, IREC recommends that the Commission adopt an appropriate threshold for co-located storage systems, such that customers whose systems cannot accommodate NGOM would be exempt from any additional monitoring requirements so long as the storage system that they co-locate with their solar PV system has a net output in kilowatt-hours no greater than the net output during summer months of the installed PV system that qualifies under the NEM tariff, adjusted for expected system losses. Thus, a customer with a 4 kW solar PV system that would expect to generate 50 kWh of power during summer months should be limited to installing a storage system with a maximum capacity of 50 kWh after storage system losses are accounted for.<sup>4</sup> (This would presumably allow for the installation of a 58 kWh storage system with 15% in

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<sup>4</sup> In stating this proposed criterion, we assume that the DC power generated by the PV system will be stored as DC power.



losses associated with converting the kinetic energy generated by the PV system to potential energy and back again to kinetic energy when the stored energy is actually used.)

The reason for this recommendation is that it would be easier and fairer to implement than the other two approaches suggested by the three questions in the ACR. Reliance on an estimate of NEM generation will be subject to many potential inaccuracies, based, especially, on the vagaries of electricity usage by the wide range of customers who might install co-located storage with their PV systems. For instance, a highly temperature-sensitive customer in Fresno or Palm Springs may install PV plus storage to enable a much-enhanced use of air conditioning during the summer. Without a "before" and "after" monitoring of that customer's usage, the utility would not have a rational basis to estimate NEM generation, especially if the customer significantly increases his or her air conditioning load after installation of the storage device.

Similarly, requiring the use of NGOM on customers on non-time-varying rates would not address the issue here, because a customer with a single-inverter PV system that decides to co-locate storage with that system would effectively be unable to do so, because of the incompatibility between NGOM and the inverter. Hence, this approach would effectively prevent a large number of homes and small businesses that have already installed single-inverter systems from ever co-locating storage with those systems. IREC does not believe that this is the Commission's intent here, and accordingly recommends against such an approach.

## **2. Storage System Sizing Limits**

Finally, the approach recommended above should apply not only in response to the Commission's understandable concern about the need to maintain the integrity of the NEM

tariffs, but also in response to the Commission's legitimate concern about the need to limit the size of storage systems that would qualify for the statutory exemption. The ACR states a proposed sizing limit in terms of "the rated capacity of the AES system can be no larger than the CEC-AC rating of the PV system, which is the rated AC output of the PV system including inverters."

However, IREC recommends that the appropriate limit on the size of storage systems that would qualify for the statutory exemption should be based on the amount of energy stored in the storage device rather than on the capacity of such device. Energy actually stored is a more relevant criterion, because small-scale storage devices (virtually all of which are batteries of one type or another) come in many configurations. Some batteries can absorb a lot of energy in a short period of time, but can only store a relatively small amount of energy (*e.g.*, a battery that can instantaneously absorb 10 kW may only be able to store 2 or 3 kWh of energy). The criterion that the Commission adopts should not be predicated on such an outlier.

Rather, as recommended above, the Commission should focus on the net amount of energy that the battery can absorb during a given generating day. To restate that recommendation, a customer with a 4 kW solar PV system that would expect to generate 50 kWh of power during summer months should be limited to installing a storage system with a maximum capacity of 58 kWh after storage system losses are accounted for. With such a practical limitation in place, a customer that is away from home all day (such that very little of the solar energy generated by the customer is used by that customer when it is generated), who wants to use self-generated energy at night would be able to do so without being subject to interconnection fees and related charges for the installation of the storage

system. At the same time, the Commission's legitimate concern about the potential over-sizing of storage systems co-located with NEM-eligible solar PV installations can be effectively addressed.

### III. CONCLUSION

IREC appreciates the opportunity to submit these Comments and encourages the Commission to take these comments into account as it finalizes a decision to implement the October 17, 2013 ACR.

Respectfully submitted,

/s/  
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