March 25, 2013

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 11-RPS-01
And Docket No. 02-REN-1038
RPS Proceeding
1516 Ninth Street
Sacramento, CA 95814-5512

SolarCity and Tesla Motors respectfully submit these comments to the California Energy Commission (CEC) in response to the proposed revisions to the Renewables Portfolio Standard (RPS) Eligibility Guidebook. Our joint comments focus on the revisions to the Guidebook that specifically relate to energy storage.

Summary and Background

SolarCity is California's leading full service solar power and energy efficiency provider for homeowners and businesses - a single source for engineering, design, financing, installation, monitoring, and support. SolarCIty provides cost-effective financing that enables customers to eliminate the high upfront costs of solar and efficiency improvements. SolarCity has more than 1,500 California employees based at 13 facilities around the state and has provided clean energy services to more than 15,000 customers. As discussed below, we have recently begun offering a battery storage product coupled with PV systems.

Tesla Motors is the market leader in electric vehicles. Tesla designs, develops, and produces its flagship Model S vehicle from its HQ in Palo Alto, CA and factory in Fremont, CA. In addition to being used in its own vehicles, Tesla's powertrain technology is also being in used in vehicles by Toyota and Daimler, and the stationary energy storage market is a natural extension of that powertrain development and commercialization expertise.

We believe the language in section III.G of the Guidebook, with the proposed revisions, should be modified as follows:

- Unambiguously find that energy storage, when paired with a renewable generating facility, is an "addition or enhancement" to that facility, pursuant to Public Resources Code Section 25741, in circumstances when the storage system can be directly charged from and is jointly operated with the facility.
- Clarify the project size threshold below which a project is considered a "small system" and thus eligible for less onerous metering requirements, (e.g., device-internal metering with +/- 5% accuracy).
- Eliminate any requirement that may discriminate against any particular ownership arrangement.

Below we provide additional information regarding our requested modifications. In describing our requested changes, we address the first two questions identified by the CEC staff at the March 14, 2013 workshop staff presentation.[1]

As the CEC is aware, there is growing recognition of the relevancy of storage and the important role it can play in California's energy system particularly as we rely increasingly on intermittent, as-available resources to meet our energy needs. The potential value of storage has been recognized in statute, as well as in actions taken by the California Public Utilities Commission (CPUC) through a number of different programs. AB 2514 (Skinner, 2010) directed the CPUC to initiate a proceeding to determine whether and at what level to establish targets for the procurement of "viable and cost effective energy storage systems". This proceeding is nearing conclusion and the proposed revisions to the Guidebook will hopefully recognize the RPS eligibility of storage resources that may be required in any procurement standard. In a recent decision authorizing Southern California Edison (SCE) to procure additional resources, the CPUC specifically required SCE to procure at least 50 MW of storage, recognizing the promise of storage in meeting local reliability needs.[2] The CPUC has also approved utility-scale projects that include storage elements under the state's RPS program.[3] Finally, the Self Generation Incentive Program (SGIP) provides incentives for stand-alone storage projects as well as storage coupled with intermittent distributed generation like wind and solar. Given this context, we believe the CEC's revisions to the Guidebook will lay the foundation to give storage the proper recognition and value in the above proceedings.

SolarCity is currently deploying a significant number of SGIP-eligible, small-scale storage projects utilizing battery technology engineered by Tesla Motors. The vast majority of these particular projects is being deployed at residential properties, integrated with solar energy systems, and may be charged from both the solar energy system or from the grid. Tesla Motors is also deploying stand-alone storage systems on its own. We believe the traction we are gaining in the market for this product is a testament to the substantial value that customers see these systems providing as a means of managing energy costs, reducing peak loads, maximizing the value of their solar energy systems, and providing valuable back-up power in the event of grid outages.

Energy Storage as an "Addition or Enhancement" Pursuant to Public Resources Code Section 25741

SolarCity's deployment model as it relates to storage is currently captured in the draft revisions to the RPS Eligibility Guidebook in the language describing storage systems "not integrated into the operations of an electrical generation facility." The Guidebook provides that in these instances, the storage system "may be considered part of the renewable generating facility." While we appreciate the intent of this language and associated conditions, we believe greater clarity is necessary to provide industry an unambiguous understanding for when a storage system shall be considered an "addition or enhancement" to a renewable generating facility pursuant to Public Resources Code Section

[1] The first question sought input on when a categorical determination can be made that a storage system, co-located with a renewable electrical generation facility, is an "addition or enhancement" to that facility pursuant to Public Resources Code section 25741; the second question sought input regarding alternative metering arrangements that should be considered, recognizing the need to preserve the integrity of RPS accounting. At this time we do not offer any comments regarding the third question, regarding what additional equipment, beyond storage devices, should also be considered an addition or enhancement to a renewable electrical generation facility.

[2] D.13-02-015, Finding of Fact 44, Conclusions of Law 10, Ordering Paragraph 1.b

[3] See, for example, Resolution E-4522, October 25, 2012

25741(a)(1). We note that this categorical determination should be completely separable from any requirements that may be established to accurately measure the amount of renewable energy that is attributed to a renewable generating facility.

This is particularly important for small scale, customer-side-of-the-meter projects given the substantial implications this determination can have on project costs and viability. Public Utilities Code Section 2827 establishes specific requirements related to Net Energy Metering (NEM), including eligibility requirements to participate in NEM as a customer generator, as well as specific requirements intended to ensure that customer generators are not subject to costs or fees that they would not otherwise face absent their decision to invest in customer-side generation. Under the statute, one of the eligibility requirements for customer generators participating in NEM is that they use a "renewable electrical generation facility", which is in turn defined by Public Resources Code Section 25741(a)(1). This section defines a "renewable electrical generation facility" as a facility that uses a renewable fuel and, most salient for purposes of our comments here, includes "additions or enhancements" to that facility.

To the degree a storage system is deployed such that it can be reasonably deemed to enhance the value of an associated renewable electrical generation system, we believe it is incumbent upon the CEC to affirmatively and unambiguously find that the storage system is an "addition or enhancement" pursuant to Section 25741. This would ensure that the protections afforded to NEM generating facilities are appropriately extended to any "additions or enhancements" to that facility. For small scale storage projects integrated with a NEM eligible generating system, the benefit of this would be substantial. Currently, projects that we believe should be considered an addition or enhancement to a renewable facility face interconnection and metering costs that represent from 11% to over 30% of out-of-pocket project costs. Needless to say, these costs can dramatically alter the customer value proposition and represent a significant barrier to customer uptake.

We recognize that in finding that a storage system is an addition or enhancement, specific conditions should be established to ensure there is a sufficient nexus between the operation of the storage system and the renewable generating facility to which it is connected. Notwithstanding other deployment scenarios the CEC may consider, we believe that in circumstances where the storage system can be directly charged from, and is jointly operated with the renewable generating facility, the storage system should be deemed an "addition or enhancement". In the case of the systems SolarCity is currently deploying, the storage system is jointly operated with the solar generation system by a combined controller that considers measured and predicted solar generation when deciding when to charge and discharge the battery.

RPS Guidebook Should Not Discriminate Against Different Ownership Models

We also request the CEC, in modifying the language in the draft consistent with our proposal, to ensure that the requirements do not discriminate against any particular ownership arrangement. Doing so will limit customer choice and market opportunities without advancing any particular policy objective. Specifically, as currently drafted the revisions include language requiring the storage system to be "owned by the same entity" that owns the associated renewable facility. We respectfully request that this language be deleted since we believe the issue of who owns the storage system has no bearing on whether a storage system should be deemed an addition or enhancement to the facility, pursuant to Public Resources Code section 25741. As discussed, we believe this is entirely a function of how the storage system operates in relation to the renewable generation facility.

Metering Requirements and System Size

The proposed revisions to the Guidebook impose metering requirements for energy storage devices not integrated into the operations of the renewable electricity generating facility. We sincerely appreciate that the CEC has recognized that metering costs can be substantial and may pose a barrier to adoption, particularly in the case of small-scale systems. However, we request additional clarification and refinement to this language.

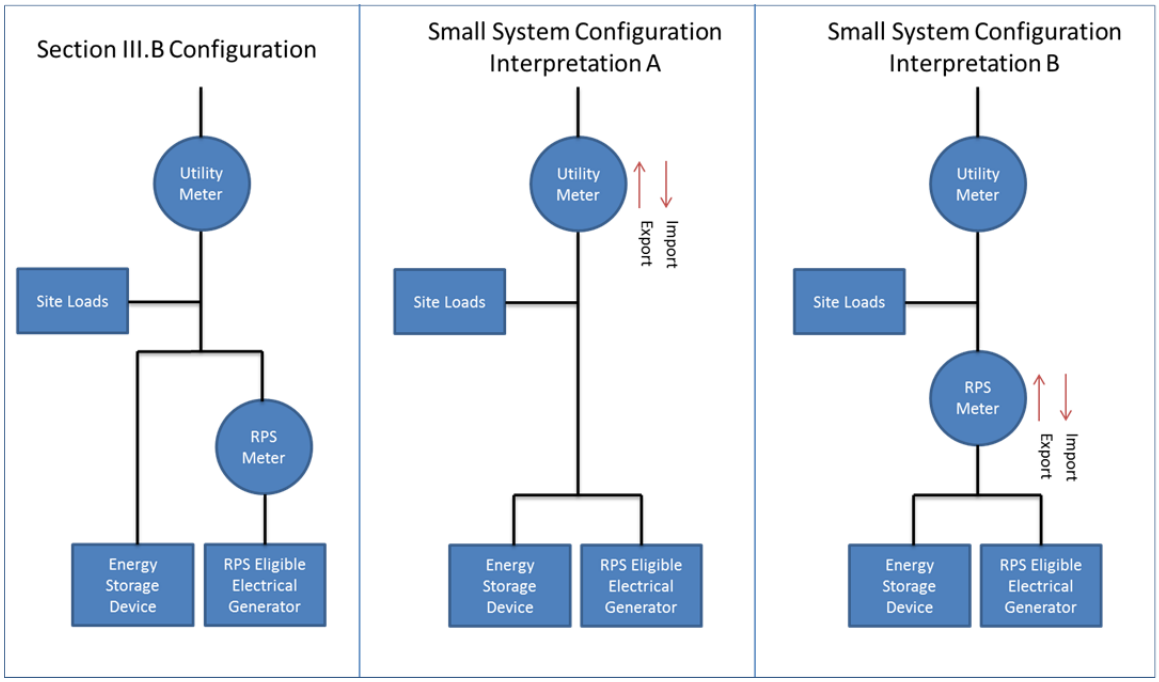
First, in the interest of providing industry with clear rules, the guidebook should more specifically define what is meant by "small systems" and adopt a cut-off of 30 kW. This is consistent with the approach taken in the context of the California Solar Initiative and SGIP program requirements for metering and data collection, which both reflect a 30 kW demarcation. We suggest that projects at or below this threshold should be subject to less stringent metering requirements, as further described below.

Second, there is some ambiguity in how the language in the draft revisions to the Guidebook should be interpreted as it relates to small facility metering arrangements, and by extension uncertainty regarding whether the revised Guidebook achieves the objective of reducing metering costs for small systems. The current language states, "the applicant may propose to treat only the energy leaving the facility in excess of the imported grid electricity as RPS eligible." The figure below shows two interpretations of the small facility metering arrangement described in the revised Guidebook, as well as the arrangement described in Section III.B of the Guidebook.

In the diagram labeled "Section III.B Configuration", an RPS Meter is placed on electrical output of the RPS Eligible Electrical Generator in order to directly measure RPS eligible generation. Energy from other sources that is stored in the battery is not included in the measurement of RPS eligible generation. Notably this is the configuration that SolarCity is currently using for our storage deployments. This configuration also meets the requirements of Net Generation Output Metering (NGOM) used in NEM tariffs, where the RPS eligible generator is metered individually for the purpose of limiting NEM export bill credits.

In the diagram labeled "Small System Configuration Interpretation A", the energy leaving the facility and imported from the grid is measured at the Utility Meter. RPS eligible energy is computed as the net Export across the Utility Meter, which is total energy leaving the facility across the Utility Meter minus total imports of grid electricity (Export-Import). This interpretation appears to result in cost savings relative to the Section III.B Configuration since a separate RPS Meter is not required. However, current incentive programs for renewable generators, specifically the CSI program, require that the renewable generator be sized to not generate more annual energy than consumed by the site. This means that the computation of net annual Exports and thus RPS eligible energy using this configuration will almost always be zero, except in rare circumstances where a system is oversized. So, while the metering costs are lower, it would also effectively eliminate the ability of these systems to receive any renewable value for energy exported to the grid.

In the diagram labeled "Small System Configuration Interpretation B", energy leaving the facility and imported from the grid is measured at the point that the combined generation and storage facility connects with the site electrical system. RPS eligible energy is computed as the net Export across the RPS Meter, which is total Exports minus Imports. Because imports from other sources are always subtracted from the total energy export, the RPS eligible energy computed using this method will never exceed the energy generated by the RPS Eligible Electrical Generator by itself.



Because the metering arrangement in Small System Configuration Interpretation B will underestimate the renewable portion of the exported electricity in all possible cases, we believe this arrangement should be allowed, along with the Section III.B Configuration, for all system sizes. Unlike Interpretation A, Interpretation B would allow the facility to receive credit for renewable energy exported to the grid; however, because it requires a separate RPS meter, it does not reduce costs over the Section III.B Configuration SolarCity currently relies upon.

In order to reduce costs for small systems, we propose small systems be allowed to use lower cost, device-internal metering adhering to the accuracy and data collection requirements in the CSI Handbook. The CSI Handbook provides a standard for +/- 5% accuracy internal measurement for systems less than 30 kW. Additionally, it defines requirements for data collection and validation under the Performance Monitoring and Reporting Service (PMRS) and Performance Data Provider (PDP) requirements. This same standard for internal measurement accuracy of a generating system and data collection requirements should be applied for determining the RPS eligibility of energy discharged from the facility. In effect, this would mean using device internal meters in lieu of the RPS meters shown in the diagrams above. To the degree the CEC believes this standard is insufficient, we believe post-measurement adjustments could be explored as a backstop, rather than requiring, in all circumstances, a more costly metering solution.

We sincerely appreciate the CEC's efforts and leadership to incorporate Energy Storage into the RPS Eligibility Guidebook and the opportunity to comment on the proposed revisions.

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Regards,

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