



Via email to DOER.SREC@state.ma.us

October 27, 2016

Mike Judge
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

BORREGO SOLAR COMMENTS TO DOER ON NEXT GENERATION SOLAR INCENTIVE PROGRAM
Comments on energy storage component of DOER straw proposal

Dear Mr. Judge:

We at Borrego Solar are pleased to see the inclusion of an adder for energy storage in DOER's straw proposal, not least, though parochially, because it coincides with our launch of Borrego Solar's energy storage division, which marks the company's first-ever formal expansion into energy services beyond PV. Our decision is a reaction to the same market forces that have drawn DOER's attention: falling storage costs, and a growing systematic need, driven largely by the increasing penetration of intermittent renewables, for flexible, low-cost, low-carbon electricity supply.

We believe in energy storage as a long-term strategic direction because of those underlying systematic forces, but our decision to act now is rooted in the emergence of strong governmental support for storage in our three core markets: Massachusetts, New York, and California. We explicitly and directly link the early actions that DOER has taken to promote energy storage in the Commonwealth to our decision to invest and grow this business here: the spring and summer's work on State of Charge, followed by its release last month; the upcoming DOER/CEC storage solicitation; and now this adder to the incentive program. Taken together with the Legislature's July move towards energy storage, we see a still-forming but clear signal from the Massachusetts government, and we are responding by adapting, investing, and hiring.

We are thus grateful for the opportunity to provide these comments with respect to the energy storage component of the new solar program, and look forward to working on this next chapter of our collaboration with DOER. Borrego Solar is separately filing comments on the balance of the next generation incentive program straw proposal.

Three stages of DOER storage programs

We believe that the storage adder to the new solar incentive program is best considered as the second in a progression of three stages in DOER's support for an emerging energy storage marketplace in MA. The first of these three stages is the grant stage, characterized by projects that DOER and/or CEC has already funded, and by the upcoming DOER/CEC RFP for storage demonstration projects. The program commented on here is the second stage. It marks an important transition to a more programmatic model, wherein the policy sets structure and boundaries, and projects within those boundaries can qualify.

In the third stage, the policy is performance-based (as a function of storage performance, rather than solar performance), it is for storage that is both paired with solar and stand-alone, and it can be combined with market signals in rates that better capture the un-monetized values identified in State of Charge, to create a longer-term, more stable, lower cost framework for supporting and developing a local market for storage. For us, it is by envisioning a third stage that we can view this second stage in context, and thereby find an appropriate balance between simplicity and efficacy on the one hand, and the desirability of more complex issues that can be addressed in the more mature third stage on the other hand.

For now, after discussion and reflection, we believe that a per-kWh adder to the solar incentive is a good policy for stage two. Upon first reviewing DOER's straw proposal, we were concerned about the lack of a direct performance-based component in the storage adder. But as we considered it further, we realized that, because the incentive will not on its own be sufficient to make projects work without what market signals for charge and discharge do exist – such as demand charge reduction, capacity tag management, power factor correction, time-of-use optimization, and others – projects will still have a strong inducement towards performance optimization. To be sure, a longer-term policy aim should be to better align market signals, principally through rate design, with the categories of storage value described in State of Charge, but we do not believe that this incentive program needs to expose the incentive payment itself to the risks of storage performance in order to expose the investment overall to those risks. On the contrary, we believe that by connecting the incentive to PV system performance and otherwise including some basic standards regarding the storage component, DOER incentivizes quality in design and construction in general, and this will be a simple, low-risk structure that is suitable for a nascent market.

Structure of the storage adder to the next generation solar incentive program

DOER has proposed an adder to the solar incentive of \$0.03/kWh of solar production for behind-the-meter systems, and \$0.05 for standalone systems. As DOER is of course well aware, it is possible to describe a storage component as an addition to a PV project for which this adder would be more than is needed, another one for which this adder would be nowhere close to sufficient, and everything in between. One option for resolving this is to set minimum requirements that a storage system must meet in order to qualify the entire system for the storage adder. For example, DOER could require that the storage system must be rated no smaller than some percentage of the PV system, and that it must have a minimum duration (ratio of energy capacity to power capacity). This approach, however, would strictly limit the market's ability to design the best storage solution for each individual case, because it would create an overpowering signal for system design that maximizes the incentive, at the expense of optimizing the delivery of value through system design and performance; developers would build the minimum storage system required in order to access the storage adder, not the best system for each individual customer.

Instead, we propose that the storage adder should scale as a function of two ratios:

- The ratio of storage system size (kW-AC) to PV system size (kW-AC) (“size ratio”); and
- The ratio of storage system energy capacity (kWh) to power capacity (kW) (“duration”).

The policy would set a “base incentive adder” – a per/kWh adder to the solar payment, as DOER proposed in its straw – and the adder that actually applies to each qualifying PV system would be calculated as:

- $(\text{Base Incentive Adder}) * (\text{Size Ratio}) * (\text{Duration}) = \text{Project Adder}$

For example – and only as an example, for illustration – imagine that the base incentive adder is \$0.06, and the project in question has a 500 kW PV system and a 300 kW and 600 kWh storage system. The size ratio is thus 0.60, and the duration is 2.0. Accordingly:

- $\text{Project Adder} = (\$0.06) * (0.60) * (2.0) = \$0.072/\text{kWh of solar production}.$ ¹

Because the base incentive adder for storage is properly designed as a function of several factors that are competitively sensitive, we decline to publicly recommend a base incentive adder here, and request a meeting with DOER to discuss competitively sensitive inputs and modeling.

Step-downs in the storage adder are appropriate for the same reasons they represent good design in the solar program overall – because costs are declining and the industry is maturing. But because the two markets are at different stages in their development, we argue that the storage blocks should be independent of the solar blocks, and that the design should be simpler, with a more explicit and near-term review opportunity. We propose a series of three 200 MW storage blocks, and that each of the three should be a single statewide block. Here again, we reserve discussion of the magnitude of the step-down between blocks for a private meeting, due to competitive sensitivity.

We further propose that, by rule, DOER will initiate proceedings to consider amendments to the blocks twice: first when 100 MW of projects have reserved program capacity, and again at 300 MW of reservations. The review process should be explicitly limited to four months – i.e., if any amendment to the regulation is found to be necessary, it must be promulgated within four months of the triggering reservation – and if any change is made, all projects that are qualified before the regulation is promulgated would be grandfathered.

We propose that reservation requirements for storage capacity should be at least as stringent as those that apply to PV, but we favor an additional cash deposit or other security or sign of project maturity. Given the early stage of the storage market, the success rate of storage projects that reach the ACA eligibility milestones will be lower than the success rate of similarly situated solar projects, so in order to avoid tying up scarce program capacity unnecessarily, and to thereby better ensure smooth market functioning, storage projects should clear a higher bar for project viability, and storage project proponents should bear the risk and burden of project development a little longer than with a PV project.

¹ We want to note here that it may make sense to scale the project adder as a function of duration by a factor less than 1:1, since a 2-hour system of a given AC rating is less than twice as expensive as a 1-hour system of the same rating.

We propose that projects that receive any other incentive funding through DOER or CEC should be excluded from eligibility for the storage adder. This comment is specifically directed at the upcoming DOER/CEC solicitation. Bids into that solicitation would be distorted by potential (though at the time uncertain) access to the next generation solar program, and if the adder to the solar program is properly designed, additional money from the earlier program would be unnecessary and wasteful. In order for both programs to function smoothly, they must be kept separate.

Finally, we do want to note here that we are concerned that \$10M of funding for that upcoming solicitation will not go very far. For all the reasons mentioned above, the market is alive to the opportunity for energy storage in Massachusetts. This is of course a good thing: more market activity and a more competitive development environment will drive adoption and quality. But we earnestly hope that the solicitation will be funded at the \$20M level called for in State of Charge, lest only a small number of projects are funded through the solicitation, both in absolute terms and as a percentage of applicants.

Conclusion

We close with a note about thinking ahead to stage three. As DOER launches this program, with its storage component, and with State of Charge having set the tone, we respectfully urge DOER to define a destination that is no more than a few years away, and that is characterized by two things:

- Amended market structures that deliver stronger market signals, recognizing more of the values of storage, both paired with solar and alone; and
- A third-stage, more stable, longer-term, lower-level, performance-based incentive program that is in place by the time the storage element of this program expires.

It is not too soon to initiate a proceeding now to design a performance-based incentive program. If we start that initiative soon enough, it could be available as an option if the market is ready for it at one of the two program review points described above. One lesson we have all learned from the solar program over the last six years is that it is best to be prepared with new program design before the old one is closed, and programs tend to end unexpectedly quickly. Furthermore, stakeholders who come together to work on that project would be well positioned to make rate reform recommendations to the DPU – perhaps the most important step in the maturation of the market for storage in Massachusetts, and an objective that State of Charge puts squarely in the crosshairs.

Thank you for the opportunity to provide these comments. We hope you find them helpful, and we look forward to discussing these ideas and others related the storage adder at your convenience.

Sincerely,

Dan Berwick
General Manager, Energy Storage
Borrego Solar Systems, Inc.