

November 16, 2017

Submitted Electronically and via UPS Delivery

Mark D. Marini, Secretary
Department of Public Utilities
One South Station, 5th Floor
Boston, MA 02110

RE: D.P.U. 17-146
Inquiry by the Department of Public Utilities on its own Motion into the eligibility of energy storage systems to net meter pursuant to G.L. c. 164, §§ 138-140 and 220 CMR 18.00, and application of the net metering rules and regulations relating to the participation of certain net metering facilities in the Forward Capacity Market pursuant to Net Metering Tariff, D.P.U. 09-03-A (2009).

Dear Secretary Marini:

Clean Energy Group (CEG) appreciates the opportunity to submit these comments to Massachusetts DPU Docket 17-146, regarding the treatment of behind-the-meter energy storage and NEM systems (BTM NEM+storage) that are engaged, or wish to engage in net energy metering (NEM).

CEG is a leading national, nonprofit advocacy organization working on innovative policy, technology and finance programs in the areas of clean energy and climate change. CEG promotes effective clean energy policies, develops low-carbon technology innovation strategies, and works on new financial tools to advance clean energy markets. Our projects concentrate on climate and clean energy issues at the state, national, and international levels as we work with stakeholders from governments, and the private and nonprofit sectors. CEG created and manages The Resilient Power Project (www.resilient-power.org), an initiative that supports new public policies and funding tools, connects public officials with private industry, and works with state and local officials to support greater investment in power resiliency. CEG does not accept any support from corporations or private companies; it is funded exclusively by foundations and government support.

In these comments, CEG addresses questions 1, 2, 4, 5, and 6 in the DPU 17-146 Order Opening Inquiry of October 3, 2017, Section III, A. Eligibility of Energy Storage Systems to Net Meter.

1. *Q: Should net metering facilities paired with energy storage systems be eligible to net meter?*

A: Yes, CEG asserts that net metering customers who have both NEM-eligible generators

and energy storage systems behind their electrical meter should be eligible to net meter.¹

2. *Q: Should only specific types of energy storage systems be eligible to net meter (e.g., battery storage systems)?*

A: No, CEG believes that an eligible BTM generator combined with any type of energy storage system should be eligible to net meter. Because it is the eligible generator, not the storage device that is net metering, the type of storage device should not matter.

4. *Q: To safeguard against gaming and manipulation of the net metering rules and regulations, the Department expects that, to be eligible for net metering, a net metering facility paired with an energy storage system would need to be configured such that: (1) the energy storage system is charged only from the net metering facility; and (2) the energy storage system cannot export power to the electric grid. What should the process be to certify, ensure, and enforce customer compliance with these requirements?*

A: CEG does not agree with the premise that in order to be eligible for net metering, a net metering facility paired with an energy storage system would need to be configured in the manner here described. CEG understands that the State and utilities have a valid concern about the potential for NEM+storage systems to “game” the NEM system (by charging from the grid and then selling that power back to the grid for NEM credit). And, we recognize that Tesla’s proposed regulatory solution, temporarily affirmed in a DPU advisory ruling (DPU 17-105), provided a short-term solution to that problem with regard to a specific set of existing customers.

However, we believe that a more inclusive long-term policy solution should be adopted going forward, that will be less restrictive to customers while still protecting the integrity of the state’s net metering program. The policy solution we propose would enhance the value of BTM energy storage devices such as those sold by Tesla and other companies, both to customers, and to Massachusetts electric companies and the Massachusetts grid.

An Alternative Solution

The temporary solution affirmed in DPU 17-105 states that BTM solar+storage systems are eligible for net metering so long as three conditions are met:

1. The solar net metering facility has a nameplate capacity of 60 kW or less alternating current;
2. the battery storage charges only from the solar net metering facility; and
3. the battery storage component of the facility does not export power to the electric grid

¹ On the face of it, not allowing BTM NEM+storage systems to net meter would appear to contradict the state’s SMART solar incentive program, which includes an adder for solar with storage behind the meter.

While these requirements do ensure that any energy exports from BTM solar+storage systems will be from solar PV only, they also limit the customer's ability to use the energy storage system to provide services, thus restricting potential revenues and cost reductions, as explained below.

CEG believes it unnecessary to limit energy storage systems in this way. Rather than require BTM storage systems to be physically disconnected from the grid, it would be sufficient to require a metering solution that captures both solar generation and energy exports. This type of metering solution would be sufficient to ensure that no stored grid power is being exported for net metering credit, but would not restrict the uses of BTM storage resources.

There is no need for Massachusetts to reinvent the wheel on this issue; the same problem arose in California several years ago, and it was solved with a regulatory requirement for allowable system configurations, as described in <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M193/K571/193571456.PDF>. CEG suggests that Massachusetts adopt the California solution, as described in the linked document, or a variation thereof. The relevant text is summarized below.

Requirements to qualify for CA's NEM plus storage (NEM-PS) designation:

"Customers that pair an energy storage system to their NEM generation system qualify for the NEM-Paired Storage (NEM-PS) conditions of the NEM tariff. As described in Decision (D.) 14-05-033, energy storage systems that are: 1) paired with NEM-eligible generation facilities, and 2) meet the Energy Commission's RPS Guidebook requirements to be considered an "addition or enhancement" to NEM-eligible systems are exempt from interconnection application fees, supplemental review fees, costs for distribution upgrades, and standby charges when interconnecting under the current NEM tariffs. In this way, D.14-05-033 conferred a considerable benefit on storage systems paired with renewable generation.

"In order to ensure the integrity of the NEM program, D.14-05-033 placed certain limitations on storage system sizing and implemented metering requirements. Under this decision, customers with systems over 10 kW in size are limited to a maximum output power no larger than 150% of the NEM generator's maximum output capacity, and are subject to specific metering requirements. Those metering requirements were derived from the pre-existing NEM Multiple Tariff (NEM-MT) requirements, which were used to differentiate NEM and non-NEM generation behind the same customer meter. D.14-05-033 noted that "[w]e find that such metering requirements [for NEM-paired storage] will effectively ensure that only NEM-eligible generation receives NEM credit." The specific metering requirements adopted by the Decision require large NEM-PS systems to: 1) install a non-export relay on the storage device(s); 2) install an interval meter for the NEM-eligible generation, meter the load, and meter total

energy flows at the point of common coupling; or 3) install interval meter directly to the NEM-eligible generator(s).

“While not explicitly stated in the Decision, the effect of imposing these metering requirements on large NEM-PS systems is to prohibit the discharge of energy from the storage device at a level that exceeds on-site load. The language of the requirement draws a distinction between the storage device (subject to metering option #1) and the NEM-eligible generator (subject to metering options #2 and #3). The storage device is, therefore, not a NEM-eligible generator and the customer may not receive NEM credit for the storage device’s output. These metering requirements effectively treat a NEM-paired energy storage device as a non-NEM generator, and preclude customers from getting NEM credits for energy exported from the storage device. As a result of this, the economic rationale for installing an energy storage system as a NEM-PS system is limited to 1) taking advantage of the reduced interconnection costs available through the NEM-PS structure and 2) serving on-site load with stored energy to avoid retail energy charges.

“D.16-04-020 resolved the methodology to be used to calculate the NEM credits for NEM-PS systems sized 10kW and smaller. Generally speaking, a customer is not required to use the NEM-MT metering structure (although they may choose to do so). Instead, the total exports from their customer meter that are eligible for NEM credit are capped at the estimate of the maximum monthly export possible by their specific NEM generation system. This estimation methodology is not available to non-solar small NEM-PS customers, who are required by D.16-04-020 to use the NEM-MT metering method as applicable to large NEM-PS systems.”

To summarize the above, the California ruling states that solar+storage systems sized 10kW or smaller are only limited in that they are not allowed to export more than what would be expected for their solar system size. Larger systems are subject to one of three system configuration requirements: 1) a non-export relay on the storage; 2) interval meters on the solar, the load, and point of common coupling; or 3) interval meter directly on the solar. With these provisions in place, California has not found it necessary to require that storage paired with NEM generators cannot charge from the grid.

Issues with the current, temporary solution

CEG asserts that the current regulatory regime, as temporarily affirmed in DPU 17-105, should not be made permanent; to do so may needlessly harm the economic viability of BTM energy storage systems in Massachusetts. CEG further asserts that the problem can and should be solved by use of configuration requirements, as described above, rather than by limiting the uses to which customers can put energy storage resources behind their meters.

To recap, the current regulatory regime provides that BTM solar+storage systems are eligible for net metering so long as three conditions are met:

- 1) The solar net metering facility has a nameplate capacity of 60 kW or less alternating current;
- 2) the battery storage charges only from the solar net metering facility; and
- 3) the battery storage component of the facility does not export power to the electric grid.

We have concerns regarding each of these conditions:

- 1) **The solar system must be 60 kW or less in capacity.** This limits the amount of solar PV that can be deployed by a solar+storage customer wishing to engage in net metering. In addition to being an arbitrary size constraint, for some large facilities where energy resilience is a goal, limiting the amount of solar PV that could be deployed effectively limit the use of the solar+storage system for resiliency purposes, since the energy storage system would need to recharge from the solar to provide support to the facility during an extended (multi-day) grid outage. If the critical loads of the facility exceed the ability of the solar resource to recharge the energy storage system, the solar+storage system cannot be relied upon to provide backup power during a multi-day grid outage.²
- 2) **The energy storage system can charge only from solar and cannot charge from the grid.** This provision restricts the customer's ability to use BTM energy storage for applications that require two-way flows of power, such as may be required for providing a number of grid services; furthermore, it precludes the customer recharging the energy storage system at night so that it can be discharged the next morning, before solar generation is available. Under this regime, the customer can still participate in applications such as demand charge management and/or demand response programs, but only to the extent that the energy storage system can be recharged from solar between demand peaks. Because solar recharging is not always possible, this creates a risk that customers might miss local or regional demand peaks, because the energy storage system would not be able to be recharged in time and would be depleted when it is needed. This restriction puts at risk the customer's ability to realize cost savings from the use of BTM energy storage, and it thereby harms the economic viability of BTM energy storage systems in Massachusetts.
- 3) **The energy storage system may not export to the grid.** Similar to #2 above, this precludes participation in certain grid services applications, and thereby

² According to 220 CMR 18.02, any type of generating facility, regardless of fuel source, may qualify for net metering, as long as the facility's nameplate capacity is 60 kilowatts or less. However, renewable facilities of up to two megawatts, or ten MW in the case of certain public facilities, are eligible for net metering. Limiting NEM+storage facilities to 60 kW is essentially saying that renewable generators are no longer renewable when combined with an energy storage device, and should be treated the same as a diesel generator or any other fossil fueled generator. Such an equivalence does not seem warranted, and CEG cautions that a regulatory regime of this sort could result in undesirable consequences.

reduces the cost savings potential of BTM energy storage systems in Massachusetts. At the same time, this restriction reduces the ability of BTM energy storage to provide electric system benefits the state has identified as desirable and valuable in the State of Charge report.

In summary, if the current, temporary regime described above were to be adopted as a permanent solution for all NEM customers, NEM+storage customers in Massachusetts would be restricted in how they could use their energy storage device, and in turn, this would restrict the benefits and cost savings they would expect to receive. For example, a customer might have to choose between net metering solar generation for credit and using solar generation to recharge the energy storage system for demand charge management.

Furthermore, requiring systems to be configured such that energy storage is physically disconnected from the grid could create downstream problems, in that this policy would result in a legacy of BTM NEM+storage systems configured so as to prohibit storage and grid interactions. Later, if state regulations change, customers who installed NEM+storage systems configured in this way would face additional costs to correct the problem.

It is important to understand that the vast majority of BTM NEM+storage systems installed in the US have been installed specifically for the purposes of A) demand charge management, and B) energy resilience. The current, temporary solution, if adopted long-term, would likely undercut both of these applications in Massachusetts, to the detriment of customers, the state, and the energy storage industry. We believe, based on our study of energy storage markets and applications, that limiting BTM NEM+storage systems in this way could negatively impact the market for BTM energy storage in Massachusetts.

5. *Q: If net metering facilities paired with energy storage systems are permitted to net meter, are there any requirements in addition to those set forth in (4) above that would be necessary to safeguard against gaming and manipulation of the net metering rules and regulations (e.g., capacity size limits, additional configuration requirements, etc.)? If so, what should the process be to certify, ensure, and enforce customer compliance with these requirements?*

A: See our response to #4, above.

6. *Q: If net metering facilities paired with energy storage systems are permitted to net meter, should the net metering cap allocation reflect the combined capacity of the net metering facility and the energy storage system?*

A: No, under the configuration constraints detailed in our response to #4, the energy storage system should in no way alter the effective capacity of the NEM facility. Only the generation asset should be considered regarding the net metering cap allocation.

Conclusion

CEG's position is that NEM+storage systems should be eligible to net meter; that a less restrictive, system configuration solution, such as adopted in California, is available; and that this California regime, or a version of the same, should be adopted in Massachusetts. This would prevent gaming of the NEM system, while allowing NEM+storage customers full use of their storage devices for numerous applications, including those identified in the Massachusetts State of Charge report as beneficial and desirable.

Thank you for your consideration of these comments. Please let us know if we can answer any other questions pertaining to this filing.

Respectfully submitted this 16th day of November, 2017.

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