



January 31, 2024

Re: Solect Energy comments on Charging Forward report

Dear Mr. Ferguson,

The Solect team has reviewed the document “Charging Forward: Energy Storage in a Net Zero Commonwealth” and provides our comments herein. We appreciate being involved in the stakeholder outreach that went into the making of Charging Forward. Solect participated in an interview survey on energy storage with E3 in September 2023.

Solect Energy is one of the largest C&I solar developers and integrators in New England. With over 750 projects completed, Solect specializes in rooftop, ground-mounted and canopy solar projects, and energy storage systems. Solect develops, installs, finances and provides management services for projects with a wide range of commercial, industrial, public and non-profit customers. Solect is the provider to the PowerOptions Solar and Storage program, serving municipal, state and public schools throughout New England, and is a proud recipient of the Northeast Clean Energy Council's Partnership of the Year in 2022.

Progress on BTM C&I Storage Goals

Solect compared Charging Forward to DOER's “State of Charge” report in 2016 to assess how the Behind the Meter C&I Solar Plus Storage segment has performed relative to goals. The 2016 report made a strong case for the benefit of C&I solar plus storage:

“Energy storage co-deployed and co-located with solar can allow the reshaping of solar production to better support system needs in the wholesale market (energy arbitrage, capacity value), reduce energy and demand charges for host customers, and better support the distribution system (minimizing back flow, better matching generation and load on distribution feeders, etc.).”
(State of Charge, page 159)

State of Charge recommended 106 MW of Behind the Meter C&I energy storage by 2020, representing 6% of the overall goal of 1,766 MW. To measure progress toward this goal, we find ConnectedSolutions enrollments to be a strong representation of the overall size of the BTM C&I energy storage market in Massachusetts. As of the summer 2022 Demand Response season, Charging Forward reports 35 C&I storage systems totaling 11.1 MW enrolled statewide in the ConnectedSolutions program. In December 2023, Mass Save reported C&I enrollments of 42 C&I storage systems totaling 18.3 MW. **Therefore, we estimate that C&I Energy Storage has reached only 17% of the 2020 goal set in State of Charge.**

Solect Experience

Solect examines the feasibility and economics of attaching energy storage on each of its BTM C&I projects in National Grid and Eversource territory. An overwhelming percentage of our customers are interested in a proposal that includes energy storage with PV. In 2023, we closed just 3 energy storage projects, while the other 63 projects won were PV-only. The most common reasons that energy storage gets dropped from the proposal is that the economics are unattractive and interconnection delays are expected.

One example of many projects that illustrates how batteries and interconnection need better alignment is a current project with a Massachusetts public high school, which also functions as a community emergency shelter. Solect applied for interconnection of a project with a 500 kW battery coupled to a 500 kW BTM PV array. One year after application, the utility responded with a requirement for a \$108,000 dynamic impact study to further evaluate the project. Given the significant cost, uncertain time frame, and uncertain future system upgrade costs, Solect reviewed options with the utility, and the school and town leadership. The decision was made to remove the battery, which led to an ISA being issued within 2 weeks, with no study or upgrade costs. The project will proceed as PV-only, but the loss of the storage means the school, Solect, and the grid will not realize the planned for benefits from the battery system.

Incentives

The complexity of the state's energy storage programs and the variable revenue streams make it extremely difficult and inefficient to finance battery systems. Lenders either discount or do not consider the value of variable revenue streams when offering financing of energy storage systems (ESS). Therefore developers need a higher return to offset the risk. In order to optimize the available capacity of behind-the-meter C&I ESS, developers need ESS compensation to be more stable to allow lenders to underwrite these investments. As referenced in the table below, only one of the four existing revenue streams for ESS, the SMART storage adder, is considered financeable by lenders. Furthermore, the compensation structure should be more comprehensive and consider how to incentivize both developers and distribution utilities to develop ESS projects most efficiently. The incentive structure should reinforce a recommendation to improve coordinated planning between developers and utilities, as made in the Charging Forward report to:

“A coordinated planning process that, based on state deployment goals, asks EDCs to identify the most valuable sites for energy storage could reduce interconnection timelines, reduce project uncertainty, and ensure value to the state and ratepayers from the storage capacity being installed.”

Program-Specific Feedback

The use of C&I-scale batteries for providing backup power has been very limited. Although Charging Forward does not provide any data, we find that less than 10% of battery capacity registered in the Clean Peak Standard program receives the Resilience Multiplier (source: Clean Peak Standard Qualified Units List, published 1/2024). A higher Resilience multiplier could be a simpler way to incentivize batteries of this size rather than adding a Resilience component to the SMART Storage Adder.

The Clean Peak Standard Qualified Units List also points to a hole in the market for batteries under 1 MW, with only 6 battery systems on CPS List with nameplate power output less than 1 MW.

The following SMART regulation requires any PV system larger than 500 kW AC to be paired with energy storage, with the intended goal of potentially reducing the system's export capacity.

Energy Storage Requirement. Solar Tariff Generation Units greater than 500 kW applying for a Statement of Qualification for any available capacity in any capacity block available after the Publication Date must be co-located with an Energy Storage System that meets the eligibility requirements for an Energy Storage Adder pursuant to 225 CMR 20.06(1)(e).

This rule has had the following unintended consequence of limiting the size of a PV system instead of promoting the development of ESS for the following reasons:

- Adding a battery triggers additional costly and time-consuming studies by the utilities, rather than expediting the process
- C&I customers opt to undersize their PV systems to below 500 kW because smaller battery system is uneconomic

Comparison of ESS Incentive Programs

Program	Finance-able?*	Challenges	Recommendation
SMART Storage Adder	Yes	<ul style="list-style-type: none"> One-size-fits all approach Does not compensate for added cost of Resiliency 	Storage adder multiplier for small to mid-size commercial batteries (25 to 1000 kW) that do not enjoy the same economies of scale that larger batteries do
Connected Solutions	No	<ul style="list-style-type: none"> 5-year term is shaky EDCs change program without open proceeding 	Fix incentive value and set a 10-year term
Clean Peak	No	No floor price	<ul style="list-style-type: none"> Set a floor price for a 10 year term Increase the Resilience Multiplier from 1.5X
ISO-NE Demand Response	No	<ul style="list-style-type: none"> FCA price is only known for 3 years Capacity buyout creates barrier Customers with AOBCs not eligible 	Increase SMART incentive to compensate for capacity value
FUTURE PROGRAM	Yes	Potentially time-consuming application process	Include Resilience component while allowing market participation

*Most financing parties consider Connected Solutions, Clean Peak, and ISO-NE Demand Response programs to carry merchant risk.

Resiliency and Capacity

Solect agrees that the proposed resiliency grant program is an appropriate mechanism to simultaneously mitigate electricity outages and encourage the use case of batteries for resiliency benefits.

With new inverter certifications that allow utilities more control of ESS, we recommend that DOER either consider another program or incorporate a focus on the advanced metering capabilities of ESS in the proposed resiliency program.

Advanced metering capabilities are currently being considered by EDCs in their respective Electric Sector Modernization Plan (ESMP) and are expected to improve resilience of the distribution grid, among other benefits. EDCs have planned investments for DER interface technology that will allow EDCs to communicate and control DER systems located on customer facilities. As stated in Eversource's January 2024 ESMP (Section 9.1.4.2):

In the future, more sophisticated dispatch strategies may be needed to help address localized grid constraints and help balance load and BTM generation on circuits. With Advanced metering infrastructure (AMI) and Distributed Energy Management System (DERMS) fully implemented, the EDCs would be well positioned to use BTM DERs in their operational control, to manage demand on the grid more effectively.

Solect works with many public organizations whose storage projects can stand to improve their and the grid's reliability as stated in the Eversource ESMP (Section 6.3.2.1):

A third party owned battery connected to the Company's SCADA system for monitoring and control by Eversource system operators is significantly more reliable than a pay-for-performance Wi-Fi thermostat demand response program that allows for customer override. Reliability of aggregated BTM DER increases with the number of customers enrolled, to allow for a percentage of override within the DER population.

Eversource proposes rolling out its investments in a limited manner by December 2025. We think DOER can play a pivotal role to encourage collaboration of developers and EDCs to accelerate the adoption of such technologies and consequently their benefits to the grid and ratepayers.

Lastly, the report and study identify resiliency and local air quality as the only quantifiable potential value streams for behind-the-meter systems. However, behind-the-meter storage provides capacity value to optimize solar PV in the short term. The significant grid congestion limits the ability for C&I customers to get access to electricity from front-of-the-meter solar systems in upcoming two to three years and potentially delays the Commonwealth's ability to meet its climate change targets. Therefore, a key potential value for behind-the-meter ESS in the short term is optimization of available grid capacity for renewable energy.

Interconnection

Incentives need to align with the interconnection process. Solect has dozens of BTM C&I PV projects that are delayed behind Group Studies. Coupling these PV systems with energy storage should be the logical solution to enable these projects without costly distribution investments. Any future energy storage incentive programs should be designed to incentivize reducing the export capacity of PV systems under development.

The Distribution Circuit Multiplier to the Clean Peak Standard is a great idea that in theory should encourage development of energy storage capacity where hosting capacity is the least. In practice, however, all 276 circuits on DOER's "DCM Eligible Circuits List" were in a group study



area and/or have zero available hosting capacity. If there were a viable path to expedite interconnection for energy storage projects on these congested circuits, Solect would pursue such projects.

Finally, we agree with the following conclusion on page 35 of Charging Forward:

“A coordinated planning process that, based on state deployment goals, asks EDCs to identify the most valuable sites for energy storage could reduce interconnection timelines, reduce project uncertainty, and ensure value to the state and ratepayers from the storage capacity being installed.”

To achieve this outcome, we recommend that DOER create a new pilot program that enables the developer and EDC to partner on energy storage projects. In this pilot program, the developer puts their capital to work efficiently in installing the battery and providing O&M services, while the EDC would operate the battery to achieve grid reliability and cost reduction goals. Such a program should link to ESMP goals and ESIRG working group objectives.

Thank you for this opportunity to provide feedback.

-The Solect Team