



June 28, 2023

FirstLight Power Comments: Massachusetts 2022-2023 Energy Storage Study Stakeholder Process

Company Overview

FirstLight is a leading clean power producer, developer, and energy storage company serving North America. With a diversified portfolio that includes over 1.6 GW of operating renewable energy and energy storage technologies and a development pipeline with 2,000+ MW of solar, battery, and offshore wind projects, FirstLight specializes in hybrid solutions that pair hydroelectric, pumped-hydro storage, utility-scale solar, large-scale battery, and offshore wind assets.

Our mission and vision is to accelerate the decarbonization of the electric grid by owning, operating, and integrating large-scale renewable energy and storage assets to meet the region's growing clean energy needs and to deliver an electric system that is clean, reliable, affordable, and equitable.

FirstLight's clean energy facilities in New England produce over 690,000 MWh of emissions-free generation, reducing the region's carbon footprint by more than 780,000 tons annually. In addition to our clean energy generation facilities, we also own and operate the 1168 MW Northfield Mountain pumped hydro storage station and 29 MW Rocky River pumped hydro storage station, respectively the largest and third largest energy storage facilities in New England, 2 MW of solar PV, and 1.5 MW of behind-the-meter battery storage in Massachusetts. Our facilities represent over a billion dollars of private investment in the region, employ nearly 200 people, and support our communities in Massachusetts with more than \$15 million in local property taxes every year.

Introduction

Under Chapter 179 of the Acts of 2022, the Massachusetts Department of Energy Resources (DOER), in consultation with the Massachusetts Clean Energy Center (CEC) must examine ways to "optimize the cost-effective deployment and utilization of both new and existing mid-duration and long-duration energy storage systems", providing critical information on how energy storage systems can help contribute to the state's goals to reduce greenhouse gas emissions, integrate renewable resources, lower consumer costs, enable firm delivery of renewables during periods of high demand, and enhance reliability.



Comments on Proposed Approach

On June 7, DOER, CEC, and the state's consulting firm E3 presented the initial approach the Commonwealth is taking in response to the statutory study requirements. Upon review of the information provided and the accompanying presentation FirstLight has concerns that the proposal is missing several critical objectives and characteristics that would result in a study that does not achieve the specified intent of the legislation and Massachusetts' decarbonization goals.

The legislation passed last year reestablished Massachusetts as the leader in the United States in energy storage policy, aggressively attacking what is viewed by clean energy policy makers as one of the most critical issues facing states attempting to fully decarbonize their grid: large-scale mid- and long-duration energy storage. The legislation required the Commonwealth to examine how to optimize both the "deployment" and "usage" of new and existing mid- and long-duration energy storage; however, the proposal outlined at the June 7th meeting seems to focus largely on the deployment of new storage, relying on the assumption that existing storage will continue to operate in a manner similar to how it is used now.

Existing energy storage, particularly pumped hydro storage, currently provides the region with substantial benefits, improving clean reliability and flexibility in the system. **However, as FirstLight has pointed out in our previous comments dated November 2022, these existing resources are substantially underutilized under existing market conditions.** For example New England's largest pumped hydro facility, Northfield Mountain, operates at approximately 25% of its overall throughput capability on an annual basis.

In a study published by Energyzt, LLC in June 2020 (included below), the firm concluded that increasing the quantity of megawatt-hours of energy that is moved into peak hours at just two of Northfield Mountain's four units would produce more than \$410 million in consumer savings between 2022 and 2030.¹ Additionally the same regimen would reduce carbon emissions by an average of 180,000 metric tonnes annually.² These values account for only a portion of Northfield's potential and do not account for an increased use of the other energy storage facilities located in New England.

With more than 1,800 MW of installed energy storage capacity that is similarly underutilized, the potential value for optimization is compelling and should certainly be examined under the study. Alarming, the presentation highlighted a number of data sets that deliberately "exclude

¹ Energyzt, LLC, *Northfield Mountain Pumped Storage: Assessment of Contract Benefits in an Increasingly Renewable Region* (June 2020), 35.

² Ibid. 34.



pumped hydro". Given the statutory requirement that existing resources be included in the study to optimize the deployment and usage we are concerned that the proposed structure will fail to achieve that very clear objective as stated under statute.

In order to maximize the value of every clean electron, we recommend that Massachusetts closely examine pairing the operation of existing grid-connected energy storage with large-scale offshore wind, large-scale hydropower, and other large-scale clean energy deployments. The clear benefit of studying the means to optimize existing storage resources to increase their utilization in combination with new renewables is that these solutions can begin immediately. For example, the Commonwealth's first offshore wind project is already under construction and will begin partial operations later this year. Tapping large scale long-duration existing resources to help integrate this resource right away is clearly a focus of the legislation that prompted this study, and the Commonwealth should take this opportunity very seriously. Such pairings will enable the Commonwealth to deliver large-scale clean energy (like offshore wind) when the region, the system and consumers need it most, not limited to periods when the resources are generating (such as when the wind is blowing off the coast). The scale of Massachusetts' clean energy programs demand similarly sized flexible storage solutions. As noted above, there are already more than 1,800 MW of installed energy storage resources capable of pairing with new clean energy facilities the moment they come online.

Additional Questions and Recommendations

FirstLight encourages the Commonwealth and E3 to re-review the enabling legislation quoted above to ensure that all of the study objectives outlined in the legislation are clearly included in the scope of the study.

- New and existing energy storage should be considered consistently, so the measure of offshore wind energy movement across hours under a contract should be measured relative to the amount of storage throughput expected under wholesale market energy signals for both existing and new storage.³ In both cases, the incremental storage throughput incited through a renewable-storage pairing is the amount of storage throughput beyond the level that would happen (or not) through competitive energy market arbitrage signals.
- The proposal seems to lack information on other methods to help increase the utilization of energy storage systems.
- The state of energy storage systems currently in operation and development is not well addressed.

³ Since the quantity of Off Shore Wind generation will continue to increase in stages as new projects achieve commercial operation, the contracted storage could initially also be used to move other forms of clean energy generation to most valuable hours, maximizes the value of clean energy for Massachusetts consumers.



Conclusion

This study offers an unprecedented opportunity to more fully assess how we can optimize energy storage resources to help Massachusetts remain a leader in the effort to fight climate change and fully decarbonize the grid. To the best of our knowledge, this study and any subsequent procurement undertaken will represent the first concerted effort by a state to directly leverage medium and long-duration storage resources to facilitate renewables integration at a statewide level. Thus, the work done by Massachusetts will once again serve as a potential model for other states in the future. There is therefore a lot at stake in getting this right at the outset.

We fully support the statutory objectives of this study and would be willing to provide additional information or data to assist DOER and CEC in this endeavor. We also respectfully request to be included in the interview process outlined during the June 7th meeting, and look forward to assisting in any way we can to ensure that the Commonwealth can continue to advance its clean energy goals.

Sincerely,

A handwritten signature in blue ink, appearing to read "Len Greene".

Len Greene
Vice President, External Affairs
FirstLight Power