



June 28, 2022

The Honorable Jeffrey Roy, House Chair
The Honorable Michael Barrett, Senate Chair
Joint Committee on Telecommunications, Utilities and Energy
State House, Room 42
Boston, MA 02210

RE: Energy Conference Committee

Dear Chairman Roy and Chairman Barrett:

On behalf of FirstLight Power, we thank you for your work on the respective offshore wind and climate bills, and offer our strong support for the storage provisions contained in the bills, specifically Section 26 of H. 4524, *An Act advancing offshore wind and clean energy*. This section is designed to address the Commonwealth's need for large-scale energy storage capable of capturing the value of off-peak energy generation from Massachusetts' new offshore wind and other renewable energy resources and reinjecting that clean power into the daily peak hours when it is needed the most. Section 26 directs the Department of Energy Resources, in consultation with the Massachusetts Clean Energy Technology Center, to study how to optimize the deployment and utilization of both new and existing long-duration and storage systems in the Commonwealth. If the study demonstrates benefits to the Commonwealth from the inclusion of storage, the Department is then directed to conduct a solicitation for the procurement of storage resources.

In recent years, Massachusetts has made major strides in advancing bold, nation-leading climate and clean energy measures to secure a cleaner energy future for our residents and to stave off the worst impacts of climate change. Harnessing the power of large-scale energy storage to maximize the value of renewable generation, and to avoid over-reliance on dirty fossil fuel fired generating units to preserve reliability and balance variable renewable generation, is the next bold step Massachusetts should take to ensure that our future electric grid would in fact be clean, reliable and equitable for all Massachusetts residents.

For context, FirstLight is a leading clean power producer and energy storage company with operating and development assets in New England, Pennsylvania and New Jersey, and New York, with expansion to other regions actively underway. Our operating portfolio includes nearly 1.4GW of pumped-hydro storage (including Northfield Mountain, the largest energy storage facility in New England), battery storage, conventional hydroelectric generation, and solar generation—the largest clean energy generation portfolio operating in New England today. 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. In light of this mission, FirstLight strongly supports Massachusetts' decarbonization

efforts and commends the Legislature for the bold climate commitments they have enacted to date.

As part of its goal to reduce emissions by 50% below 1990 levels by 2030, Massachusetts has authorized procurements of 5,600 MW of offshore wind by 2027, a major component of the state's plans to decarbonize its electric sector. In order to maximize the value of these new offshore wind resources and the other variable renewables like solar that are coming onto the New England electric grid in significant new quantities, deployment of energy storage that is specifically designed to maximize the value of new renewables will be critical. The *Massachusetts 2050 Decarbonization Roadmap*¹ found that "...even a massive buildout of offshore wind power will not provide enough carbon-free electricity generation to reach Net Zero" and stated that "additional energy storage" would be among the measures needed to reach the state's net zero goal.

While new energy storage resources will be needed and should be a major part of the state's strategy, capturing the unrealized value from existing energy storage also offers a significant opportunity to harness storage capacity that is available at the scale. This is needed to meet the vast new amount of offshore wind generation contracted by Massachusetts that will be starting operations in the next few years.

Both the state and leading Massachusetts academic researchers have recognized this need for several years. For example, the Department of Energy Resources' (DOER's) *Offshore Wind Study*, conducted with Levitan & Associates, found that: "To support a growing amount of intermittent renewable energy generation, energy storage will need to be developed to charge during low-cost periods when there is excess offshore wind and discharge during high-cost peak times. *Pairing energy storage with offshore wind will allow the Commonwealth to meet peak demand times with clean energy instead of high cost and high emissions fuel oil...* Analysis showed that the greatest benefits came from energy storage systems that were connected directly to the grid instead of behind the meter of the additional offshore wind. Behind the meter, the energy storage system can charge with excess offshore wind and

¹ Massachusetts Executive Office of Energy and Environmental Affairs/The Cadmus Group, December 2020, p. 23

discharge during times of high demand. Connected to the grid in front of the meter, the energy storage system could operate similarly but also provide other services to the system when not being utilized by the offshore wind. This would maximize the benefits of the energy storage without increasing cost.’²

To underscore the DOER’s findings, a 2019 study by UMass Lowell³ stated: “It is clear that deployment of thousands of megawatts of new renewable energy generating capacity, particularly offshore wind, will require thousands of megawatt-hours of storage capacity, including both increased utilization of the Commonwealth’s now-underutilized pumped storage hydro facilities and the development of new storage systems ... *The massive untapped potential of pumped hydro facilities for storing and moderating the intermittent nature of renewable electricity needs to be recognized*” (emphasis added).

I. Leveraging large-scale energy storage is a cost-effective strategy for reducing carbon emissions.

Under Massachusetts’ current laws and policies, offshore wind procurements will be delivering an unprecedented scale of new renewable energy in the years ahead and maximizing the value of these investments will be critical to ensure that the investments add to our efforts to create a clean and reliable electric grid. By utilizing energy storage at a scale that is matched to the massive volume (thousands of megawatts) of offshore wind, Massachusetts consumers can realize even greater value from the state’s offshore wind purchases by transporting off-peak renewable energy deliveries to higher value peak periods using large-scale energy storage. There will be many hours when power from the state’s offshore wind contracts will be wasted (e.g., curtailed), or otherwise employed less efficiently. This excess wind power can be stored and used to displace scheduling of oil and gas-fired generation, including periods when the wind generation drops significantly.

While other parts of the country may have limited existing storage, New England is fortunate to have more than 1,800MW (12,000 MWh) of energy storage capacity already built and in operation. The amount of storage contemplated in this legislation is a fraction of this – 4,800,000MWh of energy per year, a level equivalent to serving the needs of nearly 700,000 homes annually. One of these storage facilities, FirstLight’s 1,168 MW Northfield Mountain, is the largest energy storage facility in the region. A 2020 study commissioned by FirstLight⁴ estimated that a competitively-bid contract for two of Northfield Mountain’s four units (a total of 584 MW) could save Massachusetts ratepayers \$220 million from 2022-30 while removing over 875,000 metric tonnes of CO₂ emissions – roughly the same level of CO₂ reduction projected from the entirety of Massachusetts’ Clean Peak Standard. It would also reduce wintertime natural gas

² DOER, “Offshore Wind Study”, May 2019, emphasis added

³ UMass Lowell *The State of Grid Energy Storage in Massachusetts*, November 2019

⁴ Energyzt Advisors, June 2020: “Northfield Mountain Pumped Storage: Assessment of Contract Benefits in an Increasingly Renewable Region”:

<https://www.firstlightpower.com/new-report-shows-big-environmental-economic-benefits-from-increased-northfield-mountain-operation/>

consumption in New England by 0.5-4.1 percent, improving regional winter energy security, and improving air quality for vulnerable populations.

However, this result will not occur absent a clear policy directive from the state, and a mechanism to contract for large-scale storage resources. The ISO New England energy markets are specifically designed to maintain reliability at the lowest cost possible, regardless of technology and emissions. The markets were not designed to drive the reduction of greenhouse gas emissions in any way, which is a problem that the New England states are struggling with now. The markets were also not designed to capture the full set of values that storage can provide to consumers, which is recognized as a vital need for the implementation of deep decarbonization goals.

As a result, Massachusetts' existing large-scale storage capacity is not sufficiently coordinated with the off-peak output of renewable generation, and currently responds to the prevailing wholesale energy and operating reserve economics signaled by the ISO New England markets. Coordinated energy storage operation can lower peak prices and reduce carbon emissions, resulting in a net benefit that effectively pays for itself, but this will not be realized without the mechanism to contract for large-scale storage resources proposed under Senate Bill 2155 and House Bill 3314.

Absent immediate and dynamic market reforms that are designed to optimize energy storage, contracts are the most efficient pathway to aligning the operation of energy storage facilities with renewable energy production. This would ensure that the consumers of the Commonwealth were realizing the full value of their investment in offshore wind at the least cost and meeting the state's clean energy goals.

II. Large-Scale Energy Storage Will Enable Massachusetts to Decrease Reliance on Dirty Fossil Fuel Fired “Peaker” Plants to Maintain Reliability as We Switch to Renewables.

In addition to the benefits noted above, utilizing large-scale energy storage is a key policy to ensure we do not lock in a system of reliance on fossil-fuel as the primary resource to balance new renewable generation—a key priority for advancing environmental justice outcomes. As outlined above, the regional electric grid operates in a technology-agnostic, and emissions-blind, way to dispatch lowest-cost resources to meet peak energy needs. Sometimes clean resources like pumped-hydro storage meet that peak, but so-called peaker plants fueled by oil, kerosene, jet fuel, or gas are also used. They are disproportionately located in environmental justice neighborhoods, and they contribute to poor air quality and adverse health impacts for residents of those areas.

Absent a mechanism to directly use large-scale storage to move off-peak renewable generation to meet daily peak-needs, these fossil-fuel resources will continue to play a larger than necessary role to ensure reliability of the electric system, while simultaneously “wasting”, or at least foregoing significant value from, offshore wind and other renewables delivered in periods of much less value to consumers. Operation of fossil fuel peakers harms local residents and can

be substantially reduced if we move to greater reliance on under-utilized storage assets. This real-world impact of better leveraging large-scale energy storage resources should not be overlooked in considering the benefits of the proposed legislation beyond the energy and reliability considerations described above.

III. Investing in in-state clean energy storage would be an economic driver for Massachusetts.

Western Massachusetts is the leader in clean energy storage capability, and it makes sense to direct the state's decarbonization investments to clean energy resources located in the state. A contract for energy storage to support in-state clean energy storage resources would also support the rural communities where these facilities operate. FirstLight currently spends \$9 million annually in Massachusetts-based vendor contracts and pays over \$16 million in property taxes to Franklin County communities, making up over 85% of the tax base in some places. We are a proud union employer, and our skilled employees earn over double the median income for Franklin County. However, the facility is currently operating at less than 25 percent of its potential annual output, foregoing significant additional economic value of these important assets. A clear state policy that would better leverage these resources for in-state clean energy storage would support continuing investment in the state's business base and the communities where they operate.

IV. Recommended Action.

FirstLight urges the Conference Committee to support Section 26 of H. 4524 that will enable energy storage resources to efficiently integrate the State's investments in large-scale carbon-free resources, including offshore wind. This coordinated use of new and existing storage resources to perform the renewable energy transportation service will result in lower costs to consumers, reduced carbon emissions, improved winter reliability, and additional support for the large-scale renewable investments that Massachusetts has already made.

Sincerely,

Alicia Barton
Chief Executive Officer
FirstLight Power

cc: The Honorable Tackey Chan
The Honorable Cynthia Stone Creem
The Honorable Bradley H. Jones, Jr.
The Honorable Bruce E. Tarr