COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD

Petition of Cranberry Point Energy Storage, LLC,) Pursuant to G.L. c. 164, § 69J ¼ for Approval to) Construct a 150 MW Battery) Energy Storage System in Carver, MA)	EFSB 21-02

PETITION OF CRANBERRY POINT ENERGY STORAGE, LLC
FOR APPROVAL OF 150 MW BATTERY ENERGY STORAGE PROJECT

NOW COMES Cranberry Point Energy Storage, LLC ("Cranberry Point", the "Company" or the "Applicant"), pursuant to G.L. c. 164, § 69J ¼, seeking approval from the Energy Facilities Siting Board (the "Siting Board" or "EFSB") to construct a 150 megawatt ("MW")/300 megawatt-hour ("MWh") standalone battery energy storage system ("BESS") to be located in the Town of Carver (the "Town" or "Carver") (the "Cranberry Point Energy Storage Project" or the "Project").

G.L. c. 164, § 69J ¼ states that the Siting Board shall approve construction of a generating facility where the applicant has demonstrated that: (i) the description of the proposed generating facility and its environmental impacts are substantially accurate and complete; (ii) the description of the site selection process used is accurate; (iii) the plans for the construction of the proposed generating facility are consistent with current health and environmental protection policies of the Commonwealth and with such energy policies as are adopted by the Commonwealth for the specific purpose of guiding the decisions of the Board; (iv) such plans minimize the environmental impacts consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility; and (v) the construction of the proposed near zero greenhouse gas emission-generating facility on balance contributes to a reliable, low-cost, diverse, clean regional energy supply with minimal environmental impacts.

As detailed herein, the Project is contractually committed to meeting the capacity needs of Massachusetts as determined by ISO-New England, Inc. ("ISO-NE"), is located in an area that allows for easy interconnection adjacent to an existing NSTAR Electric Company d/b/a Eversource Energy ("Eversource") substation, is consistent with current health, safety and environmental regulations and policies, and is designed to minimize environmental impacts. As such, the Project is consistent with the requirements for approval of the Project under the Siting Board requirements.

In support of the Application, the Company states as follows:

1. The Siting Board Has Jurisdiction over the Proposed Project

The Siting Board has jurisdiction to review and approve "generating facilities" pursuant to G.L. c. 164, § 69J ¼, defined as "any generating unit designed for or capable of operating at a gross capacity of 100 MW or more, including associated buildings, ancillary structures, transmission and pipeline interconnections that are not otherwise facilities, and fuel storage facilities." The Project is a standalone energy storage system, in that it is not designed as a co-located or a hybrid installation with renewable energy generation onsite. The Project is the first of its kind in Massachusetts and proposes to: (1) have a nameplate capacity of 150 MW; (2) be connected to the ISO-NE administered transmission system and (3) to participate in the ISO-NE wholesale market and the ISO-NE Forward Capacity Market ("FCM").

While the Siting Board's statutes and regulations do not explicitly define what constitutes a "generating unit," "generation," or a "generating facility", the Siting Board has, in the past, looked to definitions in Section 1 of Chapter 164 when a particular term is not defined in G.L. c. 164 § 69G. Chapter 164 defines generation as "the act or process of transforming other forms of energy into electric energy or the amount of electric energy so produced." Relatedly, a "generation facility" is defined as a "plant or equipment used

to produce, manufacture or otherwise generate electricity and which is not a transmission facility, or an energy storage system procured by a distribution company for support in delivering energy services to end users."[1] Cranberry Point Energy Storage meets these definitions. Cranberry Point is a BESS, which is defined as "a commercially available technology that is capable of absorbing energy, storing it for a period of time and thereafter dispatching the energy."[2] Cranberry Point was not procured by a distribution company for support in delivering energy services to end users. Rather, Cranberry Point is a BESS that can participate in the ISO-NE marketplace as a Generator Asset, which is defined in the ISO-NE Tariff as a "device (or a collection of devices) that is capable of injecting real power onto the grid."[3] Because Cranberry Point will function as a generator, it is a "generating facility" subject to Siting Board review. Cranberry Point has been designed to participate in ISO-NE's Forward Capacity Market ("FCM") and will contribute to system reliability with its 150 MW of capacity in Southeast Massachusetts within ISO-NE's Southeast New England ("SENE") capacity zone. The Project, located in ISO-NE's Southeast Massachusetts ("SEMASS") load zone will also participate in the Day-Ahead and Real-Time energy markets as well as ISO-NE's ancillary services markets and will mitigate instability on the grid that could result from intermittent resources, congestion, fluctuations in system demand and other system contingencies. From a wholesale electricity market standpoint, the Project will operate much like a generator in that it will act as a source of wholesale electricity and provide wholesale services in the same manner as other resources, *i.e.*, by dispatching electricity into the marketplace.

[1] G.L. c. 164 § 1.

[2] *Id.*

[3] ISO-NE Tariff § "Generator Asset."

ISO-NE has implemented a technology-neutral market construct, meaning that a resource participating as a BESS must register under existing market constructs. Specifically, a storage facility registers as a dispatchable Generator Asset to manage injection capability for the provision of capacity energy, reserves, primary frequency response, blackstart, and reactive power. A BESS, like other resources, also has the ability to participate in the ISO-NE FCM by qualifying as a Generating Capacity Resource. A BESS can also offer as a Limited Energy Resource, which allows it to lower its maximum dispatch limit at any time during the current operating hour or future hours to save the facility's energy for a future period, while continuing to provide reserves up to its full capability. Essentially, under ISO New England's market rules, a BESS acts as and is modeled a generator when dispatching electricity into the marketplace.

The size of the Project, at 150 MW, exceeds the Siting Board's 100 MW jurisdictional threshold. Moreover, given Cranberry Point's intended participation in the wholesale electricity markets and ISO-NE's characterization of storage facilities as Generator Assets under the market rules, this Project qualifies as a "generating unit" or a "generating facility," and its operation should be considered to be "generation" over which the Siting Board's exercise of jurisdiction is appropriate.

2. ISO-NE has Determined a Need for Resources Such as Standalone Battery Energy Storage Systems

The Project critically supports ISO-NE in meeting the future capacity needs of the SENE zone, which is comprised of Northeastern Massachusetts, Greater Boston, Southeastern Massachusetts, and Rhode Island. Pertinent to this matter, on February 8, 2021, Cranberry Point participated in ISO-NE's Forward Capacity Market Auction ("FCA 15") and ISO-NE selected Cranberry Point to provide capacity to serve the SENE zone starting in 2024.

The projects selected by ISO-NE align with power system transmission constraints and signal areas of the system with a potential shortfall. The clearing prices in FCA 15 reveal the different values across the region based on the individual capacity needs for each zone. The clearing price in the SENE zone, where this Project will be located, is $3.98 kW-month. ISO-NE noted that FCA 15 included nearly 600 MW of energy storage capacity target for 2024-2031, of which 150 MW was committed to from the Project.

3. Project Has Minimal Environmental Impacts

The Project has significantly fewer environmental considerations and impacts for EFSB review than traditional generation projects. The Project will generate near zero air emissions, and will not impact water resources, will not impact rare species, and will not interfere with heritage agricultural uses. Additionally, it is not anticipated that the Project will damage any sensitive archaeological resources. All predicted noise levels from the Project are within the Massachusetts Department of Environmental Protection ("MDEP") noise regulation standards. Similarly, traffic impacts due to initial construction and occasional on-site maintenance will all be minimal, especially as the site location is adjacent to a substation on property owned by Eversource and in an area where BESS is allowed pursuant to a 2018 Town Board meeting (*see* Exhibit CP-1, Exhibit CP-2, attached). Any required traffic changes during construction have been discussed with the Town and will be addressed in accordance with the requirements set forth in the Town of Carver's Site Plan Review and Special Permit for the Project. The Project will be remotely monitored; traffic to the Project Site will be limited to regularly scheduled site inspections.

4. The Project Site Selection is Preferred

The Project site was chosen given its proximity to its existing transmission lines and Eversource substation, as well as its remote location. Specifically, the size of the lot, at

approximately 6 acres, meets the requisite land area needed for a project of the size proposed. Second, as the lot is more than 400 feet from the nearest residence, there is minimal, if any, economic or environmental impact on the surrounding community. Third, the lot is readily available for lease. Fourth, the lot is adjacent to infrastructure with available transmission interconnection capabilities. Fifth, the location of the Project is in an area where the Company could readily obtain a Site Plan Review and Special Permit, with minimal impact on the environment. Sixth, the location is in close proximity to retiring nuclear and fossil-fuel generation facilities and potential offshore wind interconnection points onshore which, combined with significant market advantages including but not limited to, energy price volatility and compensation mechanisms available for providing ancillary services, etc., enhancing the viability of a project of this size and scope. In fact, the Project Site allows sufficient physical and electrical space to add new enclosures of batteries in the future to maintain the system's capacity.

5. Consistency with Massachusetts Energy Policies and Initiatives

In addition to being nearly emissions-free and environmentally consistent with current laws and regulations, the Project may displace conventional non-renewable generation facilities and thereby further reduce emissions of carbon, particulates, and other air pollutants. For example, the Project represents approximately 10 percent of the capacity of the nearby retiring Mystic gas plant and is sited near other Mystic units that are slated to retire in the coming years.[4] As such, the Project will also promote the Commonwealth of Massachusetts's energy storage and clean energy goals. For example, in its *State of Charge*, Massachusetts Energy Storage Initiative, a copy of which is attached hereto as Attachment 1 and in subsequent initiatives and mandates,

[4] https://www.exeloncorp.com/newsroom/statement-regarding-the-retirement-of-mystic-generating-station-in-2024

the Commonwealth intends to enhance the efficiency, affordability, resiliency and cleanliness of the electric grid by modernizing the way that electricity is generated and delivered. Massachusetts established the Energy Storage Initiative in 2015, with the goal of "advancing energy storage" by:

- *Attracting, supporting and promoting* storage companies in Massachusetts;
- *Accelerating the development of* early commercial storage technologies;
- Expanding markets for storage technologies, and *valuing storage benefits* to clean energy integration, grid reliability, system wide efficiency, and peak reduction; and
- Recommending and developing policies, regulations and programs that help achieve those objectives.

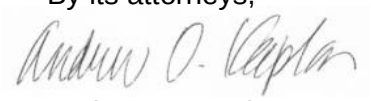
As demonstrated below, the Project is anticipated to qualify to participate in the Commonwealth's Clean Peak Standard as well as the initiatives established in the Global Warming Solutions Act.

WHEREFORE, Cranberry Point Energy Storage, LLC respectfully requests that the Energy Facilities Siting Board approve this Application, with conditions as required to be met by the Town of Carver pertaining to its Site Plan Review and Special Permit and its Order of Conditions**.**

Respectfully submitted,

Cranberry Point Energy Storage, LLC

By its attorneys,



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Dated: August 27, 2021

COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD

Petition of Cranberry Point Energy Storage, LLC for Approval to Construct a 150 MW Battery Energy Storage System in Carver, MA Docket No. EFSB 21-02

CRANBERRY POINT ENERGY STORAGE

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August 27, 2021

ANALYSIS IN SUPPORT OF PETITION

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Attachment 3:	Clean Peak Energy Standard 225 CMR 21.00

Exhibits

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Exhibit CP-CQ-1	Testimony of Christopher Quaranta
Exhibit CP-PNS-1	Testimony of Polly N. Shaw
Exhibit CP-PR-1	Testimony of Lt. Paul Rogers
Exhibit CP-TJK-1	Testimony of Thomas J. Keough
Exhibit CP-1	Town of Carver 2018 Annual Town Meeting Warrant
Exhibit CP-2	Town of Carver 2018 Annual Town Meeting Minutes
Exhibit CP-3	Carver Site Plan Review and Special Permit
Exhibit CP-4	Carver PB June 22 2021 Meeting Minutes
Exhibit CP-5	Carver Conservation Commission Order of Conditions
Exhibit CP-6	Carver Conservation Commission Meeting Minutes
Exhibit CP-7	Expanded ENF
Exhibit CP-8	Wetland Delineation Report
Exhibit CP-9	Stormwater Report
Exhibit CP-10	Acoustic Assessment
Exhibit CP-11	Draft Emergency Response Plan
Exhibit CP-12	Project Notification Form
Exhibit CP-13	MHC Response Letter

SECTION 1.0 THE PROJECT

1.1 PROJECT OVERVIEW

Cranberry Point Energy Storage, LLC (the "Applicant" or the "Company" or "Cranberry Point") proposes to construct a 150 MW/300 MWh battery energy storage system with ancillary structures (*i.e.,* transformers, substation, low voltage/medium voltage equipment) to be located at 31R Main Street, in Carver, Massachusetts. Currently, the Project is designed to utilize lithium-ion batteries, which will be located in approximately 116 above-ground enclosures on an approximately 6-acre parcel of undeveloped land that is currently under an Option to Lease with the Company.

The Project will interconnect adjacent to an Eversource substation (No. 276), via a new 115 kV three-breaker ring bus, which will tap into the existing transmission line #127, requiring the installation of two (2) new dead-end structures between existing structures. In terms of site access, there are two main points of ingress/egress. The existing approximately 530-foot long gravel access driveway from Main Street to the Project will be improved to a width of 20 feet. An existing gravel access road of approximately 20-feet wide and 25-feet long will be extended further south on the East side of the Project Site to allow for emergency vehicle access.

The Project will store electricity, during times of oversupply, and dispatch the electricity, during times of peak demand onto the electric grid. This function will serve as a valuable addition to the electricity system by lower-cost energy generated during off-peak periods to meet peak demand, provide flexibility to optimize the use of other clean, intermittent renewable resources, and defer future traditional generation and transmission projects while avoiding and even offsetting their environmental impacts.

The Project critically supports ISO-NE in meeting the future capacity needs of the SENE zone, which is comprised of Northeastern Massachusetts, Greater Boston, Southeastern Massachusetts, and Rhode Island. On February 8, 2021, ISO-NE as part of its most recent Forward Capacity Market Auction ("FCA 15"), selected Cranberry Point to ensure

there are adequate power system resources available to provide New England with sufficient capacity to meet peak demand needs from 2024-2031.

The projects selected by ISO-NE align with power system transmission constraints and signal areas of the system with a potential shortfall. The clearing prices in FCA 15 reveal the different values across the region based on the individual capacity needs for each zone. The clearing price in the SENE zone, where this Project will be located, was $3.98 kW-month. ISO-NE noted that FCA 15 included nearly 600 MW of energy storage capacity for 2024-2025, of which 150 MW was committed by the Project.

1.2. HOW THE PETITION IS STRUCTURED

There are eight sections that make up the Company's Siting Board application including the Project Overview. Collectively, they demonstrate that Cranberry Point's proposed Project meets or exceeds the statutory requirements, pursuant to G.L. c. 164 § 69J ¼.

Specifically, Sections 2 and 3 provide details about the Project's site. Testimony on these sections will be offered by Allyson J. Sand, the Development Lead for the Project.

Section 4 details the testing and analysis that was completed by AECOM, on behalf of the Company, to demonstrate that the Project will have minimal impact on the environment, including, but not limited to, surrounding water, wetlands, stormwater, solid and hazardous waste, air quality, noise, or emissions. Thomas J. Keough, Senior Wetland Scientist and Permitting Specialist at AECOM will testify on these matters.

Section 5 describes the extraordinary safety testing, evaluations, analyses, and planning that the Company has undertaken to ensure that the Project is constructed and operated in a safe and secure manner. These include, but are not limited to, meeting extensively with the Carver Fire Department ("CFD") to design the Project Site and retaining retired New York City Fire Department Lieutenant Paul Rogers, who helped to develop the safety and building code standards for lithium-ion battery installations. Testimony on the Project's safety will be offered by Lieutenant Rogers, the co-founder of Energy Safety Response Group ("ESRG") and

Christopher Quaranta, Director of Engineering and Construction for the Project.

Section 6 discusses the Archaeological & Historical analysis and is sponsored by the testimony of Thomas J. Keough.

Section 7 details the Site Selection process, including information about alternative sites that were considered, but for a variety of reasons, ultimately not chosen. In addition to Ms. Sand, Mr. Keough will sponsor this section.

Section 8 outlines each of the Commonwealth's policies designed to promote energy storage and how this Project will help propel the Commonwealth to meeting those policy goals and will be sponsored by the testimony of Polly N. Shaw.

1.3 PROJECT TEAM

The Plus Power team, led by seasoned executives from the renewables and energy storage industry, is accelerating the deployment of transmission-connected battery storage throughout the United States, including the development of the Cranberry Point Energy Storage Project.

With a mission to facilitate the changing energy landscape, Plus Power focuses on standalone battery energy storage systems that foster grid flexibility by providing capacity, energy and ancillary services as more renewable generation enters wholesale energy markets.

In addition, the Company has retained the following entities for environmental, safety and legal services.

1.3.1 AECOM

AECOM is an approximately 54,000-person engineering and environmental consulting firm based internationally, including offices in and around the greater Boston area. For the Cranberry Point Energy Storage Project, AECOM's role is lead environmental consultant for the necessary federal, state, regional, and local permitting, as well as performing studies that include, but are not limited to biological resources, physical resources, cultural resources, and noise resources. AECOM is responsible for evaluation of environmental

impacts and provided environmental support for the Petition.

1.3.2 ESRG

ESRG co-founder Paul Rogers led New York City's development of the then-most stringent fire codes in the nation for battery energy storage systems as supervisor of NYC Fire Department's premier HazMat team. Mr. Rogers has also played a pivotal role in the design and evolution of the ensuing National Fire Protection Association (NFPA) 855 national standard for BESS, and he is a member of the International Fire Code Action Committee for BESS. Co-founder Nick Warner similarly advises on six UL standards related to BESS, as well as NFPA and ICC codes for fire safety and BESS deployment. Co-founder Tom Benson also sits on the NFPA 855 committee, bringing over 20 years of fire investigation including extensive BESS safety review. Many of ESRG's senior consultants served in the NYC, Boston, and Phoenix Fire Departments.

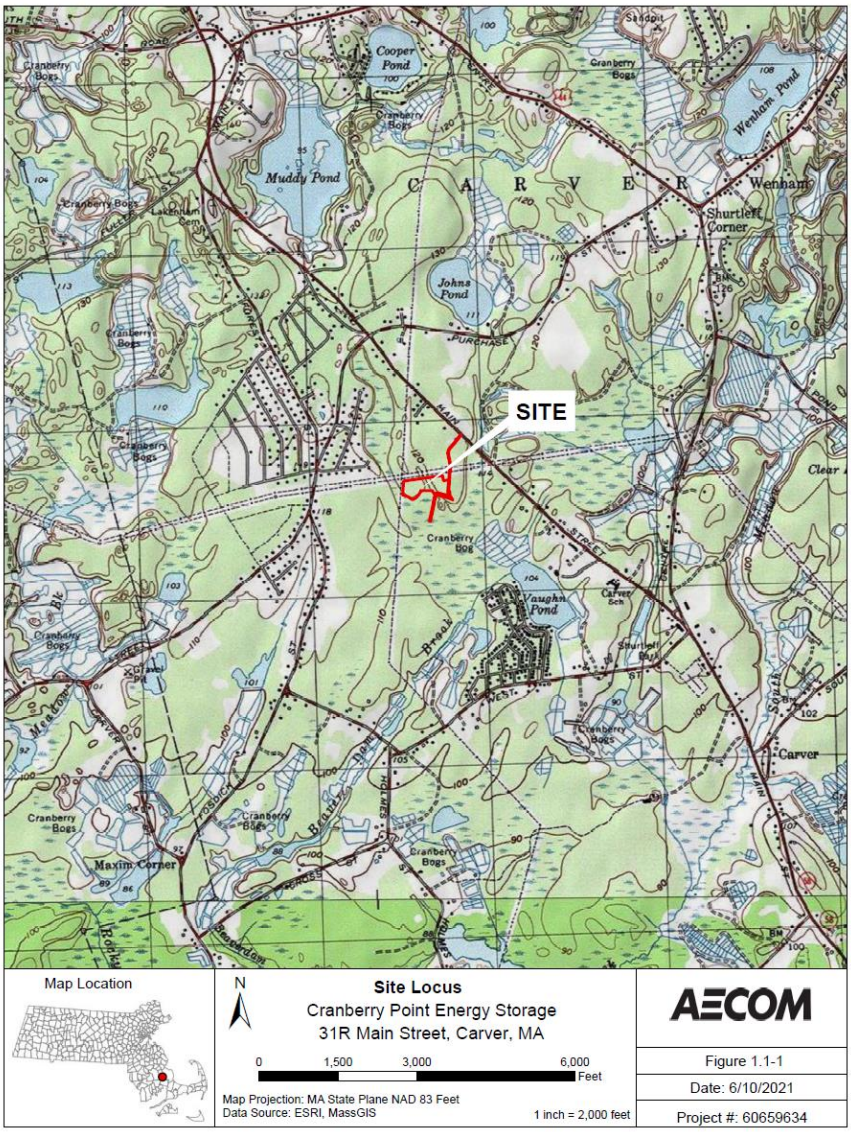
1.3.3 PIERCE ATWOOD LLP

Pierce Atwood LLP is a full-service law firm, representing a broad range of utilities, developers, and other stakeholders before federal and state agencies. Pierce Atwood clients include energy storage developers, solar, wind and biomass companies, developers of natural gas-fired generation facilities, electric and natural gas utilities, hospitals, global governmental agencies and industrial facilities**.**

SECTION 2.0 SITE DESCRIPTION

The Project is located on two undeveloped, primarily wooded properties (Map 61, Lots 7 and 10) at 31R Main Street in Carver, Massachusetts (*see* Figure 1.1-1).

Figure 1.1-1 | Site Locus



The approximate 6-acre area of the Project (the “Project Site”) that will be leased from the current landowner is part of two larger parcels, one of which is 21.5 acres and the other is 12.5 acres. (*see* Figure 1.1-7 and Figure 1.1-8).

Figure 1.1-7 | Site Layout Map

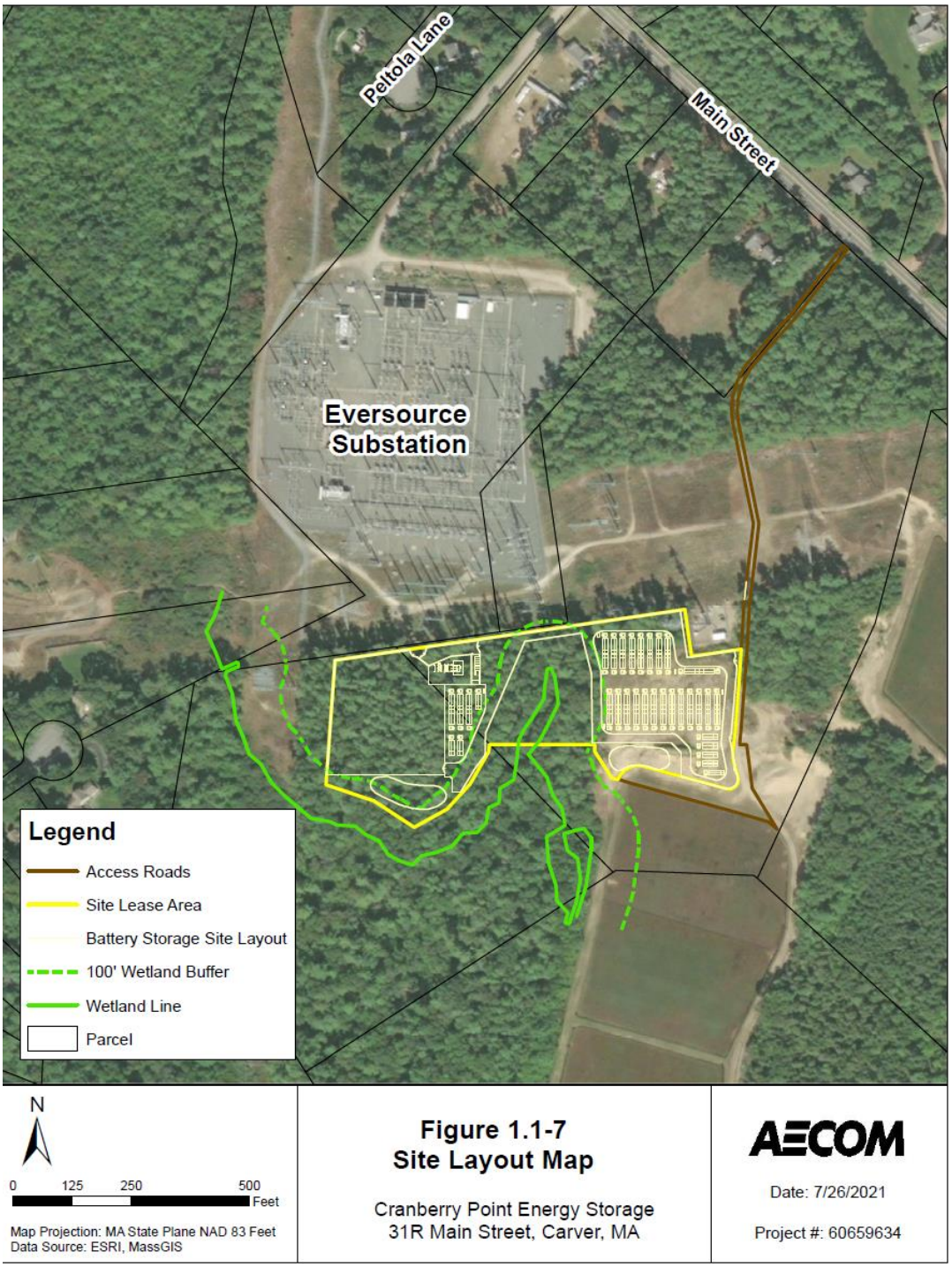
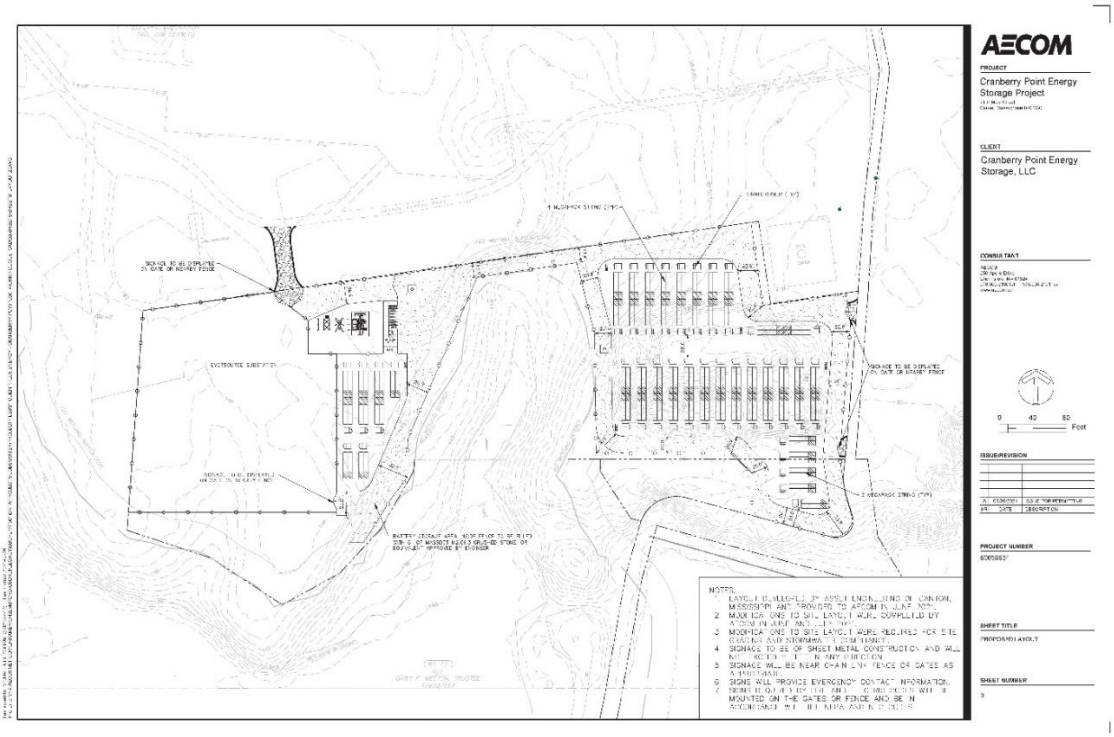


Figure 1.1-8 | Proposed Layout Map



An Eversource Substation (Station No. 726) and electrical transmission/distribution lines are located within a right-of-way ("ROW") just north of the Project Site (*see* Figure 2).

Figure 2 | Aerial Rendering

The Project Site also includes existing unimproved roads to access a cell tower, to the northeast of the Project, and cranberry bogs to the south (*see* Figure 1.1-7 above). Electrical transmission and distribution lines are also located to the north and west of the Project Site within an additional ROW (*see* Figure 2 above). Residential properties are not located within 400 feet of the proposed Project Site boundaries.

Although wetlands and commercial cranberry bogs are located to the south and east of the Project Site, they will not be impacted by the construction or operation of the Project.

The wooded areas are dominated by softwoods (pines) and mixed hardwoods (maples and oaks). Understory species consist of a mix of saplings, shrubs, and herbaceous species. Topography slopes gently in a southerly direction towards the wetland and cranberry bogs. A large Palustrine Forested (PFO) wetland was delineated south of the Project Site.

A Palustrine Emergent (PEM)/Scrub-Shrub (PSS) wetland is located within the electrical transmission line ROW to the west of the site. All these areas of PFO and PEM/PSS wetland are contiguous and considered one large wetland area. Vegetation within the Bordering Vegetated Wetland include an overstory of trees consisting of red maple (*Acer rubrum*) and yellow birch (*Betula alleghaniensis*) a shrub understory dominated by pepperbush (*Clethra alnifolia*), spicebush (*Lindera benzoin*) and highbush blueberry (*Vaccinium corymbosum*) with an herbaceous understory of cinnamon fern (*Osmundastrum cinnemomea*), skunk cabbage (*Symplocarpus foetidus*), Massachusetts fern (*Parathelypteris simulate*) and sphagnum moss. Hydric soil containing both shallow and deep organic soil and hydrologic indicators including soil saturation at the surface and a water table less than 12 inches below the surface were encountered.

Wetlands Protection Act ("WPA") regulations (310 CMRS 10.02(2)(b) establish a 100-foot buffer zone that extends from Bordering Vegetated Wetland ("BVW"). The buffer zone itself is not a jurisdictional resource area under the WPA; however, it is a resource area pursuant to Chapter 1 of the Carver Wetlands Protection Bylaw (Chapter 9). In addition, the Town of Carver

Wetlands Protection Bylaw provides a 65-foot setback from wetlands that restricts the construction of any structure or impervious surface within 65 feet of a wetland. The Project will not result in any direct wetland impacts, and no Project facilities are located within the 65-foot setback.

Based on the Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") panel No. 25023C0343J (July 17, 2012), the Project Site is located outside of the flood hazard areas subject to the 100-year flood/inundation by the 1% annual chance flood. Therefore, the Project Site does not contain any areas of Bordering Land Subject to Flooding ("BLSF").

According to Massachusetts Natural Heritage and Endangered Species Program ("NHESP") Atlas (August 1, 2017, 14th Edition), the Project Site is not located within an area of Estimated Habitats of Rare Wildlife or an area of Priority Habitats of Rare Species. There are no certified vernal pools located on or near the site.

Two cranberry bogs are located to the south of the Project Site, within the remaining southern portion of the eastern parcel (parcel 61/7) and also within an off-site parcel (parcel 61/8) to the south. Based on review of United States Geological Survey historical topographical maps from 1893 to the present and historic aerial photographs from 1960 to the present, it appears the northern portion of the bog located within the southern extent of the remaining portion of the Project area parcel (parcel 61/7) is an "upland bog" since there has historically been an upland area (upland lobe) that is surrounded by wetland to the south, east and west. The far southern bog (the southernmost bog) located off-site on parcel 61/8 appears to have potentially been former wetland; however, the far northernmost portion of the bog (the "upland bog" area) located on the site of the Project area appears to have been mostly upland. The proposed Project Site is not located within a current or former bog.

2.1 TOWN OF CARVER ZONING APPROVALS

On March 26, 2019, the Town of Carver Planning Board awarded the Applicant a Site Plan Review and Special Permit, allowing for the construction and operation of the Project, subject to limited conditions (s*ee* Exhibit CP-3 attached). The vote was four in favor and one opposed. On June 22, 2021, the Project's Minor Modification Application was approved by the Town of Carver's Planning Board (*see* Exhibit CP-4, attached). Additionally, on February 6, 2019, the Company received an Order of Conditions from the Carver Conservation Commission (*see* Exhibit CP-5, attached). Per the December 2, 2020 letter from the Carver Conservation Commission (*see* Exhibit CP-6, attached), no additional conditions were necessary as a result of the minor modifications made to the Projects design.

SECTION 3.0 PROJECT DESCRIPTION

The description below is based on the Project layout as it is currently designed as of the date of this filing. As battery technology evolves, the exact quantity and dimensions of the equipment listed below that will be utilized for the Project may change. However, the Company will maintain strict adherence to the requirements as to the environment, and other conditions required in the Company's permits and certifications.

The Project involves the construction of a 150 MW lithium-ion battery energy storage system ("BESS") that will contain lithium-ion battery modules built into approximately 116 individual enclosures that will be supported by concrete slabs and pier foundations and surrounded by crushed stone. The BESS itself will be constructed using an assembly of subcomponents that include battery enclosures manufactured by Tesla, oil-filled step-up transformers, medium voltage circuit breakers, and associated electrical control and interconnection equipment. The entire BESS will be electrically connected to a Project Substation (described in more detail below), which includes a single large Power Transformer, circuit breaker, and interconnection structures that are used to match up to the electrical interface of the Eversource grid. Lastly, the Project will include an Eversource-owned switchyard that will electrically allow Eversource and ISO-NE to either connect, disconnect, or bypass the Project based on market and grid conditions, as required.

Within the Project's BESS, groups of two battery enclosures will connect to their own 3,000 kVA transformer to form an AC "string". Lithium-ion battery cells, which are hermetically sealed, are combined electrically in a series of parallel arrangement within each battery module. Each enclosure will have approximately 22 inverter and 15 battery modules to provide the necessary power and energy required from each enclosure. Enclosures in the current design are 23.5 feet long, 5.4 feet wide, and stand 8.3 feet tall atop one-foot concrete pad foundations. Every two enclosures will be installed back-to-back, creating a string that will be approximately

11-feet wide. The concrete pad foundation will also include empty space for the future installation of additional battery equipment to address the time-based degradation of the initial installation, which is further detailed below in Section 3.2.

The rows of enclosures in the current Project design are spaced 8 feet apart and the transformers are spaced 3 feet from the first and last enclosures in each row. Per this design, there will be a total of approximately 58 standard step-up transformers that are approximately 4-feet by 5-feet and approximately 8-feet high.

The physical layout of the proposed Project has two separate areas of development within the Project Site, including an east and west battery storage area to ensure no wetland impacts and to mitigate the need to cut the nearby forest. The eastern storage area is the larger of the two areas and is connected to the western side via a proposed vehicle access path at the northern edge of the Project Site. Within the approximately 6-acre Project Site, 4,217 square feet includes impervious surfaces such as concrete slabs and drilled piers. The remaining 213,583 square feet within the proposed fenced-in area will be surfaced with an approximate 12-inch-thick layer of crushed stone and approximately 13,051 square feet of crushed stone within the driveways.

As noted above, in addition to the battery system and transformers, the Project will include a small substation within the fenced area ("Project Substation") with low voltage/medium voltage equipment, protective relays, circuit breakers, and other ancillary electrical equipment, all of which will be supported by concrete pads. All of this equipment will be secured by the installation of a chain link fence and, with prohibitive signage, will be monitored by security cameras. Within the fenced Project Substation, all equipment will be placed on concrete pads and the area in between the concrete pads will be covered with gravel.

The Project will interconnect to Eversource's existing transmission line #127 via a new 115-kV three-breaker ring-bus ("Switchyard") to be located west of the Project Substation. It is anticipated this interconnection will be effectuated via an approximately 100-foot, aboveground

115-kV line directly from the Cranberry Point Project Substation to the Switchyard ring-bus. Said interconnecting line, and the two new dead-end structures, will not cross any public ways and will be entirely located on the Project Site and Eversource's right-of-way.

A total of three access gates (points of ingress/egress) are proposed for the Project, two of which would be for normal use, with one additionally proposed emergency entrance within Eversource's existing transmission ROW to the north of the Project Site. A new approximately 16- to 20-foot-wide gravel access driveway that is approximately 530 feet in length is proposed to extend from an existing unimproved drive-way from Main Street that is currently used to access the cranberry bogs located to the south of the Project area. A second new 20-foot wide gravel access driveway that is approximately 25 feet in length is proposed to extend from the existing access road directly to the east storage area. A third new 20-foot wide gravel access driveway that is approximately 90 feet in length is proposed to extend from the existing road to the northern portion of the site to provide ingress/egress to the west storage area from the existing electrical substation. This driveway is proposed solely for emergency access purposes and must be approved by Eversource.

Permanent structural stormwater management control devices are proposed including two infiltration basins. These stormwater management control devices will collect and treat stormwater before discharge to the surrounding wetlands**.**

3.1 PROJECT DEVELOPMENT SCHEDULE

On August 16, 2021, an Expanded Environmental Notification Form ("ENF") was submitted to the Massachusetts Environmental Policy Act Office ("MEPA") (*see* Exhibit CP-7, attached). Relatively few remaining permits or applications are needed for the development of the Project.

The timeline for the remaining anticipated permits / approvals are as follows:

Number	Permit/Review/Approval	Issuing Agency / Regulatory Authority	Status
1	Site Plan Review and Special Permit	Town of Carver Planning Board	Awarded March 26, 2019 Extension approved March 23, 2021 Minor Modification Application approved June 22, 2021
2	Petition of Cranberry Point Energy Storage, LLC, Pursuant to G.L. c. 164, § 69J ¼ for Approval to Construct a 150-MW BESS (EFSB 21-02)	Massachusetts Energy Facilities Siting Board (EFSB)	Submitting August 2021
3	Expanded Environmental Notification Form (EENF) and Environmental Impact Report (EIR) pursuant to 309 CMR 11.03(7)(1)	Massachusetts Environmental Policy Act (MEPA) Office	Submitted Expanded Environmental Notification Form August 16, 2021
4	WPA Form 5 - Order of Conditions (SE# 126-579)	Carver Conservation Commission, Massachusetts Department of Environmental Protection Bureau of Resource Protection - Wetlands)	Awarded February 7, 2019
5	Certificate of Compliance	Carver Conservation Commission	Once construction is completed
6	National Pollutant Discharge Elimination System (NPDES) Stormwater General Permit	U.S. Environmental Protection Agency (EPA)	Application to be submitted prior to construction start

7	Project Notification Form (PNF)	Massachusetts State Historic Preservation Office (SHPO)	PNF submitted July 2, 2021
8	Building Permit	Town of Carver	Application to be submitted prior to construction start
9	Electrical Permit	Town of Carver	Application to be submitted prior to construction start
10	Certificate of Use and Occupancy	Town of Carver	Application to be submitted prior to construction start

3.2 BATTERY TECHNOLOGY AND LOCATION

Currently, the Project expects to use the Tesla Megapack enclosure as the proposed battery solution. The Tesla Megapack includes:

- DC Battery Module –
    - Quantity of 15, rated for ~89.4 KW (AC) for a 2-hour duration
- Powerstage (DC-AC Inverter) –
    - Quantity of 22, each rated for 71.5KVA

Each Megapack enclosure also includes equipment that provides ancillary functionality for heating and cooling (thermal management - heater, cooling pump and reservoir, cooling distribution system, and heat exchanger with fans); connection and disconnection (fuses, circuit breakers, switches); as well as an integrated controls and Battery Management System ("BMS").

As any battery is used, it begins to degrade the total amount of electrical charge that it can store and release. For large grid-connected BESS installations, there are two typical approaches to solve for this standard process: either to (i) overbuild the Project with considerably more batteries to plan for the "theoretical" decline over the lifetime, or (ii) build the

Project such that sufficient physical and electrical space is available to add new enclosures of batteries in the future to maintain the system's capacity. Cranberry Point has chosen to implement the latter of those two approaches, which is often referred to as an augmentation of the BESS' total energy. The foundation areas for the Megapack enclosures will include open space where augmentation segments can be added to the existing equipment to increase its energy as the cells naturally decline, thereby enabling the full Project to continue to operate at its full capacity.

SECTION 4.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

G.L. c. 164 § 69J ¼ requires the Siting Board to determine whether the plans for construction of the Project minimize the environmental impacts of the proposed Project consistent with minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the Project. To make this determination, the Siting Board assesses the impacts of the Project in eight areas prescribed by G.L. c. 164, § 69J ¼, including air quality, water resources, wetlands, solid waste, visual impacts, noise, local and regional land use, and health. Several of these environmental considerations are not at issue or are mitigated by the very nature of the Project. For instance, there are no air impacts from carbon, nitrogen oxides, sulfur dioxide, methane, nitrous oxide, or fine particulates associated with the Project, as energy storage systems using lithium-ion batteries produce near zero emissions. For purposes of completeness, the Company addresses each potential environmental impact below and demonstrates how it is not applicable to the Project or, alternatively, how the Project's environmental impact is minimal or non-existent.

4.1 AIR QUALITY

The Project will contribute near zero emissions. In fact, the Project may displace conventional generation facilities and thereby further reduce emission of carbon, particulates, and other air pollutants.

According to the U.S. EPA ("EPA"), emissions including, carbon dioxide, nitrogen oxides, sulfur dioxide, methane, nitrous oxide and fine particulates are products of combusting fossil fuels, as well as biogenic and other materials, and are the primary greenhouse gases ("GHG") emitted by human activities that are driving global climate change. Nitrogen oxides are also emitted by electric generating units and are precursors to the formation of ozone or smog, and fine particulates, and they also contribute to acid rain and other environmental and human health impacts. Additionally, sulfur dioxide is emitted by electric generating units especially in coal combustion; it produces acid rain and particulates that are associated with

other environmental and human health impacts.

The EPA estimated that in 2018, conventional power plants across the country emit more than 1.93 billion tons of CO2. According to the EPA eGRID 2016 technical support documents, the CO2 emissions from hydrogen, nuclear, purchased steam, solar, waste heat, water, wind, and energy storage are considered to be zero. Further, since energy storage has near zero emissions of any kind, the Project has no air impacts from the nitrogen oxides, sulfur dioxide, methane, and nitrous oxide and fine particulates that compose greenhouse gas emissions. Thus, from an air impacts perspective, BESS is superior as a unit. Depending on the generating sources on the electric grid that charge it, it can also be significantly superior as to air quality in performing services for the electric grid system to those performed by traditional generation. In sum, energy storage has a positive impact on air quality because storage helps replace traditional polluting generation and enables higher amounts of renewable energy on the grid.

4.2 EMISSIONS

G.L. c. 164, § 69J ¼ requires that a Petition include "either (a) evidence that the expected emissions from the Facility meet the technology performance standard in effect at the time of filing, or (b) a description of the environmental impacts, costs, and reliability of other fossil fuel generating technologies, and an explanation of why the proposed technology was chosen [over these alternatives]." As explained in further detail in Section 69J ¼, the purpose of the technology performance standards is to "streamline the [Siting Board's] review of petitions to construct generating facilities that have state of the art environmental performance characteristics."

A petition for approval must include an analysis of the proposed facility's expected emissions of the criteria and non-criteria pollutants listed in 980 CMR 12.03. If the expected emissions from a proposed generating facility meet the technology performance standards, the Petition does not need to include information regarding other fossil fuel technologies. Furthermore, applicants proposing the use of fuel types that do not contain pollutants specified in the technology performance standards and do not result in pollutants specified in the technology performance standards when burned, will not be required to provide modelling or testing results, guarantees, work papers or other similar documents with respect to those pollutants.

As discussed above in Section 4.1, the Project has near zero emissions, and there are no air impacts from criteria pollutants such as nitrogen oxides, sulfur dioxide, methane, and nitrous oxide and fine particulates. The Project also does not produce or burn fuel that produces non-criteria pollutants listed in 980 CMR 12.03(2). Because the emissions from a BESS is considered to be near zero, the Project satisfies, and arguably exceeds, the technology performance standards. Accordingly, information regarding other fossil fuel technologies is not required, nor are modelling or testing results, guarantees, work papers, or the like, as the "fuel type" the Company proposes to use does not contain or produce the pollutants specified in the technology performance standards. As explained throughout this Petition, the proposed technology was selected because of the economic, grid reliability, and environmental benefits that battery energy storage systems provide and the Project's contribution to the Commonwealth's clean energy and storage-specific objectives.

4.3 WATER RESOURCES

The Siting Board has historically based its determination regarding water supply upon a demonstration by the applicant of (1) an agreement for, or documentation of, an adequate water supply for the operational needs of the facility; (2) that the required water supply infrastructure exists, or can be constructed with minimal environmental impacts; and (3) that historical and

projected water withdrawals are within the permitted limits for the water supply source. Typical generation requires water for steam generation, cooling ponds, wash ponds, and for dust control. In locations where cooling ponds or outfalls to rivers or harbors are used, there is often an increase in temperature in the receiving water.

In almost all fossil fuel generating plants, ash management includes the use of settling basins, wash ponds or lagoons where the ash is pumped into the pond in slurry. After the ash settles, the water is pumped and treated before being reused. In coal-fired generating facilities, water is used for dust mitigation and equipment washing/maintenance.

A BESS does not require a source of on-site water. The only instance where water may be utilized at the Project Site would be in the rare occurrence of a thermal event. As was confirmed with the Carver Fire Department, in the unlikely event of a thermal event, a mobile water source would be used to transport water for fire suppression, should the CFD choose to utilize water. After construction of the Project, dust suppression is not required because of the limited number of visits to the site by maintenance workers. For these reasons, a BESS is superior to most other forms of electric generation with respect to water use.

4.4 WETLANDS

The Siting Board examines direct wetlands alteration, disturbance of wetland buffer zones or coastal wetland resource areas. Specifically, whether, and if so, how much of the Project footprint or site access would be located in or disturb wetlands.

The Massachusetts Wetlands Protection Act, G.L. c. 131 § 40, protects water-related lands such as wetlands, rivers and streams, floodplains, ponds, estuaries, and others and establishes procedures by which work is conducted in these areas. The implementation of Massachusetts wetland regulations is delegated to local conservation commissions. Any proposed activity which will remove, fill, dredge, alter, or build upon a protected area or within 100 feet of a protected area (the Buffer Zone), requires the filing of a Notice of Intent. The Carver Conservation Commission will make a determination on the Notice of Intent and issue a

permit in the form of an Order of Conditions. An Order of Conditions may confirm wetlands boundaries and permit proposed work, and includes conditions under which work will be carried out to minimize impacts to wetlands, wildlife, or to prevent pollution or flooding, and may include conditions for long-term operation and maintenance that will continue after the work is done. The Notice of Intent to obtain an Order of Conditions was submitted on January 18, 2019 (MDEP file number SE#126-579) and issued by the Carver Conservation Commission on February 6, 2019. *See* Exhibit CP-5 which includes a letter from the Carver Conservation Commission dated February 7, 2019.

There are wetlands to the south and west of the Project site as determined by AECOM in the Wetland Delineation Report dated November 9, 2018 (s*ee* Exhibit CP-8). There will be no direct impacts to the wetlands bordering the Project Site. While the Project Site falls within the 100-foot buffer zone of a wetland, in no instance will work be conducted within 65 feet from the delineated wetland and impacts to the buffer zone will be limited to tree removal and no impervious surfaces will be constructed within the Buffer Zone. In addition to the general conditions under the Massachusetts Wetlands Protection Act, all work associated with the Project will be performed in accordance with the Project's Order of Conditions.

4.5 STORMWATER

The Siting Board examines whether an applicant has a comprehensive plan for minimizing impacts resulting from stormwater-related discharges, i.e., runoff resulting from rainfall events and snow melt. MDEP has issued the Massachusetts Stormwater Handbook, as well as Stormwater Management Standards pursuant to the Wetlands Protection Act, G.L. c. 131 § 40, and the Massachusetts Clean Waters Act, G.L. c. 21, §§ 26-53, to promote increased stormwater recharge, the treatment of more runoff from polluting land uses, low impact development ("LID") techniques, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater Best Management Practices ("BMPs").

As part of the Project's Order of Conditions, the Carver Conservation Commission found that work associated with the Project is subject to the Massachusetts Stormwater Standards and imposed conditions to address stormwater impacts. All work associated with the Project as it pertains to stormwater will be performed in compliance with the Order of Conditions.

To accommodate the change in runoff at the site by this Project, two infiltration basins with sediment forebays are proposed at both the eastern and western portions of the Project Site to collect and treat stormwater before discharge to the surrounding wetlands. Each infiltration basin was sized to store the amount of runoff associated with the 10-year, 24-hour storm. The structures were developed in accordance with Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook. Both infiltration basins are proposed just outside of the fence lines to the battery storage areas, but outside of the 65-foot wetland setback area. Please refer to the Stormwater Report located as Exhibit CP-9 for further detail.

To protect infiltration basins from failing during a large storm, emergency spillways will be installed. The spillways will be designed to discharge just enough water so that the infiltration basin will not overflow. In addition, riprap will be used to prevent erosion at the weir discharge locations.

In conclusion, the installation of two infiltration basins with sediment forebays are designed to prevent a net increase in runoff from the site for the 10-year, 24-hour storm. The basins have also been designed to withstand larger rainfall events.

4.6 SOLID AND HAZARDOUS WASTE

The Project will produce neither solid nor hazardous waste during operations. During construction of the Project, solid waste will be transported offsite by the construction contractors in accordance with local, state and federal guidelines.

4.7 VISUAL

The visual impact of the Project is minimal due to the location and orientation of the Project Site, the existing tree cover on adjacent properties and the existing electrical

infrastructure to the north of the Project Site. As seen in Figure 3 below (and in Figure 2, above), the Project Site is located on a remote portion of land and the proposed western fence line of the Project is approximately 730 feet from the nearest occupied residence with a direct line of sight.

Figure 3 | Rendering looking West

A depiction of the future view, looking southeast towards the proposed Project Site, from said residence's backyard is included as Figures 4-1 and 4-2.

Figure 4-1 | Rendering of View from Easternmost Residence on Atwood Street (scale)

Figure 4-2 | Rendering of View from Easternmost Residence on Atwood Street (no scale)

The closest residence to the Project is approximately 400 feet west of the proposed Project fence line, but is shielded by forest, as is depicted in Figure 3, above.

As for visual impacts that could result from the construction of the Project, the Town of Carver limits construction to daylight hours of 7:00 a.m. to 4:30 p.m. As such, temporary lighting is not anticipated.

Moreover, permanent lighting within the Project Site will be pole-mounted. Carver zoning restrictions limit the height of those lighting poles to 15 feet. Accordingly, there should be no visual impact from those poles. As one of the conditions of the Site Plan Review and Special Permit, an approved lighting plan with a photometric analysis will be required before a building permit will be issued by the Town of Carver.

4.8 NOISE

The Project has minimal noise impacts to the surrounding community and complies with the MDEP's Noise Regulations and Policy.

1. State/Local Noise Policy/Regulations

The MDEP regulates noise under its Air Pollution Control regulations. Per the regulations, an "air contaminant" includes "any substance or man-made physical phenomenon in the ambient air space" and includes sound, and "air pollution" means the "presence . . . of one or more air contaminants . . . in such concentrations and of such duration as to . . . cause a nuisance . . . or unreasonably interfere with the comfortable enjoyment of life and property or the conduct of business." The MDEP regulations also prohibit "unnecessary emissions" of noise. The MDEP Division of Air Quality Control Policy Statement 90-001 (Feb. 1, 1990) interprets a violation of this noise regulation to have occurred if the sources cause either:

- An increase in the broadband sound pressure level of more than 10 A-weighted decibels (dBA) above the ambient, or
- A "pure tone" condition.

The ambient background level is defined as the L_{90} level as measured during proposed operating hours. A "pure tone" condition occurs when any octave band sound pressure level exceeds both of the two adjacent octave band sound pressure levels by 3 decibels (dB) or more.

These noise limits are MDEP policy and are applicable both at the property line and at the nearest noise sensitive areas (residences). In some circumstances, the policy limits can be "waived" by MDEP at property line locations when the adjacent land uses are not considered sensitive to elevated sound levels and are likely to remain so. The policy limits typically apply at the quietest period analyzed (*i.e.*, nighttime) unless the measurement location is associated with daytime use only. MDEP does not regulate the sound from construction activities or moving motor vehicles.

The permits issued by the Town of Carver do not contain noise requirements because the Town does not have a numerical decibel requirement. The Town of Carver will specify construction hours, which are currently expected to be from 7:00 a.m. to 4:30 p.m. Otherwise, no numerical decibel limits apply to construction activity.

2. Modeling Procedure and Results

Under normal conditions such as those present during the collection of ambient noise measurements, the modeled noise increase at the nearest residences are expected to be zero (0) to four (4) dBA above the ambient noise (*see* Exhibit CP-10). Moreover, all predicted noise levels from the proposed Project are within 10 dBA of the minimum measured background and will not exceed the MassDEP noise regulation standard at the property line.

Noise mitigation measures are not required for the Project because the predicted noise levels are within 10 dBA of the minimum measured background as required by DEP. As explained above, the rural Project Site minimizes noise impacts, and all predicted noise levels from the Project fall within the acceptable range of the MassDEP's noise regulation standards.

4.9 LOCAL AND REGIONAL LAND USE

The Project Site consists of an approximately 6-acre portion of two larger parcels. While portions of the larger parcels are occupied by cranberry bogs, the proposed location of the BESS is not, and has not, been used for agricultural purposes. The anticipated changes to the acreage required to construct and operate the Project is as follows:

	Existing	Change	Total
Footprint of buildings	0	+0.911 acres[1]	0.911 acres
Internal roadways	0	+3.265 acres	3.265 acres
Parking and other paved areas	0	0	0
Other altered areas	0	+0.624 acres[2]	0.624 acres
Undeveloped areas	5.85 acres	4.80 acres	5.85 acres
Total: Project Site Acreage	5.85 acres	4.80 acres	5.85 acres

1. Structure to house switchgear and controls.
2. Grading and grass areas for stormwater basins.

As reflected in the above table, the Project Site consists of approximately 6 acres of undeveloped uplands, of which 4.80 acres will be altered to accommodate the proposed BESS. In addition to the above changes, and as described above in Section 3.0, grading will be completed during the construction phase and grass areas will be added for stormwater infiltration basins.

The use of the land for the Project is consistent with the Town of Carver Master Plan, dated 2001 (the "Plan"). Under the Plan, Carver requires that land be used for economic development. The Project will provide a near zero emission source of electricity at times when that electricity will have the greatest economic value to the regional electric system. Moreover, the Project will improve grid reliability as intermittent renewables are added and traditional generation is retired in the Southeast Massachusetts load zone, improving current and future local business' access to reliable electricity. As such, the Project will improve the overall utilization and economics of resources supplying electric service to the grid.

Similarly, the addition of a BESS meets the Plan's objectives to add adequate infrastructure in cluster formations. Carver encourages developers to build infrastructure together with similar-situated purposes, so as not to construct infrastructure that interferes with the cranberry agriculture, on which Carver is reliant. This Project will be constructed next to a cell tower and adjacent to 345-kV, 230-kV and 115-kV transmission systems in Eversource's substation (No. 276) and adjacent electrical systems and lines. This selected location was carefully sought out and is consistent with the efforts preferred in the Section 1.3 Land Use Strategies of the Town Master Plan.

Moreover, the Project is consistent with the Southeastern Regional Planning and Economic Development District (the "SRPEDD"). The SRPEDD holds a responsibility for the region by enhancing the quality of life including economic opportunity and environmental quality. This refers to both preserving open land and maintaining a low unemployment rate.

As with the Town's Plan, the SRPEDD encourages development in areas that contain underutilized infrastructures (land, buildings, and other facilities). The Project's location is beneficial in that it is currently an undeveloped wooded area, however, infrastructure will be centrally located to interconnect with the existing 115-kV transmission system.

Additionally, the amount of land required for this Project is significantly less than would be necessary for a traditional generation plant of similar size (*i.e.,* 150 MW fossil fuel plant), which would require approximately 41 acres on average, as opposed to approximately 6 acres for development of the Project. This assumption was calculated by estimating the footprints of the following Massachusetts power plants: Pittsfield – 40 acres (154 MW), Mt. Tom – 86 acres (143 MW), Milford – 7 acres (148 MW), Exelon Medway – 53 acres (123.8 MW), Potter Station 2 – 65 acres (183 MW), Cleary Flood – 26 acres (133 MW) and Dighton – 12 acres (164.2 MW).

In generating stations that are oil-fired, vast areas of land are used to house large (~100,000 to ~500,000-gallon capacity) above-ground fuel storage tanks ("ASTs"). Since the fuel is liquid, the land immediately surrounding the ASTs is improved with containment berms to

contain 110% of the tank volume in the event of a breach in the tank. Filling the AST is typically accomplished by unloading fuel from offshore vessels/tankers or by pipeline. Smaller facilities may use over the road tank trucks to refuel their ASTs. This additional land is not needed for a BESS.

In generating stations that are fueled by natural gas, there is typically a restricted corridor that contains underground piping used to transport the natural gas. This corridor restricts most land use activities to maintain the integrity of the pipeline and to provide access for maintenance and or repair. This type of restricted corridor is also not required for a battery energy storage system.

In many cases, the transmission and distribution lines involve wetland crossing or work within the wetlands – these are not necessary to a significant degree for the Project. In addition, fossil fuel generating stations also require significant land for staging areas and employee parking and, although the generating stations are automated and do not require a large number of employees, a large portion of generating stations are paved.

Essentially, the Project will occupy a space approximately 12% the size of a traditional generation plant of the same MW output. The Project will not store fuel (coal, oil or other fuels); it does not contain any lagoons or wash ponds; it has limited restricted areas protecting underground utilities; and since the BESS Project is unmanned, there is no paved parking or sewer interconnections. All repairs are made on a carry-in and carry-out basis. In terms of decommissioning the Project Site, the Company will provide the Town of Carver with a bond per the requirements of the Site Plan Review and Special Permit (*see* Exhibit CP-3, attached). Based upon the above comparison of recent fossil-fuel fired generating facilities, the Cranberry Point Energy Storage Project's land use impacts associated with the BESS are significantly fewer, limited in location and easily mitigated.

Nonetheless, an erosion and sedimentation control program will be implemented to minimize potential temporary impacts to BVW and the 100-foot Buffer Zone during the

construction of the Project. The program incorporates BMPs specified in guidelines developed by the MDEP and presented in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials (1997), River & Stream Crossing Standards (2011), U.S. Army Corps of Engineers (ACOE) document, Stream Crossing Best Management Practices (2015) and the EPA document, Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites (Office of Water Report EPA 833-B-09-002, February 2009). Proper implementation of the erosion and sedimentation control program will:

1. Minimize exposed soil areas through sequencing and temporary stabilization; and,

2. Place structures to manage stormwater runoff and erosion.

Non-structural practices to be used during construction include temporary stabilization, pavement sweeping along Main Street (if necessary), and dust control. These practices will be initiated as practicable in appropriate areas at the Project Site. Any areas of exposed sediment or stockpiles that will remain inactive for more than 14 days will be covered with a layer of straw mulch or plastic sheeting.

Structural erosion and sedimentation controls to be used on the site include erosion control barriers including silt fence, hay bales, and/or wattles or a combination of these materials.

Prior to any ground disturbance, an erosion control barrier will be installed at the downgradient limit of work. As construction progresses, additional barriers will be installed around the base of stockpiles and other erosion prone areas.

The following includes the key design and operation procedures for the Project in the approximate order of their implementation.

- Installation of soil erosion and siltation controls;
- Vegetation clearing and grubbing;
- New access driveway construction;

- Installation of concrete slab and pier foundations;
- Installation of battery storage system components and equipment; and,
- Installation of security fencing.

SECTION 5.0 BATTERY SAFETY

The Cranberry Point Energy Storage Project will be designed, constructed, and operated in a manner that will promote and maintain safety. The BESS will be designed in conformance with the Massachusetts Fire Code and associated National Fire Protection Association ("NFPA") standards. As described in greater detail below, the Company has taken proactive and practical steps to ensure that the safety of the public, emergency responders, employees and others is adequately protected.

5.1 SAFETY STANDARDS

There are numerous and redundant safeguards built into the hardware and management systems of lithium-ion battery systems to help mitigate the risk of a thermal event. The Project will adhere to the premier national standard for stationary BESS installation (*i.e.*, the NFPA 855 code) (the "Code").

Moreover, the design and operation of the Project will comply with international, national and state safety requirements standards, and best practices, including but not limited to the following.

- Battery design requirements, driven by safety standards from organizations such as UL or International Electrotechnical Commission ("IEC")
    - UL 1642 *Standard for Lithium Batteries*
    - UL 1741 *Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources*
    - UL 1973 *Standard for Batteries for Use in Light Electric Rail (LER) Applications and Stationary Applications*
    - UL 9540 *Standard for Energy Storage Systems and Equipment*
    - UL 9540A *Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems*
    - IEC 62619 *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial application*
- Fire codes and National Fire Protection Association ("NFPA") standards,

including:

- The Massachusetts Comprehensive Fire Safety Code (527 CMR 1.00);
- NFPA 1 *National Fire Code;*
- NFPA 855 *Energy Storage Systems* Standard.

5.2 MITIGATION

The Cranberry Point Energy Storage Project will utilize multiple redundant systems to prevent and manage battery short-circuiting, overcharging the BESS, overheating and thermal runaway, as described below.

To protect against battery short-circuiting and overcharging, the Project will use pyrotechnic fusing at various circuit integration levels to protect the low-voltage battery modules from faults triggered by overcurrent or the module-level battery management system (BMS). The power electronics have DC-side Solid State Circuit Breakers integrated into the battery enclosures, which, in part, measure the resistance between the ground and both poles. If the resistance drops below 1,000 Ω/V, a warning alarm is set off automatically and the applicable equipment is shut down.

To mitigate hazards due to overheating, the proposed battery enclosures are equipped with a thermal management system. This system operates by flowing a cooling liquid through a coolant loop which travels into each module to ensure that each cell is controlled thermally. The thermal management system undergoes a series of UL electrical tests (e.g., overcharging or short-circuiting battery cells), environmental tests (e.g., subjecting cells to external heating) and mechanical tests (e.g., dropping and/or physically damaging the cells). The testing is used to ensure that a single cell failure will not cascade to cause a thermal event outside of the battery enclosure.

Even with stringent testing, thermal events within a battery enclosure are possible. To mitigate such an event from cascading to more significant thermal activity outside of the enclosure, each enclosure has an automatic shut-down sequence that will occur should a

particular battery cell operate outside predetermined values of temperature, voltage and impedance. Additionally, a manual shutdown mechanism will be included in the Project design in the rare event that the system needs to be shut down on site by the CFD or an operations and maintenance professional.

If a thermal event does occur, and spreads beyond the incipient stage, the CFD will be notified automatically by an external fire detection system. This external fire detection system, which is separate from the thermal management system, utilizes thermal imaging cameras located outside of the enclosures, to detect heat rise within seconds of a battery enclosure reaching thermal runaway conditions.

Additionally, a Draft Emergency Response Plan ("ERP") was prepared to reflect discussions with the CFD and the Company's consultant, ESRG, and is included herein as Exhibit CP-11, attached.

5.3 HAZARD CONTROL

Battery technologies continue to evolve and be tested in accordance with similarly evolving codes and standards. Tesla battery systems have undergone rigorous testing in compliance with the standards outlined for the battery storage industry, including the national standard for stationary BESS installation, NFPA 855. This testing will be performed as part of the building permit process prior to construction of the Project pursuant to NFPA 855.

Per the manufacturer's hazard mitigation analysis, unless there are conditions deemed at risk by the CFD within the immediate area of an enclosure with a thermal runaway event occurring, no water use is required or recommended, as the thermal event will end once the fuel sources within the enclosure (battery cells) are consumed. However, if the CFD does deem the use of water to be necessary, the manufacturer has indicated that there is no risk of electric shock for fire service personnel when applying water to lithium-ion battery fires. The use of water on an electrical system only presents a risk for very high voltages and even then, the risk is limited.

5.4 LOCAL COORDINATION

Cranberry Point has had numerous meetings with the CFD to discuss the proposed Project, including fundamental design components, emergency vehicle access, and emergency response plan development. Enclosures included in the proposed site design, as opposed to housing batteries within a building structure, present easier access and promote safety in the event of an emergency at the Project. The Project implemented several additional recommendations from the Carver Fire Department, including:

1. A ~20-foot access road around the Project, to allow fire truck access throughout the Project Site;
2. 8-foot spacing between battery enclosures; and
3. Coordinated emergency planning.

The Company incorporated this input and designed the Project accordingly. The Company also included the CFD recommendations on the parameters of the Emergency Response Plan (appended hereto as Exhibit CP-11, attached).

SECTION 6.0 ARCHAEOLOGICAL AND HISTORICAL

On July 1, 2021, Cranberry Point submitted a Project Notification Form ("PNF") to the Massachusetts Historical Commission ("MHC") for the proposed Project. On July 20, 2021, the MHC notified the Company that the Project Site is "in proximity" to several ancient Native American archaeological sites (l 9-PL-767; 19-PL-768). The MHC requested that an intensive (locational) archaeological survey (950 CMR 70) be conducted within archaeologically sensitive portions of the project impact area.

Cranberry Point is currently working with MHC to determine the extent of the archaeological survey. The Company will supplement this Application upon the completion of the archaeological survey. A copy of the PNF, as well as the MHC Response Letter, can be found attached as Exhibit CP-12 and Exhibit CP-13, respectively.

No part of the Project Site includes any historic structure, nor will any aspect of the Project be constructed within a historic district. Similarly, no part of the Project Site is listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth.

SECTION 7.0 ALTERNATE SITES ANALYSIS

Cranberry Point conducted a comprehensive analysis to determine a suitable Massachusetts location for its 150 MWBESS.

The locations evaluated met specific requirements for a project of the size and scope under consideration. For example, the BESS had to be located (1) adjacent to infrastructure with available transmission capacity, (2) on a parcel of land greater than 1 acre and available for lease or sale, (3) in an area where construction and operation of the project would have minimal environmental impact or would not closely abut residences, (4) in ISO-NE's "SENE" zone, and (5) at a location on the grid where the Project could provide its maximum service potential to local electric reliability.

As such, Cranberry Point evaluated several alternative sites as well as a 'no-build' alternative.

No Build Alternative

Under the No-Build alternative, the Project would not be constructed. Failure to develop the Project would undermine ISO-NE's capacity requirements in the SENE zone. Without this Project, the SENE zone will face increasing volatility with the retirement of Mystic gas generation units, the recent retirement of the Plymouth nuclear plant, and the future on shoring of the Vineyard Wind and Mayflower Wind offshore projects. Moreover, because the Project is likely to defer and/or alleviate the need for additional electric transmission infrastructure in the area, the environmental benefits from the Project would not be realized. Therefore, the No-Build alternative was not considered further.

Alternative 1 – Carver (Preferred Alternative)

The proposed Carver BESS site is an approximately 6-acre site (250,000+ square foot) area located adjacent to and just south of the existing Eversource Carver Substation off Main Street in Carver, Massachusetts. This location was identified as the optimal solution for multiple reasons. First, the size of the lot, at approximately 6-acres, meets the requisite land area

needed for a project of the size proposed. Second, as the lot is more than 400 feet from the nearest residence, has no wetland intrusion, and no historical cranberry operations, there is minimal, if any, economic or environmental impact on the surrounding community. Third, the lot of land is readily available for lease. Fourth, the parcel is adjacent to infrastructure with available transmission capacity. Fifth, the location of the Project is in an area where the Company could readily obtain a Site Plan Review and Special Permit, with minimal impact on the environment, but for tree clearing on the western portion of the Project Site. Sixth, the location is in close proximity to retiring nuclear and fossil-fuel generation facilities and potential onland interconnection points for offshore wind, combined with significant market advantages including but not limited to, energy price volatility and compensation mechanisms available for providing ancillary services. All of these enhance the viability of a project of this size and scope.

Alternative 2 – Wakefield

The Wakefield BESS site is an approximately 2.24-acre (97,700+ square foot) area located adjacent to and just east of the existing Wakefield Substation off of Old Colony Drive in Wakefield, Massachusetts. The location within the Boston load center made the Wakefield site attractive, however, as compared to the Preferred Alternative, this location was not considered further. First, the site is densely forested and surrounded by Isolated and Bordering Vegetated Wetlands. Second, the site is located within 300 feet of the nearest residence. Third, this site was not known to be located near future offshore wind interconnection points or retiring generation. As such, the economics to develop a project at this location were not viable. Access to the site would have required significant tree clearing and filling an Isolated Wetland in order to construct the roadway. Given the constraints that this site would have on the project's development and economic viability, Wakefield was not considered further.

Alternative 3 – Falmouth

The proposed Falmouth BESS site is an approximately 2.42-acre (105,600+ square foot) area located adjacent to and northwest of the existing Falmouth Substation off of Stephens

Lane in Falmouth, Massachusetts. The Falmouth site is on a lower-voltage network near Cape Cod, which presented deliverability difficulties to the Boston load center when compared to the location and transmission network of the Preferred Site. From an interconnection perspective, a generation tie-line would have been required in order to connect to the nearest point of interconnection. Moreover, the site is located within 200 feet of the nearest residence, as well as within 200 feet of the Oak Grove cemetery. While the site is an active sand and gravel pit, and any tree removal required to construct the BESS project would be minimal, construction would result in impacts to an Isolated Wetland. When Falmouth was under consideration, it was not known to be located in an area where offshore wind projects were thought to tie into the existing onshore electrical grid or near retiring generation. Thus, given these issues, the Falmouth site was not considered further.

Conclusion

Of all the BESS sites considered, Alternatives 2 and 3 were excluded because of the significant environmental impacts (e.g., close proximity to Isolated Wetlands and residential neighborhoods. Additionally, Alternative 2 would result in significant tree clearing. The Preferred Alternative location was selected because of its proximity to a crucial inter-tie point for the 115-kV transmission systems, has no impact on wetlands, minimal tree-clearing needs, and is more than 400 feet of the nearest residence. Given the cost, siting constraints, land area requirements, environmental considerations and transmission analysis performed, the Preferred Alternative is ideally located for a large, grid-improving standalone BESS project in Massachusetts**.**

SECTION 8.0 CONSISTENCY WITH COMMONWEALTH POLICIES

8.1 CONSISTENCY WITH POLICIES OF THE COMMONWEALTH

The Project, if approved, would contribute 300 MWh of energy storage toward the goals delineated by the Commonwealth of Massachusetts in its *State of Charge* report and other initiatives and mandates. As discussed below, it is designed to enhance the efficiency, affordability, resiliency, and cleanliness of the electric grid by modernizing the way that electricity is generated and delivered.

8.2 ENERGY STORAGE INITIATIVE

As noted above, the Baker Administration launched the Energy Storage Initiative in May 2015 with the goal of advancing the energy storage segment of the Massachusetts clean energy industry by: 1) Attracting, supporting and promoting storage companies in Massachusetts; 2) Accelerating the development of early commercial storage technologies; 3) Expanding markets for storage technologies, and valuing storage benefits to clean energy integration, grid reliability, system wide efficiency, and peak demand reduction; and 4) Recommending the developing policies, regulations and programs that help achieve those objectives.

As part of the 2015 Energy Storage Initiative, the Department of Energy Resources ("DOER") and Massachusetts Clean Energy Center partnered to conduct a study, the *State of Charge* (*see* Attachment 1, attached), to review the storage industry landscape, review economic development and market opportunities for energy storage, and evaluate potential policies and programs to support energy storage development in Massachusetts. DOER has implemented many of the 2016 *State of Charge* report's recommendations to promote energy storage in the state.

The *State of Charge* report identified ratepayer cost benefits of energy storage associated with "reduced peak demand, deferred transmission and distribution investments, reduced GHG emissions, reduced cost of renewables integration, deferred new capacity

investments, and increased grid flexibility, reliability and resiliency."[5] The report also identified near and long term economic and workforce benefits to Massachusetts by implementing energy storage.[6]

An Act Relative to Energy Diversity, Chapter 188 of the Acts of 2016, directed the DOER to adopt targets to achieve the state's energy storage goals. DOER adopted a 200 MWh energy storage target for Massachusetts Electric Distribution Companies ("EDCs") to procure by January 1, 2020. An Act to Advance Clean Energy, signed into law by Governor Baker in 2018, subsequently revised that goal to a 1,000 MWh energy storage target to be achieved by December 21, 2025. As of February 15, 2020, Massachusetts EDCs reported only 108 MWh of installed energy storage. The Project would contribute 150 MWh of energy storage toward the Commonwealth's 1,000 MWh goal, while posing minimal impact to the environment by not contributing to, and potentially reducing or displacing, GHG emissions.

8.3 CLEAN PEAK STANDARD

The Massachusetts Clean Peak Standard ("CPS") is "designed to provide incentives to clean energy technologies that can supply electricity or reduce demand during seasonal peak demand periods established by DOER" (*see* Attachments 2 and 3, attached). According to DOER, Clean Peak Resources contribute to the Commonwealth's environmental protection goals concerning air emissions, including those required by the Global Warming Solutions Act ("GWSA"),[7] discussed below, by displacing non-renewable generating resources while reducing peak demand and system losses and increasing grid reliability.

Similar to the Massachusetts Renewable Portfolio Standard, the CPS requires a percentage of electricity delivered during peak hours to come from certain eligible Clean Peak

[5] State of Charge: A Comprehensive Study of Energy Storage in Massachusetts, Emerging Technology Division (last accessed Oct. 8, 2020), *available at* https://www.mass.gov/service-details/energy-storage-study.

[6] *Id.*

[7] Global Warming Solutions Act, M.G.L. c. 21N, §§ 1-9.

Sources. Clean Peak Sources include Qualified RPS Resources, Qualified Energy Storage Systems, or Demand Response Resources that generate, dispatch, or discharge electricity into the electric distribution system during certain peak periods, or alternatively, reduce load on the system during those periods.[8]

The Project is uniquely positioned to satisfy the CPS. One of the many benefits of the Project is that it is "fully dispatchable," capable of providing an energy source directly to the transmission system during peak load and can store electricity during off peak periods, whereas intermittent renewables and renewable-storage hybrid projects are unable to fully produce on demand and are limited in their charge and discharge by implementation rules of the federal Investment Tax Credit that they use in financing. Moreover, fully dispatchable BESS installations like the Project can perform additional grid services that are currently provided by traditional power plants, such as fast frequency response, virtual inertia, and black-start capabilities to prevent catastrophic failure or restart after an outage. Standalone BESS like the Project are thus the ideal clean facilities to achieve the objectives of the CPS because they displace non-renewable generating sources, thereby reducing air emissions, while reducing peak demand and increasing reliability.

8.4 GLOBAL WARMING SOLUTIONS ACT

The 2008 Global Warming Solutions Act ("GWSA") required a 25% reduction in greenhouse gas ("GHG") emissions from all sectors of the economy below the 1990 baseline emission level by 2020, and mandates at least an 80% reduction by 2050. The Executive Office of Energy and Environmental Affairs is working toward the development of the Massachusetts Decarbonization Roadmap to 2050 that will identify "strategies, policies, and implementation pathways for MA to achieve at least 80% GHG reductions by 2050, including multiple pathways

[8] *See* 225 CMR 21.02, "Clean Peak Resource."

to near zero emissions."[9] On January 21, 2020, Governor Baker announced the Commonwealth's intent to pursue the more aggressive near zero target to further reduce emissions.

The GWSA requires that the Secretary of Energy and Environmental Affairs, in consultation with the MassDEP and DOER, adopt separate statewide GHG emissions limits for 2020, 2030, 2040, and 2050. On April 22, 2020, the Secretary established a 2050 statewide emissions limit of near zero greenhouse gas emissions defined as follows:

> A level of statewide greenhouse gas emissions that is equal in quantity to the amount of carbon dioxide or its equivalent that is removed from the atmosphere and stored annually by, or attributable to, the Commonwealth; provided, however, that in no event shall the level of emissions be greater than a level that is 85 percent below the 1990 level.[10]

Approval of the Project would contribute to the Commonwealth's achievement of important health, environmental, and energy policies, including meeting the Commonwealth's 2050 near zero emissions goal under the GWSA. Battery storage facilities increase the energy efficiency of the electric grid with minimal environmental impacts. As described throughout this Petition, there is no waste produced by energy storage systems and no fuels emitted by the BESS. Furthermore, the system increases grid reliability during peak load times, and can perform other grid services, thereby offsetting the need for additional fossil-fuel fired peaking units, further reducing greenhouse gas emissions and limiting the environmental impacts of such projects.

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[9] *See* MA Decarbonization Roadmap, Massachusetts Executive Office of Energy and Environmental Affairs (last accessed Oct. 8, 2020), *available at* https://www.mass.gov/info-details/ma-decarbonization-roadmap.

[10] *Determination of Statewide Emissions Limit for 2050*, Executive Office of Energy and Environmental Affairs (Apr. 22, 2020), *available at* https://www.mass.gov/doc/final-signed-letter-of-determination-for-2050-emissions-limit/download.