

Plymouth Regional Economic Development Foundation
White Paper – Proposal: Energy Overlay District
June 2019

Proposal:

Create an *Energy Overlay District* encompassing the entirety, or portion, of the 1,500 acres of land located adjacent to the existing Pilgrim Nuclear Energy facility.

The site may be suitable to host Battery Energy Storage System(s) capable of storing energy generated at times when demand is low and discharging the stored energy to the grid during times of peak-demand.

Benefits:

The ability to store energy will reduce the necessity for improvements to public utility infrastructure, thereby saving current and future rate-payers the expense for capital improvements.

Energy *retained* during low-demand costs less than energy *used* during peak-demand. Introducing cheap energy to the grid during peak-demand is anticipated to reduce the cost of energy paid by rate-payers.

BESS does not utilize town services or resources, such as water and sewer, schools or traffic mitigation.

The site is near a former energy generating facility with access to the grid.

More tax revenue is derived per square foot than traditional mixed-use development.

BESS creates a stable energy source, most pressingly during power-outages. Sustainable, inexpensive and reliable energy sources will attract complimentary development, such as companies focused on high-capacity data processing and storage.

For manufacturing and warehousing uses, access to open and clean linear space for development is more attractive than vertical space often found in communities with higher density.

Findings:

The Commonwealth of Massachusetts Energy Storage Initiative (ESI) aims to make the Commonwealth a national leader in the emerging energy storage market. The Baker Administration launched ESI 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. 4) Recommending the developing policies, regulations and programs that help achieve those objectives.

An Act Relative to Energy Diversity, Chapter 188 of the Acts of 2016 states that the Department of Energy Resources (DOER) shall adopt targets to achieve the state's energy storage goals. DOER conducted extensive research, hosted public hearings, solicited comments from stakeholders and industry leaders. DOER has determined that the appropriate next step for the Commonwealth is the adoption of an aspirational 200 Megawatt hour (MWh) energy storage target for electric distribution companies to procure viable and cost-effective energy storage systems to be achieved by January 1, 2020.

The DOER's *State of Charge* report released in September 2016 identified over \$800 million in system benefits to Massachusetts ratepayers by 2050. Since its release, DOER has implemented many of the report's recommendations to promote energy storage in the Commonwealth; including incentivizing pairing energy storage with solar, authorizing the pairing of energy storage technologies with the largest procurement of clean and offshore wind energy generation, continued energy storage grant opportunities through the Community Clean Energy Resiliency Initiative, and funding energy storage projects through the Peak Demand Reduction Grant Program.

According to *State of Charge*, the electricity market currently has only a storage capacity of 1% of daily electricity consumption in Massachusetts. Other commodities, such as food, water, gasoline, oil and natural gas have an average storage capacity of 10% of daily consumption.

Without storage, electricity needs to be produced, delivered and consumed nearly instantaneously for the grid to maintain balance. According to ISO-NE Hourly Load Data, over the past 3 years, the top 1% most expensive hours accounted for 8% (\$680 million) of Massachusetts ratepayers' annual spend on electricity. The top 10% of hours accounted for 40% of annual electricity spend, over \$3 billion. Energy storage is the only technology that can use energy generated during low cost off-peak periods to serve load during expensive peak periods.

According to ISO-NE, the New England region is losing traditional energy generators. More than 5,200 MW of oil, coal and nuclear power plants will retire by 2022. An additional 5,000 MW of coal-and oil-fired generation is anticipated to be retired shortly thereafter.

Operating examples of BESS contain Lithium-ion battery technology. The contents of the batteries include nickel, manganese and cobalt.

A local jurisdiction in the region recently permitted a project for 186,436 square feet of new development located adjacent to an Eversource substation on Main Street. The storage capacity is 150MW. The total investment is estimated to be \$80 million from a private foreign-based company with North American headquarters located in Massachusetts. The annual tax yield to the host community is estimated to be approximately \$2 million per year. The project site is situated on 5 acres, however only 46,294 square feet will be rendered impermeable.

The applicant pledged to mitigate environmental impacts by donating funds to assist with reforestation efforts and landscaping intended to beautify public rights of way located in the immediate vicinity of the project. Additional funds will be donated by the applicant to assist abutters with a landscaping plan to be implemented on the abutting property for the purpose of screening the project site from the project site.

Potential Partners:

Enel is a multinational energy company and one of the world's leading integrated electricity and gas operators. Enel has a presence in 35 countries across 5 continents and generates energy with a capacity in excess of 89 Gigawatts (GW). Approximately 43 GW is provided by wind farms, hydroelectric, geothermal, solar and biomass power plants. Enel distributes energy to 73 million customers around the world.

Enel Green Power North America, Inc. (EGP-NA) inaugurated their North American headquarters in March 2017 in Andover, Massachusetts. EGP-NA is a leading owner and operator of renewable energy plants in North American with projects operating and under development in 23 U.S. states. EGP-NA first entered the U.S. market in 2000 with the acquisition of approximately 300 MW of hydropower, including two hydropower plants

in Lowell, MA and Lawrence, MA. Since then, the company has increased its capacity to more than 3,000 MW nationwide.

Conditions of Special Permit:

1. Prior to the issuance of an Electrical Permit, the applicant shall develop an Emergency Response Plan (ERP), with input and approval from the Carver Fire Department. The ERP will include best practices for fire suppression, professional development and training for Fire Department personnel, specialized equipment and/or any apparatus that may be necessary to mitigate fire hazard on site. The ERP will include the methods for collection, testing and disposal of water used to suppress a fire that comes into contact with the lithium-ion cells.
2. The ERP will include the contact information for two (2) responsible site managers.
3. Prior to the facility going on-line, funding shall be provided by the applicant, directed towards emergency equipment and training, to help mitigate any potential hazards. These funds will be directed towards the purchase of small emergency fire vehicles/necessary fire equipment, specifically to assist the town in mitigating fire hazards, accessing, rescuing, and removing people in danger in the remote areas of the site, that do not meet access standards. The funding amount and mechanism for needed emergency equipment, utilized by the Fire Department, will be finalized by the Town Administrator.
4. The BESS shall be installed in accordance with MA 527 CMR 1.00, Chapter 52, Stationary Storage Battery Systems. This includes, but is not limited to: 52.3.10, an approved, supervised smoke detection/fire alarm system; 52.3.2, a Thermal runaway system; and 52.3.7, a temperature maintained operating environment.
5. A local disconnect shall be installed.
6. All access roads shall be constructed of an all-weather surface 12' wide, and be cleared of obstructions on both sides by at least 2'. The vertical clearance shall be a minimum of 16'. All gated access points should have the ability to accommodate a Fire Department supplied padlock or a "Supra" key safe, which must be installed at the expense of the developer. Specifications and ordering information for order the "Supra" box will be provided by Fire Department upon request.
7. The applicant shall submit and maintain ground fuels manicuring and maintenance schedule. Manicuring of ground fuels should occur twice per year.
8. Prior to the issuance of a Building Permit, the applicant shall inform the Planning Administrator and Fire Department which manufacturer has been selected to provide the technology for the development.
9. The applicant shall provide to Fire Department evidence that the BESS will not create radio interference with this mission critical infrastructure.
10. The design of the fire suppression system shall be in accordance with all applicable codes and requirements, including NFPA 70, NFPA 72, NFPA 855, MA 527 CMR 1.00 and UL 9540. These systems shall be approved by the Fire Department.

11. Site shall be screened with a vegetative barrier or fencing on all sides of the project site in order to adequately prevent abutters from reasonably being visibly impacted by the development site.
12. Prior to the issuance of a Building Permit, a true copy of the recorded decision, as registered at the Plymouth Co. Registry of Deeds shall be submitted to the Board.
13. The project must be constructed as approved in the Site Plan. Any other revisions will require approval from the Board as a Modification of this decision.
14. Prior to the issuance of a Building Permit, the applicant shall submit site signage information, including details and locations.
15. Applicant must submit updated Operation and Maintenance plan.
16. Applicant must submit updated SWPPP.
17. Applicant shall submit estimate of construction costs to the Planning Administrator.
18. Prior to the issuance of an Electrical Permit, the applicant shall provide the Board with a de-commissioning bond in an amount to be negotiated by Town Administrator to run with the life of the project.
19. Prior to the issuance of an Electrical Permit, applicant will submit photometric analysis showing locations, height, orientation, color and type of lighting.
20. The applicant is responsible for the proper operation and maintenance of the site. During construction sedimentation and soil erosion controls shall be installed, repaired and supplemented as needed. Dust control is required during construction and the roadway apron is to be kept swept and clear of any dust, dirt or debris.
21. Any outstanding balance of the Review and Inspections Deposit Account shall be paid prior to the issuance of a Certificate of Use and Occupancy.

Proposed/Possible Waivers:

1. a waiver for providing open space.
2. a waiver for designating permanent parking, loading areas, and walkways.
3. a waiver for providing on-site landscaping, with an exception for screening requirements.
4. a waiver for providing traffic plan. A waiver does not apply to the trip generation during construction.