3590 BATTERY ENERGY STORAGE SYSTEMS

3590.10. Purpose. The purpose of this Section is to advance and protect the public health, safety, welfare, and quality of life by creating regulations for the installation and use of battery energy storage systems, with the following objectives:

1. To provide a regulatory scheme for the location, construction and operation of battery energy storage systems consistent with best practices and safety protocols;

2. To ensure compatible land uses in the vicinity of the areas affected by battery energy storage systems and to mitigate any potential impacts on abutting and nearby properties; and

3. To mitigate the impacts of battery energy storage systems on environmental resources such as agricultural lands, forests, wildlife, wetlands and other natural resources.

This Section shall be construed to be consistent with state law, including but not limited to the provisions of General Laws chapter 40A, section 3, and state regulations, including but not limited to the provisions of the State Building Code, State Fire Code, and State Electrical Code. In the event of any conflict between the provisions of this section and the provisions of state law or regulations, the state law and regulations shall prevail.

3590.20. Applicability

1. The requirements of this bylaw shall apply to battery energy storage systems permitted, installed, decommissioned or modified after the effective date of this bylaw, excluding general maintenance and repair. BESS subject to this bylaw are only those that exceed the following capacities:

- Lead-acid with a capacity of greater than 70 kWh

- Nickel with a capacity of greater than 70 kWh

- Lithium-ion with a capacity of greater than 30 kWh

- Sodium nickel chloride with a capacity of greater than 20 kWh

- Flow with a capacity of greater than 20 kWh

- Other battery technologies with a capacity of greater than 10 kWh BESS that do not meet the threshold capacities above are not subject to this bylaw and are allowed by right in all zoning districts.

2. A battery energy storage system that is subject to this bylaw is classified as a Tier 1, Tier 2 or **Tier 3** Battery Energy Storage System as follows:

a) Tier 1 Battery Energy Storage Systems have an aggregate energy capacity **less than 0.5MWh** and, if in a room or enclosed area, consist of only a single energy storage system technology.

b) Tier 2 Battery Energy Storage Systems have an aggregate energy capacity equal to or greater than 0.5 MWh but less than 1MWH or are comprised of more than one storage battery technology in a room or enclosed area.

c) **Tier 3 Battery Energy Storage Systems have an aggregate energy capacity greater than 1MWh or are comprised of more than one storage battery technology in a room or enclosed area.**

3590.30. General Requirements

1. All permits required by state codes, including but not limited to building permit, an electrical permit, and a fire department permit shall be required for installation of all battery energy storage systems.

2. All battery energy storage systems, all Dedicated Use Buildings, and all other buildings or structures that (a) contain or are otherwise associated with a battery energy storage system and (b) subject to the requirements of the State Building Code, shall be designed, erected, and installed in accordance with all applicable provisions of the State Building Code 780 CMR, State Fire Code 527 CMR 1.00, and State Electrical Code 527 CMR 12.00. All battery energy storage systems shall comply with NFPA 855, Standard for the Installation of Stationary Energy Storage Systems.

3. Energy storage system capacities, including array capacity and separation, are limited to the thresholds contained in NFPA 855.

4. All access roads should be at least 12' wide, constructed of an all-weather surface, and be cleared of obstructions on both sides by at least 2'. A 16' vertical clearance should be maintained for large vehicle access. Access gates erected onsite should be at least 12' wide, accessible via Carver Fire Department lock. Access to all four sides of each enclosure should be provided where practical.

3590.40. Permitting Requirements for Tier 1 Battery Energy Storage Systems

Tier 1 Battery Energy Storage Systems are allowed by right in all zoning districts, subject to applicable provisions of the State Building Code, Electrical Code, Fire Code, and other applicable codes, and are subject to minor site plan review and such provisions of this bylaw as are applicable.

3590.50. Permitting Requirements for Tier 2 and Tier 3 Battery Energy Storage Systems

Tier 2 **and Tier 3** Battery Energy Storage Systems are subject to this bylaw and require the issuance of a special permit in those zoning districts identified in Use Regulations Schedule in Section 2230, and are subject to Site Plan Review pursuant to Section 3100. Tier 1 and Tier 2 BESS shall comply with the applicable requirements set forth in this bylaw, as well as this Zoning Bylaw, and the Carver General Bylaws. The following requirements apply to all Tier 1, Tier 2 and **Tier 3** BESS subject to this bylaw, except where it is specifically noted to apply only to Tier 2 and **Tier 3** BESS:

1. Utility Lines and Electrical Circuitry. All on-site utility lines shall be placed underground to the extent feasible and as permitted by the serving utility, with the exception of the main service connection at the utility company right-of-way and any new interconnection equipment, including without limitation any poles.

2. Signage. Signage shall comply with the requirements of Section 3500 of this Zoning Bylaw and the following additional requirements; in the event of a conflict between the provisions of Section 3500 and this section, the requirements of this section shall prevail.

a) The signage shall be in compliance with ANSI Z535 and shall include the type of technology associated with the battery energy storage systems, any special hazards associated, the type of suppression system installed in the area of battery energy storage systems, and 24-hour emergency contact information, including reach-back phone number.

b) As required by the state electrical code, disconnect and other emergency shutoff information shall be clearly displayed on a light reflective surface. A clearly visible warning sign concerning voltage shall be placed at the base of all pad-mounted transformers and substations.

c) Signage compliant with ANSI Z535 shall be provided on doors to rooms, entrances to BESS facilities, and on BESS outdoor containers.

3. Lighting. Lighting of the battery energy storage systems shall be limited to that minimally required for safety, security and operational purposes and shall be consistent with local, state and federal law. Lighting of other parts of the installation, such as appurtenant structures, shall be limited to that required for safety and operational purposes, shall be shielded to eliminate glare from abutting properties, shall be directed downward, and shall incorporate cut-off fixtures to reduce light pollution.

4. Vegetation and tree-cutting. Areas within **thirty** feet on each side of Tier 2 or **Tier 3** Battery Energy Storage Systems shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers shall be permitted provided that they do not form a means of readily transmitting fire. Removal of trees should be minimized to the extent possible.

5. Setbacks. Tier 1 Battery Energy Storage Systems shall be set back a minimum of **50 feet from all side, rear, and front lot lines**. Tier 2 and **Tier 3** BESS shall be set back **a minimum of 200 feet from side, rear, and front lot lines that abut or are across a street from residential zoning districts or existing single, two-family, or multi-family structures.** The **minimum setback areas shall include a vegetated Buffer Area at least fifteen feet wide along all property lines.** Access drives and parking are allowed in the setback areas, but shall not intrude into the required Buffer Areas except where necessary to provide access or egress to the property. In addition, **a minimum of 10 feet must be maintained, if within a building, between BESS components and all stored combustible materials, hazardous materials, high-piled storage, infrastructure.**

6. Dimensional. Tier 2 **and Tier 3** Battery Energy Storage Systems shall comply with the dimensional limitations for principal structures of the underlying zoning district as provided in Section 2300 of this Zoning Bylaw, unless otherwise provided in this bylaw.

7. Fencing Requirements. Tier 2 **and Tier 3** Battery Energy Storage Systems, including all mechanical equipment, shall be enclosed by a minimum eight foot high fence with a self-locking gate to prevent unauthorized access unless housed in a dedicated-use building. Security barriers, fences, landscaping, and other enclosures must not inhibit required air flow to or exhaust from the BESS and components. Electrical equipment greater than 1,000V require a separate and additional means to restrict access. NFPA 855 requires specialty safety systems to be provided based on the BESS chemistry and installed location.

8. Screening and Visibility. Tier 2 **and Tier 3** Battery Energy Storage Systems shall have views minimized from adjacent properties to the extent reasonably practicable using architectural features, earth berms, landscaping, or other screening methods that will harmonize with the character of the property and surrounding area. Such features may not inhibit required air flow to or exhaust from the BESS and components and must comply with the setbacks established in paragraph 6 above.

9. Noise: An Acoustic Study shall be provided in order to ensure that any increase in sound complies with Mass DEP requirement limiting any increase in ambient noise to be less than 10 decibels at the property line.

10. Mitigation for Loss of Carbon Sequestration and Forest Habitat. If land that is Forestland or has been Forestland within one year immediately preceding the filing an application to install a Tier 2 **or Tier 3** BESS, the plans shall designate thereon an area of unprotected (meaning, not subject to G.L. c. 184, sections 31-33 at time of application) land on the same lot and of a size equal to two times the total area of Forestland that will be eliminated, cut, destroyed, or otherwise disturbed by such installation. Such designated land shall remain in substantially its natural condition without alteration, including prohibition of commercial forestry or tree cutting not related to the maintenance of the installation, until such time as the installation is decommissioned; except in response to a natural occurrence, invasive species or disease that impacts the trees and requires cutting to preserve the health of the forest.

11. Mitigation for Disruption of Trail Networks. If existing trail networks, old roads, or woods or cart roads are disrupted by the location of a Tier 2 **or Tier 3** BESS, the plans shall show alternative trail alignments to be constructed by the applicant, although no rights of public access may be established hereunder.

12. Mitigation for Disruption of Historic Resources and Properties. Historic resources, structures and properties, such as cellar holes, farmsteads, stone corrals, marked graves, water wells, or pre-Columbian features, including those listed on the Massachusetts Register of Historic Places or as defined by the National Historic Preservation Act, shall be excluded from the areas proposed to be developed for a Tier 2 **or Tier 3** BESS. A written assessment of the project's effects on each identified historic resource or property and ways to avoid, minimize or mitigate any adverse effects shall be submitted as part of the application. A suitable buffer area as determined by the PEDB shall be established on all sides of each historic resource.

13. Batteries. Failed battery cells and modules shall not be stored on the site and shall be removed no later than 30 days after deemed failed by the BESS operator or cell/module manufacturer. The operator shall notify the Carver Fire Department in advance if the type of battery or batteries used onsite is to be changed.

14. Decommissioning Plan. The applicant shall submit with its application a decommissioning plan for Tier 2 **or Tier 3** BESS to be implemented upon abandonment and/or in conjunction with removal of the facility. The owner or operator of the BESS shall notify the Building Commissioner in writing at least twenty days prior to when a Tier 2 BESS **or Tier 3** will be decommissioned. Decommissioning of an abandoned or discontinued Tier 2 BESS **or Tier 3** shall be completed within six months after the facility ceases operation. The decommissioning plan shall include:

a. A narrative description of the activities to be accomplished, including who will perform that activity and at what point in time, for complete physical removal of all battery energy storage system components, structures, equipment, security barriers, and transmission lines from the site;

b. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations;

c. The anticipated life of the battery energy storage system;

d. The estimated decommissioning costs and how said estimate was determined;

e. The method of ensuring that funds will be available for decommissioning and restoration;

f. The method by which the decommissioning cost will be kept current;

g. The manner in which the site will be restored, including a description of how any changes to the surrounding areas and other systems adjacent to the battery energy storage system, such as, but not limited to, structural elements, building penetrations, means of egress, and required fire detection suppression systems, will be protected during decommissioning and confirmed as being acceptable after the system is removed; and

h. A listing of any contingencies for removing an intact operational energy storage system from service, and for removing an energy storage system from service that has been damaged by a fire or other event.

15. Decommissioning Fund. The owner and/or operator of the energy storage system, shall continuously maintain a fund or other surety acceptable to the Town, in a form approved by the Planning Board and Town Counsel, for the removal of the battery energy storage system, in an amount to be determined by the Town, for the period of the life of the facility. All costs of the financial security shall be borne by the applicant.

16. Proof of Liability Insurance. The applicant or property owner shall provide evidence of commercially liability insurance in an amount and type generally acceptable in the industry and approved by the PEDB prior to the issuance of a building permit, and shall continue such insurance in effect until such facility has been decommissioned, removed, and the site restored in accordance with this bylaw.

3590.60. Site plan application. For a Tier 2 **or Tier 3** Battery Energy Storage System the site plan application shall include the following information, in addition to that required by Section 3100 of this Zoning Bylaw:

1. A one- or three-line electrical diagram detailing the battery energy storage system layout, associated components, and electrical interconnection methods, with all State Electrical Code compliant disconnects and over current devices.

2. A preliminary equipment specification sheet that documents the proposed battery energy storage system components, inverters and associated electrical equipment that are to be installed. A final equipment specification sheet shall be submitted prior to the issuance of building permit.

3. Name, address, and contact information of proposed or potential system installer and the owner and/or operator of the battery energy storage system. Such information of the final system installer shall be submitted prior to the issuance of building permit.

4. Large-scale fire test data, evaluation information, and calculations, and modeling data. For any of the following, UL 9540A fire test data must be made available to the Planning Board and Fire Department for review: - BESS systems with a capacity of greater than 50kWh - BESS systems with spacing between arrays of less than 3 feet

5. Safety data sheet (SDS) that address response safety concerns and extinguishment.

6. Commissioning Plan. The system installer or commissioning agent shall prepare a commissioning plan prior to the start of commissioning. Such plan shall be compliant with NFPA 855 and document and verify that the system and its associated controls and safety systems are in proper working condition per requirements set forth in applicable state codes. Where commissioning is required by the Building Code, battery energy storage system commissioning shall be conducted by a Massachusetts Licensed Professional Engineer after the installation is complete but prior to final inspection and approval. A corrective action plan shall be developed for any open or continuing issues that are allowed to be continued after commissioning. A report describing the results of the system commissioning and including the results of the initial acceptance testing required by applicable state codes shall be provided to Zoning Enforcement Officer **and the Carver Fire Department** prior to final inspection and approval and maintained at an approved on-site location.

7. Fire Safety Compliance Plan. Such plan shall document and verify that the system and its associated controls and safety systems are in compliance with state codes, including documentation that BESS components comply with the safety standards set forth in subsection 3590.80.

8. Operation and Maintenance Manual. Such plan shall describe continuing battery energy storage system maintenance and property upkeep, as well as design, construction, installation, testing and commissioning information and shall meet all requirements set forth state codes and NFPA 855. Maintenance provisions will be driven by manufacturer requirements for the specific listed system.

9. Depending on the location of the BESS in relation to and its interaction with the electrical grid, interconnection will be completed per 527 CMR 12.00. System interconnections into utility grids shall be in accordance with NFPA 855. An accessible disconnect is required per 527 CMR 12.00.

10. Prior to the issuance of the building permit, engineering documents must be signed and sealed by a Massachusetts Licensed Professional Engineer.

11. Emergency Operations Plan. An Emergency Operations Plan compliant with NFPA 855 is required. A copy of the ~~approved~~ Emergency Operations Plan **approved by the Carver Fire Department** shall be given to the system owner, the local fire department, and local fire code official. For so long as the BESS is operational, the operator shall provide the Fire Department, Police Department, Building Commissioner, and Town Manager's office with contact information for personnel that can be reached 24 hours per day every day, and this contact information shall be updated by the operator whenever there is a change in the information. The operator shall also be required to have an official representative be present onsite not later than two hours after notification by the Fire Chief, Police

Chief, or their designee. A permanent copy shall also be placed in an approved location to be accessible to facility personnel, fire code officials, and emergency responders. The emergency operations plan shall include the following information:

a. Procedures for safe shutdown, de-energizing, or isolation of equipment and systems under emergency conditions to reduce the risk of fire, electric shock, and personal injuries, and for safe start-up following cessation of emergency conditions.

b. Procedures for inspection and testing of associated alarms, interlocks, and controls, including time intervals for inspection and testing.

c. Procedures to be followed in response to notifications from the Battery Energy Storage Management System, when provided, that could signify potentially dangerous conditions, including shutting down equipment, summoning service and repair personnel, and providing agreed upon notification to fire department personnel for potentially hazardous conditions in the event of a system failure.

d. Emergency procedures to be followed in case of fire, explosion, release of liquids or vapors, damage to critical moving parts, or other potentially dangerous conditions. Procedures can include sounding the alarm, notifying the fire department, evacuating personnel, de-energizing equipment, and controlling and extinguishing the fire.

e. Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required.

f. Procedures for safe disposal of battery energy storage system equipment damaged in a fire or other emergency event, including maintaining contact information for personnel qualified to safely remove damaged battery energy storage system equipment and any affected soils from the facility.

g. Other procedures as determined necessary by the Town to provide for the safety of occupants, neighboring properties, and emergency responders.

h. Procedures and schedules for conducting drills of these procedures and for training local first responders on the contents of the plan and appropriate response procedures.

3590.70. Ownership Changes. If the owner of the battery energy storage system changes or the owner of the property changes, the special permit shall remain in effect, provided that the successor owner or operator assumes in writing all of the obligations of the special permit, site plan approval, and decommissioning plan. A new owner or operator of the battery energy storage system shall notify the Building Commissioner of such change in ownership or operator within 14 days of the ownership change. A new owner or operator must provide such notification to the Building Commissioner in writing **and meet with any permitting authority from which the original applicant received a permit.**

3590.80. Safety

1. System Certification. Battery energy storage systems and equipment shall be listed by a Nationally Recognized Testing Laboratory to UL 9540 (Standard for battery energy storage systems and Equipment) or approved equivalent, with subcomponents meeting each of the following standards as applicable:

a. UL 1973 (Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail Applications),

b. UL 1642 (Standard for Lithium Batteries),

c. UL 1741 or UL 62109 (Inverters and Power Converters),

d. Certified under the applicable electrical, building, and fire prevention codes as required.

e. Alternatively, field evaluation by an approved testing laboratory for compliance with UL 9540 (or approved equivalent) and applicable codes, regulations and safety standards may be used to meet system certification requirements.

2. Site Access. Battery energy storage systems shall be maintained in good working order and in accordance with industry standards. Site access shall be maintained, including snow removal at a level acceptable to the local fire department.

3. Battery energy storage systems, components, and associated ancillary equipment shall have required working space clearances, and electrical circuitry shall be within weatherproof enclosures marked with the environmental rating suitable for the type of exposure in compliance with NFPA 70.

3590.90. Abandonment

The battery energy storage system shall be considered abandoned when it ceases to operate consistently for more than 90 days. If the owner and/or operator fails to comply with decommissioning upon any abandonment, the Town may, after compliance with any applicable state and federal constitutional requirements, enter the property and utilize the available bond and/or security for the removal of a Tier 2 BESS **or Tier 3** and restoration of the site in accordance with the decommissioning plan.