



July 12, 2022, 2022

**Medway Planning & Economic Development Board
Meeting**

Zoning for Fall Town Meeting

- DRAFT of BESS Zoning dated 7-7-22 prepared by Barbara Saint Andre

DRAFT – BESS Bylaw
July 7, 2022 bjs

Article ____ To see if the Town will vote to amend the Zoning Bylaw by:

(1) deleting the definition of Battery Energy Storage Facility;

(2) **Amending Table 1, Schedule of Uses to add Battery Energy Storage System as follows:**

Battery Energy Storage Systems [TBD: zones where BESS to be allowed]

(3) **Amending Table 3, Schedule of Off-Street Parking Requirements, by adding a new line:**

Battery energy storage systems (as principal use)	2 spaces for Tier 1 3 spaces for Tier 3
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(4) And to add a new Section 8.12 Battery Energy Storage Systems:

Section 8.12 Battery Energy Storage Systems

A. 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 designation of properties suitable for the location, construction and operation of battery energy storage systems;
2. To ensure compatible land uses in the vicinity of the areas affected by battery energy storage systems; and
3. To mitigate the impacts of battery energy storage systems on environmental resources such as important agricultural lands, forests, wildlife and other protected 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.

B. Definitions

As used in this bylaw, the following terms shall have the meanings indicated. Terms that are not defined herein or elsewhere in this Zoning Bylaw shall be as defined in NFPA 855 if applicable.

ANSI: American National Standards Institute

Battery or batteries: A single cell or a group of cells connected together electrically in series, in parallel, or a combination of both, which can charge, discharge, and store energy electrochemically. For the purposes of this bylaw, batteries utilized in consumer products are excluded from these requirements.

Commented [BSA1]: This is from Arup, need to check if definitions from the NY model bylaw (below) are different than NFPA 855

Battery Energy Storage Management System: An electronic system that protects energy storage systems from operating outside their safe operating parameters and disconnects electrical power to the energy storage system or places it in a safe condition if potentially hazardous temperatures or other conditions are detected.

Battery Energy Storage System (BESS): One or more containers or cabinets containing batteries and related equipment, assembled together, capable of storing electrical energy in order to supply electrical energy at a future time. This includes all accessory equipment necessary for energy storage including but not limited to inverters, transformers, cooling equipment, switching gear, metering equipment, transmission tie-lines, and other power interconnection facilities and/or a project substation, and does not include a stand-alone 12-volt vehicle battery or an electric motor vehicle.

Cell: The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy.

Commissioning: A systematic process that provides documented confirmation that a battery energy storage system functions according to the intended design criteria and complies with applicable code requirements.

Dedicated-Use Building: A building that is built for the primary intention of housing battery energy storage system equipment, is classified as Group F-1 occupancy as defined in the State Building Code, and complies with the following:

- 1) The building's only use is battery energy storage, energy generation, and other electrical grid-related operations.
- 2) No other occupancy types are permitted in the building.
- 3) Occupants in the rooms and areas containing battery energy storage systems are limited to personnel that operate, maintain, service, test, and repair the battery energy storage system and other energy systems.
- 4) Administrative and support personnel are permitted in areas within the buildings that do not contain battery energy storage system, provided the following:
 - a. The areas do not occupy more than 10 percent of the building area of the story in which they are located.
 - b. A means of egress is provided from the administrative and support use areas to the public way that does not require occupants to traverse through areas containing battery energy storage systems or other energy system equipment.

Nationally Recognized Testing Laboratory (NRTL): A U.S. Department of Labor designation recognizing a private sector organization to perform certification for certain products to ensure that they meet the requirements of both the construction and general industry OSHA electrical standards.

NFPA: National Fire Protection Association.

Non-Dedicated-Use Building: All buildings that contain a battery energy storage system and do not comply with the dedicated-use building requirements.

Non-Participating Property: Any property that is not a participating property.

Non-Participating Residence: Any residence located on non-participating property.

Commented [CMM2]: I don't see a specific listing for BESS. Factory and Industrial Use Category F-1 includes electronics. See 780 CMR 306(19).

Storage Use Category S-2 includes dry cell batteries, electrical coils and motors. See 780 CMR 311.3.

I recommend consulting with the Building Commissioner for input.

Participating Property: A battery energy storage system host property or any real property that is the subject of an agreement that provides for the payment of monetary compensation to the landowner from the battery energy storage system owner (or affiliate) regardless of whether any part of a battery energy storage system is constructed on the property.

UL: Underwriters Laboratory

C. Applicability

The requirements of this zoning bylaw shall apply to battery energy storage systems permitted, installed, 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; BESS that do not meet the following threshold capacities are not subject to this bylaw:

- 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 20 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 in one- and two-family dwellings with a capacity of greater than 1 kWh

Commented [BSA3]:
These thresholds are from Arup materials.

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

- A. Tier 1 Battery Energy Storage Systems have an aggregate energy capacity less than or equal to 600kWh 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 greater than 600kWh or are comprised of more than one storage battery technology in a room or enclosed area.

D. General Requirements

1. A building permit, an electrical permit, and a fire department permit per state codes 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.

E. Permitting Requirements for Tier 1 Battery Energy Storage Systems

Tier 1 Battery Energy Storage Systems shall be permitted 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.

F. Permitting Requirements for Tier 2 Battery Energy Storage Systems

Tier 2 Battery Energy Storage Systems that are subject to this bylaw require the issuance of a special permit in those zoning districts identified in Table 1, Schedule of Uses, and shall be subject to Major Site Plan Review pursuant to Section 3.5. Tier 1 and Tier 2 BESS shall comply with the requirements set forth in this bylaw, as well as this Zoning Bylaw, and the Medway General Bylaws. The following requirements apply to all Tier 1 and Tier 2 BESS subject to this bylaw, except where it is specifically noted to apply only to Tier 2 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, with new easements and right-of-way.
2. **Signage.** Signage shall comply with the requirements of Section 7.2 of this Zoning Bylaw and the following additional requirements; in the event of a conflict between the provisions of Section 7.2 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 and operational purposes and shall comply with Section 7.1.2 of this Zoning Bylaw.
4. **Vegetation and tree-cutting.** Areas within ten feet on each side of Tier 2 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 to be exempt provided that they do not form a means of readily transmitting fire. Removal of trees should be minimized to the extent possible.
6. **Setbacks.** Tier 2 Battery Energy Storage Systems shall comply with the setback requirements of the underlying zoning district for principal structures. In addition, a minimum of 10 feet must be maintained between BESS and all buildings, stored combustible materials, hazardous materials,

Commented [BSA4]: Should there be increased setbacks?

high-piled storage, personnel means of egress, and other exposure hazards not associated with electrical grid infrastructure.

7. Dimensional. Tier 2 Battery Energy Storage Systems shall comply with the dimensional limitations for principal structures of the underlying zoning district as provided in Section 6 of this Zoning Bylaw.

8. Fencing Requirements. Tier 2 Battery Energy Storage Systems, including all mechanical equipment, shall be enclosed by a minimum six 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 means to restrict access. NFPA 855 requires specialty safety systems to be provided based on the BESS chemistry and installed location.

9. Screening and Visibility. Tier 2 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

10. Decommissioning Plan. The applicant shall submit a decommissioning plan for Tier 2 BESS to be implemented upon abandonment and/or in conjunction with removal from 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 will be decommissioned. Decommissioning of an abandoned or discontinued Tier 2 BESS 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.

11. 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 and Economic Development 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.

G. Site plan application. For a Tier 2 Battery Energy Storage System the site plan application shall include the following information, in addition to that required by Section 3.5 of this Zoning Bylaw and the Planning and Economic Development Board Rules and Regulations Governing Site Plan Applications:

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 and Economic Development Board for review:
 - BESS systems with a capacity of greater than 50kWh
 - BESS systems with spacing between arrays of less than 3 feet
5. 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 prior to final inspection and approval and maintained at an approved on-site location.
6. 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.
7. 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.

Commented [BSA5]: Per comment of AG on the Athol bylaw, can we incorporate the required elements from G.L. c. 44 §53G ½ here, or should we enact a General bylaw that would apply generally to surety funds?

Commented [CMM6]: Either is acceptable, but I imagine the Town has other bylaw license/fee requirements, so a general bylaw would have broader impact. Also, consider requiring applicant to provide a cost estimate for decommissioning prepared by a professional engineer so the Town has a basis for setting the amount of the fund.

8. 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.

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

10. Emergency Operations Plan. An Emergency Operations Plan compliant with NFPA 855 is required. A copy of the approved Emergency Operations Plan 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. 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.
- 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 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.

H. 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 Zoning Enforcement Officer 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 Zoning Enforcement Officer in writing. The special permit

and all other local approvals for the battery energy storage system will be void if a new owner or operator fails to provide written notification to the Zoning Enforcement Officer in the required timeframe. Reinstatement of a void special permit will be subject to the same review and approval processes for new applications under this Bylaw.

I. 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.

K. Abandonment

The battery energy storage system shall be considered abandoned when it ceases to operate consistently for more than one year. 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 and restoration of the site in accordance with the decommissioning plan.

Or act in any manner relating thereto.

(4) NOTE - Need to deal with the moratorium also; do we repeal it, or leave it in place and let it expire June 2023.

(5) Need to check if any other ZBL provisions need to be amended.

Commented [CMM7]: Since Town Meeting will likely be held before the moratorium expires in June, I recommend letting it expire and deal with it as a housekeeping matter at a future Town Meeting.