

## Proposed Additions to Section 2.2 (Definitions)

**ANSI:** American National Standards Institute

**BATTERY(IES):** 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.

**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 devices, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include a stand-alone 12-volt car battery or an electric motor vehicle. A Battery Energy Storage System is classified as a Tier 1, Tier 2, or Tier 3 BESS as follows:

A. Tier 1 Battery Energy Storage Systems have an aggregate energy capacity greater than or equal to 20KWh and, whose purpose is to store energy from residential solar energy systems if in a room or enclosed area, consist of only a single energy storage system technology.

B. Tier 2 Battery Energy Storage Systems are defined as those that are interconnected to utility distribution lines and have an aggregate energy capacity greater than 20KWh but less than or equal to 10 MWh.

C. Tier 3 Battery Energy Storage Systems are defined as those that are interconnected to high voltage transmission lines and have an aggregate energy capacity greater than 10 MWh.

**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 International 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.

## Proposed addition to **Special Use Regulations (Section 4.8)**

### 4.8.9 Battery Energy Storage Systems (BESS)

#### A. Purpose

The purpose of this bylaw is to provide for the construction and operation of Battery Energy Storage Systems (BESS) and to provide standards for the placement, design, construction, monitoring, modification and removal of energy storage systems that address public safety, minimize impacts on scenic, natural and historic resources of the Town of Ware and provide adequate financial assurance for decommissioning. The provisions set forth in this section shall take precedence over all other sections when considering applications related to the construction, operation, and/or repair of Battery Energy Storage Systems.

#### B. Definitions

**BATTERY ENERGY STORAGE SYSTEM** – a physical container providing secondary containment to one or more battery cells for storing electrical energy derived from solar or sourced directly from the grid that is equipped with cooling, ventilation, fire suppression, and an electronic battery management system. It may be a primary use or accessory to a solar energy facility, power generation facility, an electrical sub-station, or other similar uses. A Battery Energy Storage System can be classified as a Tier 1, Tier 2, or Tier 3 Battery Energy Storage System, as follows:

1. Tier 1 Battery Energy Storage Systems are defined as those that have an aggregate energy capacity equal to 20KWh and greater and, whose purpose is to store energy from residential solar energy systems if in a room or enclosed area, consist of only a single energy storage system technology. The facility must comply with the State's electrical code (527 CMR. 12.00) and the State's Fire Code (527 CMR 1.00).
2. Tier 2 Battery Energy Storage Systems are defined as those that are interconnected to utility distribution lines and have an aggregate energy capacity greater than 20KWh but less than or equal to 10 MWh. The facility must comply with the State's electrical code (527 CMR. 12.00) and the State's Fire Code (527 CMR 1.00).
3. Tier 3 Battery Energy Storage Systems are defined as those that are interconnected to high voltage transmission lines and have an aggregate energy capacity greater than 10 MWh. The facility must comply with the State's electrical code (527 CMR. 12.00) and the State's Fire Code (527 CMR 1.00).

## C. Applicability

### 1. Building-integrated Battery Energy Storage Systems

- a) Battery Energy Storage Systems that are building-integrated, whether a residential or commercial building, energy storage systems shall not be erected, constructed, installed, or modified as provided in this section without first obtaining a building permit from the Building Inspector.
- b) Building-integrated energy storage systems may be coupled with rooftop solar or behind the meter applications for peak shaving.
- c) Building-integrated battery energy storage systems may be located in any zoning district of the Town of Ware.

### 2. Co-located Battery Energy Storage Systems

- a) Battery Energy Storage Facilities are encouraged to co-locate with solar photovoltaic installations, energy, power generation stations, and electrical substations.
- b) Battery Energy Storage Systems associated with on-site solar power generation shall be permitted in the same districts as Large-Scale Solar Arrays by Special Permit and Site Plan Review.
- c) If co-located with a solar photovoltaic installation, the BESS shall not exceed the necessary capacity and size generated by the output of the co-located solar photovoltaic installation.

### 3. Battery Energy Storage systems not associated with on-site solar generation shall only be permitted in the Commercial Industrial (CI) and Industrial (I) Districts, and shall require a Special Permit and Site Plan Review from the Planning Board.

- i. The nameplate capacity of an Energy Storage system shall not exceed the total kw of renewable energy being produced on the 3-phase distribution line that the energy storage system will be interconnected to.
- ii. Modifications to, retrofits or replacements of an existing battery energy storage system that increase the total battery energy storage system designed discharge duration or power rating shall be subject to this bylaw.
- iii. Battery Energy Storage Systems not associated with on-site solar generation are prohibited in the Aquifer Protection Overlay District.
- iv. Battery Energy Storage Systems not associated with on-site solar generation must be located in-proximity to the public water supply system for the purposes of fire suppression.

## D. General Requirements

1. All Tier 2 and 3 battery energy storage systems shall require a special permit and site plan approval by the Planning Board prior to construction, installation, or modification as provided in this bylaw.
2. The construction, operation, and decommissioning of all battery storage energy storage systems shall be consistent with all applicable local, state, and federal requirements, including but not limited to all applicable environmental, safety, construction, fire, and electrical requirements.
3. A building permit and an electrical permit shall be required for installation of all battery energy storage systems.

E. Application Materials

1. In addition to requirements for Special Permit and Site Plan Approval, the application shall include the following:
  - a) A site plan prepared, stamped and signed by a Professional Engineer licensed to practice in Massachusetts, that shows the following:
    - 1) An existing conditions plan with property lines and physical features, including topography and roads, characteristics of vegetation (trees- mature, old growth, shrubs, open field, etc.), wetlands, streams, ledge, for the project site;
    - 2) Proposed changes to the landscape of the site, including grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures, driveways, snow storage, and storm water management systems; including total acreage of disturbed area, total vegetation cleared, not including mowed fields;
    - 3) Trees with a DBH of 20" or greater within project parcel(s) shall be identified to determine tree loss, along with inventorying of diseased or hazard trees slated to be removed due to proposed development;
    - 4) Property lines and physical dimensions of the subject property with contour intervals of no more than 10 feet;
    - 5) Property lines of adjacent parcels within 30 feet;
    - 6) Location, dimensions, and types of existing major structures on the property;
    - 7) Location of the proposed battery energy storage structures, foundations, and associated equipment;
    - 8) The right-of-way of any public road that is contiguous with the property;
    - 9) Any overhead or underground utilities.

- 10) At least one color photograph of the existing site, measuring eight inches by 10 inches.
  - 11) Locations of active farmland and prime farmland soils, wetlands, permanently protected open space, Priority Habitat Areas and BioMap 2 Critical Natural Landscape Core Habitat mapped by the Natural Heritage & Endangered Species Program (NHESP) and "Important Wildlife Habitat" mapped by the DEP.
  - 12) Locations of floodplains or inundation areas for moderate or high hazard dams;
  - 13) Locations of local or National Historic Districts.
  - 14) Stormwater management and erosion and sediment control
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- b) A preliminary equipment specification sheet that documents the proposed battery energy storage system components, inverters and associated electrical equipment that are to be installed, including manufacturer and model. A final equipment specification sheet shall be submitted prior to the issuance of building permit;
  - c) One- or three-line electrical diagram showing associated components, and electrical interconnection methods, with all NEC compliant disconnects and overcurrent devices;
  - d) Contact information and signature of the project proponent, as well as all co-proponents, if any, and all property owners;
  - e) Contact information and signature of agents representing the project proponent, if any;
  - f) Contact information for the person(s) responsible for public inquiries throughout the life of the system;
  - g) An operations and maintenance plan for Battery Energy Storage System. Such plan shall describe continuing battery energy storage system maintenance and property upkeep, as well as design, construction, installation, testing and commissioning information;
  - h) Energy Storage System technical specifications, including manufacturer and model;
  - i) Electrical schematic;
  - j) Documentation that shows the owner of the Energy Storage System has site control, which shall include easements and access roads;
  - k) Documentation that shows the owner of the Energy Storage System has notified the electric utility of this installation.

- l) Emergency Operations Plan. A copy of the approved Emergency Operations Plan shall be given to the system owner, the local fire department, and local fire code official. 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:
- 1) 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.
  - 2) Procedures for inspection and testing of associated alarms, interlocks, and controls.
    - i. This includes hazmat appliances for conducting atmospheric monitoring with a scientific officer to support.
  - 3) 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.
  - 4) 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.
  - 5) Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required.
  - 6) Procedures for dealing with 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.
  - 7) Other procedures as determined necessary by the Town to provide for the safety of occupants, neighboring properties, and emergency responders.
  - 8) 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.
    - i. Trainings must be provided and organized by the applicant.

- m) Proof of liability insurance: The applicant shall be required to provide evidence of liability insurance in an amount and for a duration sufficient to cover loss or damage to persons and property caused by the failure of the system.
- n) A noise study, prepared by a qualified individual with experience in environmental acoustics, to assess the impact of all noise sources generated from the project to abutting properties, and determine the appropriate layout, design, and control measures. The report should include details of assessment methods, summarize the results, and recommend the required outdoor as well as any indoor control measures.

F. Design and Site Standards

1. In addition to the standards for Special Permit and Site Plan Review in the Zoning Code, the applicant shall adhere to the following standards and provide such information on the site plan:
  - a) Utility Lines. All on-site utility lines shall be placed underground to the extent feasible and as permitted by the serving utility.
  - b) Signage. The signage shall include the type of technology associated with the systems, any special hazards associated, the type of suppression system installed, and 24-hour emergency contact information. All information shall be clearly displayed on a light reflective surface. Clearly visible warning signs concerning voltage shall be placed at the base of all pad-mounted transformers and substations.
  - c) Lighting. Lighting of the systems shall be limited to that minimally required for safety and operational purposes and shall be reasonably shielded and downcast from abutting properties.
  - d) Setbacks. Battery Energy Storage Systems not co-located with solar photovoltaic installations shall adhere to a one hundred (100) foot setback from the front, side, and rear property lines. BESS's shall also adhere to a one hundred (100) foot setback from water wells (both private and public) located either on-site or on abutting properties.
  - e) Vegetation and Tree-Cutting. Areas within ten (10) feet on each side of a system shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees or shrubbery and cultivated ground covers such as green grass, ivy, succulents, or similar plants shall be exempt provided that they do not form a means of readily transmitting fire. Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and

maintenance of the system and that which is otherwise prescribed by applicable bylaws and regulations.

- f) Noise. The 1-hour average noise generated from the systems, components, and associated ancillary equipment shall not exceed a noise level of 60 dBA as measured at the property line.

G. 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.

H. Special Permit Criteria

1. The Planning Board may approve an application if the Board finds that the system complies with the Site Plan Review and Approval criteria and with the conditions for granting Special Permits. Battery energy storage systems shall also satisfy the following additional criteria:
  - a) Environmental features of the site are protected, and surface runoff will not cause damage to surrounding properties or increase soil erosion and sedimentation of nearby streams and ponds.
  - b) The Planning Board may also impose conditions as it finds reasonably appropriate to safeguard the town or neighborhood including, but not limited to, screening, lighting, noise, fences, modification of the exterior appearance of electrical cabinets, battery storage systems, or other structures, limitation upon system size, and means of vehicular access or traffic features.
  - c) No occupancy permit shall be granted by the Building Commissioner, nor shall the site be energized or interconnected to the utility until the Planning Board has

received, reviewed, and approved an as-built plan that demonstrates that the work proposed on the approved site plan, including all stormwater management components and associated off-site improvements, have been completed in accordance with the approved plan and certified same to the Building Commissioner.

- d) The Planning Board may, in its discretion, approve an as-built plan upon provision of a proper bond, covenant, or third-party agreement to secure incomplete work where such work is not immediately necessary for lawful operation of the system without negative effect on public health and safety and surrounding properties.
- e) The applicant shall make every effort to coordinate necessary surveying and finalization of the as-built plans and submission of required construction control documents prior to the conclusion of construction. Notwithstanding the above, a temporary occupancy permit may be granted with the approval of the Planning Board subject to conditions for completion of work imposed by the Board.

**Commented [WR1]:** Should this only be a decommissioning bond? Maybe mimic what we have for solar?

#### I. Decommissioning

1. As part of the applicant's submission to the Board, the applicant shall submit a decommissioning plan, to be implemented upon abandonment or in conjunction with removal from property. The 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 property.
  - b) Disposal of all solid and hazardous waste in accordance with local, state, and federal regulations.
  - c) The anticipated life of the battery energy storage systems.
  - 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.

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

2. Decommissioning Fund. The owner and/or operator of the energy storage system, shall continuously maintain a fund or bond payable to the Town, in an approved form for the removal of the battery energy storage system, in an amount to be determined Town, for the period of the life of the facility. All costs of the financial security shall be borne by the applicant. The amount shall include a mechanism for calculating increased removal costs due to inflation.

Commented [WR2]: Again, should this just be a bond?

3. An inspection of the completed decommissioned area shall be reviewed by a consultant hired by the Planning Board before approving the decommissioning work in accordance with the Decommissioning Plan. The owner and/or operator shall pay for the cost of this review with such payment being provided by the owner and/or operator prior to the consultant undertaking said review, in accordance with MGL Chapter 44, Section 53G.

#### J. Abandonment

The battery energy storage system shall be considered abandoned when it ceases to operate consistently for more than twelve (12) months. The system shall be presumed abandoned if the owner and/or operator fails to respond affirmatively within thirty (30) days to a written inquiry from the Building Inspector as to the continued validity and operation of the system. If the owner or operator fails to comply with decommissioning upon any abandonment, the Town, may, at its discretion, and utilize the available bond or surety for the removal of a system and restore the site in accordance with the decommissioning plan.

Commented [WR3]: Should it be just a bond?

#### K. Severability

If any provision of this By-Law is found to be invalid by a court of competent jurisdiction, the remainder of this By-Law shall not be affected but remain in full force. The invalidity of any provision of this By-Law shall not affect the validity of the remainder of the Ware Zoning By-Law.