Model Zoning Bylaw:
Allowing Use of Battery Energy Storage Systems

Prepared by:
Department of Energy Resources
Massachusetts Executive Office of Environmental Affairs

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This model bylaw was prepared to assist cities and towns in establishing reasonable standards to facilitate the development of Battery Energy Storage Systems. The model bylaw was developed as a model and is not intended for adoption without specific review by municipal counsel.

225 CMR 29.00 states that "Local Governments may adopt additional standards, provided such standards are reasonably necessary to protect the public health, safety, or welfare and do not conflict with the standards specified in 225 CMR 29.00 or any associated Department Guideline." This model bylaw is intended to inform municipalities in their consideration of the additional local zoning criteria within the rubric of 225 CMR 29.00. However, municipalities should independently verify compliance with the applicable DOER regulations and Guidelines.

This bylaw addresses Battery Energy Storage Systems and not other mechanical energy storage systems.

This model bylaw includes grey highlighted phrases or sections that may need to be revised to make the model consistent with the municipality's ordinances or bylaws or specific numerical criteria that the municipality may wish to adjust.

1.0 Purpose

The purpose of this bylaw is to promote the development and installation of new Battery Energy Storage Systems (BESS) by providing standards for placement, design, construction, operation, monitoring, modification, and removal of such systems that address public safety, minimize the impacts on the scenic, natural and historic resources, and to provide adequate financial assurance for the eventual decommissioning of such installations.

This section is intended to align with the consolidated siting and permitting process for small clean energy infrastructure facilities established under Chapter 239 of the Acts of 2024. In the event of any inconsistency, the provisions of Chapter 239, or subsequent regulation, shall govern.

2.0 Definitions

Accessory Use: A BESS Installation is considered an Accessory Use when it is secondary to the use of the premises for other lawful purposes. An Accessory Use cannot exist without a Primary Use on the same lot. A BESS Installation co-located with solar photovoltaic facilities may be treated as an Accessory Use to the solar facility.

As-of-Right or By Right Siting: As-of-Right Siting shall mean that development may proceed without the need for a Special Permit, variance, amendment, waiver, or other discretionary approval. As-of-Right development may be subject to site plan review to determine conformance with local zoning ordinances or bylaws. Projects allowed As-of-Right, including those subject to Site Plan Review, cannot be prohibited except as provided by 225 CMR 29.00, but can be reasonably regulated by the person or board designated by local ordinance or bylaw. The designated person or board may be the Planning Board or the inspector of buildings, building commissioner or local inspector, or if there is none in a town, the board of selectmen, or person or board designated by local ordinance or bylaw.

Aggregate Energy Capacity: Total amount of energy stored that can be stored in all batteries that are part of the BESS measured in kilowatt-hours (kWh) or megawatt-hours (MWh).

Battery or Batteries: A single cell or group of cells connected electrically in series, in parallel, or 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 System (BESS): A system consisting of one or more battery modules for storing electrical energy, any equipment needed to support the safe and proper function or usage of the battery modules, and one or more physical containers providing secondary containment to any of the above. It may be a primary use or an Accessory Use to a solar generating facility, power generation facility, electrical substation, or other similar uses. BESS are classified as Tier 1, Tier 2, and Tier 3, as follows:

The Tiers described below were developed based partially on input from stakeholders including municipal/regional planners, BESS developers, and environmental advocacy groups. The municipality may wish to consider alternate Tiers based on local health, safety, environmental, or other public concerns. The upper limit of the lowest Tier reflects the commercially available systems and how they are generally configured. Towns with existing BESS bylaws typically have upper limits for the lowest tier ranging from 20-600 kWh.

***Note:** BESS with a capacity of 100 MWh or greater will be under the jurisdiction of the Energy Facilities Siting Board (EFSB)*

A. Tier 1 BESS Installations include systems with an aggregate energy capacity of less than 250 kWh. The facility must comply with the State's Electrical Code (527 CMR. 12.00), the State's Fire Code (527 CMR 1.00), and National Fire Protection Association (NFPA) 855 or subsequent standard.

B. Tier 2 BESS Installations include systems with an aggregate energy capacity of 250 kWh, but less than 10 MWh. The facility must comply with the State's Electrical Code (527 CMR. 12.00), the State's Fire Code (527 CMR 1.00), and NFPA 855 or subsequent standard.

C. Tier 3 BESS Installations include systems with an aggregate energy capacity of 10 MWh or more and less than 100 MWh. The facility must comply with the State's Electrical Code

(527 CMR. 12.00), the State's Fire Code (527 CMR 1.00), and NFPA 855 or subsequent standard.

Note: *NFPA 855 is the most recent standard for the installations of stationary energy storage systems.*

Brownfield: A disposal site that has received a release tracking number from MassDEP pursuant to 310 CMR 40.0000: Massachusetts Contingency Plan, the redevelopment or reuse of which is hindered by the presence of oil or hazardous materials, as determined by the Department, in consultation with MassDEP. The terms "disposal site," "release tracking number," "oil," and "hazardous materials" shall have the meanings given to such terms in 310 CMR 40.0006: Terminology, Definitions and Acronyms. No disposal site that otherwise meets this definition shall be excluded from consideration as a Brownfield because its cleanup is also regulated by the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601-9675, the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6921 - 6939g, or any other federal program.

Building Inspector: The inspector of buildings, building commissioner, or local inspector, or person or board designated by local ordinance or bylaw charged with the enforcement of the zoning ordinance.

Building-Integrated BESS: A BESS facility that is installed within, on, or directly adjacent to the building or structure the BESS will serve. This does not include a building constructed for the primary purpose of housing a BESS Installation.

Co-located BESS: A BESS Installation developed within or directly adjacent to the boundaries of an existing or proposed solar photovoltaic installation, power generating station, electrical substation, or similar facility.

Community Benefits Agreement (CBA): A legally binding, negotiated agreement between a project applicant and a community, often represented by a coalition of community groups or a local government body, which outlines benefits the communities will receive and is prepared in accordance with the standards and guidelines developed by the Office of Environmental Justice and Equity, pursuant to M.G.L. c. 21A, § 29.

Note: *While Community Benefit Agreements (CBAs) are often considered a best practice—particularly for larger projects with more significant local impacts—communities are generally discouraged from requiring CBAs for all projects or specific types of projects. CBAs work best when they result from voluntary negotiations between the parties involved. The zoning and permitting process should not be used to compel additional benefits from BESS/solar developers that would not also be expected of other, similarly situated developments.*

Community Benefits Plan (CBP): A non-legally binding document that outlines how a project will engage with and benefit local communities during development and operation of a Solar Photovoltaic Installation and is developed in accordance with the standards and guidance developed by the Office of Environmental Justice and Equity, pursuant to M.G.L. c. 21A, § 29.

DOER: The Massachusetts Department of Energy Resources.

National Fire Protection Association (NFPA): Association of fire safety professionals that provides safety standards for the aid in the development of local and state fire codes.

PFAs (Per And Polyflouroalkyl Substances): A class of man-made chemicals used in many consumer products to alter their water, grease, and heat-resistant properties. They are frequently used in fire suppression foams.

Site Plan Review: Review by the Site Plan Review Authority to determine conformance with local zoning bylaws or ordinance. Site Plan Review for By-Right projects may reasonably condition, but not unconditionally deny, the project applications.

Note: *In some communities this is known as Site Plan Approval rather than Site Plan Review. Regardless of which term is used by a community, the following excerpt from Lowe's Home Centers, Inc. v. Town of Auburn Planning Board, Mass. Land Court PS 07-352453 (2010) provides an excellent judicial explanation of the nature of Site Plan Review as applied to As-of-Right uses:*

Site plan approval acts as a method for regulating As-of-Right uses rather than prohibiting them as per Y.D. Dugout, Inc. v. Bd. Of Appeals of Canton, 357 Mass. 25, 31, 255 N.E.2d 732 (1970). When evaluating the Site Plan Applications, the Planning Board may not unconditionally deny the Site Plan Applications, but rather, it may impose reasonable conditions upon them. See Prudential v. Bd. Of Appeals of Westwood, 23 Mass. App. Ct. 278, 281-82, 502 N.E.2d 137 (1986); Quincy v. Planning Bd. Of Tewksbury, 39 Mass. App. Ct. 17, 21-22, 652 N.E.2d 901 (1995) ("[W]here the proposed use is one permitted by right the planning board may only apply substantive criteria .. i.e., it may impose reasonable terms and conditions on the proposed use, but it does not have the discretionary power to deny the use."). Thus, when a site plan application is submitted for an As-of-Right use, a planning board is obligated to grant an approval with reasonable conditions unless, "…the site plan, although in proper form, may be so intrusive on the interest of the public in one regulated aspect or another that rejection by the board would be tenable. This would typically be a case in which, despite best efforts, no form of reasonable conditions [can] be devised to satisfy the problem with the plan...." Prudential, 23 Mass. App. Ct. at 283, n. 9, 502 N.E.2d 137; Castle Hill Apartments Ltd. P'ship v. Planning Bd. Of Holyoke, 65 Mass. App. Ct. 840, 845-45, 844 N.E.2d 1098 (2006).

Site Plan Review Authority: For the purposes of this bylaw, the Site Plan Review Authority refers to the body of local government designated as such by the Municipality.

Note: *The Site Plan Review Authority can be the Board of Selectman, City Council, Board of Appeals, Planning Board, or Zoning Administrator. However, the Planning Board is typically the best group to serve in this capacity as it is usually the most familiar with the municipality's zoning bylaws/ordinances as well as its Master Plan or other plans for future conservation/development.*

Stand-Alone Primary-Use BESS Installation: A BESS facility that is the Primary Use of the parcel and is not co-located with solar photovoltaic installations, power generating stations, and electrical substation and is not an Accessory Use to the Primary Use of the parcel.

3.0 Applicability

This section applies to all new BESS Installations proposed to be constructed after the effective date of this section. This section also pertains to physical modifications that materially alter the type, configuration, or size of these installations or related equipment. For Co-located BESS, also see the associated Solar Model Bylaw.

This section is intended to align with the consolidated siting and permitting process for small clean energy infrastructure facilities established under Chapter 239 of the Acts of 2024. In the event of any inconsistency, the provisions of Chapter 239 shall govern.

***Educational Note**: Existing Massachusetts law limits the local zoning restrictions that can be placed on solar and storage facilities. Massachusetts General Laws Chapter Chapter 40A, Section 3, ninth paragraph, provides:*

No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety, or welfare. The Attorney General's Office (AGO) reviews all zoning bylaws for compliance with state law, including with M.G.L ch. 40A § 3.

This exception is often referred to as the "Dover Amendment."

Section 23 of Chapter 239 of the Acts of 2024 states in part that local governments acting in accordance with the standards set by DOER governing the siting and permitting of small clean energy infrastructure facilities by local governments "shall be considered to have acted consistent with the limitations on solar facility and small clean energy storage facility zoning under section 3 of chapter 40A." This model bylaw also complies with the Dover Amendment protections for solar facilities. However, the DOER standards set forth in 225 CMR 29.00 and associated Guidelines do not address all aspects of solar siting and permitting, and the municipalities that deviate from the DOER standards or the model bylaw in a way that significantly restricts the feasibility of solar and/or is not necessary to protect public health, safety or welfare may risk violating the Dover Amendment.

There has been significant jurisprudence surrounding the interpretation and implementation of M.G.L. c. 40A, § 3 to solar and battery storage resources. This includes:

- *Tracer Lane II v Waltham, 489 Mass. 775 (2022), Supreme Judicial Court ruling that limiting Primary Use solar to the 1-2% of the town zoned industrial land impermissibly violates the Dover Amendment.*
- *Kearsarge Walpole v. ZBA Walpole, a 2024 Mass. Appeals Court decision (No. 23-P-128) finding that confining large ground-mounted solar to the town's designated overlay districts was impermissible. The overlay districts allowing large ground-mounted solar covered around 2% of the town's land. The court did not find that overlay districts are impermissible, but rather that the bylaw unduly restricts solar energy systems to those overlay districts and therefore violates G.L. c. 40A, § 3*
- *Summit Farm Solar v. New Braintree, a 2022 MA Land Court ruling that towns cannot condition special permits on zero or negligible visual impact.*
- *NextSun Energy LLC v. Fernandes, a 2023 MA Land Court ruling, affirmed by the Massachusetts Appeals Court in 2025, finding that Co-located BESS with solar is protected by M.G.L c. 40A, § 3.*
- *Sunpin Energy Services LLC v. ZBA of Petersham, a 2025 Massachusetts Appeals Court decision ruling that a special permit for a solar project cannot be denied based on policy preferences that are extraneous to those expressed in zoning bylaw when the applicant would meet all of the special permit conditions. i.e. the zoning authority must reply on the text of the bylaw to make a decision on permitting.*
- *Duxbury Energy Storage v. Town of Duxbury ZBA, a June 2025 MA Land Court decision finding standalone BESS is protected by M.G.L c. 40A, § 3, ninth par.*

We note this is not an exhaustive list of cases, and case law will evolve over time. Towns should consult with local counsel on any bylaw changes.

3.1 BESS Installation Tiers

This section applies to all Tier 1, Tier 2, and Tier 3 BESS defined as follows:

A. Building-Integrated or Accessory Use BESS
    1. BESS that are Building-Integrated, whether with a residential or commercial building, shall not be erected, constructed, installed, or modified as provided in this section without obtaining a building permit from the Building Inspector.
    2. Building-Integrated or Accessory Use BESS may be coupled with rooftop solar or behind the meter applications for peak shaving.
    3. Building-Integrated or Accessory Use Tier 1 BESS may be located in any zoning district.

B. Co-located BESS
    1. BESS are encouraged to be co-located with solar photovoltaic installations, power generation stations, and electrical substations, or similar facilities.
    2. BESS associated with solar power generation shall be permitted in all districts where solar photovoltaic installations are allowed as established in the associated Solar Model Bylaw

C. BESS that are not co-located with solar photovoltaic installations, power generation stations, and electrical substations are <<permitted as shown in Table of Uses below>>.

The following table defines certain classes of Solar Photovoltaic Installations, characterized by a combination of size and use case, with differentiated zoning and permitting requirements as further detailed below.

Table 1: BESS Installations by Tier and Associated Zoning/Permitting Requirements by District and Use

Class/Zone	Residential	Commercial	Industrial	Agricultural
Primary Use				
Tier 1	BR	BR	BR	BR
Tier 2	SP	SPR	BR	SPR
Tier 3	SP	SP	SPR	SP
Accessory Use				
Tier 1	BR	BR	BR	BR
Tier 2	SPR	SPR	BR	BR
Tier 3	SP	SP	SPR	SPR

BR = By-Right, Subject to Building Permit Only
SPR = By-Right, Subject to Site Plan Review (As noted above, under SPR the Site Plan Review authority may not unconditionally deny the Site Plan Applications, but rather, it may impose reasonable conditions upon them.)
SP = Special Permit

N = Not Permitted

***Notes**:*

The Table of Uses (above) for BESS Installations was developed for general classes of zoning districts. It is based partially on input from stakeholders including municipal/regional planners, BESS developers, and environmental advocacy groups. Municipalities will need to add BESS to their table of uses or lists of allowed/permitted uses based on the purpose and standards for each zoning district in the municipality.

Certain Massachusetts communities, more often small and rural communities, consist of a single zone, typically "Residential-Agricultural." In such cases, DOER encourages the community to develop one or more overlay zones that enable differentiated review of different Tiers of BESS, based on the areas most appropriate for Primary Use BESS. As noted in the discussion of Kearsarge Walpole v. ZBA Walpole, prohibiting ground-mounted solar, and by extension BESS, outside of an overlay district that covers only a small percentage of the municipality's land has been found to violate the Dover Amendment. Municipalities may want to consider allowing Primary Use BESS with a Special Permit outside the overlay district and allowing Primary Use BESS with SPR in the overlay district, and/or ensuring that the overlay district encompasses a reasonably large percentage of the municipality's land.

We also note that the model use table above does not prohibit BESS Installations in any of the common zoning districts. Municipalities may wish to prohibit Primary Use of BESS in certain districts but should be cautious not to exclude BESS from a large portion of the Municipality's land, per the Tracer Lane II decision, 489 Mass. 775 (2022). An example of an area that a municipality may reasonably wish to exclude Primary Use BESS from categorically might be a dense commercial or residential district.

For projects categorized as By Right, only Sections 4.0 and 5.0 below apply. For projects categorized as Site Plan Review, Sections 4.0, 5.0, and 6.0 apply. For projects categorized as Special Permit, Sections 4.0, 5.0, 6.0, 7.0 apply.

4.0 General Requirements

The following requirements are common to all BESS Installations to be sited in designated locations.

4.1 Compliance with Laws, Ordinances, and Regulations

The construction and operation of all BESS Installations shall be consistent with all applicable local, state, and federal requirements, including but not limited to all applicable safety, construction, electrical, and communications requirements. All buildings and fixtures forming part of a BESS Installation shall be constructed in accordance with the State Building Code. Other applicable requirements may include but are not limited to DOER's Regulations and Guidance for Small Clean Energy Infrastructure Facility Siting and Permitting, Department of Environmental

Protection (MassDEP) noise standards, the State Fire Code, the Massachusetts Environmental Policy Act (MEPA), and other applicable local bylaws.

Additional Resources for other Applicable Regulations:

- ***DOER Clean Energy Siting & Permitting Division:*** *DOER Siting & Permitting and Guidance, including 225 CMR 29.00*
- ***Massachusetts Department of Environmental Protection (DEP):*** *Noise Standards, Wetlands Protection Act Regulations, Stormwater Handbook and Standards*
- ***State Fire Code (527 CMR 1.00):*** *Massachusetts State Fire Marshal*
- ***Massachusetts Environmental Policy Act (MEPA):*** *MEPA Office*
- ***Massachusetts State Building Code (780 CMR):*** *Board of Building Regulations and Standards*
- ***Local Bylaws and Ordinances:*** *Check with the local planning board, zoning board, or building department for town-specific requirements*
- ***Federal Requirements:*** *National Environmental Policy Act (NEPA)*
- ***Regional Planning:*** *Check with regional planning agency for your area for additional considerations when adapting this model bylaw.*

5.0 Pre-Filing Requirements

As applicable per *225 CMR 29.08: Pre-Filing Requirements* and the *DOER Guideline on Pre-Filing Stakeholder Engagement*, Applicants must complete several pre-filing steps including, but not limited to, filing a Notice of Intent to File Application, meeting Public Notice Requirements, and submitting a Pre-Filing Engagement Completion Checklist.

5.1 Building Permit and Building Inspection

No BESS Installation shall be constructed, installed, or modified as provided in this section without first obtaining building and/or electrical permits.

Note: *Under the state building code, work must commence within six (6) months from the date a building permit is issued; however, a project proponent may request an extension of the permit, and more than one extension may be granted. Separately, under Section 280 of Chapter 238 of the Acts of 2024, qualifying permits in effect or expired between January 1, 2023 and January 1, 2025 were automatically extended for two years.*

5.2 Fees

The application for a building permit for a BESS Installation must be accompanied by the fee required for a building permit. Applications for BESS Installations requiring Site Plan Review must be accompanied by the fee for Site Plan Review specified in <<reference fee schedule or bylaw for Site Plan Review fee>>. Likewise, applications for BESS Installations requiring a Special Permit must be accompanied by fee listed in <<reference fee schedule or bylaw for Special

Permit fee>>. BESS Installations are subject to permitting fee requirements pursuant to *225 CMR 29.09: Consolidated Local Permit Application.*

Note: *Municipalities structure fees in a variety of ways. Most use a tiered structure based on the estimated construction cost. A municipality may consider reduced permit fees or other incentives for projects located on preferred sites, e.g., brownfields, landfills, industrial/commercial parcels, or other previously disturbed lands.*

6.0 Site Plan Review

All Primary Use BESS that require Site Plan Review, as specified in the Table of Uses in Section 3.0, shall undergo Site Plan Review by the Site Plan Review Authority prior to construction, installation, or modification. Any project that requires Site Plan Review shall also comply with the applicable provisions of *225 CMR 29.09: Consolidated Local Permit Application*, DOER's *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions.*

Purpose*: The purpose of the Site Plan Review is to determine that the use complies with all requirements set forth in this zoning bylaw and that the site design conforms to established standards regarding landscaping, access, and other zoning provisions. Municipalities are encouraged to adopt clear standards for approval of site plans. When issuing a conditional approval, the Site Plan Review Authority should cite conditions that are tied to specific land use concerns, such as screening and buffering, vegetation clearing, lighting, and noise.*

Additional Considerations*: As part of the implementation of a BESS bylaw, municipalities should consider amending their existing Site Plan Review provisions to incorporate Site Plan Review conditions that apply specifically to such installations. These provisions shall comply with the review standards in the local bylaw, 225 CMR 29.00, DOER Guideline on Public Health, Safety, and Environmental Standards, and any other applicable regulations. Municipalities may impose additional conditions but must show they are necessary to protect public health, safety, or the environment.*

6.1 General

All plans shall be prepared, stamped, and signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts.

6.2 Required Documents

Pursuant to the Site Plan Review process, the project owner or operator shall provide the following documents:

A. A site plan showing:
    i. Property lines and physical features, including topography, roads, characteristics of vegetation (mature trees, old growth, shrubs, open field, etc.), wetlands, streams, etc. for the project site;

ii. Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures, snow storage, and stormwater management systems;

iii. Contact information and signature of the project owner or operator, as well as all co-proponents, if any, and all other owners;

iv. Contact information and signature of any agents representing the owner or operator, if any;

v. Contact information for the person(s) responsible for public enquiries throughout the life of the BESS;

vi. Zoning district of project site and adjacent parcels;

vii. Blueprints or drawings of the BESS Installation signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts showing the proposed layout of the system

viii. One- or three-line electrical diagrams detailing the BESS, associated components, and electrical interconnection methods, with all National Electric Code compliant overcurrent devices;

ix. Documentation of major system components including the batteries, inverters, fire detection and suppression systems, and foundations or mounting;

x. Total limit of disturbance

xi. Total area of vegetation clearing, not including mowed field;

xii. Contour lines with an interval of no more 2 feet;

xiii. Property lines of parcels within 30 feet;

xiv. Location, dimension, and types of existing structures on the property;

xv. Location of noise producing equipment;

xvi. Trees with a diameter at breast height (DBH) of 20 inches or greater within the project site. Diseased or hazard trees that will be removed as part of the project;

xvii. The right-of-way of any public road that is contiguous with the property;

xviii. Overhead and underground utilities;

xix. Locations of floodplains or inundation areas for moderate or high hazard dams;

xx. Locations of local or National Historic districts and properties;

xxi. Stormwater management and erosion and sediment control;

B. Proof of notification the owners of record for all abutting properties and properties within 300 feet of the subject parcel's boundary;

C. A Site Suitability Report, if applicable, as prescribed by 225 CMR 29.06(2); and aa

D. Other materials necessary for site plan review, if required by the Site Plan Review Authority, including other applicable information required by 225 CMR 29.00 or associated guidance.

E. A detailed description of the proposed project, including the proposed Site Footprint and the surrounding area with relevant maps, figures, drawings, anticipated permits, any proposed Community Benefits Plan if applicable, a description of any proposed Payment

in Lieu of Taxes (PILOT) payment, or other attachments specified by 225 CMR 29.00 or associated Guidance;

F. Documentation of actual or prospective access and control of the project site (see also Section 6.3);

G. An Operation and Maintenance Plan (see Section 6.4);

H. An Emergency Response Plan (see Section 6.5);

I. A preliminary equipment specification sheet that documents the proposed BESS components and other associated electrical equipment that are to be installed, including the manufacturer and model. A final equipment specification sheet shall be submitted prior to issuance of a building permit;

J. Proof of liability insurance; and

K. Documentation that the project has complied with all applicable pre-filing requirements in 225 CMR 29 29.08.

The Site Plan Review Authority may waive document requirements as it deems appropriate.

The proof of notification to abutters and property owners listed in Section B above complies with M.G.L. ch. 40A sec. 11, which requires mail notification of abutters and abutters to abutters withing 300 feet when a public hearing is required during the review process for the proposed development. Municipalities may wish to extend to a greater distance to encourage more community engagement with the BESS development.

Additional Consideration for BESS: *The extensive site plan review documentation set forth in Section 6 of this model bylaw is not intended to apply to residential uses and Tier 1 BESS Installations. Communities should shape their bylaws to enable both large and small projects to proceed without undue delay.*

6.3 Site Control

The project owner or operator shall submit documentation of actual or prospective access and control of the project site sufficient to allow for construction and operation of the proposed BESS Installation.

Examples of acceptable documentation of site control may include:

- *Deed showing ownership of the project site*
- *Lease agreement with the landowner*
- *Option to lease or option to purchase the property*
- *Easement granting rights to use the land for solar development*
- *Any other documentation sufficient to demonstrate that the project owner or operator has, or will have, the legal right to construct and operate the installation on the site*

6.4 Operation and Maintenance Plan

The project owner or operator shall submit a plan for the operation and maintenance of the BESS, which shall include measures for maintaining safe access to the installation, stormwater controls, and general procedures for operational maintenance of the installation. Operations and Maintenance plans for Solar Photovoltaic Installations must comply with the standards in the DOER *Guideline on Public Health, Safety, and Environmental Standards,* and *Guideline on Common Conditions.*

6.5 Emergency Response Plan

For all BESS Installations requiring Site Plan Review or a Special Permit, the proponent shall submit an Emergency Response Plan. The Emergency Response Plan shall be approved by the local fire department prior to system commissioning. A copy of the Emergency Response Plan shall be given to 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 Response 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 BESS 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 dealing with BESS 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 Municipality 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.

Municipalities may wish to require additional requirements depending on the size and location of the BESS Installation. For example:

- *A communications plan for nearby residences which may be affected by an emergency event.*
- *Evacuation/shelter-in-place plans*
- *Reporting requirements to local boards or commission for events requiring notification of firefighters or other first responders.*
- *An annual safety report.*
- *It is recommended that emergency plans fully adopt the standards in NFPA 855*

6.6 Utility Notification

No BESS Installation requiring Site Plan Review shall be constructed until evidence has been given to the Site Plan Review Authority that the utility company that operates the electrical grid where the installation is to be located has been informed of the BESS owner or operator's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

6.7 Dimension and Density Requirements

6.7.1 Setbacks

BESS Installations must comply with all setbacks for the zoning district where they are located.

Some municipalities may wish to vary the setbacks for BESS Installations based on the needs and character of the community. A stakeholder group including municipal/regional planners, BESS developers, and environmental advocacy groups developed the following alternative front, side, and rear setbacks:

(a) *Front yard: The front yard depth shall be at least 20 feet; provided, however, that where the lot abuts a Residential district, the front yard shall not be less than 50 feet.*

(b) *Side yard. The side yard depth shall be at least 20 feet; provided, however, that where the lot abuts a Residential district, the side yard shall not be less than 50 feet.*

(c) *Rear yard. The rear yard depth shall be at least 25 feet; provided, however, that where the lot abuts a Residential district, the rear yard shall not be less than 50 feet.*

In general, less densely developed communities may want larger setbacks and more developed communities may want smaller setbacks. Setbacks, however, should not be so large as to result in de facto prohibition on BESS across large areas of the municipality.

***Note:** NFPA 855 requires a minimum separation of 10 feet between the BESS equipment and combustible materials*

6.7.2 Appurtenant Structures

All appurtenant structures to BESS Installations that require Site Plan Review shall be subject to reasonable regulations concerning the bulk and height of structures, lot area, setbacks, open space, parking, and building coverage requirements. All such appurtenant structures, including but not limited to equipment shelters, storage facilities, transformers, and substations, shall be architecturally compatible with each other. Whenever reasonable, structures should be shaded from view by vegetation and/or joined or clustered to avoid adverse visual impacts.

Note: *Regulations governing appurtenant structures are typically contained in a municipality's zoning ordinance or bylaw.*

6.8 Design Standards

All BESS Installations requiring Site Plan Review are subject to the following design standards:

6.8.1 Lighting

Lighting of BESS Installations shall be consistent with local, state and federal laws, and the DOER *Guideline on Common Conditions* and *Guideline on Public Health, Safety, and Environmental Standards*. Lighting of other parts of the installation, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties. Where feasible, lighting of the BESS Installation shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.

Note: *See Dark Sky Massachusetts Model Bylaw for a more in-depth model bylaw for outdoor lighting. See the International Dark Sky Association website (http://www.darksky.org/fsa/) for further information.*

6.8.2 Signage

Signage for BESS Installations shall be in compliance with American National Standards Institute (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. Signage must be updated to reflect any changes to contact information within 90 days of any changes.

Note: *Municipalities may require developers to place utility connections from BESS Installations that require Site Plan Review underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. It is recommended that municipalities allow electrical transformers for utility interconnections to be above ground. Where there is existing aboveground utility infrastructure, the impacts of incremental aboveground utility interconnections may be minimal. Utility interconnections should generally not be required to be underground unless there are site-specific reasons for undergrounding.*

6.8.3 Screening

Visual screening practices for BESS Installations must comply with the DOER *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions*. If necessary and reasonable to minimize visual impacts on adjacent properties or public ways, BESS Installations which require Site Plan Review shall include year-round screening. Screening may consist of vegetation, berms, fencing, or a combination thereof. Project owners are responsible for maintaining screening throughout the life of the installation. For smaller projects below a designated capacity or acreage threshold, screening may be reduced or waived at the discretion of the Site Plan Review Authority.

6.8.4 Fencing

BESS Installations which require Site Plan Review must be completely enclosed by chain-link or comparable fencing to prevent entry by unauthorized persons. If applicable, fencing for all BESS Installations shall comply with standards established by the electric utility to which the BESS connects.

6.8.5 PFAS

The applicant shall certify that non-PFAS fire-suppression foams shall be employed to the extent that they are commercially available, efficacious, and compliant with federal and state fire codes.

6.8.6 Containment of Liquid Hazardous Materials

Liquid hazardous materials shall be stored in a containment area that, in the case of leaks, is capable of containing 110% of the largest volume stored in the containment area.

6.8.7 Noise

BESS Installations must comply with all state noise regulations (310 CMR 7.10) and local noise bylaws or ordinance <<reference Chapter of local noise bylaw>>

To the extent practicable, noise producing equipment shall be located at the maximum distance possible from residences and other sensitive noise receptors.

Note: *Depending on the size and location of the BESS Installation, Municipalities may wish to require that the applicant conduct a noise study demonstrating that it complies with applicable state noise standards, and local noise bylaws or ordinances, if any.*

6.9 Safety and Environmental Standards

6.9.1 Safety

A. BESS and associated equipment shall be certified by a Nationally Recognized Testing Laboratory to UL 9540 (Standard for BESS); approved equivalent standard, or subsequent standard. All subcomponents shall meet the following standards as applicable:
    i. UL 1973 (Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail)
    ii. UL standards for the battery technology used in the BESS Installation (e.g., UL 1642, Standard for Lithium Batteries)
    iii. UL 1741 (Inverters and Power Converters)
B. For all Tier 2 and Tier 3 systems, the UL9540A test report for the product shall be made available to the fire marshal and building officials. If Site Plan Review is required, it shall also be provided to the Site Plan Review Authority.
C. The BESS shall be maintained in good working order and in accordance with industry standards.
D. Site access shall be maintained, including snow removal at a level acceptable to the local fire department

Note: *Additional information on fire code can be found in NFPA 1 with amendments as adopted by the Commonwealth of Massachusetts. NFPA 855 contains additional guidance regarding energy storage systems and is considered the industry's best practice but is not an adopted code. Both codes govern site design and not equipment design and are not standards to be certified to.*

6.9.2 Emergency Services

The BESS owner or operator shall provide a copy of the project summary, electrical schematics, and site plan to the local fire chief. All means of shutting down the BESS shall be clearly marked. The owner or operator shall identify a person responsible for public inquiries throughout the life of the installation.

Site specific procedures for handling emergencies shall be established in the Emergency Response Plan as required in Section 6.5.

6.9.3 Land Clearing and Soil Erosion

Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the BESS Installation or otherwise prescribed by applicable laws, regulations, and bylaws.

All combustible vegetation shall be removed for a minimum distance of 10 feet from the BESS modules.

Note: *NFPA 855 requires a minimum separation of 10 feet between the BESS equipment and combustible materials.*

Notes on Environmental Protections:

The following considerations will be primarily applicable to BESS Installations that are co-located with solar photovoltaic generating facilities:

- *Some Massachusetts towns require habitat mitigation offsets for large-scale solar built on previously undeveloped land, requiring developers to conserve land in proportion to the land disturbed by the solar installation. The Massachusetts Attorney General's Office (AGO) Municipal Law Unit (MLU) has approved mitigation ratios of 1:1 and has disapproved one instance of a 4:1 habitat mitigation ratio. Mitigation measures involving replacement of impacted resources (e.g. tree replacement, wetlands replacement, or habitat replacement) should adhere to a no net loss goal and at least a one-to-one replacement ratio of impacted land area. Such mitigation may be incorporated into a local bylaw, and/or included in a CBA.*
- *Project owners and operators shall site and design facilities to avoid, minimize or, if impacts cannot be avoided or minimized, mitigate siting impacts and environmental and land use concerns to the greatest extent possible.*
- *Projects with a Total Site Suitability Score above 15 for any Criteria-Specific Suitability (see table in Section VIII.C.ii. of Site Suitability Guidance) is an eight or above (a six or above in Unfairly Burdened Areas) may be subject to Compensatory Environmental Mitigation Fees. Projects with a Total Site Suitability Score of 5 or below may not be required to pay a Compensatory Environmental Mitigation Fee, but a fee may be included in a CBA if so negotiated in good faith.*
- *Municipalities may require Compensatory Environmental Mitigation Fees pursuant to 225 CMR 29.07: Application of Site Suitability Guidance, and DOER's Guideline on Minimization and Mitigation Measures for projects with a Site Suitability Score greater than 5. Mitigation fees are calculated according to the following formula:*

*Total Fee = Maximum Fee Per Acre * (Total Site Suitability Score/25) * Number of Acres Impacted on Site Footprint*

- *Stormwater management, watershed protection, flood zones, and wetland protections are regulated at the state and federal levels.*
- *MassDEP Wetlands Program Policy recommends, but does not require, land disturbance and grading to be conducted in a phased manner to minimize runoff from solar development.*

6.10 Monitoring and Maintenance

6.10.1 BESS Installation Conditions

The BESS Installation owner or operator shall maintain the facility in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and integrity of security measures. Site access shall be maintained at a level acceptable to the local Fire Chief

and Emergency Medical Services. The owner or operator shall be responsible for the cost of maintaining the BESS Installation and any access road(s), unless accepted as a public way.

6.10.2 Modifications

All material modifications to BESS installations which require a Site Plan Review made after the issuance of the required building permit shall require approval by the Site Plan Review Authority. Any increase in Site Footprint or capacity in kW_{DC} or kWh_{DC}, or significant alterations to project configuration shall constitute a material modification.

6.10.3 Change of Ownership

The BESS Installation owner or operator must provide written notification to the municipality within 30 days if there is any change of project ownership. Notifications must include name, business address, phone number, email address, and emergency phone number of the new owner.

6.11 Abandonment or Decommissioning

6.11.1 Removal Requirements

The BESS Installation owner or operator shall comply with all decommissioning and abandonment standards set forth in the DOER's *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions.* Any Tier 2 BESS Installation, unless located in the industrial zoning district, or Tier 3 BESS Installation which has reached the end of its useful life or has been abandoned consistent with Section 6.11.2 of this bylaw shall be removed. The owner or operator shall physically remove the installation no more than 150 days after the date of discontinued operations. The owner or operator shall notify the Site Plan Review Authority by certified mail of the proposed date of discontinued operations and plans for removal. Decommissioning shall consist of:

A. Physical removal of all BESS Installations, structures, equipment, security barriers, and distribution and/or transmission lines from the site.
B. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.
C. Stabilization or re-vegetation of the site as necessary to minimize erosion. The Site Plan Review Authority may allow the owner or operator to leave landscaping or designated below-grade foundations to minimize erosion and disruption to vegetation.

Note: *The list of BESS Installations required to follow the removal process described above is based on the municipality adopting the model Table of Uses in Section 3.0. Municipalities will need to adapt based on the Table of Uses amendment they develop for BESS.*

6.11.2 Abandonment

The BESS 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 municipality shall have the right, to the extent it is otherwise duly authorized by law, to enter the property and physically remove the installation at the expense of the owner of the installation and the owner(s) of the site on which the installation is located. The Town may use the financial surety as described in Section 6.11.3 Decommissioning Fund below for this purpose.

6.11.3 Decommissioning Fund

Prior to construction, the project owner shall provide to the Municipality, in cash, bond, letter of credit, escrow, or another form reasonably acceptable to the Site Plan Review Authority, a surety to cover the cost of removal in the event the Municipality must remove the BESS Installation and remediate the landscape. The amount of the surety shall be 125 percent of a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The project owner shall provide an updated estimate after ten (10) years of project operation and subsequent updates in five-year intervals after that date, for the remainder of the project's lifetime. The project owner shall provide additional surety in the amount of 125 percent of the most recent estimated cost of decommissioning.

This surety will not be required for municipally or state-owned facilities.

Note on Surety: *When decommissioning is as long as 25 years away, surety provisions should include a mechanism to ensure that the abandonment surety accounts for inflation and other costs increases during the lifetime of the project.*

7.0 Special Permit

Prior to construction, installation, or modification, Primary-use Tier 2 BESS Installations in the Residential District and Tier 3 BESS Installations in the Residential, Commercial, or Agricultural Districts and Accessory Use Tier 3 BESS Installations in a Residential or Commercial district require a Special Permit as provided in <<Section in Municipality's zoning bylaw related to Special Permits>>. Any BESS Installation that requires a Special Permit shall also acquire a Building Permit and undergo Site Plan Review and comply with the applicable provisions of Sections 4.0, 5.0, and 6.0 above and shall also comply with 225 CMR 29.00 and any associated Guidance. The Special Permit Granting Authority for the development of a BESS Installation shall be the Planning Board.

See the model Table of Uses in Section 3.1 for the list of BESS Installations requiring a Special Permit. Municipalities will need to adapt based on the Table of Uses amendment they develop for BESS.

7.1 Special Permit Waivers

Upon written request by the applicant, the Site Plan Review Authority may waive or reduce any of the special permit requirements of this Section by the same majority vote required for the permit itself upon written findings of:

1. Special circumstances of the site, its surroundings, or the proposal design that negate the need for imposition of the requirement, or the objectives of this section may be met in an alternative manner or, and
2. That such a waiver or reduction will not result in a BESS that is less protective of public health, safety, and welfare than if the waiver were not granted.

In the case of a Special Permit, such requests must be made by the applicant no later than the close of the public hearing. An affirmative or negative vote under this paragraph shall not be construed as an approval or disapproval of the Special Permit sought.

Note on Special Permits: *Municipalities may wish to require certain BESS-specific elements to be submitted with a special permit application, in addition to the elements required for any special permit application. These may include, but are not limited to:*

- *Visual renderings of the project*
- *Prime Farmlands (identify disruption and any Best Management Practices/mitigation for conversion of prime farmland, continued use of land)*
- *Threatened and endangered species*
- *Wildlife Habitat (Pollinator-friendly species, raised fences for small wildlife passage, etc.)*