Model Zoning Bylaw:
Allowing Use of Battery Energy Storage Systems

Prepared by:
Department of Energy Resources
Massachusetts Executive Office of Energy and 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.

DOER acknowledges that this model represents our own understanding of state law and has made every effort to carefully research this issue. While DOER believes our interpretation is reasonable, we anticipate that local municipal counsel may offer a different interpretation and that communities will need to consider these alternatives moving forward. It is highly recommended that any local regulatory language developed from this Guidance be reviewed by municipal counsel prior to adoption.

In forming their bylaw, Municipalities can consider any standard contained within DOER's Guideline on Public Health, Safety, and Environmental Standards.

This model 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 provide adequate financial assurance for the eventual decommissioning of such installations.

2.0 Definitions

Accessory Use: A BESS installation is considered an Accessory Use when it is subordinate to a permitted or conditional use or structure and customarily incidental

to the permitted or conditional use of the structure. 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. BESS facilities that connect directly to the electric grid but are located on a parcel with a separate Primary Use are considered an Accessory Use.

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, zoning amendment, waiver, or other discretionary zoning approval. As-of-Right development may be subject to Site Plan Review (as set out in Section 3.1) to determine conformance with local zoning ordinances or bylaws. Projects allowed As-of-Right, including those subject to Site Plan Review, cannot be denied, 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 select board, 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 including, but not limited to, an Accessory Use to a solar generating facility, power generation facility, electrical substation, or other similar uses. The facility must comply with the State's Electrical Code (527 CMR. 12.00), and the State's Fire Code (527 CMR 1.00), or subsequent standard.

BESS are classified as Tier 1, Tier 2, and Tier 3, as follows:

A. Tier 1 BESS installations include systems with an Aggregate Energy Capacity of less than 250 kWh.
B. Tier 2 BESS installations include systems with an Aggregate Energy Capacity of 250 kWh, but less than 10 MWh.
C. Tier 3 BESS installations include systems with an Aggregate Energy Capacity of 10 MWh or more and less than 100 MWh.

Note: *The Tiers described above are defined by watt-hours (Wh), or the total energy the BESS installation can hold. The total capacity of the system in how much power in watts (W) the system can produce at any given time. The total energy in Wh is a function of the system's capacity and the maximum duration of that output (hours). BESS installations with a different maximum output and duration can have the same amount of energy; for example, a 4-MW, 1-hour system and a 2-MW, 2-hour system are both 4 MWh. Energy is closely related to the physical size of the system.*

Note: *The Tiers were developed with input from stakeholders including municipal/regional planners, BESS developers, and environmental advocacy groups. The municipality may wish to consider alternate Tiers based on local public health, safety, and welfare. 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.*

The thresholds between categories are not fixed and municipalities may vary the thresholds to fit circumstances in their community, provided that significant variations or variations that have an unreasonably restrictive effect should be avoided.

If a municipality decides that the projects currently designated as Tier 1 go through Site Plan Review, the municipality should create a 0-100 kWh separate tier for residential systems that are allowed by-right with a building permit, or exempt such residential systems from the requirements of the bylaw. Processing individual residential and small commercial BESS systems through Site Plan Review are likely to be burdensome to municipalities and applicants alike.

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.

DOER: The Massachusetts Department of Energy Resources, established by M.G.L. c. 25A.

Liquid Hazardous Materials: Liquids that are designated Toxic or Hazardous as they are defined under M.G.L. c. 21C and c. 21E and 310 CMR 30.00.

MassDEP: The Massachusetts Department of Environmental Protection, established by M.G.L. c. 23J, § 2.

Site Footprint: The area of land and water encompassed by a BESS installation's equipment, plus any land significantly impacted by construction of the BESS installation, including, but not limited to, land altered of its natural vegetative composition and structure for clearing, grading, and roadways.

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 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 Ctrs., Inc. v. Town of Auburn Planning Bd., 18 Land Ct. Rep. 377 (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 Select Board, 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.

3.0 Applicability

This section applies to any BESS installation that applies for a permit 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 complement the consolidated local siting and permitting process for small clean energy infrastructure facilities established under Chapter 239 of the Acts of 2024.

***Educational Note**: Existing Massachusetts law limits the local zoning restrictions that can be placed on solar and storage facilities. Massachusetts General Laws 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."*

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

The Massachusetts Attorney General's Office reviews all zoning bylaws for compliance with state law, including with M.G.L. c. 40A, § 3.

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

- *Tracer Lane II v Waltham, 489 Mass. 775 (2022), Supreme Judicial Court ruling that a City's limiting of 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 the town's zoning bylaw confining large ground-mounted solar to designated overlay districts was impermissible because the overlay districts allowing large ground-mounted solar covered only approximately 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 M.G.L. c. 40A, § 3.*
- *Sunpin Energy Services LLC v. ZBA of Petersham Supreme Judicial Court ruling that the Town improperly denied a special permit because denial was*

based primarily on the 14.3 acres of tree clearing required in a Town is 97% forested and therefore such rationale is an effective blanket prohibition on large-scale solar systems.

- *Northbridge McQuade, LLC v. Northbridge Zoning Bd. of Appeals, June 2021 Mass. Land Court (Decision 18 Misc 000519), finding that the Town's minimum frontage requirement of 150 feet was improperly applied to the solar facility in question, as there was no legitimate concern regarding public health, safety, or welfare.*
- *Summit Farm Solar v. New Braintree, a 2022 Land Court decision, 18 MISC 000367, ruling that towns cannot condition special permits on zero or negligible visual impact.*
- *NextSun Energy LLC v. Fernandes, a 2023 Land Court decision (decision 19 MISC 000230), affirmed by the Massachusetts Appeals Court in 2025, finding that co-located BESS with solar is protected by M.G.L c. 40A, § 3.*
- *Duxbury Energy Storage v. Town of Duxbury ZBA, June 2025 Land Court decision 23 MISC 000643, finding that standalone BESS is protected by M.G.L. c. 40A, § 3, ninth paragraph.*

We note this is not an exhaustive list of cases, and case law will evolve over time. Municipalities should consult with municipal 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.
   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>>.

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 (<250 kWh)	Y	Y	Y	Y
Tier 2 (250 kWh–10 MWh)	SP	SPR	Y	SPR
Tier 3 (10 – 100 MWh)	SP	SP	SPR	SP
Accessory Use				
Tier 1 (<250 kWh)	Y	Y	Y	Y
Tier 2 (250 kWh–10 MWh)	SPR	SPR	Y	Y
Tier 3 (10 – 100 MWh)	SP	SP	SPR	SPR

Y = 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 a Site Plan Applications but may impose reasonable conditions.)
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.

Municipalities may adopt different classifications or permitting thresholds than those in the Model BESS Bylaw.

To the extent a municipality has districts not listed here it should apply the classifications applicable to the district closest in character to the district in question. Municipalities may establish tiers based on desired underlying land uses, such as brownfields, landfills, or established industrial uses.

Certain Massachusetts communities, more often small and rural communities, consist of a single zone, typically "Residential-Agricultural." Overlay districts may be of interest to municipalities that consist of a single zone. As noted in the discussion of Kearsarge Walpole v. ZBA Walpole, prohibiting ground-mounted solar, and by extension BESS (see Duxbury Energy Storage v. Town of Duxbury Zoning Bd. of Appeals, 33 Land Ct. Rep. 293 (2025)), outside of an overlay district that covers only a small percentage of the municipality's land has been found to violate the Dover Amendment. Considerations when approaching overlay districts may include the size of the overlay district and if Primary Use BESS is ever allowed to be sited outside of the overlay district, such as with a Special Permit. It is recommended that municipalities work with town counsel on decisions related to overlay districts.

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 in light of the Tracer Lane II decision, 489 Mass. 775 (2022) should be cautious not to exclude BESS from a large portion of the municipality's land.

For projects categorized as By Right, only Section 4.0 below applies. For projects categorized as Site Plan Review, Sections 4.0 and 5.0 a apply. For projects categorized as Special Permit, Sections 4.0, 5.0, and 6.0 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 comply with all applicable local, state, and federal requirements, including but not limited to all applicable safety, construction, electrical, fire safety 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 (MassDEP):*** *Noise Standards, Wetlands Protection Act Regulations, Stormwater Handbook and Standards*
- ***Massachusetts Comprehensive 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.*

4.2 Local Permits

No BESS installation shall be constructed, installed, or modified as provided in this section without first obtaining a building permit.

Note: *Under the State Building Code, work must commence within six (6) months from the date a building permit is issued; however, a project owner or operator may request an extension of the permit, and more than one extension may be granted Under Section 119 of Chapter 239 of the Acts of 2024, as amended by Section 136 of Chapter 248 of the Acts of 2024, permits granted to clean energy generation or storage projects between October 22, 2020, and August 1, 2024 will not expire until August 1, 2029.*

4.3 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>>.

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.

Fees should be designed to cover the municipality's cost of permitting the project and not designed to generate net revenue for the municipality.

4.4 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 the 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 BESS 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*

4.5 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.

Note: *Municipalities may want to refer to the DOER Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions for a model approach to operations and maintenance plans. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00. Municipalities should take into consideration the proposed size of the project, and whether it's a primary or ancilliary use to an existing use (i.e., in support of an apartment building, school, medical office, etc)*

4.6 Emergency Response Plan

The project owner or operator shall submit an Emergency Response Plan for review and approval 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 authority responsible for issuing permits required under the State Fire Code, 527 CMR 1.00>>. A permanent copy shall also be placed in an approved location to be accessible to facility personnel, <<Local authority responsible for issuing permits required under the State Fire Code, 527 CMR 1.00>>, 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 BESS 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.

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

- *A temporary exclusion/isolation zone around the facility during emergency situations.*
- *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*
- *Additional guidance from the EPA can be found at: https://www.epa.gov/electronics-batteries-management/battery-energy-storage-systems-main-considerations-safe#:~:text=Ensure%20use%20of%20Personal%20Protective,application%2C%20to%20the%20extent%20possible.*

4.7 Design Standards

All BESS installations are subject to the following design standards:

4.7.1 Lighting

Lighting of BESS installations shall be consistent with local, state and federal laws. Lighting of other parts of the BESS, 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 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.*

Municipalities may want to refer to DOER *Guideline on Common Conditions* and *Guideline on Public Health, Safety, and Environmental Standards for lighting. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00.*

4.7.2 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 BESS, any special hazards associated, the type of suppression system installed in the area of the BESS, 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.

BESS installations shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the BESS installation. Notwithstanding any general or zoning sign bylaw to the contrary, safety-related signs and signs required by either the State Fire safety Code or the State Electrical Code, of reasonable size and number, shall be permitted.

4.7.3 Screening

If necessary and reasonable to minimize visual impacts on adjacent public ways, driveways, and abutting residential dwellings, BESS installations shall include year-round screening. Screening may consist of vegetation, berms, fencing, or a combination thereof and should preserve natural vegetation to the maximum extent possible. Project owners are responsible for maintaining screening throughout the life of the BESS. 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.

Note: *Municipalities may want to refer to DOER Guideline on Common Conditions and Guideline on Public Health, Safety, and Environmental Standards for more information on screening. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00.*

4.7.4 Landscaping

If the developed area includes open vegetated areas, these landscaped areas will be maintained over the life of the BESS installation and, where feasible, prioritize the use of native plants

Note: *Municipalities may want to refer to DOER Guideline on Common Conditions* and *Guideline on Public Health, Safety, and Environmental Standards for more information on landscaping. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00.*

4.7.5 Fencing

Outdoor BESS installations must be completely enclosed by chain-link or comparable protective measure that complies with 527 CMR 12.00. If applicable, fencing for all BESS installations shall comply with standards established by the electric utility to which the BESS connects.

4.7.6 Fire Suppression System

Any fire suppression systems associated with the BESS installation shall comply with the State Fire Code (527 CMR 1.00).

4.7.7 Containment of Liquid Hazardous Materials

The containment of liquid hazardous materials shall comply with the State Fire Code (527 CMR 1.00).

4.7.8 Noise

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

To the extent practicable, BESS shall be designed to minimize noise at residences and other sensitive noise receptors. The project owner or operator shall submit manufacturer sound data and a site-specific acoustic analysis showing expected dBA levels at the nearest property lines and noise-sensitive receptors under normal operation, maximum HVAC/fan operation, charging/discharging operation, and nighttime conditions. The analysis shall demonstrate compliance with MassDEP noise policy and applicable local noise bylaws.

BESS installations over 100 kWh that are in or abut a Residential zone shall submit a noise assessment, conducted at the applicant's expense, to be submitted with the application to <<the appropriate authority, board or department>>.

Note: *BESS should be subject to the same locally enacted noise standards as other types of development. BESS-specific noise regulations that are functionally unattainable may violate the Dover Amendment.*

4.8 Safety and Environmental Standards

4.8.1 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 <<local authority responsible for issuing permits required under the State Fire Code, 527 CMR 1.00>>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 on access roads or driveways controlled by the owner/operator

Note: *Fire code requirements for BESS projects in Massachusetts are primarily governed by 527 CMR 1.00, the Massachusetts Comprehensive Fire Safety Code, which is based on NFPA 1 with amendments adopted by the Commonwealth of Massachusetts. Energy storage system requirements are addressed in Chapter 52 of 527 CMR 1.00/NFPA 1, including requirements and thresholds that reference or incorporate NFPA 855, Standard for the Installation of Stationary Energy Storage Systems, which govern installation, siting, fire protection, emergency planning, and operational safety requirements for BESS projects.*

4.8.2 Emergency Services

The BESS owner or operator shall provide a copy of the project summary, electrical schematics, and site plan to the <<local authority responsible for issuing permits required under the State Fire Code, 527 CMR 1.00>>. All means of shutting down the BESS shall be clearly marked. The owner or operator shall identify a responsible contact person for public inquiries and shall update that contact information as needed.

Site specific procedures for handling emergencies shall be established in the Emergency Response Plan as required in Section 5.4.

4.8.3 Land Clearing and Soil Erosion

Clearing of natural vegetation shall be limited to what is reasonably 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 as prescribed by the State Fire Code, 527 CMR 1.00 modules.

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

Notes on Environmental Protection:

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. 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.*
- https://www.mass.gov/info-details/site-suitability-assessments-for-clean-energy-infrastructurehttps://www.mass.gov/info-details/clean-energy-siting-permitting-regulations*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.*

Water Resources and Clean Energy Zoning

Note on Private Wells: *Private wells are regulated by local health boards. Municipal bylaws should reference or defer to any local health regulations.*

Note on Other Drinking Water Protections: *If a BESS installation is proposed for construction in an Aquifer Protection Overlay District, Watershed District, or similar district/overlay district implementing zoning controls for drinking water protections under 310 CMR 22.00, the BESS must comply with all regulations related to this district/overlay district.*

Specifically, of 310 CMR 22.00 governs activities in public water supply areas. In Zone I, where the wellheads are located, current and/or future land uses are limited to those

directly related to the provision of public drinking water supply or will have no adverse impact on water quality (310 CMR 22.21(1)(b)(5)).

A 2011 (rev. 2018) policy from MassDEP prohibits Batteries or housing Batteries within Zone I. For solar in zone I, there must be an explanation of how the energy generated benefits the water supplier.

310 CMR 22.00 also requires zoning and/or non-zoning controls for Zone II, which is the land surrounding the Zone I wellhead area. Part of these controls include a list of prohibited activities, including, but not limited to:

- *Landfills and open dumps*
- *Automobile graveyards*
- *Stockpiling of snow or ice that contains sodium chloride or other chemicals used for snow and ice removal*
- *Bulk petroleum storage*
- *Storage of sludge and septage*
- *Storage of Liquid Hazardous Materials unless such storage is above ground, on an impervious surface, and with proper containment*

See 310 CMR 22.21 for additional information.

4.9 Monitoring and Maintenance

4.9.1 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 authority responsible for issuing permits required under the State Fire Code, 527 CMR 1.00>>and Emergency Medical Services. The owner or operator shall be responsible for the cost of maintaining the BESS installation and any access road(s) under the owner or operator's control, unless accepted as a public way.

4.9.2 Modifications

All material modifications to BESS installations made after the issuance of the required building permit shall require approval by the local permitting authorities. Any increase in Site Footprint, changes to the site that would impact the Site Suitability Score (if applicable) or impact resource areas protected by other municipal bylaws, or significant alterations to project configuration shall constitute a material modification.

4.9.3 Change of Ownership

The BESS installation owner or operator must provide written notification to the municipality within 15 days if there is any change of project ownership, and the municipal officials in receipt of the notification shall relay said information to the appropriate emergency response personnel. Any relevant signage at the site shall be updated within 30 days of a change of ownership. Notifications must include name, business address, phone number, email address, and emergency phone number of the new owner.

5.0 Site Plan Review

All BESS that require Site Plan Review, as specified in Table 1 in Section 3.1, shall undergo Site Plan Review by the Site Plan Review Authority prior to construction, installation, or modification. Projects that require Site Plan Review and proceed through a consolidated permitting process may also be required to comply with the applicable provisions of *225 CMR 29.09: Consolidated Local Permit Application*.

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, and any other applicable regulations, such as 225 CMR 29.00 for projects utilizing the consolidated permitting process. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00. Municipalities may impose additional conditions but must show they are necessary to protect public health, safety, or welfare.*

5.1 Required Documents

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

A. Current contact information (as of the date of the permitting application) and signature of the project owner or operator, as well as all co-proponents, if any, and all other owners;

B. Current contact information (as of the date of the permitting application) and signature of any agents representing the owner or operator, if any;
C. Current contact information for the person(s) responsible for public inquiries;
D. One- or three-line electrical diagrams detailing the BESS, associated components, and electrical interconnection methods, with all State Electric Code compliant overcurrent devices;
E. A site plan prepared, stamped, and signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts, showing:
    i. Property lines and physical features, including but not limited to roads, characteristics of vegetation (mature trees, old growth, shrubs, open field), wetlands, and streams for the project site;
    ii. Proposed landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures, snow storage, and stormwater management systems;
    iii. Zoning district of project site and adjacent parcels;
    iv. Proposed layout of major system components including the Batteries, inverters, fire detection and suppression systems, and foundations or mounting;
    v. Total limit of disturbance;
    vi. Total area of vegetation clearing, not including mowed field;
    vii. Contour lines with an interval of no more than 2 feet;
    viii. Property lines of parcels within 300 feet, and any existing structures;
    ix. Location, dimension, and types of existing structures on the property;
    x. Location of noise producing equipment;
    xi. Trees with a diameter at breast height (DBH) of 20 inches or greater, mature Birch trees, and trees covered by any applicable tree ordinance within the project site. Diseased or hazard trees that will be removed as part of the project;
    xii. The right-of-way of any public road that is abutting the property;
    xiii. Overhead and underground utilities;
    xiv. Locations of floodplains or inundation areas associated with moderate or high hazard dams;
    xv. Stormwater management and erosion and sediment control;
    xvi. Bodies of water, including streams, rivers, lakes, and ponds;
    xvii. Historic and cultural resources, including those listed on the Massachusetts Register of Historic Places or those defined by the National Historic Preservation Act;
    xviii. Trails and recreation areas, including access points;

xix. Proposed fencing;
xx. Staging area(s) and offsite parking during construction;
xxi. Energy storage units.

F. Proof of notification the owners of record for all abutting properties and properties within 300 feet of the subject parcel's boundary;
G. A Site Suitability Report, if applicable, as prescribed by 225 CMR 29.07;
H. A detailed description of the proposed project, including the proposed Site Footprint and the surrounding area with relevant maps, figures, drawings, anticipated permits, a description of any proposed Payment in Lieu of Taxes (PILOT) payment, (if applicable; a finalized PILOT agreement is not required at the time of application and is typically negotiated separately from, and may occur after, permit approval) or other attachments specified by 225 CMR 29.00 or associated Guidance, if applicable;
I. Documentation of actual or prospective access and control of the project site (see also Section 5.2);
J. An Operation and Maintenance Plan (see Section 5.3);
K. A preliminary Emergency Response Plan (see Section 5.4), which the applicant shall update prior to construction and as necessary to reflect final equipment selection and any material design changes
L. Documentation of hazardous materials/substances/liquids safety data sheets and quantities for proposed BESS components and other associated hazardous materials;
M. 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 the local fire department and <<Local authority responsible for issuing permits required under the State Fire Code, 527 CMR 1.00>>. Any changes must be reviewed and approved prior to issuance of a building permit;
N. Proof of liability insurance provided to the Site Plan Review Authority prior to the commencement of construction; and
O. Certification of compliance with all local, state and federal regulations and guidance, including but not limited to access to water as may be required by the State Fire Code (527 CMR 1.00).

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

Note: *Local bylaws should endeavor to outline all the reports, data, and studies required for Site Plan Review, and Site Plan Review Authorities should avoid requesting further studies ad-hoc during the review process. The Site Plan Review*

Authority may request additional information on the items enumerated in the Required Documents.

Note: *The proof of notification to abutters and property owners listed in Section 5.1 above complies with M.G.L. c. 40A, § 11, which requires mail notification of abutters and abutters to abutters within 300 feet when a public hearing is required during the review process for the proposed development.*

Note: *The extensive site plan review documentation set forth in Section 5.1 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.*

5.2 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.

5.3 Dimension and Density Requirements

5.3.1 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 as an example of what solar setbacks installation might look like should they differ from the setbacks for the zoning district in which the solar is located:

(a) *Front yard: The front yard depth shall be at least 10-30 feet; provided, however, that where the lot abuts a Residential district, the front yard shall not be less than 50 and not more than 75 feet.*

(b) *Side yard. The side yard depth shall be 10-30 feet; provided, however, that where the lot abuts a Residential district, the side yard shall not be less than 50 feet and not more than 75 feet.*

(c) *Rear yard. The rear yard depth shall be 15-35 feet; provided, however, that where the lot abuts a Residential district, the rear yard shall not be less than 50 feet and not more than 75 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. A BESS Installation may have a setback that exceeds the required value if necessary to comply with other applicable standards (e.g., for noise or safety). The permit-granting authority may approve a further setback exceeding NFPA 855 guidelines, provided that it is pertinent to a public health or safety need for a unique scenario relevant to the project site.

5.3.2 Appurtenant Structures

If a BESS installation is subject to Site Plan Review, the Site Plan Review shall include any appurtenant structures.. All such appurtenant structures, including but not limited to equipment shelters, storage facilities, transformers, and substations, shall be architecturally compatible with each other. Architecturally compatible means that the materials and designs should be integrated into the existing landscape. 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. Municipalities may want to refer to the DOER Guideline on Common Conditions for a model approach to architectural compatibility. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00.*

Note on Utility Infrastructure Placement: *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. However, where there are site-specific reasons to do so, municipalities may require utility connections from BESS installations that require Site Plan Review to be placed underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider, as a condition of the permit. It is recommended that municipalities allow electrical transformers for utility interconnections to be above ground.*

5.4 Abandonment or Decommissioning

5.4.1 Removal Requirements

Any Tier 2 BESS installation or Tier 3 BESS installation which has reached the end of its useful life or has been abandoned consistent with Section 5.10.2 of this bylaw shall be removed. The owner or operator shall physically remove the installation no more than 150 days after the planned decommissioning date, or the date the installation has been deemed abandoned, whichever occurs first. The owner or operator shall notify the Site Plan Review Authority by certified mail of the proposed decommissioning date and plans for removal. The BESS installation owner shall prepare a decommissioning plan that includes removal of all structures, buildings, cabling, electrical components, security barriers, roads, foundations, pilings, and any other associated facilities, so that any agricultural ground upon which the facility and/or system was located is again tillable and suitable for agricultural uses. Decommissioning shall consist of:

A. Physical removal of all BESS installations, structures, buildings, cabling, electrical components, security barriers, roads, foundations, pilings, and any other associated facilities.
B. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.
C. Disturbed earth shall be graded and re-seeded as necessary to minimize erosion unless the landowner requests in writing that the access roads or other land surface areas not be restored. 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 Table 1 under 3.1. Municipalities will need to adapt based on the Table of Uses amendment they develop for BESS.*

Municipalities may want to refer to DOER's Guideline on Public Health, Safety, and Environmental Standards and Guideline on Common Conditions for more information on decommissioning and abandonment. Applications utilizing the consolidated permitting process must comply with DOER Guidelines authorized under 225 CMR 29.00.

5.4.2 Abandonment

The BESS installation shall be considered abandoned when it ceases to operate or undergo active repair or replacement, for more than twelve (12) months, without written consent of the Zoning Enforcement Authority. 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 Zoning Enforcement Authority 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 BESS at the expense of the owner of the BESS and the owner(s) of the site on which the BESS is located. The Town may use the financial surety as described in Section 5.10.3 below for this purpose.

5.4.3 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% of total amount of equipment and labor rates outlined by the Massachusetts Department of Labor Standard's Prevailing Wage Program and shall account for increased costs due to inflation at a rate of 2.5% per year. The Site Plan Review Authority shall reserve the right to have the decommissioning plan reviewed by a third-party engineer at the cost to the Applicant. 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% of the most recent estimated cost of decommissioning.

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

Note: *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.*

6.0 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. The Special Permit Granting Authority for the development of a BESS installation shall be the Planning Board.

6.1 Special Permit Waivers

Upon written request by the applicant, the Special Permit Granting 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 facility that endangers public health, safety or welfare.

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: *Broadly speaking, discretionary denials of Special Permit applications for uses protected under the Dover Amendment, including BESS, will be viewed with more scrutiny by courts than for uses not protected by the Dover Amendment.*

In particular, the Summit Farm case states: "The better, and correct, view of the limits of local regulation of solar energy facilities allowed by G. L. c. 40A, § 3 is that such local regulation may not extend to prohibition except under the most extraordinary circumstances, and that special permits regulating solar energy facilities must be treated like site plan approval, which allows for regulation but not for prohibition."