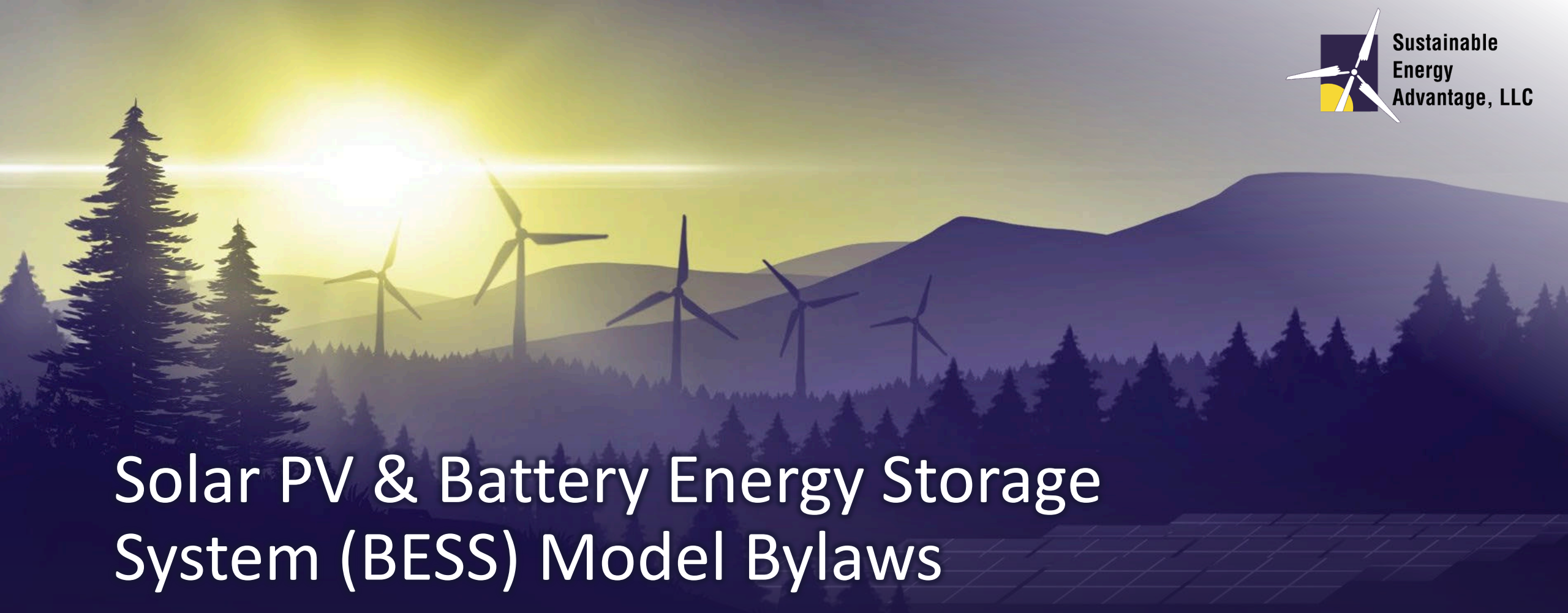

Sustainable Energy Advantage, LLC

Solar PV & Battery Energy Storage System (BESS) Model Bylaws

Performed on behalf of the Department of Energy Resources

Public Webinar - October 21, 2025

SEA, TRC, LSO Energy Advisors

Public Webinar Agenda

- Introduction and Policy Context
- Stakeholder Process
- Solar & BESS Bylaw – Key Shared Elements
  - Pre-Filing & Site Plan Review
  - Design Standards
  - Maintenance, Decommissioning, and Abandonment
- Solar PV Bylaw – Key Elements
  - Size Thresholds and Use Table
  - Tiers and Overlay Districts
  - Design Standards
- BESS Bylaw – Key Elements (presented by TRC)
  - BESS Bylaw Development Methods
  - Size Categories and Use Table
  - Design Standards
  - Fire safety and Emergency Response Coordination
- Next steps
- Stakeholder Q&A (30 minutes)

Please hold all your questions until the end.

Sustainable Energy Advantage, LLC

Model Bylaws – Overview

- Key goals include:
  - Providing Massachusetts municipalities with clear and appropriate standards to regulate solar PV and BESS development in light of statewide deployment goals
  - Serving as an example of municipal zoning and permitting rules that comply with the 2024 Climate Act and 225 CMR 29.00, and M.G.L c. 40A, § 3
  - Including contextual notes (e.g., on key legal and practical issues) to aid municipal decision-making
  - Able to be adopted as written, or with reasonable modifications to suit the circumstances of individual municipalities
- Draft model bylaws (posted Oct. 6)
  - **Draft Model Bylaw for Solar** – adapted from a previous version published in 2014, expanded in scope
  - **Draft Model Bylaw for BESS** – wholly new, drawing on expert knowledge and best practices from existing municipal bylaws

Sustainable Energy Advantage, LLC

Model Bylaws – Stakeholder Process

- Interviews & workgroups to identify key issues (complete)
- Drafted straw proposals based on feedback (posted Oct. 6)
- Public information sessions Oct. 6 - 9 (complete)
- Today: gather your feedback – also options for office hours and written comments
  - Written comments **due Nov. 14**
- Final deliverables to be published in early 2026
  - Model bylaws
  - Training resources & guidance materials

Office Hours				
M	*T*	*W*	*Th*	*F*
		October		
27	28 Office Hours: SEA + LSO (3:00-7:00)	29	30 Office Hours: SEA + TRC (3:00-7:00)	31
		November		
3	4 Office Hours: SEA + TRC (11:00-3:00)	5	6 Office Hours: SEA + LSO (11:00-3:00)	7
10	11	12	13	14 Comments Due (5:00 pm)

* TRC is the Consulting Team's energy storage expert. LSO Energy Advisors is the Consulting Team's legal expert.

Sustainable Energy Advantage, LLC

Siting and Permitting Landscape (1)

- M.G.L c. 40A, § 3, ninth paragraph (a.k.a., the "Dover Amendment")
  - "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."
- Chapter 239 of the Acts of 2024 – An Act Promoting A Clean Energy Grid, Advancing Equity And Protecting Ratepayers (2024 Climate Act)
  - Small Clean Energy Infrastructure → local jurisdiction, subject to 12-month Consolidated Permit rules
    - Generation: < 25 MW
    - Storage: < 100 MWh
    - Transmission & Distribution: < 1 miles (new corridor) and < 10 miles (existing corridor)
  - Large Clean Energy Infrastructure → EFSB jurisdiction
  - "Local governments acting in accordance with the standards established by the department for small clean energy generation facilities and small clean energy storage facilities pursuant to this subsection 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."

Sustainable Energy Advantage, LLC

Siting and Permitting Landscape (2)

- (Draft) 225 CMR 29.00 – Small Clean Energy Infrastructure Siting and Permitting
  - Implements directives of 2024 Climate Act
  - Currently in draft stage and must be finalized by March 1, 2026
  - Regulations go into effect on December 1, 2026 (proposed)
    - Municipalities must have consolidated permitting process by effective date
- EEA & DOER Siting and Permitting Guidelines (all currently in draft form)
  - Pre-filing guidelines
  - Public health, safety, and environmental standards
  - Common conditions and requirements in case of constructive approval
  - Minimization and mitigation measures
  - Guidance on Site Suitability Assessments for Clean Energy Infrastructure
  - Standards and Guidelines for Community Benefits Plans and Agreements

Sustainable Energy Advantage, LLC

Solar & BESS Bylaws

Key Shared Elements:

- Pre-Filing & Site Plan Review
- Design Standards
- Maintenance, Decommissioning, and Abandonment

Sustainable Energy Advantage, LLC

Pre-Filing & Site Plan Review

- Pre-Filing
  - Refers to *225 CMR 29.08: Pre-Filing Requirements* and DOER's *Guideline on Pre-Filing Stakeholder Engagement*
- Site Plan Review
  - Detailed list of documentation requirements
    - E.g., site plan, operations and maintenance plan, emergency response plan, equipment specifications sheet, proof of liability insurance, proof of site control
  - In Site Plan review, the relevant authority can reasonably condition, but should not discretionally deny, the project's permit
  - Waiver provision

Dimension, Design and Environmental Standards

- Design Standards:
  - Lighting: limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties
  - Screening: recommended for facilities that require site plan review
  - Fencing: required for facilities that undergo site plan review
  - Utility connection undergrounding: not required by default
  - Projects must also comply with DOER's *Guideline on Public Health, Safety, and Environmental Standards* and *Guideline on Common Conditions*
- Environmental Standards
  - Minimize clearing of natural vegetation
  - Note on habitat mitigation offsets and fees: Subject to DOER's Siting and Permitting Regulations

Sustainable Energy Advantage, LLC

Maintenance, Decommissioning, and Abandonment

- Monitoring and Maintenance
  - Material modifications approval process
  - Change of ownership notice
- At the end of the Solar/BESS installation's operational life, all components must be removed from the site.
- Prior to approval of a site plan, the applicant must provide a surety to cover the cost of removal if the municipality must remove the Solar/BESS facility and remediate the site.
- The Solar/BESS installation will be considered abandoned if its operations cease consistently for 12 months or more or if the operator does not respond within 30 days of the municipality inquiring into the continued operation

Sustainable Energy Advantage, LLC

Solar Bylaw

Key Elements:

- Size Thresholds and Use Table
- Tiers and Overlay Districts
- Design Standards

Sustainable Energy Advantage, LLC

Lower requirements for accessory vs. primary, preferred sites

Suggested Solar Permitting Requirements by Tier/Use/Zone

		Residential	Commercial	Industrial	Agricultural
	Building-Mounted/Canopy (< 25,000 kW_{DC})	BR	BR	BR	BR
Ground-Mounted	**Small** (< 25 kW)	BR	BR	BR	BR
	Medium - Primary Use (25 – 250 kW)	SPR	SPR	BR	SP
	Medium – Accessory Use (25 – 250 kW)	BR	BR	BR	SPR
	Large I (250 - 1,000 kW)	SP	SP	SPR	SP
	Large II (1,000 - 25,000 kW)	SP	SP	SP	SP
	Large – Accessory Use (> 250 kW – 25,000 kW)	SPR	SPR	SPR	SPR
	Landfill/Brownfield (< 25,000 kW)	SP	SPR	SPR	SPR
	Large III (25,000+ kW)	EFSB Jurisdictional			

BR = By Right, Subject to Building Permit Only
SPR = By Right, Subject to Site Plan Review
SP = Special Permit
N = Not Permitted

Sustainable Energy Advantage, LLC

Tiers and Overlay Districts

- Generally, primary use solar sited in residential or agricultural zones are subject to more permitting requirements; accessory uses and projects on brownfields/landfills have fewer requirements
- Solar tier thresholds: Aligned with SMART categories, above 25 MW under Energy Facility Siting Board (EFSB) jurisdiction
- Overlay districts
  - The model bylaw discusses, but does not mandate overlay districts
  - Towns may choose to incorporate solar and/or BESS overlay districts into their bylaws
  - Useful for towns with one zoning district to provide differentiated review of solar projects
    - Per Kearsarge Walpole v. ZBA Walpole, municipalities may not prohibit ground-mounted solar outside of an overlay district that covers only a small percentage of total land

Sustainable Energy Advantage, LLC

Typical Solar Project Types and Size Thresholds

Project Type	Typical Size
Residential Rooftop	7 - 25 kW
Commercial Rooftop	25 kW - 1 MW
Canopy project	Varies, 50 kW – 500 kW
Ground-Mounted Solar Farm	1-5 MW

Source: University of Michigan Alumni Association

Source: Boston Solar

Source: DOER Solar Canopy Working Group

Source: Sunlight Solar

A 250-kW project typically takes up one acre of land

Sustainable Energy Advantage, LLC

Design Standards

- Setbacks (suggested)
  - Front yard: 20 ft minimum, 50 ft if within or abutting a residential district
  - Side yard: 20 ft minimum, 50 ft if within or abutting a residential district
  - Rear yard: 25 ft minimum, 50 ft if within or abutting a residential district
- Signage requirements
  - Shall comply with a municipality's sign bylaw and include project owner/operator and 24-hour emergency contact phone number

Sustainable Energy Advantage, LLC

BESS Bylaw

Key Elements:

- Basis for BESS Bylaw Development
- Tiers by size, BESS Permitting Requirements
- Primary vs. Accessory use distinctions
- Standards for siting, design, construction, operation, and decommissioning
- Fire safety, emergency response coordination
- Decommissioning requirements

Sustainable Energy Advantage, LLC

Basis for BESS Model Bylaw Development

- Existing local BESS bylaws from cities/towns both within Massachusetts and from other states.
- Model Bylaws that have been used in other states (e.g., New York State Energy Research & Development Authority's model bylaw, American Clean Power).
- Studies related to the current state of local BESS requirements.
- National Fire Prevention Association (NFPA) 855.
- Input from stakeholders including local/regional planners, BESS developers, and environmental advocacy groups.

Sustainable Energy Advantage, LLC

NFPA 855

- Provides fire safety standards for the installation of energy storage systems of various types (not just batteries, though this is what most content is about)
- Establishes required setbacks for installations
- Establishes requirements for fire detection and suppression systems
- Establishes spill containment requirements
- Establishes requirements for Hazard Mitigation Analyses and Emergency Response Plans
- Establishes certain electrical protection requirements
- Establishes decommissioning requirements

Sustainable Energy Advantage, LLC

Tiers by size

- Tier 1: < 250 kWh
- Tier 2: 250 kWh - 10 MWh
- Tier 3: 10 MWh - 100 MWh
- BESS facilities with a capacity of 100 MWh or more are subject to EFSB jurisdiction

Sustainable Energy Advantage, LLC

Suggested BESS Permitting Requirements by Tier/Use/Zone

Lower requirements for accessory vs. primary, preferred sites

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
SP = Special Permit
N = Not Permitted

Sustainable Energy Advantage, LLC

Typical BESS Project Types and Size Thresholds

Project Type	Typical Size
Tier 1 – Residential & Small Commercial	14 kWh - 250 kWh
Tier 2 – Larger Commercial & Small Standalone	250 kWh - 10 MWh
Tier 3 – Industrial and Larger Standalone	10 MWh - 100 MWh

Source: Solartek

Source: TRC

Source: Wärtsilä Energy Storage

Sustainable Energy Advantage, LLC

Ground-Mounted, but Accessory Use BESS

Source: Lightshift Energy

Sustainable Energy Advantage, LLC

Primary & Accessory Use Distinctions

- **Primary Use:** Stand-alone installations
- **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.
- Other installations where there is an existing or proposed primary use

Sustainable Energy Advantage, LLC

Design Standards

- Setbacks
  - The BESS Model Bylaw does not alter setbacks from the setbacks established for the zoning district where it is located. Additionally, the model bylaw requires a minimum distance of 10 feet between BESS equipment and combustible materials per the National Fire Protection Association (NFPA) 855 standard
- Signage
  - Compliant 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 fire suppression system installed in the area of battery energy storage systems, and 24-hour emergency contact information

Sustainable Energy Advantage, LLC

Design Standards, continued

- Fencing
  - BESS requiring SPR (excluding building integrated BESS) require chain link or comparable fencing. If applicable, fencing for all BESS Installations shall comply with standards established by the electric utility to which the BESS connects.
- PFAS
  - Requires use of non-PFAS fire suppression foams in fire suppression system if effective alternative is available.
- Hazardous Liquid Containment
  - Areas containing hazardous liquids are required to have a capacity of 110% of the liquids volume to minimize release to the environment in the event of leaks.
- Noise
  - Must comply with MassDEP's noise regulations at 310 CMR 7.10 and any local noise bylaw or ordinance.

Fire & Safety

- BESS Model Bylaw provides current safety standards and laboratory certifications including NFPA 855, which provides safety standards for the installation and operation of BESS.
- BESS Model Bylaw recommends adherence to NFPA 855.
- An Emergency Response Plan (ERP) is a required element of the application for any BESS installation requiring SPR. The ERP will provide firefighters and other emergency first responders with the information necessary to minimize risk when dealing with an emergency situation at the BESS facility.

Sustainable Energy Advantage, LLC

Next Steps & Questions

Sustainable Energy Advantage, LLC

Next Steps

Office Hours: Drop-in sessions where staff from SEA (solar expert), TRC (storage expert), and LSO Energy Advisors (legal expert) will be available for public Q&A.

- **October 28,** 3-7pm: SEA & LSO (join here)
- **October 30,** 3-7pm: SEA & TRC (join here)
- **November 4,** 11am-3pm: SEA & TRC (join here)
- **November 6,** 11am-3pm: SEA & LSO (join here)

November 14, 5:00 pm: Draft Bylaw public comment period closes

- Submit written comments to green.communities@mass.gov
- Subject: "Model bylaw comments"

Early 2026: Final model bylaws, training resources, and guidance materials to be published

March 1, 2026: Statutory deadline for DOER to implement Siting and Permitting Regulations

December 1, 2026: Proposed deadline for local compliance with Siting and Permitting Regulations

Sustainable Energy Advantage, LLC

Questions for Public Comment

- General
  - **Design & Environmental**: Are the proposed design and environmental standards (i.e., lighting, screening, fencing) appropriate?
  - **Decommissioning & Maintenance**: Is the 125% surety requirement appropriate?
- Solar PV Bylaw
  - Do the **size thresholds** reflect typical projects in your community?
  - Is the **use table** and **permitting tiers** based on project size, zone, and use workable and clear?
- BESS Bylaw
  - Do the **size thresholds** reflect typical projects in your community?
  - Is the **use table** and **permitting tiers** based on project size, zone, and use workable and clear?
  - **Fire Safety**:
    - Feedback on the fire safety and emergency response coordination provisions (e.g., NFPA 855 compliance, emergency response plan)?
    - Feedback on requiring non-PFAS fire suppression foams when effective alternative is available

Sustainable Energy Advantage, LLC

Suggested Permitting Requirements by Tier/Use/Zone

Solar

		Residential	Commercial	Industrial	Agricultural
	Building-Mounted/Canopy (< 25,000 kW_{DC})	BR	BR	BR	BR
Ground-Mounted	**Small** (< 25 kW)	BR	BR	BR	BR
	Medium - Primary Use (25 – 250 kW)	SPR	SPR	BR	SP
	Medium – Accessory Use (25 – 250 kW)	BR	BR	BR	SPR
	Large I (250 - 1,000 kW)	SP	SP	SPR	SP
	Large II (1,000 - 25,000 kW)	SP	SP	SP	SP
	Large – Accessory Use (> 250 kW – 25,000 kW)	SPR	SPR	SPR	SPR
	Landfill/Brownfield (< 25,000 kW)	SP	SPR	SPR	SPR
	Large III (25,000+ kW)	EFSB Jurisdictional			

BESS

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
SP = Special Permit
N = Not Permitted

Sustainable Energy Advantage, LLC


Sustainable
Energy
Advantage, LLC
Questions?
How to provide written feedback:
Email: green.communities@mass.gov
Subject: “Model bylaw comments”
Deadline: November 14, 2025