

**Thursday March 17, 2022
SPECIAL MEETING
Medway Planning and Economic Development Board
155 Village Street
Medway, MA 02053**

REMOTE MEETING VIA ZOOM

Members	Bob Tucker	Tom Gay	Matt Hayes	Sarah Raposa	Rich Di Iulio	Jessica Chabot
Attendance	Not present	Absent with Notice	Remote	Remote	Remote	Remote

PRESENT:

Susy Affleck-Childs, Planning and Economic Development Coordinator

The meeting was called to order by Chairman Hayes.

BESS Technical Zoning Regulations Overview:

It was explained that this is special meeting of the Planning and Economic Development Board. There is a contract with ARUP for technical battery energy storage consulting services. The ground rules of engagement were reviewed. There will be a question-and-answer period at the end of the ARUP presentation.

By way of background, Able Grid, an energy storage system developer and builder, wants to construct a battery energy storage system in Medway. They approached the Town about amending its Zoning Bylaw to expand the Town's existing energy resource district to allow for such battery storage use. At the May 2021 Town Meeting, there was a vote to direct the PEDB to conduct a review and study of BESS systems and provide information on all aspects of the operations. There is to be a report of findings and recommendations. The Town, after conducting an RFP process, contracted with ARUP Consulting. The scope of services includes 4 elements: research and prepare a BESS Best Practices report (completed); research and prepare a zoning consideration report to identify key technical BESS language (tonight's presentation); prepare a memorandum on BESS siting considerations (forthcoming); and prepare a review memorandum of Able Grid's BESS proposal.

ARUP presenters are: Victoria Grimes and Justin Roy. **See attached presentation slides.**

The BESS Technical Zoning Outline was prepared based on a review of Benchmark Codes (New York State used as reference to develop). There were 16 sections with technical requirements. The section outlines were created and then the sections with technical requirements were established based on state codes and standards. There was also research done on a national level with the state code and standards. The technical requirements are the minimum threshold and can be tailored for the Town's needs.

The overview of the typical zoning content was shown. The code adoption for Medway will be the NFPA 855 as a basis of the BESS zoning bylaw per a decision by the Medway PEDB. The compliance with the NFPA 855 captures the latest industry research and knowledge of BESS installation and safety. The source of information is 527 CMR MA Fire Code. The first section of the bylaw would be the application. There would be thresholds which would align with the bylaw. There will be a definition section and terminology as noted. The next section will be general requirements and also code adoption. This would require compliance with NFPA 855. The permits would need to follow the standard process (ex. building permit, electrical, fire). The site may need other specific permit depending on location. There needs to be documentation which is required by NFPA 855. This includes (modeling data, commission plans, emergency operation plans, etc.) The siting requirement references where there are permissible locations outdoor, indoor and elevated areas. This has thresholds relating to size maximum capacities. There are required siting setbacks. The minimum is 10 ft. This is to be maintained between each BESS (NOTE – This section is flagged for additional review and adjustment by the Town). There are also emergency access requirements (access roads, Knox box etc.) (also flagged for additional review by the Town). There are design standards with UL listing requirements. If those thresholds are exceeded, then the system developer would be required to provide large scale fire testing. The section on safety and environment standards requires protection from unauthorized access. There should be safety systems such as fences, barriers, enclosures etc. There should be an emergency operation plan which is required to be provided. The information would include safe operation procedures including shut down, also battery management system response procedures (flagged for review by the Town). There will be monitoring and maintenance of the facility. This is based on manufacturing requirement within the operation and maintenance manual. There needs to be a decommissioning plan. The AHJ shall be notified prior to the decommissioning report with results.

Questions:

A question was asked on how is FM global 533 used and is it considered as a standard. The Consultant responded that Global 533 is used on a project-by-project basis. This was not pulled into a Bylaw since it is project specific. This was reviewed through the scope of work under contract of a project. This is an available resource.

Resident Paul Yorkis asked how will abutting owners be notified if a problem occurs at a BESS site. Mr. Yorkis was informed that there will be a plan in place within the site development of a project. There will be work with the Fire Department to develop this. A portion of this can be addressed within the Bylaw. Mr. Yorkis also wanted to know what happens to the land after decommissioning of a system. It was explained that the plan for decommissioning would be site specific. The Town can add specific language regarding decommissioning and what the Town will require. Mr. Yorkis also asked if there are specific types of noise and lighting bylaws which need to be put in place. It was explained that there are new environmental standards in place in Medway addressing noise. The standards would need to be site by site regulated by the town.

Resident Michael Fahey asked about the existing requirement establishing 10 megawatts maximum in the energy resource zone. The Consultant responded that the town would need to look at where and how big a system. Mr. Fahey does not want to see anything bigger than that outside the energy zone.

Resident Paul Yorkis communicated that the Town currently has an energy resource zoning district. He wanted to know, with the proposed BESS facility, what is the impact of having this type of facility on the surrounding structures within this area. He also wants to know how the infrastructure will be impacted. The Consultant responded that any facility needs to be built to not impact any existing infrastructure. The utilities and interconnection will need to go through its own approval. The Board agreed that there needs to be improved language in the bylaw about this process.

Resident Larry Ellsworth asked about the 3 ft. requirement for 50 KW arrays and if there could be greater distance. The Consultant communicated that there would need to be fire test data provided.

There was another question about what strategies for containing fires. The Consultant responded that there is an emergency response plan which will be in place.

Resident London asked if there were bylaws in place which would restrict this type of battery system. The Consultant communicated that this research was outside of their scope.

Resident Charlie Myers asked if this type of system is able to be put here with the high-power lines so close by. The fear is cross connection. He would like to see set distances put in place to protect abutting properties. The Consultant responded that there is an ability to set distances to protect the abutting properties. When a document is written it can require UL9540 and there can be data presented along with testing. The Town as part of this decision could require requesting test data and this information will probably need to remain confidential.

The Board was informed that there will be a maintenance plan which will need to be reviewed annually. The code documents will be written to include this. This is a common practice within the issuing of Fire Permits.

A question was asked if the Special Permit is issued can there be a requirement that when the standards are updated any facility needs to comply. The Consultant responded that the facility would need to comply with the most recent code.

A question was asked if there is air test data based on battery burning and impacts. The consultant responded that there are air samples which can be gathered from the burning cell module which is typically analyzed during a fire.

A resident asked if people in Medway concerned about this project. The Chair responded that the Town has been working on this during several meetings and suggested the Board is looking to protect the Town and put safety measures in place by being asked by Town Meeting to research how to handle the permitting of projects such as this.

Resident Paul Yorkis communicated that he would like to see the PEDB formally request that the Energy Facility Siting Board hold a hearing (on the Able Grid BESS project) in the Town of Medway. The Chair responded that the Town has sought special counsel to guide the Town through the process.

The next steps the Board will take is to begin drafting bylaw language based on all the

information they gathered from ARUP and tonight’s discussion. The model which will be used will be information from New York State. There will be continued work sessions which will be open to the public. All the information relative to the BESS is on the town website.

ADJOURN:

On a motion made by Rich Di Iulio, seconded by Sarah Raposa, the Board voted by Roll Call to adjourn the meeting.

Roll Call Vote:

Rich Di Iulio	aye
Jessica Chabot	aye
Matt Hayes	aye
Sarah Raposa	aye

The meeting was adjourned at 8:15 pm.

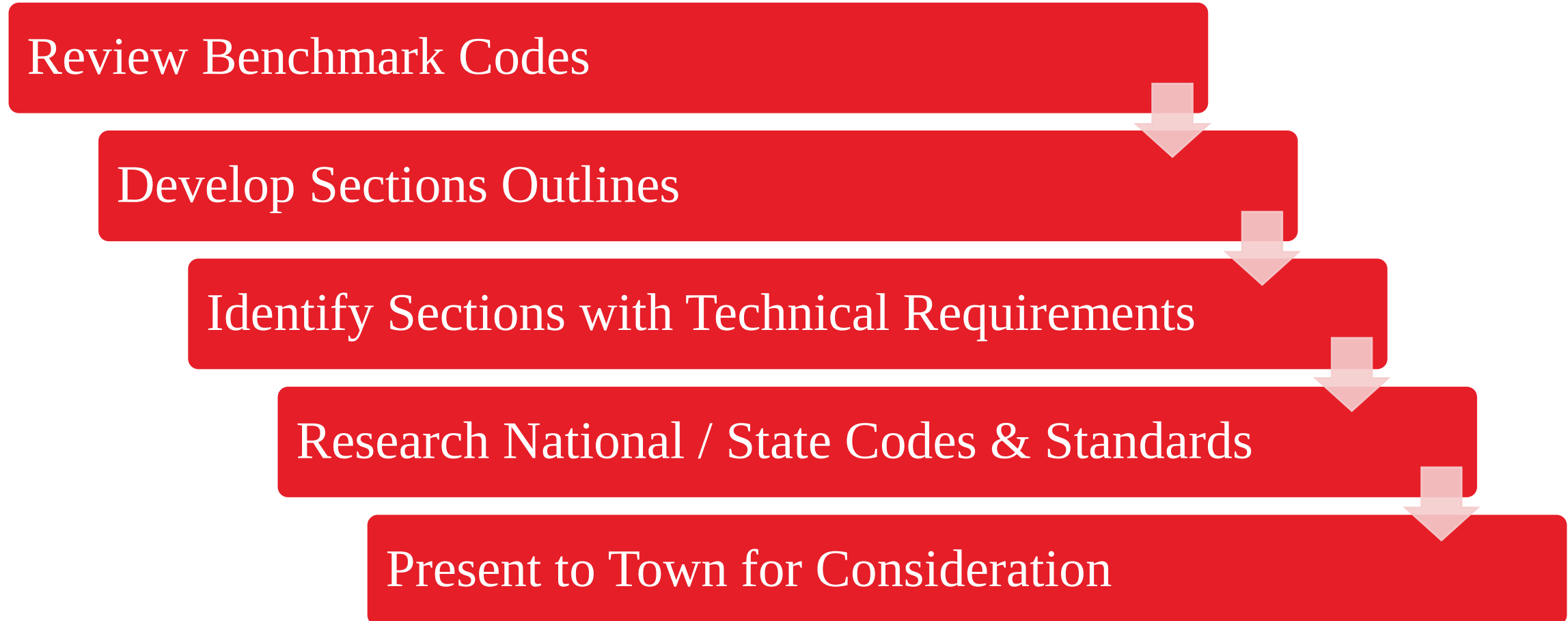
Prepared by,
Amy Sutherland
Recording Secretary

Reviewed and edited by,
Susan E. Affleck-Childs
Planning and Economic Development Coordinator

Town of Medway

BESS Technical Zoning Outline

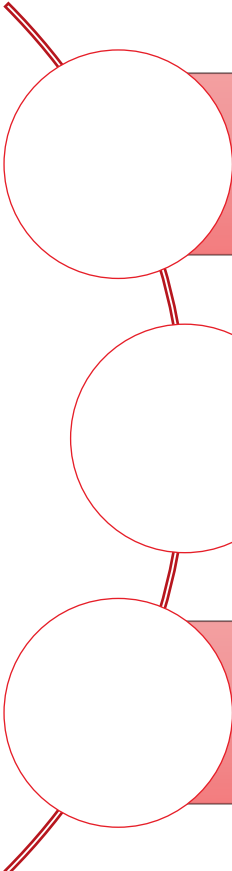
Approach



Overview

Typical Zoning Content	Technical BESS Content
Authority	
Purpose	
Application	X
Definitions	X
General Requirements	X
Siting Requirements	X
Design Standards	X
Safety and Environmental Standards	X
Monitor and Maintenance	X
Decommissioning	X
Procedures	
Terms of Special Permit	
Permit Time Frame and Abandonment	
Enforcement	
Severability	

Code Adoption



Medway PEDB adoption of **NFPA 855** as basis of BESS zoning bylaws

Compliance with NFPA 855 captures the **latest** industry research and knowledge in BESS installation and safety.

NFPA 855 is the primary source of information. **527 CMR MA Fire Code** is referenced where information is not covered by NFPA 855

Code Adoption

Town of Medway PEDB key decision: adoption of most recent available edition of **NFPA 855, Standard for the Installation of Stationary Energy Storage Systems** as the basis for BESS zoning bylaws

Compliance with NFPA 855 captures the **latest** industry research and knowledge in BESS installation and safety.

NFPA 855 is the primary source of information. Where information is not covered in NFPA 855, 527 CMR is referenced

Application

Example Bylaw

This section applies to energy storage systems exceeding the thresholds contained in NFPA 855

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

Applicable to energy storage systems **exceeding the following capacities:**

- Lead-acid > 70 kWh
- Nickel > 70 kWh
- Li-ion > 20 kWh
- Sodium nickel chloride > 20 kWh
- Flow > 20 kWh
- Other battery technologies > 10 kWh
- BESS in one- and two-family dwellings > 1 kWh

Definitions

Example Bylaw

Terminology contained in this section is as defined by NFPA 855, in addition to the definitions in this section.

Reference to NFPA 855 should be assumed as reference to the latest edition of the code.

Where a term is not defined, they shall be defined using their ordinary accepted meanings within the context in which they are used

Plain Language (reference only)

Terms to be defined:

- 780 CMR, Massachusetts State Building Code
- 527 CMR 1.00, Massachusetts Comprehensive Fire Safety Code
- 527 CMR 12.00, Massachusetts Electrical Code

Battery Energy Storage Facility to be defined per existing Town of Medway

General Requirements – Code Adoption

Example Bylaw

All energy storage systems shall be designed, constructed, and operated in accordance with the applicable requirements of 780 CMR, 527 CMR 1.00, 527 CMR 12.00, and NFPA 855

Permits shall comply with 780 CMR, 527 CMR 1.00, 527 CMR 12.00 and M.G.L.c.

Plain Language (reference only)

Requires BESS to comply with **NFPA 855**

Building permits will be applied for and obtained through the typical building permit process in Medway

Electrical permits will be applied for and obtained through the typical electrical permit process in Medway

Fire permits will be applied for and reviewed through the typical fire permit process in Medway

Fire permits through the local fire department are required for **BESS exceeding the capacity thresholds** identified in the Application bylaw section.

General Requirements – Required Documentation

Example Bylaw

Required documentation for the construction of new ESS systems per NFPA 855 will be provided to the AHJ for approval

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

Required documentation to be provided to the AHJ during the design and permitting process and the building owner / owner's authorized agent includes, as applicable:

- Construction plans and specifications
- Large-scale fire test data, evaluation information, and calculations
- Modeling data
- Commissioning plan
- Emergency operations plan

Siting Requirements – Permissible Location Thresholds

Example Bylaw

Energy storage system capacities, including array capacity and separation, are limited to the thresholds contained in NFPA 855

Where energy storage systems exceed the thresholds identified above, the AHJ is permitted to approve installations on the basis of large-scale fire test data and/or hazard mitigation analysis as permitted by NFPA 855

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

The BESS applicant can install systems up to the thresholds listed below. For BESS with **larger capacities** than the thresholds, large-scale fire test data and/or hazard analysis are required to support the installation.

ESS thresholds for array capacity is 50 kWh separated by 3 feet.

Large-scale fire test data per UL 9540A is required for BESS > 50 kWh as a requirement of the UL 9540 BESS listing

Battery Technology	Threshold Capacity
Lithium ion	600 kWh
Sodium nickel chloride	600 kWh
Flow batteries	600 kWh
Other battery technologies	200 kWh

Siting Requirements – Required Setbacks

Example Bylaw

Setbacks for outdoor ESS shall be in accordance with NFPA 855

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

A **minimum of 10ft** must be maintained between ESS and the following:

- Lot lines;
- Public ways;
- Buildings;
- Stored combustible materials;
- Hazardous materials;
- High-piled storage;
- Personnel means of egress;
- Other exposure hazards not associated with electrical grid infrastructure

This setback distance may be reduced by implementing one of the alternative measures contained within NFPA 855

Siting Requirements – Emergency Access

Example Bylaw

Fire department access must be provided in accordance with 527 CMR 1.00

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

Fire department access roads, knox boxes, and other access features must be provided as is required by the State fire code

Design Standards

Example Bylaw

Provide signage in accordance with NFPA 855

Commissioning of ESS systems shall be in accordance with NFPA 855

System interconnections into utility grids shall be in accordance with NFPA 855

Provide means for disconnecting the ESS per NFPA 855 and 527 CMR 12.00

Plain Language (reference only)

Signage should be provided on doors to rooms, entrances to ESS facilities, and on ESS outdoor containers. Signage shall be in accordance with ANSI Z535.

The system installer or commissioning agent shall prepare a **commissioning plan** prior to the start of commissioning. A report documenting the commissioning process and results shall be prepared and a **copy provided to the AHJ** prior to final inspection and approval and included in the ESS facility manual

Depending on the location of the ESS in relation to and its interaction with the electrical grid, **interconnection** will be completed per 527 CMR 12.00 (NEC) or IEEE C2

An **accessible disconnect** is required per 527 CMR 12.00 (NEC)

Design Standards – UL Listing Requirements

Example Bylaw

ESS systems, including required equipment listings, must be in accordance with NFPA 855

For any of the following, UL 9540A fire test data must be made available to the AHJ for review:

- BESS systems > 50kWh in capacity
- BESS systems with spacing between arrays of < 3 ft

Plain Language (reference only)

ESS systems are required to be **listed per UL 9540**, Energy Storage Systems and Equipment

For BESS > 50kWh in capacity listed per the 2nd edition of UL 9540, **UL 9540A (large scale fire) testing** is required and should be available for AHJ review

Safety and Environmental Standards

Example Bylaw

ESS sites should be protected from unauthorized access per NFPA 855 and 527 CMR 12.00

Vegetation around the ESS site must be maintained in accordance with NFPA 855

Provide specialty safety systems in accordance with NFPA 855 as applicable for the battery chemistry and installed location

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

ESS sites must be **protected from unauthorized access**

Security barriers, fences, landscaping, and other enclosures must not inhibit required air flow to or exhaust from the ESS and components

Electrical equipment greater than 1,000V require a means to restrict access

Areas within 10ft of outdoor ESS containers must be cleared of **combustible vegetation**. Single specimens of trees or manicured ground cover such as green grass may be permitted if it does not constitute as a source to readily transmit fire

NFPA 855 requires **specialty safety systems** to be provided based on the ESS chemistry and installed location.

Safety and Environmental Standards – Emergency Response Plan

Example Bylaw

An emergency operations plan shall be created for the ESS system in accordance with NFPA 855 and be provided to the AHJ for review

Clause is a candidate for additional input by Medway PEDB that affects technical requirements

Plain Language (reference only)

Emergency operations plans are required to be **provided to the AHJ** and must include the following at a minimum:

- **Safe operation** procedures, including shut-down
- Inspection and testing procedures for **alarms, interlocks, and controls**
- **Battery management system** response procedures
- Fire, explosion or release of liquids or vapors **emergency procedures**
- **Safe removal** procedures for damaged ESS equipment
- Other procedures as determined necessary by the AHJ to provide for **safety of occupants and emergency responders**
- Procedures and schedules for **conducting drills** of these procedures

Monitor and Maintenance

Example Bylaw

Maintenance shall be in accordance with NFPA 855 and documented in Operations and Maintenance documentation per NFPA 855

Plain Language (reference only)

Maintenance provisions will be driven by **manufacturer requirements** for the specific listed system.

Maintenance plans will be documented in the **Operations and Maintenance manual**, required by NFPA 855

Decommissioning

Example Bylaw

Decommissioning of ESS systems shall be in accordance with NFPA 855

Plain Language (reference only)

Decommissioning shall be documented in a **Decommissioning Plan**.

The AHJ shall be notified prior to decommissioning of an ESS system and shall be provided with a **Decommissioning Report** following decommissioning process and results