**Wednesday February 16, 2022**

**Medway Planning and Economic Development Board**

**155 Village Street**

**Medway, MA 02053**

**Zoom Meeting**

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| **Members** | **Bob** **Tucker** | **Tom** **Gay** | **Matt** **Hayes** | **Sarah** **Raposa** | **Rich** **Di Iulio** | **Jessica Chabot** |
| **Attendance** | **Remote**  | **Remote** | **Remote** | **Remote** | **Remote** | **Remote** |

**PRESENT:**

Susy Affleck-Childs, Planning and Economic Development Coordinator

Michael Boynton, Town Manager

State Representative Jeffrey Roy

The meeting was called to order by PEDB Chairman Hayes.

**Planning & Economic Development Board:**

**On a motion made by Rich Di Iulio, seconded by Jessica Chabot, the Board voted by roll**

**Call to open the meeting.**

**Roll Call Vote:**

**Bob Tucker aye**

**Rich Di Iulio aye**

**Jessica Chabot aye**

**Matt Hayes aye**

**Tom Gay aye**

**Sarah Raposa aye**

**Energy & Sustainability Committee:**

The meeting of the Energy & Sustainability Committee was called to order.

Present: Kristen Rice, Jason Reposa, Martin Dietrich, and Dave Travalini

**On a motion made by Jason Reposa, seconded by Dave Travalini, the Energy &**

**Sustainability Committee voted by roll call vote to open their meeting.**

**Roll Call Vote:**

**Kristen Rice aye**

**Jason Reposa aye**

**Martin Dietrich aye**

**Dave Travalini aye**

**Select Board:**

The meeting of the Select Board was called to order.

Present: Mary Jane White, Dennis Crowley, Frank Rossi, Glenn Trindade and John Foresto.

**Roll Call Vote:**

**Mary Jane White aye**

**Dennis Crowley aye**

**Glenn Trindade aye**

**Frank Rossi aye**

**John Foresto aye**

Planning and Economic Developer Coordinator, Susy Affleck Childs provided an overview of

the goals of the evening nothing that this was a joint meeting with the Planning and Economic

Development Board, Select Board, and the Energy and Sustainability Committee. (**See attached slides.**)

The Town of Medway first started discussing the topic of battery storage when Able Grid, an energy storage system developer, was interested in constructing a battery energy storage system in Medway. They approached the Town about amending the Zoning Bylaw to expand the Energy Resource District and to allow BESS use.

At the May 2021 Town Meeting, it was voted to have the PEDB conduct a review and study of

BESS and to engage the services of consultants and to provide a report of findings and

recommendations. After an RFP process, the Town has contracted with ARUP, a multi- disciplinary firmof engineers, designers,planners and consultants and technical specialists

to assist the town andthe community learn about battery energy storage systems (BESS).

The first step in the Arup contract is to prepare a BESS Best Practice report which is the focus of tonight’s meeting. (**See Attached report**.) This will be followed by a zoning consideration report to identify key technical language to include with any BESS zoning regulations and a memorandum of general siting considerations for BESS facilities. The last step is to prepare a memorandum reviewing Able Grid’s BESS proposal at such time as it is submitted.

After tonight, the next step the town will take will be to work with the consultant to revise the BESS Best Practices report based on the discussions from this evening. ARUP will then work on a report related to technical zoning bylaw language to address BESS. There will be a Zoom meeting on the zoning report on March 17, 2022.

The primary presenters from Arup were:

* Geoff Gunn, P.E. Associate Principal, Energy Lead
* Victoria Grimes, P.E. Fire, Life Safety, and Process Safety Consultant

Associate Principal Geoff Gunn started the presentation. The ARUP team and representatives

were introduced. The other representatives present were Victoria Grimes, P.E., Jonathan

Eisenberg, P.E., Justin Roy, P.E., and Mike Lepisto, P.E. (**The slides from the presentation are attached.)**

The project deliverables to be provided by Arup include:

* Technical Summary of BESS
* Technical Siting Consideration of BESS
* Technical Considerations for BESS Zoning
* Review of Able Grid EFSB Submission

The battery terminology overview included the explanation of the components: the cell, module, array unit and battery energy storage system. The cell is the basic electrochemical unit, characterized by an anode, and a cathode, used to receive, store, and deliver electrical energy. The module is a battery cell, including any exterior casing. The Array/Unit were next explained. This is a grouping of batteries which is referred to as a cluster. The battery energy storage system consists of an array of batteries intended to provide electrical power during outages and supplement when in times of high demand.

The main configuration of BESS was explained. This includes the PMS (Power Management System). PCS (Power Conditioning System), Battery, and BMS (Battery Management System). The systems have some form of cooling system. The types of storage are mechanical storage, electro-chemical storage, thermal storage, electrical storage, and chemical storage. The lithium battery is in the middle and will come down in cost based on the chart provided. The next chart showed the size of battery and the hours of duration. There are costs which are incurred for these systems. The available BESS revenue for the developer/owners includes tax savings, incentives (MA Clean Peak Standard, Connected Solutions and Daily Dispatch, and MA SMART when paired with on-site PV. There is also revenue with on-bill savings which includes demand charge reductions, energy arbitrage through TOU, and ICAP savings. The last revenue stream is from ancillary services/grid stability, operating reserves, reduction of grid congestion, ramp rate control energy arbitrage, and capacity firming with peak shaving. The capital costs for these systems include Li-Ion battery storage, foundations, electrical balance of plant, site works, the owner’s development costs, Grid interconnection, testing and energization and operation and maintenance costs.

BESS facilities come in a wide range of sizes. These are measured in electrical capacity (MW or MWH). The system also has a listing which tells one that the product or system is designed and tested to a baseline standard. The code tells how to install the system or product within a facility. The listings have Nationally Recognized Testing Agencies which are private testing agencies that are certified to test against specific standards. These include Intertek Electrical Testing Labe (ETL), United Laboratories (UL), and FM Global. The UL 9540 A test results provide AHJs and designers with tools and information to evaluate BESS performance. The BESS representative capital cost includes the owner’s development costs which include the land acquisition, permitting, financing, engineering procurement and insurance. Another capital cost is the grid interconnection which is the cost for the utility to interconnect the equipment and provide any upgrades for the system. There also needs to be testing and energization which is the testing of equipment and wiring. There are also protection and control testing which take place. The last capital cost pertains to system monitoring which is typically remote. There is also a series of on-site maintenance and inspections that have to be performed.

There was an explanation of the BESS facilities sizes.

* Investor-owned public owned utility is 5-500 mw/10-1200 MWh
* Municipality-owned public utility is 5-50 MW/10-100 MWh
* Private landowner .025-2 MW/0.5-8 MWh
* Private residential .002-.005 MW/.005-.015 MWh

There was an explanation of the growth of BESS facilities in the country and also specifically in MA. These locations include Carver MA, North Reading MA and Montgomery County CA. There are also a lot of projects under construction nationally.

Victoria Grimes next discussed the regulations. The Listings and Codes were explained. The

Listing tells you that a product or system is designed and tested to a baseline standard. A Code

tells you how to install the system or product within a facility. The Listings are products which

meet designated standards or have been tested suitable for a specific purpose. The Listings are

Nationally Recognized Testing Agencies which test against specific standards. The agencies

include Intertek Electrical Testing Labs (ETL), United Laboratories (UL), and FM Global.

UL9540 is the applicable listing for BESS systems. The UL9540A is the applicable testing

standard for BESS systems above a certain size.

The UL950A test results provide AHLS and designers with the information to evaluate BESS

performance during fire events and informed design decisions such as location and distances,

array/unit capacities, fire suppression systems. In MA there is a listing and criteria for

lithium-ion BESS projects. There was a chart shown about the system capacity with the expected

Listings. The 9540 A helps with designing. The 9540 A test takes it to the cell level and tests for fire propagation. If the propagations are not observed, testing does not continue to the next level. If fire propagation is observed, testing continues at the next level.

There is a publicly available database sponsored by UL 9540. The code development process for NFPA includes public input, public comment, NFPA technical meeting and standards council action.

The Massachusetts Comprehensive Fire Safety Code (MFSC) is approved by the local fire department and the National Electric Code (NEC) is approved by the local building

department. There are also Massachusetts State Codes and then there are the Town of Medway

codes. There are two other sources for guidance - NFPA 855 which is a relatively new code and

FM DS 5-33. This has property loss data sheets. It is voluntarily adopted. NFPA 855 is the

standard on the installation of stationary energy storage systems. The revisions of the Fire Code

are looking to adopt NFPA855. The siting considerations break down into four buckets:

permissible locations (where are these permitted), maximum stored energy, (how big can these

be?) separation distances, and environmental considerations.

The life safety siting considerations for permissible locations included the life safety exposures

such as buildings, lot lines that can be built upon, public roads, stored combustible materials,

other exposure hazards. This is for outdoor, indoor and elevated locations. The outdoor are

remote locations and locations near exposures. The indoor have dedicated use building and

also a non-dedicated building. The elevated locations are rooftops and open parking garages.

In MA, the outdoor installations, indoor installations are permitted. The rooftop and below grade installations are permitted only where the floor level is 75 ft. or 30 ft. less above lowest level of fire department access. The thresholds of the stored energy were explained. The capacity of individual is 50 kWH. The overall capacity is 600 kWh for common battery. The next section covered was the separation distances between the battery arrays and buildings, property lines etc…. this is a required 5 ft. separation for MFSC and 10 ft. for NFPA 855. This is a potential baseline for zoning bylaws.

Fire remediation action and response includes pre-incident planning, emergency response plan and training. The pre-incident and emergency planning should address primary hazards and shut down procedures. This should have input from local fire department.

The meeting was opened to questions through the CHAT feature of the Zoom meeting.

**Questions from the Zoom Chat**

**How is Medway implementing BESS within the community?**

The Town of Medway is currently in the information gathering stage which includes learning about the industry. The town allocated money at the town meeting last spring to hire consultants to assist with the process.

A comment was made by Mr. Paul Yorkis that he wanted the study to evaluate the appropriateness of a BESS facility at the location referenced and proposed. He did not get a sense from the presentation about the pros and cons of having the ABLE grid BESS on the proposed site. It was explained that this was not the scope of what the consultant was asked to do for tonight’s meeting. This meeting is for Best Practices.

**Is a BESS project built with grid resiliency?**

There is a range of resiliency that a BESS project is intended to meet. There is energy which is generated through sun and wind. Most projects on the east coast are use feeders.

**Is there a preferred preference for resilience?**

There is not a preference for resilience since it is driven by products and site constraints.

**Why do the separation distances seem close?**

The separation distances are a 10 ft. minimum. This is a common setback. The setback can be increased based on the project. The setbacks were created by experts in the field.

**Can a BESS system coexist with a generating facility?**

The Consultant responded that this was not part of the presentation but noted that there would need to be a good amount of background work for this to be a site-specific location.

**Are the BESS projects which are being built around the country grid resilient, specifically New York?**

A screen share of the BESS projects around the country was shown. There are many BESS projects in New York.

**Is there a preferred arrangement of arrays – e.g. Multiple stories, overall length, overall width that comprise a BESS?**

There is no set preference since it depends on the needs of the project. There are so many factors to determine the preferred arrangement.

**Where is MA in regard to updating the fire code?**

The Fire Codes in MA are in the process of being updated.

**Is the applicant required to provide 9540A documentation with an application and can we adopt the code as a town?**

The applicant is required to submit documentation if the system exceeds the thresholds. The town can adopt the individual codes at the local level.

**Is there a site identified at this time for proposed project?**

There is currently no application before the town, but ABLE grid is interested in Medway as a potential site.

**Is it common that the structures are placed under the transmission lines?**

It is not typical that a BESS is located under transmission lines since those are owned separately and the transmission line right of way must be maintained.

**Where are the projects in MA presented in the presentation in the approval process?**

The Carver, MA project has been submitted and is under review by the Energy Facilities Siting Board.

**How is it determined what fire suppression is needed?**

It is determined on project basis, size, location, and what type of suppression is available. There are recommended protection measures. The type of protection includes protection water mist, fire sprinklers, and deluge system.

**Can an applicant employ a mitigation strategy with a separate burn wall, and would this approval be the town?**

The town would have to accept the mitigation and the array separation as one item and the distance of the BESS is another matter. The protection of exposure is a town decision and the fire department would require a wall. Within a manufactured BESS system, one would look at the propagation of cell to determine what would be needed. There would need to be fire tests performed. This would need to be product specific.

A clarification was made that the Consultant will be performing a fourth task within the scope of services which includes an evaluation of the ABLE grid proposal.

**Does EFSB have the right to review projects and it is under their purview?**

This has not been determined at this point. There are different perspectives on this. There was review by the EFSB with the Town of Carver application.

A comment was made asking what gives the Energy Facilities Siting Board (EFSB) the authority to act on battery storage. Why can’t the town find out if the Siting Board has the authority to regulate BESS facilities. The Consultant responded that this is a legal issue and not a technical question and they do not have an answer.

**What are the other hazards or risks presented by a BESS – noise, electromagnetic fields, etc? How are they mitigated?**

There are not a lot of risks or hazards but there is some noise which is similar to an air conditioning unit.

**Is an applicant expected to provide 9540A documentation with their application?**

An applicant will need to provide 9540 A documentation if it meets the criteria within the project design stage. This would need to be determined.

**Can a town adopt NFPA on its own?**

The Town can incorporate NFPA within the local codes.

**Does the cooling system for BESS consume water, discharge water, other chemicals, and disperse water vapor?**

The cooling system is like a refrigerant based system. It is a closed system without anything vented to the atmosphere.

**Does the minimum 10 ft. building separation apply to occupied and unoccupied structures alike?**

It does apply to both. The code does not differentiate between occupied and unoccupied structures. The code does recognize fences and retaining walls as structures.

**How large is the ABLE grid proposal?**

The ABLE grid proposal is 250 MW/500MWh.

**Is there an advantage to distribution feeder versus transmission?**

This depends on the makers of the product and the revenue streams the applicant is seeking. This can vary from system to system.

**Does each container have its own HVAC system? What type of noise does this produce?**

Each container does have its own enclosure. The noise levels can vary depending on the site factors.

**What about the inverter noise? Is that not the largest contributor to BESS noise? How loud will that be when charging at night?**

The system is not typically noisy. There are also many factors which determine the amount of noise.

**Are these systems safe?**

The systems are safe, but there have been fires. The exposures need to be looked at. The process for these is evolving and there are new means of venting things such as gas which in the past has caused fire explosions. All the safety protocols need to be put in place in the initial planning.

**What is the % of problems?**

There is a low percentage of problems based on the BESS facilities that are out there currently. There is constantly new technology being created to lower the percentage of problems.

**When a site is near a stream which feeds the Charles River, are there environmental concerns?**

These units do not have leaks and cause no concerns to the water sources in the area.

 A comment was made that this is an overall quality of life issue. A BESS facility will have a look and image being in the Town of Medway.

Town Manager Michael Boynton informed the residents that the town will have a financial analysis of what a BESS system would mean to the Town. There would need to be a host agreement created.

**Next Steps:**

The next step in the process will be for Town staff to meet with the consultant team to review the report and provide revisions. Once this is done, the report will be posted on the town’s web page for the community to view. The next step would be to work with the Consultants to identify zoning amendments. The next presentation will be Thursday, March 17, 2022.

**ADJOURN:**

**Select Board:**

**On a motion made by Glenn Trindade, seconded by Frank Rossi, the Selectboard**

**voted by roll call to adjourn its meeting.**

**Roll Call Vote:**

**Mary Jane White aye**

**Dennis Crowley aye**

**Glenn Trindade aye**

**Frank Rossi aye**

**John Foresto aye**

**Energy & Sustainability Committee:**

**On a motion made by Jason Reposa, seconded by Kristen Rice, the Energy &**

**Sustainability Committee voted by roll call vote to adjourn its meeting.**

**Roll Call Vote:**

**Kristen Rice aye**

**Jason Reposa aye**

**Martin Dietrich aye**

**Dave Travalini aye**

**Planning & Economic Development Board:**

**On a motion made by Bob Tucker, seconded by Rich Di Iulio, the Board voted by roll call**

**to adjourn its meeting.**

**Roll Call Vote:**

**Bob Tucker aye**

**Rich Di Iulio aye**

**Jessica Chabot aye**

**Matt Hayes aye**

**Tom Gay aye**

The meeting was adjourned at 8:50 pm.

Prepared by,

Amy Sutherland

Recording Secretary

Reviewed and edited by,

Susan E. Affleck-Childs

Planning and Economic Development Coordinator