STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Petition of Endurant Energy for a Declaratory Ruling, Pursuant to Connecticut General Statutes §4-176 and §16-50k, for the Proposed Construction, Maintenance and Operation of a 4.9-megawatt Battery Energy Storage System to be Located at 65 Vine Street, Middletown, Connecticut, and Associated Electrical Interconnection	:	Petition No. ___
	:	January 3, 2024

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I. INTRODUCTION

Pursuant to Section 16-50k and Section 4-176(a) of the Connecticut General Statutes ("CGS") and Section 16-50j-38 et seq. of the Regulations of Connecticut State Agencies ("RCSA"), Endurant Energy (“Endurant”) requests that the Connecticut Siting Council ("Council") issue a Declaratory Ruling that a Certificate of Environmental Compatibility and Public Need (“Certificate”) is not required for Endurant’s proposed location, construction, operation and maintenance of a 4.9-megawatt ("MW") Battery Energy Storage System (“BESS” or the “facility”), a 13.8kV electrical interconnection, and associated equipment (together, the "Project") at 65 Vine Street in Middletown, Connecticut (the "Property").

As discussed more fully in this Petition for Declaratory Ruling (the “Petition”), the construction, operation and maintenance of the Project satisfy the statutory elements of CGS § 16-50k and will not have a substantial adverse environmental effect. Accordingly, this Petition should be approved by the Council.

A. ENDURANT

Endurant designs, finances, builds, constructs, owns, operates, and maintains BESS projects. Endurant is a subsidiary of LS Power, which has developed, constructed, managed and acquired more than 46,000MW of competitive power generation and over 680 miles of transmission infrastructure, for which it has raised $50 billion in debt and equity financing. This experience includes some of the largest BESS projects in the United States.

Endurant has developed distributed energy and battery storage systems for nearly twenty years. Among its chief achievements are designing and building the first MW-scale, distribution-connected BESS projects in the nation’s most dense and technically complex distribution system, New York City. Endurant did so in collaboration with the State of New York and Consolidated Edison (“Con Edison”) under a pilot program, the REV Demonstration Program, which is similar to the Connecticut Energy Storage Solutions Program (“ESS Program”). These first-of-their-kind projects resulted in several industry-setting milestones, including the first projects to secure “Letters of No Objection” from the New York City Fire Department, permits and allowances from the NYC Department of Buildings, and interconnection approval from Con Edison.

Endurant has executed similar projects in the State of Connecticut. These include five separate fuel cell projects for Bloom Energy and a fuel cell-based microgrid for the City of Hartford.

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II. CONSISTENCY WITH STATE ENERGY POLICY

A. ENERGY STORAGE SOLUTIONS PROGRAM

In June 2021, the Connecticut General Assembly passed *Public Act No. 21-53, An Act Concerning Energy Storage.* The Act directs the CT Public Utilities Regulatory Authority ("PURA" or the "Authority"), in coordination with the Department of Energy and Environmental Protection ("CT DEEP") and the CT Green Bank ("CTGB"), to initiate a proceeding to develop and implement programs and associated funding mechanisms incentivizing electric energy storage resources. When undertaking this proceeding, the Authority was instructed to design and administer a new incentive program that accelerates the adoption of electric energy storage technologies such as battery systems. One of the principal goals of the legislation is to unlock the benefits that energy storage technologies deliver to ratepayers.

Consequently, in connection with Public Act 21-53, An Act Concerning Energy Storage, PURA issued a final decision in Docket No. 17-12-03RE03, PURA Investigation into Distribution System Planning of the Electric Distribution Companies – *Electric Storage, establishing* a statewide energy storage program, known as the "Energy Storage Solutions Program" or "ESS Program". In the Final Decision in Docket No. 17-12-03RE03, PURA explicitly created electric storage deployment targets for commercial and industrial ("C&I") energy users and established an incentive structure to promote non-residential customer participation in the ESS Program.

The Project at the center of this Petition is one of the C&I projects that was selected and approved by the Authority in July 2022.

B. Conservation and Load Management Plan

Pursuant to CGS §§ 16-245(m) and 16-32(f), the State of Connecticut's electric and gas distribution utilities published the "2022-2024 Conservation & Load Management Plan: Connecticut's Energy Efficiency and Demand Management Plan" on May 1, 2022.

The Plan explicitly identifies energy storage projects, such as the project central to this Petition, to be a cornerstone of the Plan: "the Companies will promote the co-delivery of energy efficiency and demand management programs that support decarbonization and carbon neutrality, including …battery storage."[1] The Plan continues, "These active demand response strategies will significantly reduce peak demand and greenhouse gas emissions, helping to mitigate the impact that the state's building sector has on the environment and climate change. The Companies plan to encourage customers to engage with a more modern grid, improving energy affordability and resilience."[2]

The Plan specifically references battery storage throughout the document as being a priority for the state to reach its energy goals for reducing ratepayer costs, hardening the grid's resiliency, and improving the state's environmental footprint.

C. Connecticut Siting Council "White Paper on the Security of Siting Energy Facilities"

In response to Public Act 07-242, *An Act Concerning Electricity and Energy Efficiency*, the Council issued its White Paper on the Security of Siting Energy Facilities to establish the Council's scope of review of energy security for electric transmission and distribution assets on October 8, 2009. Specifically, the White Paper considers the planning, preparedness, response, and recovery capabilities of transmission and distribution assets, including generation assets.

The "clean energy revolution" is often characterized as a transformation from a fossil-fuel based system to a renewable system. While this is correct, system planners, grid operators, and development practitioners see another more fundamental transformation of the energy system: a shift from a centralized system to a de-centralized system. Just as networked computing and telecommunications have undergone this transformation since the 1970s, the electric grid is

[1] 2022-2024 Conservation and Load Management Plan: Connecticut's Energy Efficiency and Demand Management Plan ("2022-2024 C&LM Plan") at 15-16; see also, 2023 Plan Update to Connecticut's 2022-2024 Conservation & Load Management Plan, at 14.
[2] 2022-2024 C&LM Plan at 16-17.

following a similar path, trading the “hub-and-spoke” star network of Westinghouse’s day, for a more "mesh network," defined by flexibility, interconnectedness, and resiliency.

The result of this transformation is clear: distributed systems and mesh networks are inherently more secure by eliminating single points of failure. BESS are critical components of this security in their ability to maintain the integrity of the grid’s 60hz sinusoidal wave form and provide excess electric capacity in the event of a grid outage. They give grid planners flexibility when upgrading distribution systems, allow businesses (such as the Site host here, Wesleyan University (or the “host facility”) to be prepared for outage events, offer dynamic millisecond response capability to a variety of systemic needs, and, most importantly, can provide first responders time and options during emergency events. This also applies to the building process for the proposed Project.

In short, the proposed Project, both as a distributed asset, and as a physically secure and 24/7 remotely monitored asset, is part of Connecticut’s evolution towards a more secure and resilient energy system.

D. PROJECT PURPOSE

The purpose of the proposed Project is to meet the goals of the ESS Program. It will do so by offering benefits to Wesleyan University, and the surrounding community, through lower electricity costs, enhanced grid resiliency, and the maximization of “the long-term environmental benefits of electric storage by reducing emissions associated with fossil-based peaking generation.” (ESS *Program Manual*[3], January 20, 2023).

The BESS will be connected behind the customer’s electric utility meter, which will allow the host facility to run on battery power during peak demand times, alleviating grid congestion, providing it has not been called upon by the ESS Program Administrator, which will have priority access to the dispatch. That is, the BESS will be used for demand response and demand management to lower the Site host’s electric bills, and to allow for load shifting that enables the customer to use less expensive off-peak power during the daytime peak hours. The energy market’s natural time-of-use pricing difference means the battery will charge throughout the night.

As required by the ESS Program guidelines, the BESS will operate in parallel with the grid, and can also export power into the utility distribution system, delivering valuable “peaking power” during peak demand times when excess supply is most needed to balance the network. As energy markets mature, the BESS will be able to provide additional ancillary services to the grid, increasing its value to all ratepayers over its 10-year life.

[3] https://energystoragect.com/wp-content/uploads/2023/06/ESS-Program-Manual_Updated-6.23.2023_CLEAN.pdf

E. PROJECT BENEFITS

The Project is an enabling technology for the grid's transition to renewable energy. The BESS will charge from the grid at night when electricity prices are lower. The BESS will return that electricity to the grid when electricity prices are high, the sun is not shining, the wind is not blowing, or peak electric demand necessitates a reliance on carbon-intensive fossil fuel generation sources (coal or natural gas based "peaker plants").

At a micro-level, this "peak-management-focused" operational approach will take stress off of the neighborhood's local distribution grid when it is most vulnerable to pricing spikes that increase costs, balance the system when it is most vulnerable to instabilities to help reduce the frequency of outages, and relieve stress on the local network's infrastructure that can help the utility defer or delay expensive system upgrades. Put simply, the Project will be an elemental part of a larger strategy to reduce costs, disturbances, and improve the reliability of energy for the community's students, faculty, businesses and residents.

The Project will be one of the first critical assets to participate in the ESS Program and, as part of that program's target for a large, distributed portfolio, the Project will deliver the following benefits recognized by the Authority in Docket No. 17-12-03RE03:

(1) **Economic Benefits:** The Project will allow the host Site, Wesleyan University, to realize lower net energy costs through the battery's demand management, capacity charge management, time-of-use energy shifting, and revenue share operations.

As described above, the Project will be an integral part of the ESS Program's economic goals of lowering the grid's peak demand, lowering ratepayer costs by relieving peak grid capacity and transmission charges, adding capacity during times that it is needed that will allow electric utilities to avoid or delay expensive distribution infrastructure upgrade costs, increasing business operation "uptimes" through avoided outages and grid instability induced facility disruptions, enabling the integration of cheaper renewable energy resources like solar PV, and avoiding the healthcare and economic productivity costs associated with higher polluting power generation resources.

(2) **Resiliency Benefits:** For the host Site, the Project will provide fast-acting backup power during utility grid outages for up to several hours, allowing Wesleyan University to maintain operations during shorter outages and avoiding grid-transients and harmonic distortions that may cause the facility's industrial production equipment to trip. It also provides time for the facility to transition to traditional backup power resources (e.g.,

emergency generators) more effectively and without the combustion of additional fuel. On the utility scale, the Project will, in the long-term, assist in maintaining the stability and efficient operation of the electric grid by providing peaking capacity and balancing services including reserve capacity, frequency regulation, voltage support, and harmonic distortion power curing. Stress relief also means improved system reliability. BESS' modern power electronics systems allow grid balancing and stabilization services within milliseconds, preserving the safe, efficient operation of the grid. As a larger portion of the grid's energy is composed of intermittent renewable resources (such as solar and wind), distributed energy storage systems can help "smooth" the surge and lull of voltage, frequency and harmonic distortions that are inherent with the rapid integration of renewable energy systems.

(3) **Environmental Benefits:** Under the ESS Program, BESS are used as localized peaking power suppliers. As such, BESS will help reduce air quality impacts of high emitting peaker plants which are called-on as resources of last resort during peak demand times. Further, to achieve its renewable energy goals, Connecticut is relying in part on the installation of a substantial amount of energy storage to balance the grid and "smooth" the intermittent output of solar and wind generation resources. The adoption of renewable power can only happen effectively with energy storage to assist the grid in accommodating the added resources. Locally, the host Site's environmental footprint will improve since the BESS will charge at night when the ISO-NE's power supply is comprised of a higher percentage of non-carbon-based resources, and then discharge that energy to serve the facility and grid during peak demand hours when the high emitting, least efficient, fossil fuel-based peaker plants are typically used.

The result is overall positive net value to the host and all ratepayers as sought in the PURA and CTGB's ESS Program.

III. PROJECT DESCRIPTION

Designed in accordance with the ESS Program Manual, and with input and guidance from The Connecticut Light & Power Company dba Eversource Energy ("Eversource"), the Project consists of a 4.9MW/9.8MWh BESS to be installed at the site. The system will include transformers to step-down the 13.8kV AC grid voltage to the 690V required to recharge the batteries. Inverters will convert the energy from AC to DC. The 4.9MW output is based on the point of electrical interconnection, but may be adjusted slightly when interconnection is finalized with Eversource. The facility will operate between 0 and 4.9MW. Each module will be dispatched on need, either as required by the host facility, or the utility, or in cases where neither requires it, into the

wholesale markets. The system can 'balance' between each container, to optimize the system. The BESS inverter systems can dispatch almost instantaneously once called by the controls system. Typically, this is a matter of milliseconds. However, utility calls are sent 24-hours in advance under the ESS Program rules.

The Project would be designed, built, owned, operated, maintained, and financed by Endurant and participate in the ESS Program. The Project was selected for the state ESS Program and received its "Reservation of Funds" from the CTGB and PURA in July 2022. CPower, Endurant's sister company, will provide asset dispatch optimization and market enrollment services. After construction, the Project will be owned by a new special purpose entity that will be created by and wholly owned by Endurant. The new special purpose entity will contract with Endurant to obtain and hold necessary permits for construction and operation of the Project. Endurant is securing final quotes from battery suppliers that have been pre-approved by the ESS Program Administrators to supply the battery equipment.

Endurant will select a battery supplier when it is confident that all of the permitting and regulatory questions have been completed. The timing will depend on factors such as equipment lead time and availability. Not all of the suppliers offer the BYD Cube Pro battery modules, however any final product will adhere to the same strict safety and operating parameters, and be aesthetically very similar (a containerized solution). In no case will Endurant be changing the transformers or inverters, so the interconnection will be unaffected.

The ESS Program agreement is for 10 years. The related Energy-Storage-as-a-Service ("ESaaS") Agreement and associated Site Lease Terms are both 10 years. They are held between Wesleyan University and a special purpose entity that will be wholly owned by Endurant. In the unlikely event Endurant transfers the facility to another entity, Endurant will provide the Council with a written agreement confirming the entity responsible for complying with the Declaratory Ruling and assessment charges, including all appropriate contact information. At the end of the contract term, Endurant does not anticipate seeking other revenue mechanisms, but will remove all the system equipment and restore the site to its pre-installation state.

A. SITE

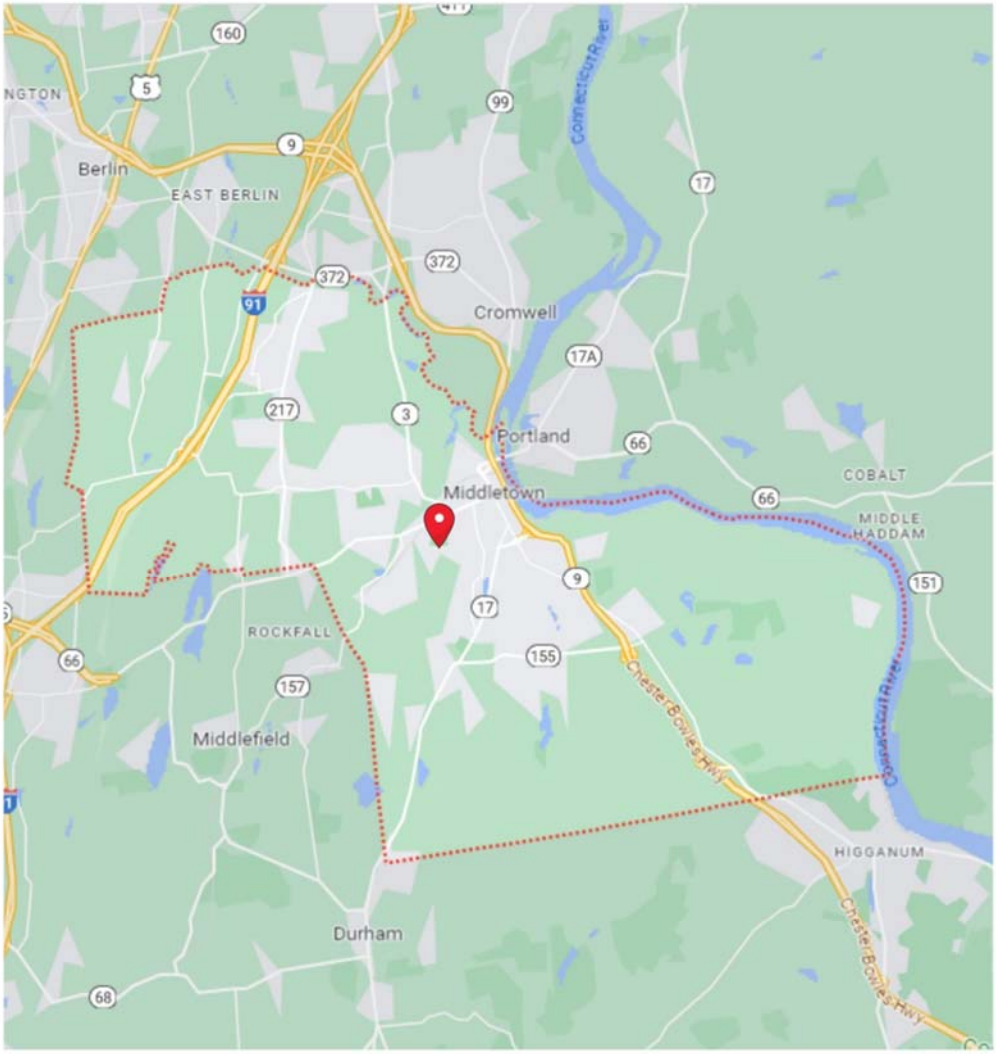
The Project will be located at the Wesleyan University tennis facility in Middletown, Connecticut, known as the John Wood Memorial Tennis Courts (the "Tennis Facility").[4] Wesleyan

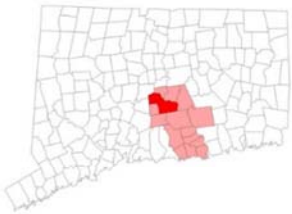
[4] The term "Tennis Facility" includes not only the 16 University tennis courts but also the parking lot adjacent to the tennis courts.

University is a private liberal arts college with almost 350 buildings set on a campus of 360-acres in Middletown, Connecticut. The Tennis Facility location is identified on Figure 1.

The footprint of the Project, including setbacks, will be approximately 5,000 square feet, and will be located on a previously developed portion of the Wesleyan University property, currently used as a parking lot. The Project will be located across two Parcel IDs. The batteries themselves and auxiliary transformers will be on Parcel ID 316 Map 23 Lot 0135 to the south of the tennis courts. Trenching holding underground conduit will then be taken in a north direction and the switchgear, invertors and transformers will be located on the site of an existing defunct University utility infrastructure (which will be demolished and removed) at the very southern end of the address 105 Vine Street – Parcel ID 331 Map 23 Lot 0134 (the total area across the two parcels that is occupied by the Project known as the "Site"). Both parcels are zoned as ID – Institutional Development, due to their long-standing ownership by Wesleyan University. Endurant arranged the layout in this way to address the City of Middletown Land Use Department's concern that the BESS might reduce the number of parking spaces in the parking lot. Please refer to Section III.D Local Authority Outreach for further information on discussions held with community stakeholders.

The Batteries will be installed within a secure, fenced area that is eight feet tall (there are no regulatory fencing height requirements for this Petition) and includes OEM-prescribed setbacks. The Site is bordered to the north by the tennis courts. Vine Street is to the east, and Knowles Avenue is at the southern end of the parking lot. To the west is Indian Hill Cemetery. The wider surrounding area, within 1,000 feet of the Site, includes University halls of residence, academic buildings and a sports field. The Site is accessed from the east off Vine Street. Figure 2 depicts plan and elevation views of the Site. Figure 3 depicts the Project equipment overlain on an aerial view, and ground level views of the Site.

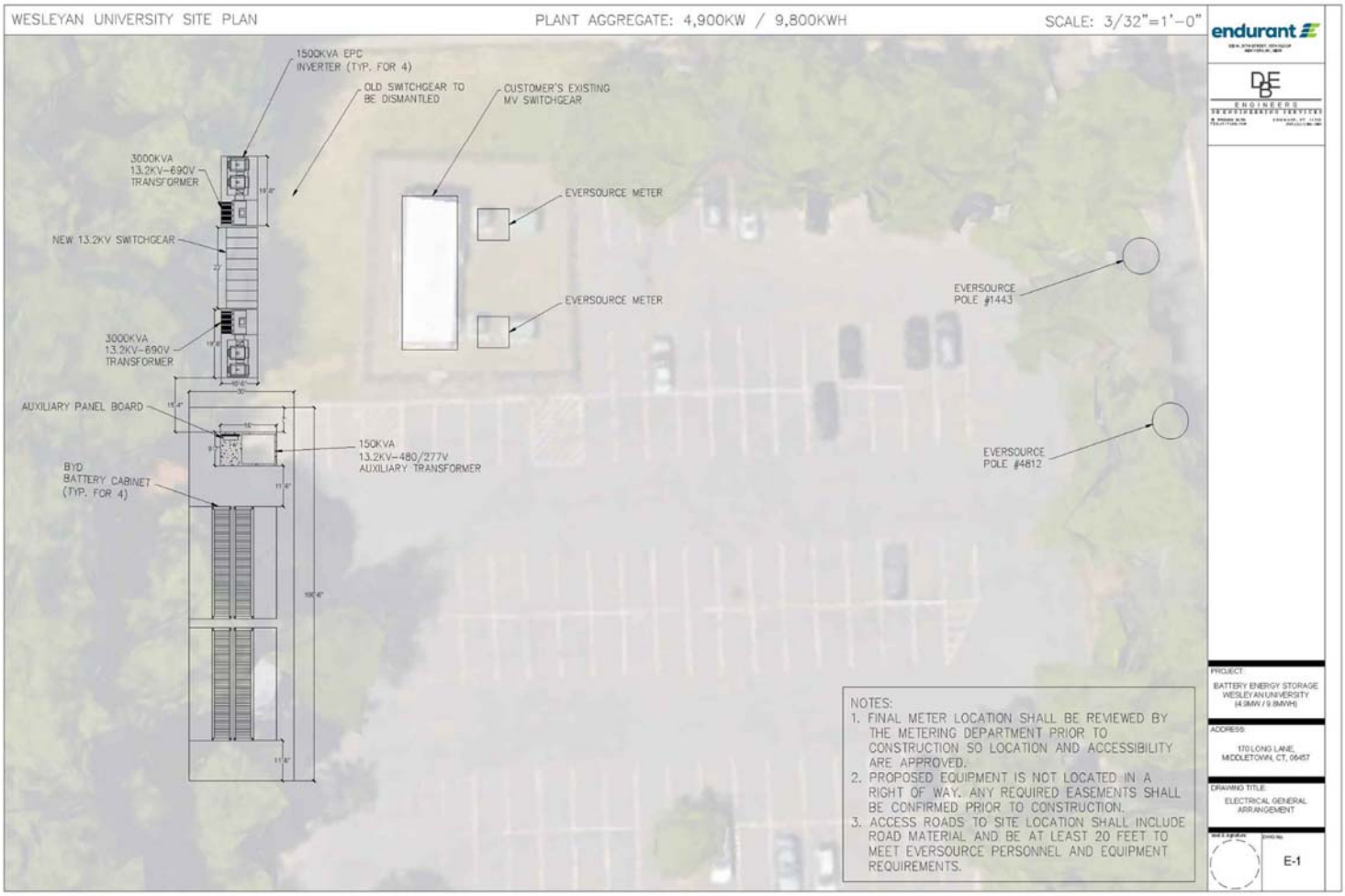




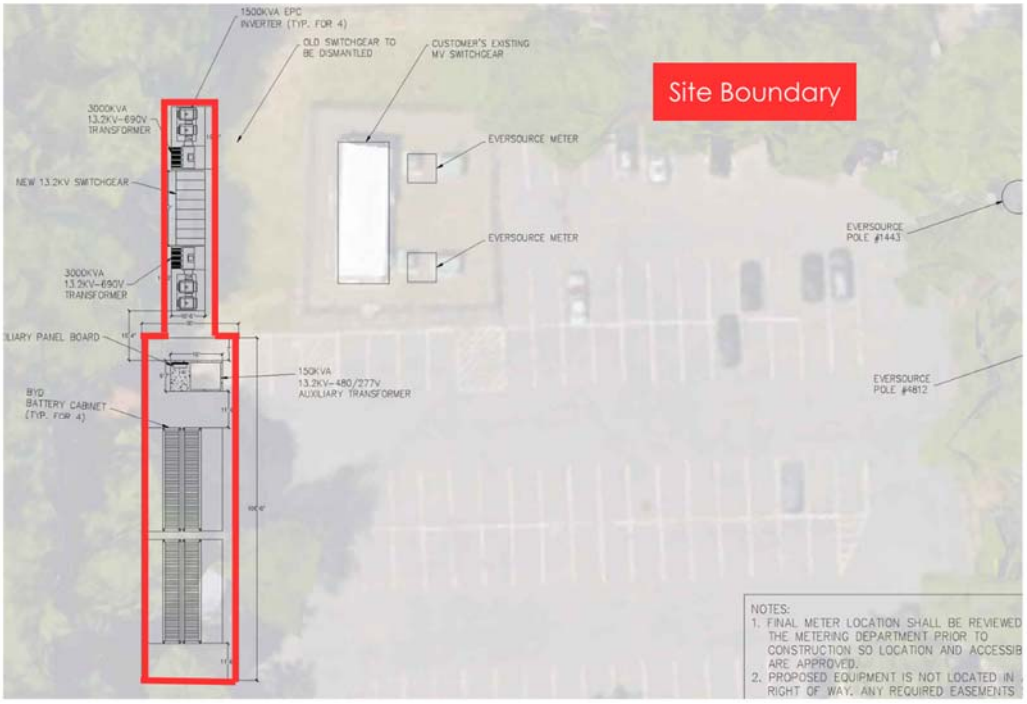
endurant	Battery Energy Storage System Wesleyan University 65 Vine Street Middletown, Connecticut	Figure 1 Site Location

Image source: Google Earth

endurant	Battery Energy Storage System Wesleyan University 65 Vine Street Middletown, Connecticut	Figure 2 Site Plan and Ground Views



endurant	Battery Energy Storage System Wesleyan University 65 Vine Street Middletown, Connecticut	Figure 3 Equipment Overlay



endurant	Battery Energy Storage System Wesleyan University 65 Vine Street Middletown, Connecticut	Figure 4 Parcel and Site Boundaries

B. PROJECT EQUIPMENT

All battery systems under consideration for the Project comply with latest UL, IEEE, and National Fire Protection Association ("NFPA"), testing regimes, and specifications, including UL 9540. The installation will include four fully containerized, UL certified and NFPA 855 compliant lithium-ion battery modules, external inverters, transformers, and switchgear.

Currently, the Project is anticipating use of BYD Cube Pro lithium iron phosphate (LiFePO4) chemistry-based battery modules with liquid cooling, humidity control, and an active balancing Battery Management System or similar. The battery modules will export DC electricity to an EPC power converter, which are UL 1741 listed and UL 1547 compliant for interconnecting and islanding capability, which will convert the electricity to AC, and step the voltage up to 13.8kV before connecting to the utility distribution network's 13.8kV feeder.

The sample specification sheet in Appendix A provides the technical details on the proposed battery modules for the battery system and presents system renderings. The final battery system's make and model may change to accommodate Eversource's feedback and supply chain constraints, but the core technology presented in this Petition will be the same.

The Project term is for 10 years. The battery capacity will degrade naturally, but Endurant will not undertake augmentation or capacity maintenance during that timeframe. That is, Endurant currently has no plans to do so, however, it is theoretically possible that in year 10, the relationship between the host Site and Endurant could be extended (there is a clause in the contract allowing for this scenario), in which case the battery cells could be replenished with newer cells to increase the system's capacity. This could only be done if both the host Site and Endurant wished to extend the relationship. The economic viability of doing so will depend on the health of the battery system at that time and cost of capacity maintenance. The BESS' internal monitoring systems will allow Endurant to monitor and diagnose the health of each cell individually over time. The transformers, invertors and switchgear are designed for a 20-year commercial life as is standard.

C. INTERCONNECTION

The Project filed an interconnection application with Eversource on August 24, 2023, and has been assigned project number INT-85362. Eversource has confirmed that an Affected Systems Operator ("ASO") study is required, which includes review by ISO-NE, and which could take up to 9-18 months to complete. Endurant paid the required fee on December 8, 2023, and the ASO Study was scheduled to start in late December 2023.

The Project will electrically interconnect to the utility's 13.8kV distribution feeder on via an underground conduit. Upon a grid fault or outage, the system will disconnect from the grid to provide resilient power to the host facility ("island mode"). When power services have resumed, the BESS will reconnect to the grid to maintain normal, "blue sky" operations.

D. Municipal/Local Input and Community Outreach

Endurant, in partnership with its subcontractor, Berkshire Environmental Consultants, has worked with the City of Middletown to provide information about the Project and to discuss permitting, safety and other feedback. Project information was sent to the City of Middletown Planning and Zoning Department and Fire Department including the Fire Marshal's office. Further, follow-up meetings were conducted, and email exchanged to discuss the Project, including the review of zoning requirements, setbacks, equipment screening, wetlands, floodplain locations and fire plan review. The Middletown Zoning Map with the Project identified is shown in Appendix C. The Land Use Department noted that the zoning is 'ID - Institutional Development', not 'Industrial' or 'Commercial'. Endurant confirmed that the ID zoning is used for Wesleyan-owned parcels irrelevant of use. Thus, this tennis facility, the parking lot and also the University's Combined Heat and Power plant for example are all zoned ID. The Land Use Department raised a concern around the potential of the Project reducing the number of parking spaces available to Wesleyan University. To address this concern, Endurant modified the original Site layout (which had the transformers and switchgear to the east of the batteries) to the one proposed in this Petition. At the Director of Land Use's request, Endurant discussed the Project with Wesleyan University's externally contracted civil engineers, VBH, who are currently undertaking a study for Wesleyan University, which includes a review of parking spaces. Endurant also discussed the change in Site layout with Wesleyan University. VBH informed Endurant that they do not believe that the layout as presented in this Petition will have a detrimental impact on parking spaces, and Endurant's Wesleyan University contacts concurred.

The Middletown Fire Department Chief and the Fire Marshal were provided with detailed information about the Project, and they reviewed this information with Endurant during a virtual meeting, where Endurant discussed the fire safety systems of the BESS, the detection and fire alarm systems, incident response, and equipment needs. No concerns were raised.

The Middletown Fire Marshall and Fire Department's input will be used in the development of emergency plans and identification of fire safety equipment for the Project. Endurant will continue to seek the Fire Department and Fire Marshal input through the design-build stage, including ensuring clear disconnection signage, providing secure fenced area access, emergency disconnection equipment and planning for water access. Endurant will also continue to work with

the Fire Marshal during the Fire Plan Review process and in finalizing the Emergency Response Plan. Once the system is installed, Endurant will work with the Middletown Fire Department to develop and provide training resources.

If the Project is approved, only municipal permits will be needed for the Project's construction and operation, including a building permit, mechanical permit and electrical permit. These will be held by Endurant DB, LLC, as Engineering, Procurement & Construction ("EPC") contractor.

A letter describing the Project was sent to the City of Middletown Mayor on November 8, 2023. No other municipalities were notified because there are none within 2500 feet of the Project Site. Detailed logs of the contacts with local authorities about the Project are presented in Appendix B.

E. Public Notice and Community Outreach

Endurant has provided notice of this Petition via certificate of mailing to all persons and appropriate municipal officials and governmental agencies to whom notice is required to be given pursuant to RCSA § 16-50j-40(a).[5] Notices have been given to property owners within 250 feet of the Site boundary and are identified in Appendix D, in addition to a map indicating the abutter properties and a sample copy of the notice letters.

F. Project Cost

Total Project capital costs will be approximately $6 million. Costs will be recouped through payments made from the ESS Program, administered by the CTGB, to the Project. Energy will be purchased at retail energy market rates according to the customer's utility tariff. Before the Project is finalized, a commodity supply agreement with a supply provider may be established.

IV. NO SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

The Project will have no substantial adverse environmental effect. Battery systems do not store or contain fuel, e.g., hydrocarbon fuels, which can cause environmental impacts. Further,

[5] RCSA § 16-50j-40(a) in part provides: "Prior to submitting a petition for a declaratory ruling to the Council, the petitioner shall, where applicable, provide notice to each person other than the petitioner appearing of record as an owner of property which abuts the proposed primary or alternative sites of the proposed facility, each person appearing of record as an owner of the property or properties on which the primary or alternative proposed facility is to be located, and the appropriate municipal officials and government agencies…The term "appropriate municipal officials and government agencies" means, in the case of a facility required to be approved by declaratory ruling, the same officials and agencies to be noticed in the application for a certificate under Section 16-50l of the Connecticut General Statutes…".

the BESS will not generate regulated air emissions, will not have an adverse impact on water resources or stormwater runoff, and will not impact endangered species.

A. Air Quality

Battery storage systems do not produce any air emissions of criteria air pollutants and/or hazardous air pollutants regulated by the Clean Air Act and Chapter 446c – Air Pollution Control of the Connecticut General Statutes because the system does not combust fuel or use any volatile organic compounds or other chemical pollutants that would be released to the atmosphere during normal operations. As such, an air permit is not required for the construction or operation of the battery system.

The liquid coolant system, used for cooling battery cells, uses a glycol-based coolant. The air-cooling system, used for cooling electrical components, uses HFC-134a or HFC-410a refrigerant. Both cooling systems are closed loop with no emissions released during routine operations. R134a and R410a are non-ozone-depleting hydrofluorocarbons ("HFC"). They were among the first refrigerants developed to replace CFCs which are ozone-depleting substances and have a lower environmental impact potential than other refrigerants. The Project is required to use licensed HVAC contractors trained to minimize or eliminate risks during maintenance activities.

During construction, short-term fugitive particulates and emissions from diesel exhaust may result from soil handling and construction vehicles. Fugitive particulate emissions from soil handling will be limited since soil disturbance is expected to be minimal with no significant storage piles. Additionally, construction vehicles will be expected to comply with CT DEEP idling requirements and operate only as needed. Therefore, any emissions resulting from their operation will also be minimal and temporary. If necessary to control fugitive dust, water spray will be used during construction.

B. Water Quality Impacts

1. Wetlands and Watercourses

The Site is not located in a mapped wetland delineated area, as determined by the wetland soil map provided by the City of Middletown GIS and the Connecticut Geodata Portal Soil Survey Geographic Database Inland Wetland Soils maps. Based on the distance from the Site to mapped wetland locations, and since the Project will be installed at a location that has been previously developed, no impact on wetland soils is anticipated.

Seasonal depressional wetlands, also known as vernal pools, are not present on the Site. There are no watercourses at the Project location. The CT Geodata Portal Inland Wetland Soils

Map, identifying the Project location, is presented in Appendix C. Based on the foregoing, the Project is not expected to negatively impact any wetlands or watercourses.

2. Aquifer Protection Areas

There are no aquifer protection areas, private well parcels, or Drinking Water Watersheds at the Site, as shown in the Aquifer Protection and Well Parcel Map in Appendix C. The CT DEEP Water Quality Classification Map is shown in Appendix C. The Groundwater Class at the location of the Site is Class GA. Class GA designated uses are for existing private and potential public or private supplies of water suitable for drinking without treatment; baseflow for hydraulically connected surface water bodies. There are no Drinking Water Watersheds or Private Well Parcels at the Site. The closest private well parcel is 1,200 feet from the Project Site.

The Project has no normal operating processes that will impact groundwater or surface water. During a fire emergency, firewater may be generated as a part of response activities, however the overall approach of response is not water deluge of the batteries, but to allow self-extinguishing, and to use water to control impacts on adjacent structures to prevent spread. Firewater generated would be comparable to water generated during routine fire response of manufacturing buildings and electrical equipment. Fire response and firewater management are further discussed in the Safety section of this Petition.

3. FEMA Flood Zones

A review of the Federal Emergency Management Agency's ("FEMA") National Flood Insurance Program flood mapping data shows that that the Project location is not within the 100-year Flood Zone. The FEMA flood hazard area is shown in Appendix C.

4. Stormwater

The area of site disturbance for the Project is less than one acre and will not require a CT DEEP General Permit for Discharge of Stormwater and Dewatering Wastewaters for Construction Activities. The battery system is contained within a weather resistant enclosure, and as such, there is no stormwater contact with the battery system components. No routine industrial stormwater permitting is triggered by the Project.

C. WASTE

During the Site clearing and construction phases, construction debris and other solid waste will be generated and managed by Endurant and its construction contractor. Typical cut and fill volumes are approximately 400 cubic feet. The soil will be tested before construction and any remediation or disposal will follow federal, state and local requirements. No hazardous waste is

expected to be generated during the construction phase, unless there are small equipment leaks from vehicles. Any vehicle fluid leak will be managed in accordance with the applicable CT DEEP requirements.

During normal operations, the only waste products that will be generated by the Project will be the result of maintenance activities, such as coolant and refrigerant change out or maintenance product usage. The servicing of the HVAC system will be contracted to a registered HVAC servicing company. Maintenance activities are expected to occur semi-annually. Refrigerant change outs would typically be recycled. The R134a change out would be closed piped to a recovery tank. Any waste oils or lubricants will be collected and managed in accordance with CT DEEP regulations. Occasional vehicle or truck traffic on the Site for maintenance activities could result in vehicle fluid leakage which will be managed in accordance with the applicable CT DEEP requirements.

D. HAZARDOUS MATERIALS

An inventory of hazardous materials expected to be onsite during construction and during normal operations, is presented in Table 1 below. The exact products to be used will be determined during construction and installation. Representative Safety Data Sheets for comparable products are contained in Appendix E for reference. There will be no fuel or hazardous material storage at the Project Site, beyond the quantities contained in equipment.

Equipment containing hazardous materials will be routinely inspected as part of the maintenance inspection program developed and conducted by the OEM contractor.

TABLE 1: HAZARDOUS MATERIAL INVENTORY

NORMAL OPERATIONS		
Product	***Use***	***Approx. Quantity On-Site***
Air cooling system refrigerant – HFC - 134a	HVAC cooling of battery electrical equipment	35.3 lbs. per BESS container
Liquid cooling system – glycol-based coolant	Cooling of battery cells	84.8 gal per BESS container
Transformer Oil*	Electrical Insulating oil	Approx 500 gal per transformer
Lithium-Ion Electrolyte	Storage of electrical energy	48 gal per BESS container
SITE PREPARATION AND CONSTRUCTION		
Product	***Use***	***Quantity On-Site***
Construction Vehicle Fluids	Fuel, oil, hydraulic and other oils used in site vehicles, and heavy equipment used during installation.	Variable

*Current design includes dry type transformers, which are air cooled, without the use of oil. Oil transformer information is provided for information and completeness, in unlikely case the design is changed.

E. WILDLIFE AND HABITAT

The CT DEEP Natural Diversity Database ("NDDB") maps general locations of Connecticut Endangered, Threatened, and Special Concern species, as well as rare natural communities. The NDDB Area Map indicates that the Project location is not in a mapped NDDB area. See the figure in Appendix F. A project review was completed for the Site, and the NDDB Determination Report indicated that no species were identified at the Site location.

The Endangered Species Act, 16 U.S.C. § 1531 et seq. protects federally threatened and endangered wildlife. Listed species and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service ("USFWS") and the fisheries division of the National Oceanic and Atmospheric Administration. The USFWS Information for Planning and Conservation ("IPaC") tool was used to identify potentially affected listed species and their habitat. The Northern Long-eared Bat (Myotis septentrionalis, endangered species) and Monarch Butterfly (Danaus plexippus, candidate species) were identified. The IPaC report indicates that there is no Critical Habitat within the vicinity of the Project area for either species. The report is provided in Appendix F.

The Project Site is not in or adjacent to any of the State's Protected Wildlife Management Areas. There are several recreational facilities and open space parks associated with Wesleyan University within 0.5 miles of the Project including the John Wood Memorial Tennis Courts on the northern Project parcel. Other Wesleyan-owned facilities are Andrus Field, 1,000 feet from the Project; Washington Green, 1,000 feet from the Project; West College Courtyard, 900 feet

from the Project; and Freeman Athletic Center, 1,200 feet from the Project Site. Butternut Hollow Park, owned by the Town of Middletown, is located 2,000 feet from the Project Site. Veteran's Memorial Park is located 2,400 feet from the Site, Ravine Park is 2,600 feet from the Site, and Field Park is located 4,600 feet from the Project Site. Wadsworth Falls State Park is the closest state facility to the Project and is located 1.7 miles from the Site. Due to site layout, vegetation and buildings, the Project will only be visible from the John Wood Memorial Tennis Courts, but not from any of the other recreation facilities or open spaces.

While not a formally designated open space, the Indian Hill Cemetery is located on the adjacent parcel to the west. There is a raised, berm-like ridge that runs north-south on the Project's western property line, and creates a raised barrier between the Project Site and the cemetery. Along with vegetation, this ridge completely prevents visibility of the Site from the cemetery property.

F. Prime Farmland and Core Forest Resources

The Soil Survey of the State of Connecticut map (2008) indicates that soils at the Site are unit #307 – Urban influenced. The General Soil Map of Connecticut (1978) indicates it is map unit #17, Narragansett-Broadbrook-Holyoke: Brownish and reddish, gently sloping to steep, well drained, deep soils with a friable or firm substratum and well drained and somewhat excessively drained shallow soils over bedrock; on uplands. None of the soils at the Site are mapped as prime farmland or farmland soils of statewide importance, nor are there any forested areas on Site, therefore there is no Core Forest. As such, construction of the Project will not impact Prime Farmland or Core Forest resources. These maps are provided in Appendix C.

G. Noise Analysis

Cavanaugh Tocci Associates has evaluated the environmental sound impact associated with the proposed BESS. This evaluation's objectives were to define the acoustic design goals based on applicable noise regulations and to estimate and evaluate the acoustic impact of the proposed Project in the surrounding community.

The battery system will generate sound when charging and discharging, and when the air conditioning system is in use. The scenario takes the cooling fans into account. Neutral conditions ('standby mode') do not generate noise. The sound assessment was modelled on the 'worst-case' scenario and examined noise levels from all the equipment of the proposed system, including the batteries, the inverters and the transformers.

Endurant was particularly interested in the results of this study as it pertains to the cemetery to the west. Based on Cavanaugh Tocci's review of the Project description and the BESS and inverter noise study reports, sound produced by the proposed BESS Project will comply with the most stringent requirements of the state and local noise regulations. Furthermore, Cavanaugh Tocci concluded that the sound emitted by the Project will not produce a noticeable impact on the acoustic environment and will not have an unreasonable adverse effect on any surrounding properties including the cemetery. The complete facility Sound Assessment is in Appendix G.

H. Visual Impact / Scenic Values

The batteries themselves will be situated in the Tennis Facility parking lot, with the switchgear and invertors on the site of existing defunct switchgear, which will be demolished and removed. There will be public visibility of the Project, however it is comparable in scope and scale with the existing functioning electrical equipment. The Middletown Director of Land Use & City Planner did not suggest any additional screening in reviewing the Project. Endurant will discuss with Wesleyan University the possibility of including privacy inserts into the proposed fencing. This could include green leaf effect or more industrial aesthetics, depending on Wesleyan University's preferences.

Since this Project is being added to an existing developed property, it will not create a substantial change in the visual and aesthetic characteristics of the Project area. Further, the Project equipment is consistent in design and aesthetic with the current uses at the host facility.

I. Cultural Resources / Historical Values

The Project will not have any adverse effects on the state's historic or archaeological resources.

A search in the National Register of Historic Places ("NRHP") map indicated that there are several NRHP listed properties within a half mile of the Project. These properties are presented below in Table 2, and mapped in the figure presented in Appendix H.

Table 2 – National Register of Historic Places

NRHP Property	Distance from Site (mi.)
Washington Street Historic District	0.08
Richard Alsop IV House	0.36
Coite-Hubbard House	0.37
Xi Chapter, Psi Upsilon Fraternity	0.38
Broad Street Historic District	0.40
Edward August Russell House	0.42
The Eclectic House	0.42
Samuel Wadsworth Russell House	0.48
Saint Luke's Home for Destitute and Aged Women	0.50

Based on the distances to NRHP properties, the limits of the Project scope and intervening structures, it is anticipated that there will be no impact on historic places. Due to the number of historic sites within a 0.5-mile radius of the Project Site, a Project Review request was made to the Connecticut State Historic Preservation Office ("SHPO") on November 7, 2023, regarding the Project's effect on historic, architectural or archaeological resources listed on or eligible for the NRHP. A copy of SHPO's response, provided to Endurant on December 22, 2023, is included in Appendix H, and it notes that "[b]ased on the information submitted to [SHPO], it is the opinion of SHPO that no historic properties will be affected by the proposed BESS development."

V. PROJECT CONSTRUCTION, OPERATION, MAINTENANCE AND DECOMMISSIONING

A. PERMITS REQUIRED

The Project will require local permits, including a Building Permit, which includes a Fire Plan review, a Mechanical Permit, and an Electrical Permit. Permit applications will be submitted after obtaining the Council's approval.

B. CONSTRUCTION

The on-site construction phase will commence when the Interconnection Agreement is executed, and upon the Council's approval of the Project. Following these key milestones, Endurant anticipates that by Q3 2024, advanced engineering design work will be completed, final permits will be secured, and equipment purchase orders will be placed. On-site activities will begin in Q1 2025. On-site construction is anticipated to take no more than six months. Endurant's construction teams and subcontractors typically work from 8 AM to 5 PM, Monday to Friday.

Occasionally specialist equipment is required (such as a crane to lift the containerized batteries from the flatbed truck upon which they will be transported) which might require work to be done on-site outside these hours, from 7 AM to 6 PM.

The Project will require minimal construction or disruption to the existing Site since the Site is already developed with appropriate works access. Initial Site work will include installation of a construction fence to shield most Site activities. Trenches to accommodate the laying of new conduit will be dug from the BESS Site to the Eversource equipment where the BESS will be connected to the distribution infrastructure. These excavation and grading phases are minimally disruptive and will be coordinated with the host facility to minimize operational impacts.

The installation of the major battery equipment is also expected to have minimal environmental impact. Pre-packaged containerized modules will be shipped to the Site from the production facility and will be dropped onto the poured concrete pads and connected via the newly laid conduit to the distribution infrastructure. Once installed, the battery system will be commissioned, tested, and activated for commercial operation. Commercial operation is expected prior to the 2025 ESS Program season, scheduled to start June 1, 2025.

C. TRAFFIC/PUBLIC TRANSPORTATION

Access to the Site is from the east, on Vine Street. During the construction phase of the Project, there will be a short-term slight increase in the local traffic coming onto the Property from Vine Street. All construction-related work will be coordinated with Wesleyan University and the City of Middletown as needed. The existing parking lot and entrances are large enough to accommodate the staging and parking of any construction vehicles or heavy equipment needed for Site work and construction activities. On-site traffic controls will be utilized to minimize any impact to typical traffic patterns and the City of Middletown Police Department will be notified prior to delivery of the equipment and construction crane. Once installation is completed, the only additional traffic will be during periodic equipment inspection and routine maintenance activity.

D. FAA DETERMINATIONS

There are four aviation facilities within a 5-mile radius of the Project. These facilities and distances from the Project are identified in Table 3.

Table 3 – Aviation Facilities – 5 Mile Radius

Facility Code	Facility Name	Type	Location	Distance from Project (nm)
CT98	Middlesex Hospital Heliport	Heliport	Middletown	0.7
0CT6	Middletown Heliport	Heliport	Middletown	3.1
CT92	Bemer Heliport	Heliport	Portland	4.9
01CT	Berlin Fairgrounds Heliport	Heliport	Berlin	5.2

The FAA Obstruction Evaluation Tool was used to assess Notification Criteria for the permanent battery positioning and for the temporary use of a mobile construction crane during the Project's construction phase. Based on the site-specific data entered for the Project, site elevation and structure height for each scenario, the results indicated that the Notice Criteria under Part 77 were not exceeded for either scenario. These Notice Criteria Tool outputs are presented in Appendix I.

Notwithstanding this determination, Endurant will provide notice to these aviation facilities prior to the use of the construction crane. This notice will ensure that the facilities are aware of the presence of the crane and factor it into their operations.

E. OPERATIONS

During "blue sky conditions," i.e., normal grid operations, the BESS will operate to provide peak demand management and demand response. From June 1 - September 30 and as per ESS Program call windows (please note whenever the ESS Program is active, it will take priority - it can call on the asset to dispatch between 12pm and 9pm any day of the week), the BESS will discharge, typically for 2-3 hours between 3:00 p.m. - 8:00 p.m. The shortest time for the battery to be discharged would be over 2 hours, when triggered by a request from the ESS Program Administrator. This will fully deplete the battery. During the June - September period, the BESS will charge at night, typically from approximately 11:00 p.m. - 6:00 a.m. The minimum amount of time it could theoretically take for the battery to fully recharge is 2 hours, however in reality the time taken will depend on energy prices and the host facility's energy demand. Typically, charging will occur over several off-peak hours. During shoulder and winter seasons, the BESS will charge at similar times, but discharge over a longer period to manage the Site host's peak demand charges. The shortest time for the battery to be discharged will be over 2 hours - specifically, this will be in the summer when it is participating in the ESS Program. This discharge will be triggered by a request from the ESS Program Administrator and will fully deplete the battery. At these times, when the ESS program is not active, Endurant will be discharging to reduce Wesleyan

University's load at peak times so discharge can therefore be to a maximum of the facility load at those times - there might therefore be residual charge in the BESS after discharge.

The BESS is not required to reserve any battery storage capability for backup power, although it can provide backup power to the Site host. The amount and duration of backup power will depend on the battery's state of charge when the outage occurs. Per UL and utility interconnection rules, the system will disconnect from the grid ("island") in the event of a power outage, and therefore will not export electricity into the grid at such a time - any charge will be used by Wesleyan University.

While the BESS will be owned and operated by Endurant, CPower, Endurant's sister company, will provide the dispatch optimization services for the battery, signaling the on-board management system to charge and discharge at economically and technically optimal times. "Active" or "Passive" calls will depend on when Program Administrators (the utility) calls on the asset to dispatch. CPower is one of the largest, most experienced demand response and demand management providers in the country and uses its "Enerwise" technology to receive signals from grid operators and relay those calls to the battery system.

During "black sky conditions," or grid outage events, the BESS will provide resiliency and power quality services, i.e., back-up power, to the host facility. During grid outages, faults or other electrical disturbances and per UL and utility interconnection rules, the BESS will be able to fully disconnect from the grid to continuously power the host facility, operating in "island mode." The system will be IEEE 1547 and UL 1741 SA compliant. Once the grid outage is over, the BESS and host facility will reconnect to the distribution network. The amount and duration of backup power will depend on the battery's state of charge when the outage occurs. Even if the battery's state of charge is low at the time of an outage, it will be sufficient to allow the host facility to continuously operate for some time, buying the staff valuable time to transfer to traditional start-up backup power resources. This is critically valuable during winter storms when backup generators may need additional startup time, and/or fuel may be inaccessible, as many Connecticut residents experienced during Winter Storm Alfred and Hurricane Sandy.

The BESS will be capable of participating in other ISO-NE markets, such as energy, forward capacity, and ancillary service markets once ISO-NE develops new participation rules for behind-the-meter resources to do so.

The BESS' inverter systems can dispatch almost instantaneously once called by the controls system. Typically, this is a matter of milliseconds. However, utility calls are sent 24-hours in advance under the ESS Program rules. While it is operating, the battery system will be remotely

monitored 24/7. The Project will be equipped with Battery Management Software ("BMS")6 that uses supervisory control and data acquisition systems to initiate automated procedures or responses by personnel.

The Project term is 10 years. The battery capacity will degrade naturally during this time, and Endurant will not undertake augmentation or capacity maintenance unless market and economic conditions change significantly, to make that option desirable. Endurant currently has no plans to do so, however it is possible that in year 10, the battery cells could be replenished with newer cells to increase the system's capacity. This could only be done if Wesleyan University and Endurant both wished to extend the relationship and agreed to trigger the clause in the contract to do so. The economic viability of doing so will depend on the health of the battery system at that time and cost of capacity maintenance. The BESS' internal monitoring systems will allow Endurant to monitor and diagnose the health of each cell module individually over time.

F. MAINTENANCE PLAN

Unlike rotating machines such as combustion engines or gas turbines, BESS require little maintenance. To honor the battery warranty, the BESS suppliers require that the battery's maintenance be conducted by the battery manufacturer and its subcontractors for the full life of the Project. The supplier's staff and subcontracting teams have been trained specifically on the modules and equipment installed on-site. Bi-annual planned maintenance events will occur, typically before and after the summer ESS Program season to ensure the system will be fully available for that season-year.

Maintenance activities include a full checklist of items to ensure system integrity and availability for peak operation. These include a full testing of the BESS safety systems, backup power and cooling systems, as well as visual inspection of system components and ancillary structures, such as the fencing enclosure, to ensure integrity and to identify any areas for repair or attention. The OEM Maintenance Plan will be provided by the manufacturer once the final decision is made on the equipment.

G. DECOMMISSIONING PLAN

At the end of the Project's Operation Phase, including any extensions, the Project equipment, including the battery containers, will be removed and the Site will be returned to its original condition before the battery system's installation (or as otherwise directed by the host facility). This will include removing the battery modules, switchgear, inverters, transformers, cabling,

[6] Also known as a "Battery Management System."

concrete pads, fencing, ethernet, and other infrastructure installed, and reinstalling pavement as needed.

The accelerating adoption of grid-scale BESS has created new markets and business opportunities, including for recycling the battery systems. This includes an off-site deconstruction of the battery's components, isolation of its elements and raw materials (including lithium, copper, nickel, cobalt, etc.). The potential has created a wave of new companies offering battery recycling and repurposing for the types of systems being proposed as part of this Project.

Newer methods of more efficient battery recycling are the subject of research, including advanced development of cathode re-lithiation processes, binder removal and recovery, and black mass purification. New thermal techniques are also being developed to identify any contaminants resulting from the recycling processes themselves.

Endurant intends to use the most advanced recycling and repurposing methodologies available at the end of the equipment's life if the materials cannot otherwise be reused.

A Site Decommissioning Plan has been developed and is provided in Appendix J.

H. SAFETY

1. Site Security & Safety

The batteries are located in a secure and gated private facility which restricts access to authorized contractors and visitors. Fire Department access to the locked gate will be provided by a Knox Box or other universal key system. Personnel will not be allowed within fenced areas during normal operation and all systems will be locked out during inspection or maintenance. No fires, flames or sources of heat are allowed within the fenced area. Contractors are trained in safe work practices around electrical equipment and specifically BESS. The fenced area and all equipment will be outfitted with proper signage designating hazards and confirmation of electrical disconnects for both the BESS and the host facility. The cabinets containing the switchgear, transformers and invertors are located outside the fenced area, with locked cabinet doors.

2. Electric and Magnetic Fields (EMF)

Electric and magnetic fields ("EMF") at storage facilities are not a cause of concern to the industry, due to the fact that static fields are produced by the battery banks and DC cabling. Best practice is therefore driven by fire safety and installation health and safety requirements, not EMF.

During operation, EMF from the Project will derive from: 1) the DC battery banks; 2) the DC cables connecting the battery banks to the power inverters; 3) the AC power inverters that convert the DC power to AC power; and 4) the 13.8-kV AC underground lines connecting Project to the existing service in the customer's electrical room. There will be no additional EMF from the existing utility interconnection.

The battery banks and DC cables on site will produce static fields (i.e., at 0 Hertz). These sources will not be expected to produce any significant disturbance to the existing levels of static magnetic field produced by natural sources within the earth (i.e., the earth's geomagnetic field) away from the Project location. The existing level of the earth's static geomagnetic field is about 8,000 times lower than the standard for exposure of the general public to static magnetic fields recommended by the International Commission on Non-ionizing Radiation Protection (ICNIRP, 2009).

The power inverters and underground AC lines on site will produce AC fields at frequencies greater than 60 Hz on site. These higher-frequency fields from the inverters, like the DC fields from the battery banks, decrease rapidly to low levels within a few tens of feet or less[7]. These components are located significantly far from any potentially affected receptors and thus will not be an important contributor to AC fields outside the Project boundaries. Additionally, electric fields are blocked (i.e., shielded) by most grounded conducting objects, including buildings, walls, trees, and fences.

3. Fire Safety

Each battery system completes UL 9540A testing which is a destructive test method used for evaluating the thermal runaway impacts in a BESS and gathering data to assist in assessing or developing mitigation plans. Endurant would only consider deploying systems which have demonstrated no module-to-module propagation. The BYD Cube Pro is made up of 24 battery packs in 8 racks with 3 packs per rack, and with 114 cells per pack, and 8 rack-mounted BMS monitoring amongst other things voltage, state of charge and temperature. 9540A testing showed only 5 cells damaged during the test, confirming the design limits propagation within the module, demonstrating it will not propagate through the entire BESS nor an adjacent system. The test found no external flames, electrical events or explosive discharge of gases.

Safety and fire protection are designed into the Project in multiple ways:

[7] Tell TA, Hooper HC, Sias GG, Mezei G, Hung P, Kavet R. Electromagnetic fields associated with commercial solar photovoltaic electric power generating facilities. J Occup Environ Hyg 12: 795-803, 2015.

Battery Design – The Project will comply with the current National Electric Code and National Electrical Safety Code standards as well as the 2022 Connecticut State Fire Code Chapter 52 – Energy Storage Systems. Stationary BESS design continues to evolve to keep pace with the evolving standards and lessons learned from performance and fire incidents. The battery system is designed for compliance with the most recent and stringent battery safety standards, including NFPA 855, UL 1642, UL 1973, UL 1741 SA as well as IEEE 1547E. In addition to meeting the UL 9540 standard, the system has been tested using the UL 9540A testing methodology. These tests are not pass/fail, but rather destructive tests used for evaluating the thermal runaway impacts of a BESS design including propagation, extent of gassing, explosion, or fire. Endurant only considers deploying systems which have demonstrated no module-to-module propagation.

The BYD BESS is made up of 8 racks of 3 modules per rack and 114 cells per module. The 9540A testing showed only 5 cells were damaged during the test, confirming the design limited propagation within the module and will not propagate through the entire BESS nor adjacent BESS. The UL 9540 A BYD Unit Level Test results found the following:

No module to module or unit to unit thermal runaway propagation

No flying debris or explosive discharge of gases during the test

No electrical arcs or other electrical events during the test

No external flaming observed.

Detection and Alarm Systems – The BESS is equipped with combustible gas detectors to detect the most prevalent flammable/explosive off-gases from lithium iron phosphate (LFP) battery cells – hydrogen (H2), carbon monoxide (CO) and methane (CH4). Industry standards recommend either explosion vent panels (deflagration panels) or automatic exhaust venting to address explosion prevention. The BESS is equipped with an exhaust fan that vents flammable/explosive gases upon detection by the gas detection system. The BESS design also integrates several safety features including a temperature detector, a smoke detector, a fire alarm (audible and visual), an alarm panel and manual emergency stop buttons. For explosion protection, the BESS is equipped with combustible gas sensors, an exhaust fan and pressure balancer. The system is not equipment with an inert gas suppression system (which reduces oxygen levels in confined space) given the system is vented thus preventing effective reduction of oxygen levels.

Battery Management System - The BMS constantly monitors cell and pack level voltage, temperature, status of the various detectors (smoke, temperature, and gas) and other

parameters to ensure early detection of pre-fault conditions, and immediate detection of fault events. Should any parameter exceed a permissible value, the BMS will surface appropriate alarms and take appropriate protective actions including the potential to disconnect the affected string.

4. Fire Response

There are many factors to consider in determining the appropriate response to an incident at a battery storage facility. Endurant will work with the Middletown Fire Department and Fire Marshal to discuss fire response options and strategies, and ways that Endurant can support both response organizations, through information, training, and other resources. Life safety is the response priority, then the protection of adjacent properties. A battery fire at the Site should be monitored for propagation to other hazards and allowed to burn itself out. First responders should not enter the fenced area other than for life safety concerns. Appropriate fire safety signage (conformant with NFPA 855) will be reviewed with the Middletown Fire Marshal as part of the Fire Plan Review and posted at the Site. Additional signage to ensure clear communication of disconnects, protocols, and contact information will be reviewed with the Fire Marshal and all requirements and recommendations will be followed.

Water may be used, at the Fire Department's discretion, to control the temperature of adjacent hazards that are not fire involved. Water has not been shown to be effective in extinguishing a lithium-ion fire but can be used to limit the potential spread of fire to adjacent structures. The Project location and configuration at the Site provide a buffer from adjacent buildings. Based on the UL 9540A testing results, and the lack of unit-to-unit propagation observed, it is expected that any fire at the Project will be contained within the affected battery module.

There is adequate space for staging and response activities including incident command.

A municipal hydrant is located directly to the east of the Project Site on the opposite side of Vine Street (approximately 300 feet away). Discussion on access to water was not part of the conversation with the Fire Department, due to the proximity to the municipal network. As discussed above, water is used to cool adjacent areas and to prevent the spread of fire. Neither water, nor any other fire suppressants (e.g., foams, etc.), have been shown to extinguish a lithium-ion fire. Accordingly, neither water deluge nor suppressant media are recommended fire responses. Any fire water generated from the response will be from cooling adjacent areas and electrical equipment to prevent spread of fire, and as such, it does not come into contact with the batteries, which are contained in weather-proof enclosures. Fire water makeup would be

consistent with that generated during routine fire response of manufacturing buildings and electrical equipment.

5. Off-Gas Composition

Battery system modules are designed to be maintained within a safe temperature range via the thermal management system which controls the internal system temperature through heating and cooling. At normal operating temperature, there is little or no off-gassing from the batteries. In a thermal runaway or fire, elevated temperature causes off-gassing from the battery cells. Gas composition is determined by the battery's chemistry. Off-gas from lithium iron phosphate batteries during thermal runaway or fire is generally characterized as follows:

Gas Component	**Percent (by volume)**
Hydrogen (H2)	48.013 %
Carbon monoxide (CO)	11.191 %
Carbon dioxide (CO2)	27.325 %
Hydrocarbons (HC)	12.999 %

The danger of these components is their ability to form an explosive mixture with air. The UL 9540A tests indicated resulting gas concentrations during thermal runaway of much less than 25% of the Lower Flammability Limit ("LFL") which is the concentration at which it will reach a flammable point. A 25% LFL concentration is the first alarm trigger for the gas detectors installed in the units (50% is the next).

The systems incorporate active venting to reduce the buildup of flammable gases to mitigate hazards associated with the amount of off-gas produced. The density of any vented off-gasses will be lighter than air thus allowing them to rise and disperse and minimize the risk of creating a localized explosive atmosphere.

6. Emergency Planning

Endurant has developed a standard operating procedure for Emergency Response and notifications in event of a battery fire or other event, which has been documented in our Emergency Response Plan ("ERP") that documents the procedures in place to prepare for and respond to an emergency at the BESS Project. The ERP delineates emergency response responsibilities of personnel and identifies mutual aid resources available by off-site responders. It also identifies training provided to Site personnel in responding to emergencies and identifies drill procedures and incident investigation procedures. The ERP has been prepared as part of

project planning. The plan will be updated to reflect additional Site-specific input generated as part of the permitting process and with further consultation with the Middletown District Fire Chief and Fire Marshal. A running record of changes and updates will be maintained with the plan. The ERP is provided in Appendix K.

The facility is remotely staffed, except for semi-annual routine maintenance activities when contractors are on-site, however, it is continuously remotely monitored by a Remote System Operator. In the event of an emergency such as a fire, an Endurant employee would be available 24/7 by telephone and would consult with responders to provide system information useful in event characterization and response planning. A member of Endurant's team would be dispatched to the location as soon as possible (within 24 hours). An on-site member of the Wesleyan team is designated as the BESS liaison and will be trained on the BESS and in emergency response protocols related to the facility. This liaison would respond immediately to the event and provide information and facilitate communication with Endurant staff. During an emergency response event, staff personnel and emergency responders are automatically contacted.

VI. CONCLUSION

For the foregoing reasons, Endurant Energy respectfully requests that the Council issue a determination that the proposed Project as described in this Petition will not have a substantial adverse environmental effect, and therefore, that a Certificate is not required.