

DRAFT

**Petition No. 1604
Endurant Energy
50 Ucar Street (Parcel No. 70H-55-97), Suffield**

**Staff Report
May 3, 2024**

Introduction

On December 18, 2023, the Connecticut Siting Council (Council) received a petition from Endurant Energy (Endurant) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k for the construction, operation and maintenance of an 18.0-megawatt (MW) alternating current (AC) battery energy storage facility (BESF)¹ and associated equipment to be located at 50 Ucar Street (Parcel No. 70H-55-97), Suffield, Connecticut, and associated electrical interconnection (Petition or Project).

Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40 on or about December 18, 2024, Endurant notified the abutting property owners, Town of Suffield (Town) officials and Town of Windsor Locks officials,² state officials and agencies of the proposed Project. No comments were received.

On December 19, 2023, the Council sent correspondence to the Town and the Town of Windsor Locks stating that the Council has received the Petition and invited the municipalities to contact the Council with any questions or comments by January 17, 2024. No comments were received.

Also, on December 20, 2023, pursuant to RCSA §16-50j-40, the Council notified all state agencies listed therein, requesting comments regarding the proposed Project be submitted to the Council by January 17, 2024. No comments were received.

The Council issued interrogatories to Endurant on February 26, 2024. Endurant submitted responses to the Council's interrogatories on April 1, 2024.

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take an action on a petition for a declaratory ruling within 60 days of receipt. During a regular meeting held on February 1, 2024, pursuant to CGS §4-176(e), the Council voted to set the date by which to render a decision on the Petition as no later than June 15, 2024, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

Public Act 21-53

Public Act 21-53, "An Act Concerning Energy Storage," established a statewide goal to deploy 1,000 MW of energy storage in Connecticut by the end of 2030. It requires the Public Utilities Regulatory Authority (PURA) to develop programs for customer-side and grid-side energy storage systems connected to the electric distribution system and enables DEEP to issue requests for proposals for energy storage systems paired with renewable energy sources and stand-alone energy storage systems connected to the electric transmission or distribution system.³

Energy storage system is defined under CGS §16-1(48) as "any commercially available technology that is capable of absorbing energy, storing it for a period time and thereafter dispatching the energy."

¹ CGS §16-50i(a)(3) - the Council has jurisdiction over energy storage facilities using any fuel throughout the state.

² The Town of Windsor Locks is located within 2,500 feet of the proposed facility site. The Town of Enfield is within approximately 3,400 feet of the proposed facility site.

³ The interim goals of the program are 300 MW by year-end 2024 and 650 MW by year-end 2027.

On July 28, 2021, PURA developed a nine-year electric storage program, the Energy Storage Solutions (ESS) program⁴, that is administered by the Connecticut Green Bank, Eversource Energy (Eversource) and the United Illuminating Company (UI). It offers performance incentive payments to residential, commercial, and industrial customers who host on-site battery energy storage systems as follows:

1. Behind the Meter (BTM): customer-side distributed resource that serves on-site load (paired or stand-alone) behind a customer meter; and
2. Front of the Meter (FTM): grid-side distributed resource that does not serve on-site load (paired or stand-alone) behind a customer meter.⁵

A paired BTM or FTM storage system has a separate input and output source. For example, a paired system could have a solar facility-generated input and a 23-kV electric distribution line output. A stand-alone BTM or FTM storage system has the same input and output source, such as a 23-kV electric distribution line. Among the technical requirements for storage systems in the ESS program is the capability of the system to provide backup power or island from the grid during outage events.

The proposed BESF is a stand-alone BTM system that was designed in response to the goals of the ESS program. It would deliver benefits identified by the ESS program, including, but not limited to, economic, resiliency and environmental benefits. The BESF would operate in parallel with the grid providing demand response, load shifting, backup power and peaking power.

Public Benefit

A “customer-side distributed resources” facility is defined under CGS §16-1(a)(34) as “generation of electricity from a unit with a rating not more than 65 MW at customer premises within the transmission and distribution system or a reduction in the demand for electricity at customer premises through conservation and load management. A “grid-side distributed resources” facility, is defined under CGS §16-1(a)(37) as “generation of electricity from a unit with a rating not more than 65 MW that is connected to the transmission or distribution system.”

The state Comprehensive Energy Strategy (CES) examines future energy needs and identifies opportunities to reduce ratepayer costs, ensure reliable energy availability, and mitigate public health and environmental impacts. CES Strategy No. 8(B) is “Integrate efficiency, storage, and renewables to meet peak demand.” The state Integrated Resource Plan (IRP) assesses the state’s future electric needs and a plan to meet those future needs. IRP Strategy No. 13 is “Support the development of energy storage resources that can support the reliable integration of variable renewables and avoid fossil peaking generation.”

The proposed BESF is a customer-side distributed resource facility. It would benefit the state electric system by drawing energy from generation resources at times of low demand and subsequently injecting that energy back into the system at times of high demand. The proposed facility is designed to achieve the goals of the state Conservation and Load Management Plan, including, but not limited to, shifting energy demand and servicing system load. It would be located at the Praxair Inc. (Praxair) industrial gas processing and supply facility.

⁴ <https://energystoragect.com/>

⁵ Energy Storage Solutions Program Manual, CT Green Bank, Eversource and UI, dated January 20, 2023, *available at* [https://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/a3ee00544b1b1fc285258940006564b7/\\$FILE/ESS%20Program%20Manual_Updated%201.20.2023_CLEAN.pdf](https://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/a3ee00544b1b1fc285258940006564b7/$FILE/ESS%20Program%20Manual_Updated%201.20.2023_CLEAN.pdf)

The BESF is designed to serve the gas processing facility as well as provide power to the grid when dispatched in accordance with the ESS Program. When the BESF is dispatched to serve the Praxair facility, it will shift the electrical load from more expensive 'peak' times to lower-priced 'off-peak' times. This load management will occur year-round and would represent approximately 9.2 percent (9000 MWh) of Praxair's total annual electrical energy consumption.

Endurant would participate in the ISO-NE England, Inc. (ISO-NE) Passive (On-Peak) Demand Response program. Endurant will also participate in any other markets that are available and consistent with the ESS Program.

Proposed Site

Pursuant to CGS §16-50x, the Council has exclusive jurisdiction over the BESF "site." Under RCSA §16-50j-2a(29), "site" means a contiguous parcel of property with specified boundaries, including, but not limited to, the leased area, right-of-way, access and easements on which a facility and associated equipment is located, shall be located or is proposed to be located. The Council does not have jurisdiction or authority over any portion of the host parcel beyond the boundaries of the facility "site." This includes portions of the host parcel retained by the property owner and portions of the host parcel the property owner may lease to third parties. Once a facility is decommissioned, the Council no longer has jurisdiction or authority over the "site."

Under a lease agreement with Praxair, Endurant proposes to construct the BESF on an approximately 1.84-acre site located on the approximately 7.0-acre host parcel owned by Praxair at 50 Ucar Street in Suffield. The host parcel is zoned Industrial (I) and is developed with several buildings, parking areas, and storage silos within the central portion of the parcel. The proposed BESF site would be located within an existing paved parking area at the far western portion of the host parcel, approximately 450 feet west of the nearest Praxair building. There is an existing 13.8-kV electric substation southeast of the site located on the southwest corner of the adjacent parking lot. The eastern part of the host parcel is undeveloped and consists of a mostly wooded area.

The surrounding area consists of industrial development to the south and northwest, undeveloped woodland to the north and northwest, Route 159 to the west and the Connecticut Southern Railroad to the southwest. The nearest residential property line and residential structure from the proposed facility site is approximately 750 feet and 900 feet to the north, respectively and both located at 1059 East Street South.

Proposed Facility and Associated Equipment

The proposed customer-side BESF would consist of 14 BYD Cube Pro battery storage units with a maximum export capacity of 18.0 MW AC. Each battery storage unit has a maximum energy storage capacity of approximately 2.57 MWh for a total maximum storage capacity of approximately 36.0 MWh.⁶ The BESF would be capable of providing a maximum of 28.8 MWh of electrical energy to reduce load over a 2-hour duration at full output or 4-hours at 50% output. Its recharge cycle would require a minimum of 2 hours based on 18.0 MW AC at the point of interconnection; however, recharging would occur during off-peak hours based on Praxair's energy demand and favorable energy pricing periods. Each battery storage unit includes 24 racks with 3 modules per rack, and 114 battery cells per module. Other equipment includes fourteen EPC 1500 kVA inverters, five 13.8-kV/690V transformers, one 13.8kV/480V auxiliary transformer and one switchgear.

Development of the facility site would disturb a 0.37-acre area. The BESF would be located within a gravel compound enclosed by an eight-foot tall chain-link fence. Each battery storage unit is self-contained and measures approximately 32 feet long by 5.6 feet wide by 8.7 feet high. Each unit includes, but is not limited

⁶ While the facility would be theoretically capable of storing up to 36.0 MWh of energy, the maximum discharge to the grid is proposed to be limited to 28.8 MWh due to electrical losses, to prevent a full depletion of the batteries and to address degradation losses over the life of the BESF.

to, batteries, thermal management system, battery management system, and electrical equipment. The thermal management system includes a liquid coolant system for battery cells and an air-cooling system for electrical components.

The facility would be accessed from an existing paved driveway off Ucar Street that serves the Praxair facility. No new access would be constructed.

The facility would interconnect to the existing 13.8-kV electric substation via an underground line extending 140 feet southeast from the BESF to the substation fence. No new utility poles are proposed.

Endurant filed an interconnection application with Eversource on March 15, 2023. An ISO-NE review of the Project is required at both transmission and distribution levels as part of the utility interconnection process. The study is anticipated to be completed by February 2025.

Construction of the BESF is expected to begin in the second quarter of 2025 and would take approximately 6 months. Construction hours would be from 8:00 a.m. to 5:00 p.m. Monday through Friday and from 7:00 a.m. to 6:00 p.m. during the delivery/installation of specialized equipment. Commercial operation is expected prior to the 2025 ESS program season, scheduled to start June 1, 2025.

Once operational, the facility would require planned maintenance visits twice per year and unplanned maintenance visits on as-needed basis. The servicing of the refrigerant system will be contracted to a registered HVAC servicing company. Refrigerant that is changed out would be recycled. Any waste or fluid leakage would be managed in accordance with DEEP regulations.

The batteries would degrade annually from 6 percent in the first year to, 3 percent in the second year and 1 percent by year 7, reducing the storage capacity by year 10 to approximately 79.1 percent. At the end of the approximate 10-year service life, Endurant would assess the facility components and consult with Praxair to determine if the life of the facility could be extended. If the life of the facility could not be extended, all BESF components would be dismantled and removed.

The estimated cost of the facility is \$18.8 million.

Environmental Effects and Mitigation Measures

Air and Water Quality

The facility would not require a DEEP Air Permit. No hazardous air emissions would be produced during the operation of the facility.

Operation of the facility would not consume water. There are no known wells on or in the vicinity of the site.

The site is not located within a Federal Emergency Management Agency-designated flood zone nor within a DEEP-designated Aquifer Protection Area.

The site is not located within the Connecticut River Conservation Zone.

No blasting is expected to be required for the Project. The geotechnical report indicates that the site is largely sand and not expected to contain shallow bedrock.

The nearest wetlands are approximately 200 feet southeast and 200 feet west of the proposed site, on abutting parcels. Facility construction would have no effect on these wetlands. No vernal pools were identified on the site.

The proposed transformers are dry type transformers that are air cooled.

The BESF would be constructed in an existing paved parking area. Approximately 1,200 cubic yards of cut and fill are required to construct the site. Excavated soils would be tested and characterized before disposal off-site at an appropriate facility.

Pursuant to C.G.S. §22a-430b, a DEEP Stormwater Permit is required for any disturbance greater than 1 acre. The construction limit of disturbance for the proposed facility is approximately 0.37 acre, therefore the Project would not require a DEEP Stormwater Permit.

Stormwater would be directed to an existing storm drain east of the site. The facility compound would be surfaced with gravel.

Forests and Parks

Development of the site would include a small amount of tree clearing for the connection to the substation via an adjacent wooded area.

The Windsor Locks Canal State Park Trail located approximately 0.6 miles north of the site. The BESF would have no impact on the park and would not be visible from the park.

Scenic, Historic and Recreational Values

There are two properties listed on the National Register of Historic Places (NRHP) located within one mile of the proposed site: the Enfield canal located 0.1 miles southeast, and Bridge #455 located 0.67 miles north. The BESF would not be visible from these properties.

There are no recreation areas in proximity to the site.

There are no scenic roads or designated scenic areas in the vicinity of the site.

The site is within a developed commercial and industrial area. Views of the proposed facility would be restricted to the immediately surrounding area. The Project would be visible from East Street South to the west and Ucar Street to the north. Endurant had initially planned to use palisade fencing, which is fencing with narrowly-spaced vertical slats, to secure the BESF. The Town expressed a preference for see through fencing with a maximum height of four feet, in accordance with its regulations. Endurant would utilize chain link fencing to comply with the Town's request. However, the fence height is proposed to be eight feet for National Electrical Code (NEC) compliance and security. No landscaping is proposed due to the Project's location on an industrial property.

Fish, Aquaculture and Wildlife

The Project site is not located within a DEEP Natural Diversity Database (NDDB) buffer area. Endurant would install a perimeter fence around the facility that would be secured to the ground to deter small wildlife from entering the proposed facility compound.

The northern long-eared bat (NLEB), a federally-listed and state-listed Endangered Species occurs in Connecticut. However, there are no known occurrences in Suffield.⁷ Additionally, forested areas, used by NLEB as habitat, would not be impacted by the Project.

Agriculture

⁷ <https://portal.ct.gov/-/media/DEEP/NDDB/NoLongEaredBat-Map.pdf>

The site does not contain prime farmland soils. Soil at the site is classified as urban land soil.

Public Safety

Noise

The primary sources of equipment noise for the proposed BESF are the 14 battery storage units, 14 inverters and 5 active transformers.

A noise analysis determined that noise from the operation of the facility would be no greater than 37 dBA at residential property boundaries and 58 dBA at commercial property boundaries. Thus, the operation of the proposed BESF would meet DEEP Noise Control Regulations.

Construction noise is exempt per DEEP Noise Control Regulations.

Electric and Magnetic Fields

During operation of the BESF, electric and magnetic fields (EMF) would be produced by the power inverters and the underground line that extends to the nearby substation. EMF levels from these sources would dissipate quickly with distance and therefore would be similar to pre-existing EMF background levels at the property lines.

Security

Between November 13 and December 6, 2023, Endurant exchanged correspondence and held virtual meetings with the Connecticut Southern Railroad and the Town. The Town raised concerns regarding the fence height.

The facility would be monitored on a 24/7 basis by a remote operations control center to detect abnormalities in operation. It includes extensive safety control systems, including both automatic and manual shutdown mechanisms that comply with pertinent engineering standards. If operational abnormalities occur, the BESF can be remotely shut down and emergency responders can be notified if necessary.

The proposed site would comply with the Council's White Paper on the Security of Siting Energy Facilities. Security measures include, but are not limited to, a locked security fence and recording security cameras.

The BESF would be enclosed within an 8-foot tall chain link fence that complies with the requirements of the National Electrical Code (NEC).⁸

The fence would be about 90 feet from Route 159 to the west. Bollards would be installed where necessary to protect the BESF.

The site will have a locked gate and limited access for authorized personnel only. No lighting is proposed.

Fire Protection

⁸ Section 110.31 of the National Electrical Code (NEC), 2020 Edition notes that for over 1,000 Volts, "...a wall, screen, or fence shall be used...A fence shall not be less than 7 feet in height or a combination of 6 feet or more of fence fabric and 1 foot or more...utilizing barbed wire or equivalent."

Endurant developed an Emergency Response Plan (ERP) for the BESF that provides guidance on procedures to address a fire or other abnormal emergency conditions at the facility.

The BESF would be designed in accordance with the NFPA 855 and the 2022 Connecticut State Fire Code Chapter 52- Energy Storage Systems. The BESF would be remotely monitored by a Remote System Operator also used by Praxair for Demand Response Services.

Each battery storage unit would contain smoke, temperature and combustible gas detectors, and a fire alarm (audible and visual), monitored by the battery management system (BMS). The auxiliary power would power the fire alarm and the BMS. In the event of fire detection via these sensors, the fire alarm panel would alert the BESF system operator which would then be relayed to the local fire department. The battery storage unit can be shut down manually or remotely. A system shutdown would result in electrical isolation of the battery strings and cessation of battery charging or discharging.

In accordance with NFPA 855, the battery storage unit is equipped with an exhaust fan that vents flammable/explosive gases upon detection by the gas detection system. Smoke from a battery fire can be a direct inhalation risk, however, the vent system would dissipate smoke levels above and around the facility to lower smoke risk levels. In the event the exhaust fans fail a pressure balancer would be activated to mitigate against explosion. Emergency response personnel should remain outside of the BESF compound, away from smoke hazards. The fire department (Incident Commander) would determine if evacuation of nearby occupied structures/areas is necessary.

If a battery storage unit is on fire, it should be allowed to self-extinguish. Battery cells could burn for several hours. Destructive testing of the battery storage unit in accordance with Underwriters Laboratories (UL) 9540A methodology indicates a battery cell fire is not likely to spread to adjacent cells. Water for fire suppression should be directed to adjacent areas/structures to prevent the spread of a fire. Although the battery storage unit has an optional fire suppression system, Endurant would not include such a system into the design due to research indicating fire suppression agents are not effective for battery fires. A municipal fire hydrant is located 285 feet north of the BESF, along Route 159.

Fire response and command would be the responsibility of the fire department (Incident Commander). Endurant would have personnel available remotely on a 24-hour basis to assist with fire response. In addition, Endurant would have a designated BESF contact/liaison available that is trained in emergency response. Endurant would dispatch personnel to the BESF as soon as possible. Signs would be posted at the BESF that comply with NFPA 855 as well as other detail that may be requested by the fire department.

The ERP will be updated to include additional site-specific input provided during further consultation with emergency responders. Endurant would provide training to Praxair staff and local emergency responders prior to operation.

Aviation Safety

Della Heliport in Enfield is located 1.26 miles to the south of the facility site. The nearest airport is Bradley International Airport (BDL) located approximately 2.0 miles west of the facility site. Based on the Federal Aviation Administration's (FAA) Obstruction Evaluation Tool, the use of a temporary crane during construction of the Project would not be an aviation hazard and would not require notification to the FAA.

Conclusion

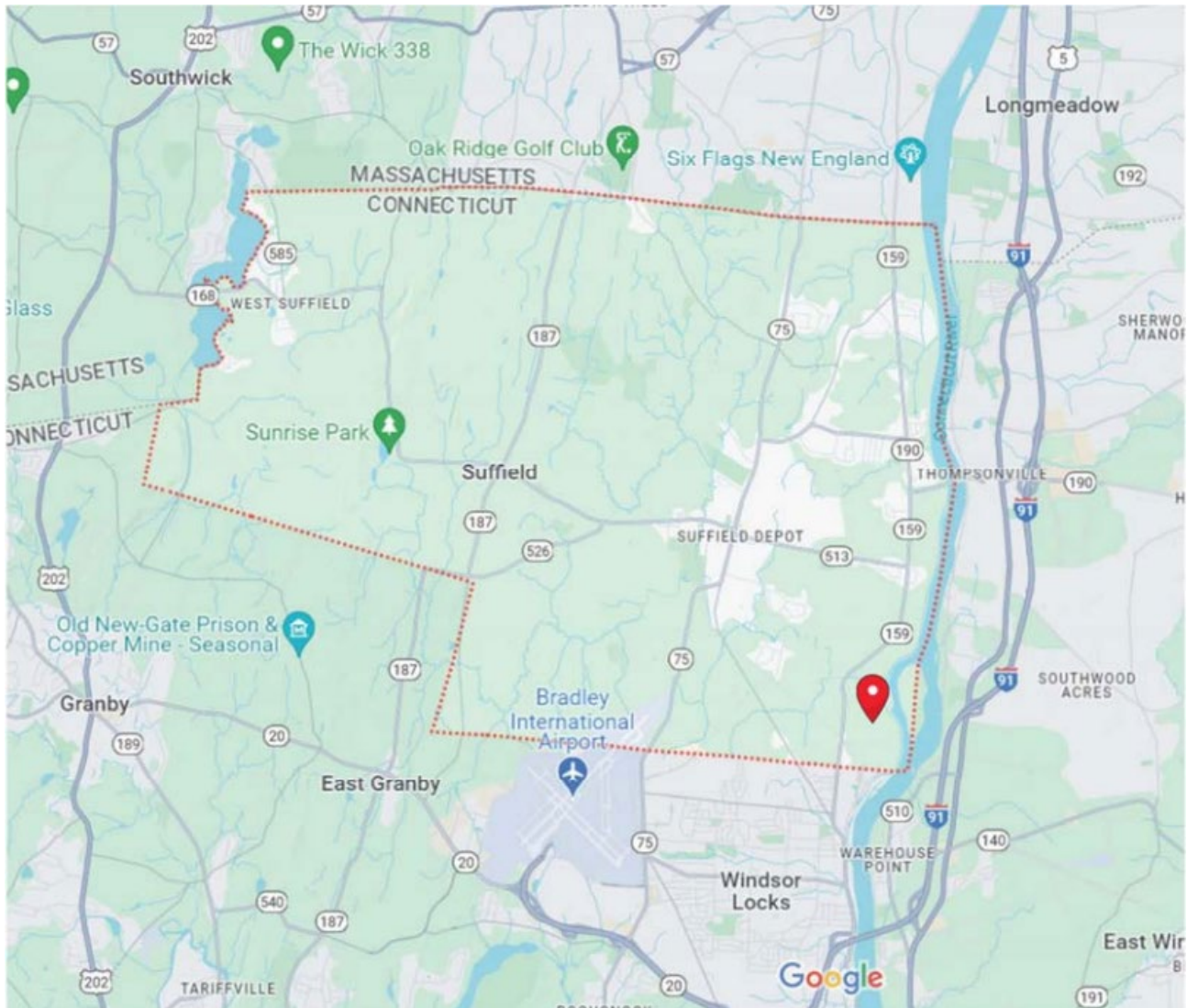
The BESF is a customer-side distributed energy resource with an output capacity of not more than sixty-five megawatts, meets air and water quality standards of the DEEP, and would not have a substantial adverse environmental effect. The proposed Project would further the State's energy policy by integrating storage to

meet peak demand and support the reliable integration of variable renewable resources. Furthermore, the Project was selected under the state's ESS Program

If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff;
2. Provide a site construction plan consistent with applicable *Connecticut Guidelines for Soil Erosion and Sedimentation Control* prior to the commencement of construction;
3. Provide a construction Fuel Storage and Spill Prevention Control Plan prior to the commencement of construction;
4. Provide a final site plan including, but not limited to, final facility layout, access, electrical interconnection, equipment pads, and fence design prior to the commencement of construction;
5. Provide an Operations and Maintenance plan for the proposed facility, prior to operation;
6. Provide a copy of the final Emergency Response Plan to local emergency responders prior to facility operation, and provide emergency response training;
7. Provide a signed certification by the Fire Chief that training has been completed and the ERP is approved prior to commencement of operation; and
8. Submit a copy of the building permit prior to commencement of operation.

Site Location



Existing Conditions



Proposed Site Layout

