DRAFT

Petition No. 1587
Endurant Energy
350 Knotter Drive, Cheshire

Staff Report
December 15, 2023

Introduction

On August 11, 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 a 4.9-megawatt (MW) alternating current (AC) battery energy storage facility (BESF) [1] located at 350 Knotter Drive, Cheshire, Connecticut, and associated electrical interconnection (Petition or Project).

Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40 on or about August 11, 2023, Endurant notified the abutting property owners and Town of Cheshire (Town) officials, state officials and agencies of the proposed Project. No comments were received.

On August 15, 2023, the Council sent correspondence to the Town stating that the Council has received the Petition and invited the Town to contact the Council with any questions or comments by September 10, 2023. No comments were received.

Also, on August 15, 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 September 10, 2023. No comments were received.

The Council issued interrogatories to Endurant on September 26 and November 14, 2023. Endurant submitted responses to the Council's interrogatories on October 20 and November 29, 2023 respectively.

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 public meeting held on September 28, 2023, 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 February 7, 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.[2]

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."

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[1] CGS §16-50i(a)(3) - the Council has jurisdiction over energy storage facilities using any fuel throughout the state.
[2] 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) program[3], 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 behind a customer meter.[4]

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 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 selected and approved by PURA for 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 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 Accel International Holdings, LLC (Accel) manufacturing facility.

[3] https://energystoragect.com/
[4] 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

The BESF is designed to serve Accel's building as well as provide power to the grid when dispatched in accordance with the ESS Program. When the BESF is dispatched to serve Accel's building, 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 23 percent of Accel's total annual electrical energy consumption.

Endurant would participate in the ISO-NE England, Inc. (ISO-NE) Forward Capacity Auction through the 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 Accel, Endurant proposes to construct the BESF on an approximately 0.13-acre site on an approximately 75-acre parcel owned by Spirit Master Funding IX LLC at 350 Knotter Drive in Cheshire. The host parcel is zoned Light Industrial (I-2) and is developed with an approximate 165,000 square-foot manufacturing facility. The proposed BESF site is located in lawn area at the southern end of the host parcel, south of the manufacturing building.

The surrounding area consists of mix of industrial/commercial development and undeveloped land. The nearest residential property line from the proposed facility is approximately 1,900 feet to the west at 1506 Marion Road.

Proposed Facility and Associated Equipment

The proposed customer-side BESF would consist of 4 Canadian Solar Inc. Energy Storage SolBank battery storage units with a maximum export capacity of 4.9 MW AC. Each battery storage unit has a maximum storage capacity of approximately 2.8 MWh, for a total maximum storage capacity of approximately 11.2 MWh.[5] The BESF would be capable of providing a maximum of 9.8 MWh of electrical energy to the grid based on a 4-hour duration. Its recharge cycle would require a minimum of 2 hours based on 4.9 MW at the point of interconnection; however, recharging would occur during off-peak hours based on Accel's energy demand and favorable energy pricing periods. Each battery storage unit includes 8 racks with 6 modules per rack, and 69 battery cells per module. Other equipment includes four EPC Power inverters, two 13.8-69-kV transformers and two switchgear.

The BESF would disturb an approximate 0.13-acre area and be located within an approximate 5,200 square foot gravel compound enclosed by an eight-foot tall chain-link fence. Each battery storage unit is self-contained and measures approximately 33 feet long by 6 feet wide by 20 feet high. Each unit includes, but is not limited 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.

[5] While the facility would be theoretically capable of storing up to 11.2 MWh of energy, the maximum discharge to the grid is proposed to be limited to 9.8 MWh due to electrical losses, to prevent a full depletion of the batteries and to address degradation losses over the life of the BESF.

The facility would be accessed from an existing paved driveway off Knotter Drive that serves the Accel manufacturing facility. No new access would be constructed.

The facility would interconnect to existing 13.8-kV electric distribution lines on Knotter Drive via an underground line extending from the BESF to the manufacturing building's electrical room. No new utility poles are proposed.

ISO-NE has completed its review of the Project as part of the utility interconnection process. Eversource's distribution impact study is under review. The interconnection agreement with Eversource has not been finalized to date.

Construction of the BESF is expected to begin by the second quarter 2024 and would take approximately six 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 semi-annual maintenance visits. The servicing of the refrigerant system will be contracted to a registered HVAC servicing company. Refrigerant that is changed out would be recycled.

The batteries would degrade annually from 1.4 to 2.5 percent per year, reducing the storage capacity by year 10 to approximately 77.2 percent. At the end of the approximate 10-year service life, Endurant would assess the facility components and consult with Accel 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 $7.0 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.

The nearest drinking water well is located approximately 4,200 feet northwest of the project site.

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

The nearest wetland is approximately 350 feet south of the proposed site, on an abutting parcel. Facility construction would have no effect on this wetland. No vernal pools were identified on the site.

The proposed transformers are dry type transformers that are air cooled. No insulating oil would be used.

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 0.13-acre, therefore the Project would not require a DEEP Stormwater Permit.

The Project would be constructed in a lawn area adjacent to a parking lot. Approximately 400 cubic yards of cut are required to construct the site. Excavated soils would be characterized before disposal off-site at an appropriate facility.

The facility compound would be surfaced with gravel, promoting stormwater infiltration. No other stormwater management features are proposed.

Forests and Parks

Development of the site would not require tree clearing. There are no state parks that abut the host parcel.

An undeveloped Town open space parcel is located approximately 800 feet southeast of the site. The proposed facility would have no impact on the open space area.

Scenic, Historic and Recreational Values

There are no properties on the National Register of Historic Places within a half-mile of the site. On August 30, 2023 the State Historic Preservation Office submitted correspondence to Endurant stating the Project would have no effect on historic resources.

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.

Privacy slats would be installed on the perimeter fence to provide visual screening of the equipment from Accel parking areas. No landscaping is proposed due to the Project's location on an industrial property, remote from off-site visual receptors.

Fish, Aquaculture and Wildlife

The Project site is not located within a DEEP Natural Diversity Database (NDDB) buffer area.

The northern long-eared bat (NLEB), a federally-listed and state-listed Endangered Species occurs in Connecticut. However, there are no known occurrences in Cheshire.[6] Additionally, forested areas, used by NLEB as habitat, would not be impacted by the Project.

Agriculture

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

Public Safety

Noise

The primary sources of equipment noise for the proposed BESF are the four battery storage units, four inverters and two transformers.

A noise analysis determined noise from operation of the facility would be no greater than 17 dBA at the nearest residential property boundary (1506 Marion Road) and 43 dBA at the nearest industrial property boundary (475 Knotter Drive). Thus, the operation of the proposed BESF would meet DEEP Noise Control Regulations.

Construction noise is exempt per DEEP Noise Control Regulations.

[6] https://portal.ct.gov/-/media/DEEP/NDDB/NoLongEaredBat-Map.pdf

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 extend to the manufacturing building electrical room. 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

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 security cameras.

The BESF would be enclosed by an 8-foot tall chain-link fence in compliance with the National Electrical Code.[7]

The fence would be approximately 200 feet west of the abutting property at 475 Knotter Drive, a developed industrial property.

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

Fire Protection

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.

Each battery storage unit would contain heat, smoke and combustible gas detectors, and a fire alarm (audible and visual), monitored by the battery management system. 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. 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.

[7] 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 a 1 foot or more…utilizing barbed wire or equivalent."

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. A fire hydrant is 1,800 feet from the BESF, along Knotter Drive. The fire department has tanker trucks which can bring water to the site in the event 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 with battery fires.

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, Accel 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 local emergency responders prior to construction.

Aviation Safety

Burke Heliport in Prospect is located 3.0 miles to the south 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.

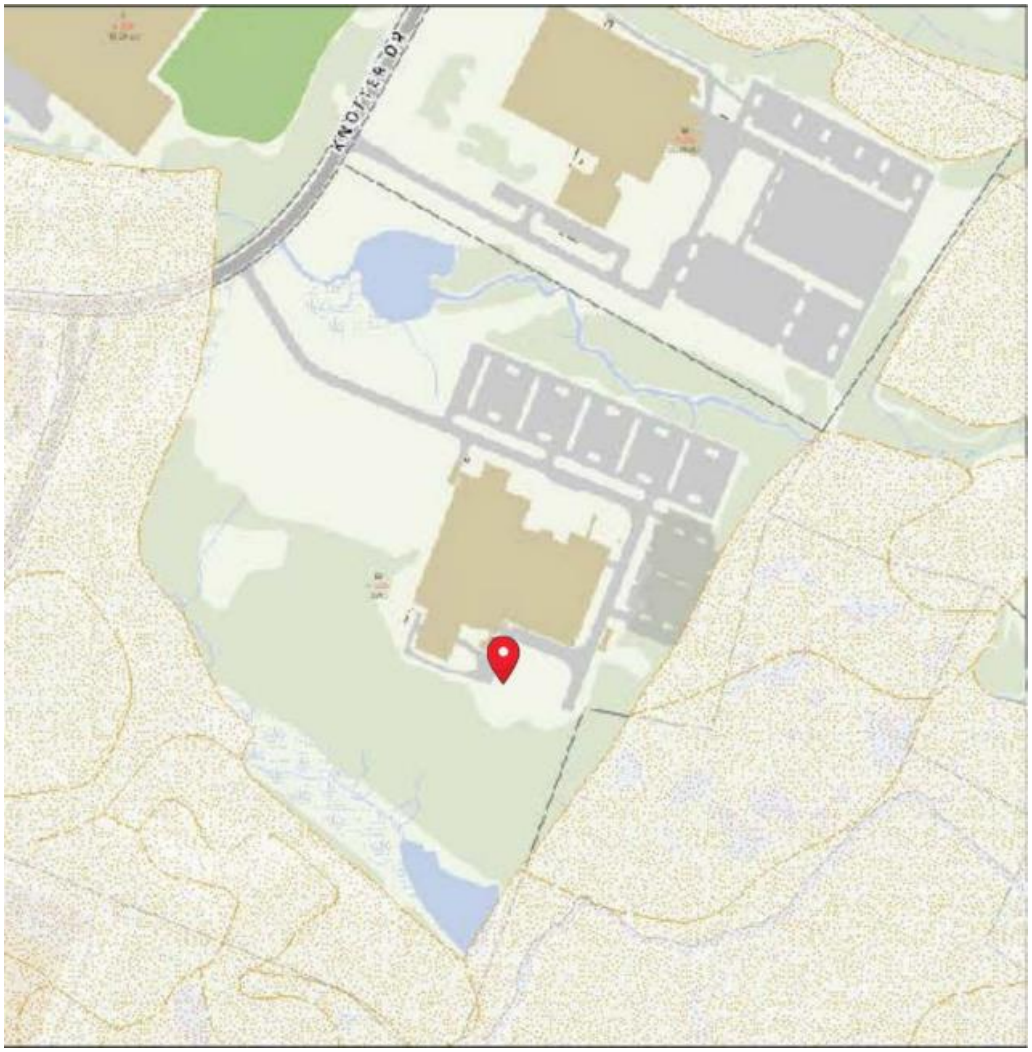
Conclusion

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 the *2002 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 a copy of the final Emergency Response Plan to local emergency responders prior to facility operation, and provide emergency response training;
6. Provide a signed certification by the Fire Chief that training has been completed and the ERP is approved prior to commencement of operation; and
7. Submit a copy of the building permit prior to commencement of operation.

Site Location



Host Parcel - Existing Conditions

Proposed Site Layout