

DRAFT

Petition No. 1658
VFS, LLC
44 Weaver Road, Storrs, Connecticut

Staff Report
July 18, 2025

Notice

On March 18, 2025, the Connecticut Siting Council (Council) received a petition from VFS, LLC (VFS) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k for the construction, operation and maintenance of a 850-kilowatt (kW) alternating current (AC) battery energy storage facility (BESF) ¹ and associated equipment located at the University of Connecticut (UConn) Depot Campus, 44 Weaver Road, Storrs (Mansfield), Connecticut, and associated electrical interconnection (Petition or Project).

Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40 on or about October 5, 2024, VFS notified abutting property owners, Town of Mansfield (Town) officials, state officials and agencies of the proposed Project. No comments were received.

On March 19, 2025, 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 April 17, 2025. No comments were received.

On March 20, 2025, the Council sent correspondence to VFS noting a deficiency in the completeness of the Petition. Specifically, proof of service to the Office of Consumer Counsel (OCC), the Council on Environmental Quality (CEQ) and the Department of Agriculture (DOAG) was not provided to the Council. On March 20, 2025, VFS submitted proof of service to OCC, CEQ and DOAG and the Council rendered the Petition complete.

The Council issued interrogatories to VFS on May 1 and June 6, 2025. VFS submitted responses to the Council's interrogatories on May 21 and June 11, 2025.

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 May 1, 2025, 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 September 14, 2025, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

Jurisdiction

Under CGS §16-50x, the Council has exclusive jurisdiction over energy storage facilities. CGS §16-50i(a)(3)(C) specifically exempts facilities with a capacity of one megawatt of electricity or less utilizing **renewable energy sources**. Under CGS §16-1, renewable energy sources include, but are not limited to, wind, solar, fuel cells, geothermal or biogas. The definition of renewable energy sources does not include BESF.

Pursuant to CGS §16-50k, the Council shall in the exercise of its jurisdiction over the siting of energy storage facilities, approve by declaratory ruling any distributed resources facility with a capacity of not more than 65 MW unless the Council finds a substantial adverse environmental effect.

¹ CGS §16-50i(a)(3)(2025) (the Council has jurisdiction over energy storage facilities using any fuel in the state.)

The capacity of a BESF is determined by the amount of stored energy that could be injected into the grid as electricity, or alternatively, when the BESF acts like a generating facility during discharge. CGS §16-50k(a)(B) directs the Council to approve by declaratory ruling, the construction of any customer-side distributed resources facility or grid-side distributed resources facility with a capacity of not more than 65 MW. This includes BESF with output capacities of 1 MW or less. Therefore, pursuant to CGS §16-50i(a)(3)(C) and §16-50k(a)(B), BESF of any output capacity are under the Council's jurisdiction, including the BESF proposed in this Petition.²

Community Outreach

VFS notified the Town of the proposed Project on October 5, 2024. VFS has not received any comments since the Petition was submitted to the Council.

State Agency Comments

On March 19, 2025, pursuant to RCSA §16-50j-40, the Council sent correspondence requesting comments on the proposed Project from the following state agencies by April 17, 2025: Department of Energy and Environmental Protection (DEEP); DOAG; Department of Public Health (DPH); CEQ; Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Emergency Services and Public Protection (DESPP); Department of Labor (DOL); Department of Administrative Services (DAS); Department of Transportation (DOT); the Connecticut Airport Authority (CAA); State Historic Preservation Office (SHPO); and OCC.

On March 26, 2025, CEQ submitted comments related to wetlands, stormwater, erosion and sedimentation control, public water supplies, spill prevention, wildlife and cultural resources.³ These concerns, among others, are addressed in the Public Health and Safety and Environmental Effects and Mitigation Measures sections of this document, pursuant to CGS §16-50p.

VFS, DEEP and UCONN representatives met at the site on April 1, 2025. DEEP confirmed no DEEP permits are required to construct the facility. A concrete structure identified during the field visit as a potential wellhead near the BESF site was determined to be a manhole for telecommunications fiber.

On April 14, 2025, the Council received comments from DEEP related to wildlife, safety features, stormwater management, visibility and noise⁴. These concerns, among others, are addressed in the Public Health and Safety and Environmental Effects and Mitigation Measures sections of this document, pursuant to CGS §16-50p.

No other state agencies provided written comments on the Project.

² See Council Declaratory Ruling for Petition No. 1646 available at [pe1646_dcltr_022125_a.pdf](#)

³ https://portal.ct.gov/-/media/csc/3_petitions-medialibrary/petitions_medialibrary/mediapetitionnos1601-1700/pe1658/sac_official_municipal_comments/pe1658_ceq-commentsrecd_032625_a.pdf?rev=c04a1e0021cf4831830cb8b8a3ec1794&hash=571B96DF7B41CF728FF111DD1FD4EEB1

⁴ https://portal.ct.gov/-/media/csc/3_petitions-medialibrary/petitions_medialibrary/mediapetitionnos1601-1700/pe1653/decision/pe1653_dcltr_053025_a.pdf?rev=333174a5b921427b8ac4b992060f59a0&hash=3905D0AD377EAD5F41E240A396103E09

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 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.⁵

On July 28, 2021, PURA developed a nine-year electric storage program, the Energy Storage Solutions (ESS) program⁶, 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.⁷

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. VFS intends to enter the BESF into the ESS Program.

The proposed BESF is a stand-alone BTM system that would be connected to the UCONN Depot Campus distribution system consistent with objectives of UCONN’s Master Green Energy Plan. It would be part of a larger BTM generator system for UCONN that also includes the 460-kW VFS fuel cell approved by the Council in 2022.⁸

Public Benefit

Pursuant to CGS §16-50p(c), a public benefit exists when a facility is necessary for the reliability of the electric power supply of the state or for the development of a competitive market for electricity.

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.”

⁵ The interim goal of the program are 650 MW by year-end 2027.

⁶ <https://energystoragect.com/>

⁷ 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)

⁸ The Council issued a Declaratory Ruling to UTC Power Corporation for the installation of a 400-kW fuel cell at UCONN’s Center for Clean Energy Engineering at the Depot Campus on November 3, 2011 (Petition 1008). On April 19, 2022, the Council approved an Exempt Modification request filed by VFS to replace the 400-kW fuel cell with a new 460-kW fuel cell. On August 12, 2022, VFS provided notice that the replacement fuel cell was operational.

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 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, as well as improve emergency management capabilities. 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.

The BESF is designed to provide reliable, continuous power to the UCONN Depot Campus distribution system during times of peak demand or during grid disruptions. The proposed facility is not designed to supply power to the local distribution grid if all or a portion of stored power is not used at the UCONN Depot Campus. The BESF would charge and discharge according to predefined exercise cycles and operational requirements, while an associated recloser would manage the BESF’s response to grid conditions.

The UCONN Depot Campus has a 13.8-kV electric distribution system with an estimated average total load of 660 kW, occasionally peaking at 757 kW. The system distributes power across approximately 25-30 buildings throughout the campus.

The facility will be installed, owned, operated, and maintained by VFS.

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.”

VFS proposes to construct the BESF on an approximate 1,035 square foot site within the approximate 226-acre host parcel owned by UCONN. The host parcel is zoned Institutional and Rural Agricultural Residence, and developed with 25-30 campus buildings, parking areas, lawn areas and recreational areas.

The proposed BESF would be located within the southeast portion of the host parcel on the east side of Weaver Road and within the Institutional zone. The UCONN Center for Clean Energy is approximately 125 feet west of the BESF, across Weaver Road. The BESF would be 50-75 feet from Weaver Road depending on final location design by UCONN Facilities staff.

The BESF would be located approximately 95 feet east of the existing fuel cell, across Weaver Road. A 28-panel solar array, used for educational purposes, is located approximately 100 feet southeast of the proposed BESF.

The surrounding area consists of campus buildings, lawn areas, and a recreational field.

There are no residential buildings located on the Depot Campus. The nearest off-campus residential property line from the nearest corner of a BESF battery unit is approximately 1,280 feet to the north at 196 Bone Mill Road.

Proposed Facility and Associated Equipment

The proposed BESF would consist of one Stark Tech Inc. microgrid skid (model 0034-modified) which utilizes lithium iron phosphate battery cells manufactured by Hithium (model 04HC-0344-DC). The BESF would have five 172-kW battery storage units, one 860-kVA combiner cabinet, one 860-kVA inverter, a 1,000-kVA transformer, and other ancillary equipment.

Each battery storage unit has a maximum storage capacity of approximately 344 kilowatt hours (kWh), for a total maximum storage capacity of approximately 1,720 kWh. The BESF would be capable of providing a maximum of 1,720 kWh of electrical energy based on a 2-hour duration at full discharge with no reserved battery storage capacity.

During charging, the BESF would be treated as a campus load, maintaining a State of Charge of 85-100% to ensure availability for potential outages. Its recharge cycle is based on a microgrid controller which would initiate charging when excess energy is available from the existing fuel cell.

Per manufacturer specifications, the BESF would experience a full discharge and recharge annually. The battery manufacturer recommends normal charge and discharge intervals to be monthly and recommends a long-term storage level of 20% to 50% for periods greater than three months.

Lithium iron phosphate batteries utilize an iron-based chemistry that does not contain toxic heavy metals, such as cobalt or nickel, which can be found in other battery chemistries. Lithium iron phosphate batteries are less prone to thermal runaway and have a higher tolerance for extreme temperatures and a lower self-discharge rate.

The BESF can operate normally between temperatures of -13° F to 113° F. No loss of charge is expected at temperatures below freezing (up to -40° F).

Each battery storage unit is self-contained and measures approximately 4.2 feet long by 4.2 feet wide by 7.7 feet high. Each unit includes, but is not limited to, batteries, thermal management system, battery management system, and electrical equipment. Each battery storage unit includes 8 racks with 1 module per rack, and 48 battery cells per module. The thermal management system includes a liquid coolant system for battery cells.

The overall dimension of the BESF microgrid skid is 10.9 feet wide, 23.7 feet long, and 9.8 feet high. It is enclosed with removable metal panels and factory-assembled and tested prior to shipment to the site. Associated electrical equipment and the microgrid controller would be ground-mounted directly adjacent to the skid.

The BESF would be located in a 56.3-foot by 18.4-foot compound, surfaced with concrete, and enclosed by an eight-foot tall chain-link fence. It would be accessed by a 50 to 75-foot long paved access drive extending from Weaver Road.

The facility would interconnect to the UCONN's existing utility interconnection via an underground line extending approximately 450 feet eastward from the BESF to an electric manhole adjacent to the Kennedy Building. No utility poles are proposed.

Eversource's electric distribution system impact study is under review. The interconnection agreement with Eversource has not been finalized.

The estimated cost of the facility is \$2.75 million.

Public Health and Safety

Noise

The primary sources of equipment noise for the proposed BESF are the battery storage units, inverters and transformers. Noise would also be produced during full charge and discharge. When the BESF is neither charging nor discharging, the BESF would continue to generate noise through operation of the temperature management system.

VFS conducted a noise analysis of the BESF using real time noise measurements collected during operation of an existing similar battery storage facility Springfield MA. The noise analysis determined noise from operation of the BESF would be no greater than 30 dBA at the nearest off-campus residential property boundaries (approximately 1,280 feet to the northeast). Thus, the operation of the proposed BESF would meet state standards. VFS would conduct post-construction noise measurements to confirm the BESF complies with state standards.

Construction noise and noise created as a result of, or relating to, an emergency, such as an emergency backup generator, is exempt from the DEEP Noise Control Regulations.

Electric and Magnetic Fields

During operation of the BESF, electric and magnetic fields (EMF) would be produced by the underground line that connects to the campus electric distribution system. EMF levels from the underground line would dissipate quickly with distance and therefore, EMF in public spaces above ground would be similar to pre-existing EMF background levels.

Security

The facility would be monitored on a 24/7 basis by a remote-operations control center that can detect operational abnormalities. 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. Kinsley Power Systems of East Granby, Connecticut would be responsible for 24/7 monitoring under a service contract with VFS.

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.

The BESF would be enclosed by an 8-foot tall perimeter fence in compliance with the National Electrical Code.⁹

When necessary, night lighting would be operated by a manual timer switch.

The National Fire Protection Association (NFPA) 855 - Standard for the Installation of Stationary Energy Storage Systems requires a minimum distance of 10 feet between the battery storage unit and public ways, buildings, and lot lines. The manufacturer's minimum recommended distance from the BESF to a publicly accessible area is 10 feet. The proposed BESF would meet these requirements.

Fire Protection

⁹ 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."

The BESF would be designed in accordance with the National Fire Protection Association 855 – Standard for the Installation of Stationary Energy Storage Systems (NFPA 855) and the 2022 Connecticut State Fire Code Chapter 52- Energy Storage Systems. Section 4.1.3 of NFPA 855 relates to *Emergency Planning and Training*.

Each battery storage unit would be monitored by the battery management system. In the event of a fault, the system would relay notification to the service provider. Notifications to local fire entities would follow per procedures within an Emergency Response Plan to be developed for the Project.

In accordance with NFPA 855, the battery storage unit is equipped with a liquid cooling, aerosol-based fire suppression system and an exhaust fan that vents flammable/explosive gases. 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 reduce smoke risk levels.

Per the International Association of Fire Chiefs (IAFC) 2023 guidance document, a recommended emergency evacuation zone should be established for all persons within 150 feet of the BESF. This zone may be extended to a 300-foot isolation zone if local emergency responders determine smoke is drifting beyond the emergency evacuation zone. The fire department (Incident Commander) would make the final determination regarding hazard mitigation.

Current IAFC guidance suggests that fire events should be allowed to burn out in a controlled, contained manner while nearby resources are monitored and protected using water as a proactive cooling agent exterior to the battery containers.¹⁰ Fire hydrants are located throughout the Depot Campus.

VFS and Kinsley are developing an Emergency Response Plan in collaboration with the UCONN Fire Marshal and UCONN facilities management. The UCONN Fire Marshal Office is located on the Depot Campus. Emergency contact signs would be posted at the BESF, in compliance with NFPA 855.

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.

Facility operation would not use water.

The site is not located within a Federal Emergency Management Agency designated flood zone nor within a DEEP-designated Aquifer Protection Area. Water service to the campus is provided by two off-campus well fields, the Fenton River Wellfield and the Willimantic River Wellfield¹¹. Both are owned by UConn and maintained by New England Water Utilities which is a subsidiary of the Connecticut Water Company.

There are no wetlands or watercourses within 100 feet of the proposed site. A drainage ditch is located approximately 100 feet to the east. VFS would develop an erosion and sediment control plan to prevent construction related off-site impacts.

¹⁰ <https://www.safetystanddown.org/wp-content/uploads/2023/06/Training-Sheet-Day-2-Firefighting-Operations.pdf>

¹¹ <https://ct-deep-gis-open-data-website-ctdeep.hub.arcgis.com/datasets/CTDEEP::aquifer-protection-area/explore?location=41.817014%2C-72.275948%2C14.28>

Pursuant to CGS §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 0.02-acre, therefore the Project would not require a DEEP Stormwater Permit.

The concrete surface within the compound would direct stormwater into a stone lined swale, dissipating into the surrounding lawn area.

The BESF coolant is composed of 50/50 ethylene glycol-water. If there was a leak, it would be contained within the battery cabinet housing. Coolant levels would be monitored by pressure monitors.

Forests and Parks

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

Scenic, Historic and Recreational Values

The Project site is located on the UCONN Depot Campus. It is adjacent to but outside of the Mansfield Training School and Hospital Historic District, listed on the National Register of Historic Places¹². The existing fuel cell is within the historic district.

No off-campus scenic or recreational resources would be impacted by the Project.

Fish, Aquaculture and Wildlife

The site is located within a DEEP Natural Diversity Database (NDDB) buffer area; however, DEEP's April 14, 2025 comments indicated a NDDB review is not required.

The perimeter fence would be secured to the ground to deter small wildlife from entering the proposed facility compound.

Agriculture

No prime farmland soils would be impacted by the proposed Project.

Facility Construction

Final site plans are being developed with input from UCONN Facilities staff. A geotechnical analysis would be performed to determine cut and fill required for site construction. Development of the BESF site would disturb an approximate 0.02-acre area.

Construction of the BESF is expected to begin in 2025 and would take approximately two months, followed by one week of facility startup and testing. Construction hours would be from 8:00 a.m. to 5:00 p.m. Monday through Friday.

Operation and Maintenance

The facility has an operational life of 20 years. The transformer, switchgear and inverter have an expected life span of at least 20 years. The batteries would degrade annually at approximately 1.2 percent per year. The batteries may need replenishment at 30 percent life, based on actual usage and discharge levels.

¹² <https://ctmaps.maps.arcgis.com/apps/webappviewer/index.html?id=ddd39a67a714449d8ad60467d10fcedd>

The minimum snow depth that would require removal within the BESF compound is 18 inches to ensure normal facility operation. UCONN would be responsible for snow removal along the access drive and VFS would be responsible for snow removal within the fenced compound, as necessary.

Decommissioning

At end of the Project's service life, the battery skid unit would be returned to the manufacturer for recycling. All remaining auxiliary electrical components would be removed and recycled to the extent possible. Once components are removed, the concrete pads would remain in place. Adjacent disturbed areas would be restored.

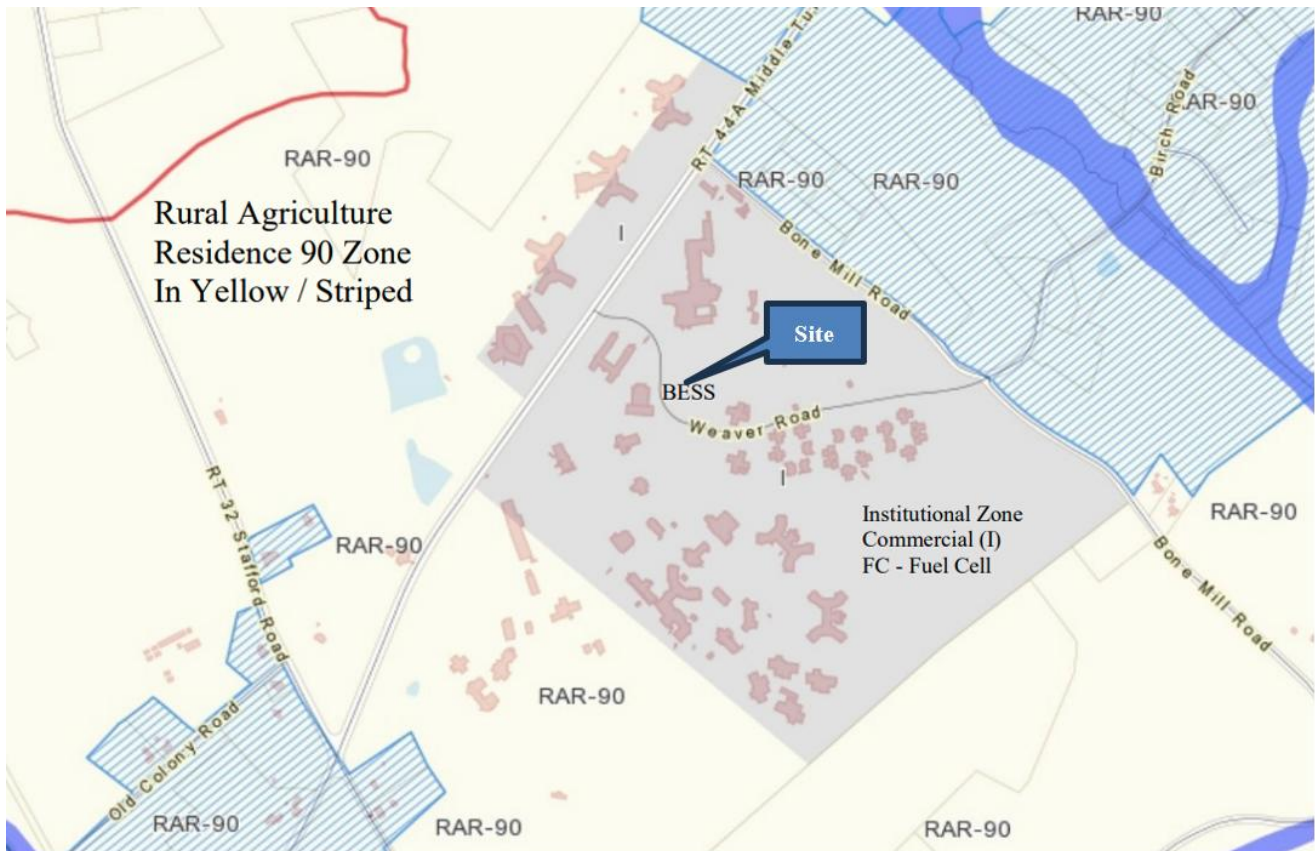
Conclusion

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 improve emergency management capabilities.

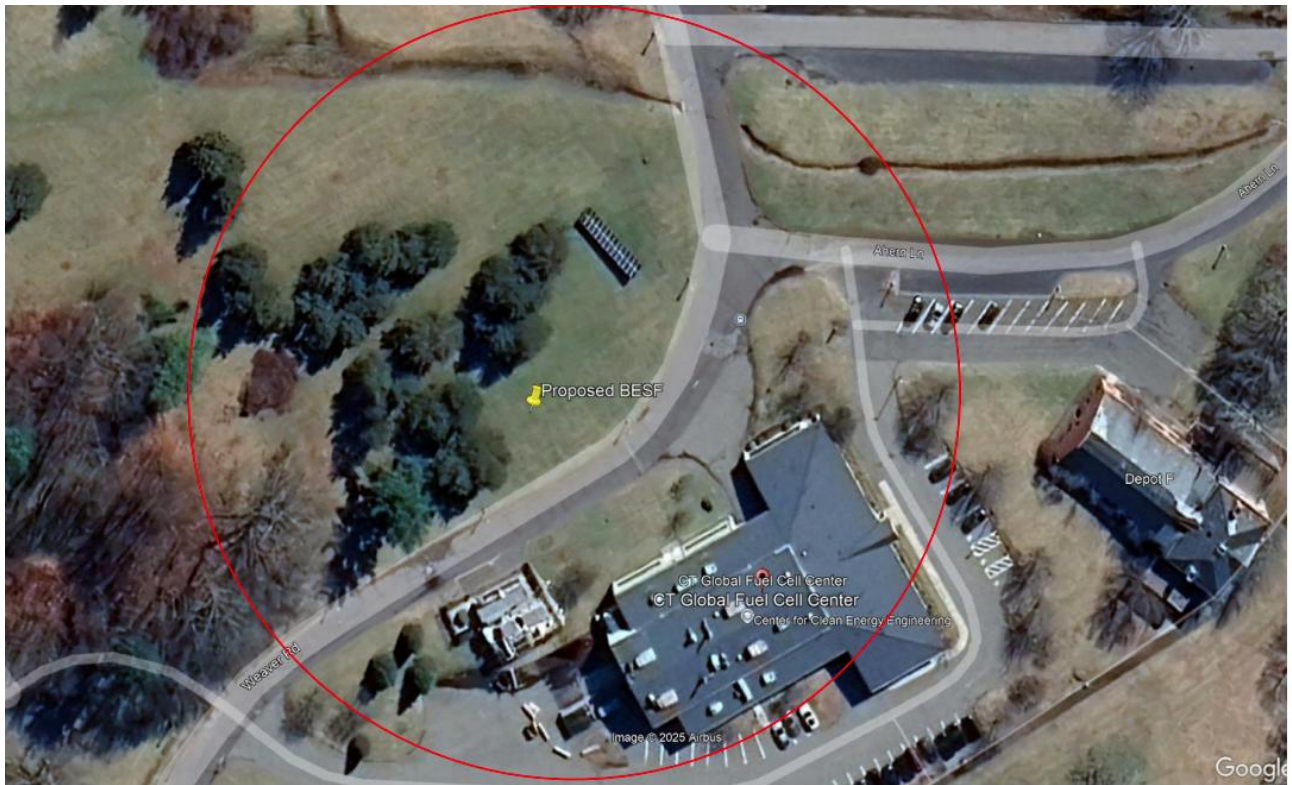
If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff;
2. Submit site plans that include final site design and an erosion and sedimentation control plan that conforms to the 2024 *Connecticut Guidelines for Soil Erosion and Sediment Control* prior to commencement of construction;
3. Submit final Spill Prevention, Control and Countermeasures Plan for the Project prior to commencement of construction;
4. Submit a Federal Aviation Administration determination for use of a temporary crane at the site, if applicable;
5. Provide a copy of the final Emergency Response Plan (ERP) that includes an itemized list of necessary fire suppression equipment to the Council and local emergency responders prior to facility operation, and provide emergency response training;
6. Provide a signed certification by the Fire Chief and UCONN Fire Marshal that training has been completed and the ERP is approved prior to commencement of operation;
7. Provide written notification to the Council if a different type of Lithium-ion battery than what is proposed will be installed at the site; and
8. Submit a copy of the building permit prior to commencement of operation.

Site Location



Host Parcel - Existing Site Conditions



300' Radius

Proposed Site Layout

