DRAFT

Petition No. 1581
KCE CT 8, LLC
44 Skinner Street, East Hampton

Staff Report
November 3, 2023

Introduction

On June 27, 2023, the Connecticut Siting Council (Council) received a petition from KCE CT 8, LLC (KCE) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k for the construction, operation and maintenance of 4.9 megawatt (MW) alternating current (AC) battery energy storage facility (BESF)[1] located at 44 Skinner Street, East Hampton, Connecticut, and associated electrical interconnection (Petition or Project).

Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40 on or about May 25, 2023, KCE notified the abutting property owners and Town of East Hampton (Town) officials, state officials and agencies of the proposed Project. No comments were received.

On June 29, 2023, the Council sent correspondence to the Town stating that the Council has received the Petition and invited the municipality to contact the Council with any questions or comments by July 27, 2023. No comments were received.

Also, on June 29, 2023, pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40, the Council notified all state agencies listed therein, requesting comments regarding the proposed Project be submitted to the Council by July 27, 2023. No comments were received.

The Council issued interrogatories to KCE on July 21, and September 27, 2023. KCE submitted responses to the Council's interrogatories on August 11, and October 19, 2023.

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 August 17, 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 December 24, 2023, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

On August 11, 2023, KCE filed a Motion for Protective Order (MPO) related to the disclosure of project costs, cost recovery mechanisms and energy pricing contained within the response to Council interrogatory No. 3 for the proposed facility, pursuant to CGS §1-210(b) and RCSA §16-50j-62(d), on the basis that it contains confidential, proprietary information. On August 31, 2023, the Council granted the MPO.

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]

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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.

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."

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 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.[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 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 FTM system that was designed in response to the goals of the ESS program and KCE expects to participate in future procurements for battery energy storage systems.

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 Objective 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 grid-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.

KCE would participate in the ISO-NE England, Inc. (ISO-NE) Forward Capacity Auction with the objective of securing a capacity supply obligation for the 2026 to 2027 Capacity Commitment Period and subsequent years. KCE will participate in other available ISO-NE markets, such as the wholesale energy market and frequency regulation markets subject to needs and market opportunities.

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[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 Project would be remotely operated by KCE and would be dispatched according to market signals and opportunities, ISO-NE capacity supply obligation instructions, or other future contract obligations, as applicable.

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 the property owner, KCE proposes to construct the BESF on an approximately 1.9-acre site on an approximately 26.49-acre host parcel owned by Skinner Street Properties, LLC. The host parcel is located within an industrial zone and is developed with an existing 1.975 MW AC solar electric generating facility approved by the Council on May 26, 2020 in Petition 1396.[5] The remainder of the host parcel contains undeveloped forest land. The facility would be located in the northeastern portion of the host parcel.

The surrounding area consists of residential areas to the north and east, a vehicle repair shop to the south, the Air Line State Park Trail to the north, Skinner Street (Route 196) to the southeast, and mostly undeveloped forest to the west. The nearest residential property line from the proposed facility site is approximately 98 feet to the north at 45 Forest Street.

Proposed Facility and Associated Equipment

The proposed grid-side BESF would consist of twelve 2.752 MWh Sungrow battery storage units with a maximum export capacity of 4.9 MW AC. Each battery storage unit has a maximum storage capacity of approximately 2.752 MWh for a total maximum storage capacity of approximately 33.02 MWh.[6] The BESF would be capable of providing a maximum of 19.6 MWh of electrical energy back to the grid based on a 4-hour duration. Its recharge cycle would require a minimum of 4.67 hours based on 4.9 MW AC at the point of interconnection. Each battery storage unit consists of 48 modules with 64 battery cells per module.

Other equipment includes two Sungrow SC3150-MV-US inverters each paired with a 5,000 kilovolt-ampere transformer; an auxiliary power skid with a 23-kV/480 V transformer; switchgear; a sound wall and a control house.

The facility would disturb a 1.9 acre area and be located within an approximately 165-foot by 158-foot compound surrounded by a 7-foot tall chain link fence with an exterior approximately 10 to 12 foot tall sound wall on all sides except the southwestern corner. The control house is 10 feet long by 8 feet wide by 8.5 feet high. The battery storage units are approximately 30.6 feet long by 5.7 feet wide by 8.5 feet high and each includes, but is not limited to, batteries, cooling system, fans, and electrical equipment. The cooling system for each battery storage unit would include a fan; water pump; and a circulating water and ethylene glycol mix coolant.

[5] https://portal.ct.gov/CSC/3_Petitions/Petition-Nos-1391-1400/Petition-No-1396-CP-East-Hampton-Solar-I-and-II
[6] While the facility would be theoretically capable of storing 33.02 MWh of energy, the maximum discharge is proposed to be limited to 19.6 MWh due to electrical losses, to prevent a full depletion of the batteries and to address degradation losses of the life of the BESS.

The facility would be accessed from an existing driveway off of Skinner Street that serves the existing solar facility. A new gravel access drive would be extended from the BESF compound to the southwest to connect to the existing access drive.

Approximately 850 cubic yards of cut and 100 cubic yards of fill would be required to construct the Project. Any excess material would be hauled off-site if it cannot be reused at the site.

No blasting is expected to be required for the Project. While the geotechnical report indicates that bedrock refusal exists as shallow as 4 to 5 feet deep, the Project has been designed to minimize cut to the extent feasible.

The facility would interconnect to existing 23-kV electric distribution lines on Skinner Street. The proposed interconnection route would run overhead from the proposed facility to the south and then east along the access route to Skinner Street. Three new poles approximately 39 feet above grade would be installed to accommodate the electrical interconnection.

Eversource's distribution impact study has been completed, and an interconnection agreement is anticipated to be completed in first quarter 2024.

By letter dated August 8, 2023, the ISO-NE Reliability Committee determined that the proposed Project would not have an adverse impact on the electric transmission system.

Construction of the BESF is expected to begin in spring 2025 and would take approximately 9 months. Construction hours would be from 7:00 a.m. to 5:00 p.m. Monday through Friday.

Once operational, the facility would require planned maintenance visits twice per year and unplanned maintenance visits on as-needed basis.

At the end of the approximately 30-year service life, all BESF components would be dismantled and removed and the site would be restored in accordance with a Decommissioning Plan.

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 BESF is located in an area served by private well water; however, it is designed to meet all Connecticut water quality standards during and after construction.

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

The nearest wetland is located about 125 feet to the southwest of the proposed fenced compound and approximately 68 feet southwest of the proposed stormwater basin. Field surveys were completed on November 17 and December 5, 2022, and April 4, 2023. No vernal pools were identified on or proximate to the site. The proposed Project would be constructed consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control* (2002 E&S Guidelines). Specifically, KCE would install silt fence near the southwestern portion of the compound area and stormwater basin area.

The proposed transformers associated with the battery storage units would be filled with 100% biodegradable FR3 oil and would not have secondary containment. The transformers would include low oil level alarms.

The auxiliary power transformer would also utilize FR3 oil and have a containment system on the auxiliary power skid.

A Spill Prevention Control and Countermeasures Plan has been developed that takes into account all three transformers.

Pursuant to CGS Section 22a-430b, DEEP retains final jurisdiction over stormwater management and administers permit programs to regulate stormwater discharges. DEEP regulations and guidelines set forth standards for erosion and sedimentation control, stormwater pollution control and best engineering practices.

The DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (General Permit) requires implementation of a Stormwater Pollution Control Plan (SWPCP) to prevent the movement of sediments off construction sites into nearby water bodies and to address the impacts of stormwater discharges from a proposed project after construction is complete. In its discretion, DEEP could require an Individual Permit for discharges and hold a public hearing prior to approving or denying any General or Individual Permit (Stormwater Permit) application.

There would be approximately 1.9-acres of ground disturbance. A DEEP-issued Stormwater Permit is required prior to commencement of construction activities. The Stormwater Permit includes erosion control measures that comply with the 2002 E&S Guidelines and the 2004 Connecticut Stormwater Quality Manual.

KCE discussed the Project with the DEEP staff on March 20, 2023. DEEP recommended that a stable outlet be provided for stormwater coming from the site. A June 23, 2023 stormwater analysis concluded that a permanent stormwater basin is necessary to mimic existing drainage patterns to the maximum extent feasible.

A construction sequence on the site plans includes the establishment of erosion control measures, site clearing, and installation of site infrastructure.

Forests and Parks

Approximately 1.9 acre of trees would be removed to construct the proposed Project. The Project is not located within core forest.

The nearest state park is Meshomastic State Park (MSP) located approximately 1.8 miles to the northwest of the site. The proposed facility is not expected to be visible from MSP due to the distance.

Scenic, Historic and Recreational Values

No historic or archeological sites within a one mile, SHPO-requested, radius of the site would be impacted by the proposed Project. A Phase 1A Report indicated that there is one district listed on the National Register of Historic Places (NRHP) located within one-mile of the proposed Project: the Belltown Historic District (BHD) in East Hampton. BHD is located on the opposite side of Skinner Street. Views of the Project from BHD would be obstructed by intervening vegetation. Three properties within one-mile of the proposed Project are listed on the State Register of Historic Places (SRHP). Views the Project from SRHP properties would be obstructed by intervening vegetation and distance. Approximately 4.45 acres of the host parcel were considered to possess a moderate to high potential for archaeological sensitivity. A Phase 1B Report indicated that no additional archaeological examination is necessary. By letter dated July 26, 2023, SHPO indicated that no historic properties would be affected by the proposed Project and concurred that no additional archaeological investigations are warranted.

The nearest publicly-accessible recreational area is the Airline State Park Trail located approximately 150 feet north of the site. The proposed sound wall would likely be partially visible from the trail. Visibility of Project components would be limited due to the trail's lower elevation relative to the site in the Project vicinity.

The nearest scenic road is a portion of Middle Haddam Road (Route 151) located approximately 2.5 miles west-southwest of the site. The Project is not likely to be visible from this road due to the distance.

The proposed facility would be screened by an existing vegetative buffer on all sides. The proposed facility equipment is not expected to be visible from the nearest residence at 45 Forest Street due to topography, existing vegetation, and the proposed sound wall.

Fish, Aquaculture and Wildlife

The site is located within a DEEP Natural Diversity Database (NDDB) buffered area. By letter dated August 25, 2022, DEEP indicated that the eastern box turtle, a state-listed Species of Special Concern, may occur at the site, and recommended protective measures for turtle populations. KCE would implement the DEEP-recommended protective measures including, but not limited to, exclusionary fencing, monitoring, contractor education, and limiting land disturbance during the active turtle season of April through October.

KCE 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 East Hampton.[7] Additionally, according to the U.S. Fish and Wildlife Service, the site does not contain critical habitat for NLEB, and the Project is not likely to impact to the NLEB.

Agriculture

Soil at the site is classified as Nipmuck-Brimfield-Rock outcrop complex. It does not contain any prime farmland soils.

Public Safety

Noise

The primary sources of equipment noise for the proposed Project are the 12 battery storage units and the 2 inverters.

A noise analysis determined that noise from the operation of the facility would be no greater than 49 dBA at residential property boundaries with the proposed sound wall. Thus, the operation of the proposed BESF would meet DEEP Noise Control Regulations with the proposed sound wall.

Construction noise is exempt per DEEP Noise Control Regulations.

Electric and Magnetic Fields

The existing distribution lines along Route 196 are the dominant sources of electric and magnetic fields (EMF). The proposed electrical interconnection is not expected to create additional EMF at the property boundaries beyond existing conditions.

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

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 recording security cameras.

The BESF would be enclosed within a 7-foot tall chain link fence that complies with the requirements of the National Electrical Code (NEC).[8]

The fence would be about 400 feet from Skinner Street to the southwest, about 102 feet from the abutting property line to the north, about 68 feet from the abutting property line to the east, about 985 feet to the abutting property line to the west, and about 814 feet from the abutting property line to the south.

The site will have a locked gate and limited access for authorized personnel only.

Emergency lighting would be installed at the BESF. Visual impacts associated with emergency lighting would be mitigated by existing vegetative buffers and site topography.

Fire Protection

KCE developed an Emergency Operations Plan (EOP) for the BESF. KCE's EOP 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 National Fire Protection Association 855 – Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). Each battery storage unit would be equipped with an exhaust ventilation system per NFPA 69 that would remove flammable gases released during a potential battery failure before explosive limits could be reached. This would consist of two exhaust fans per battery cabinet.

Each battery storage unit would also contain two heat detectors; two smoke detectors; and two combustible gas detectors for fire protection and to protect against thermal runaway. In the event of fire detection via these sensors, the fire alarm panel would send a signal to the central station which would then be relayed to the local fire department.

In the event of fire detection via smoke, heat or gas detectors, all battery racks would electrically disconnect from the system, and the fire alarm control panel would send a signal to the central station which would then be relayed to the location fire department.

Each battery unit would also be equipped with a dry sprinkler system per the manufacturer. After the power is shut down, the fire department could connect a tank truck to the system outside the battery container and pump water into the sprinkler system for fire suppression.

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

However, current guidance from the International Association of Fire Chiefs (IAFC) 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. Thus, KCE believes that containment of any fire until it is exhausted and use of water on surrounding structures to ensure containment of the fire is a best practice rather than operating the pre-installed sprinkler system.
In the event of a fire that includes a battery burst/rupture, a study for the New York State Energy Research and Development Authority notes that decomposition products or gases could potentially emit toxic fumes similar to that of fires of plastic materials such as sofas, mattresses or office furniture. It is not anticipated that evacuation would be necessary in the event of such an event, but such decision would be subject to the discretion of the local fire marshal.

KCE will continue to coordinate with local emergency responders, including the Town, to refine the emergency response plan and provide training to local responders prior to construction.

Aviation Safety

The nearest airport is Goodspeed Airport located approximately 8.9 miles south-southwest of the facility site. KCE utilized the Federal Aviation Administration (FAA) Notice Criteria Tool and determined that notice to FAA is not required for the proposed facility or any temporary cranes up to 100 feet in height.

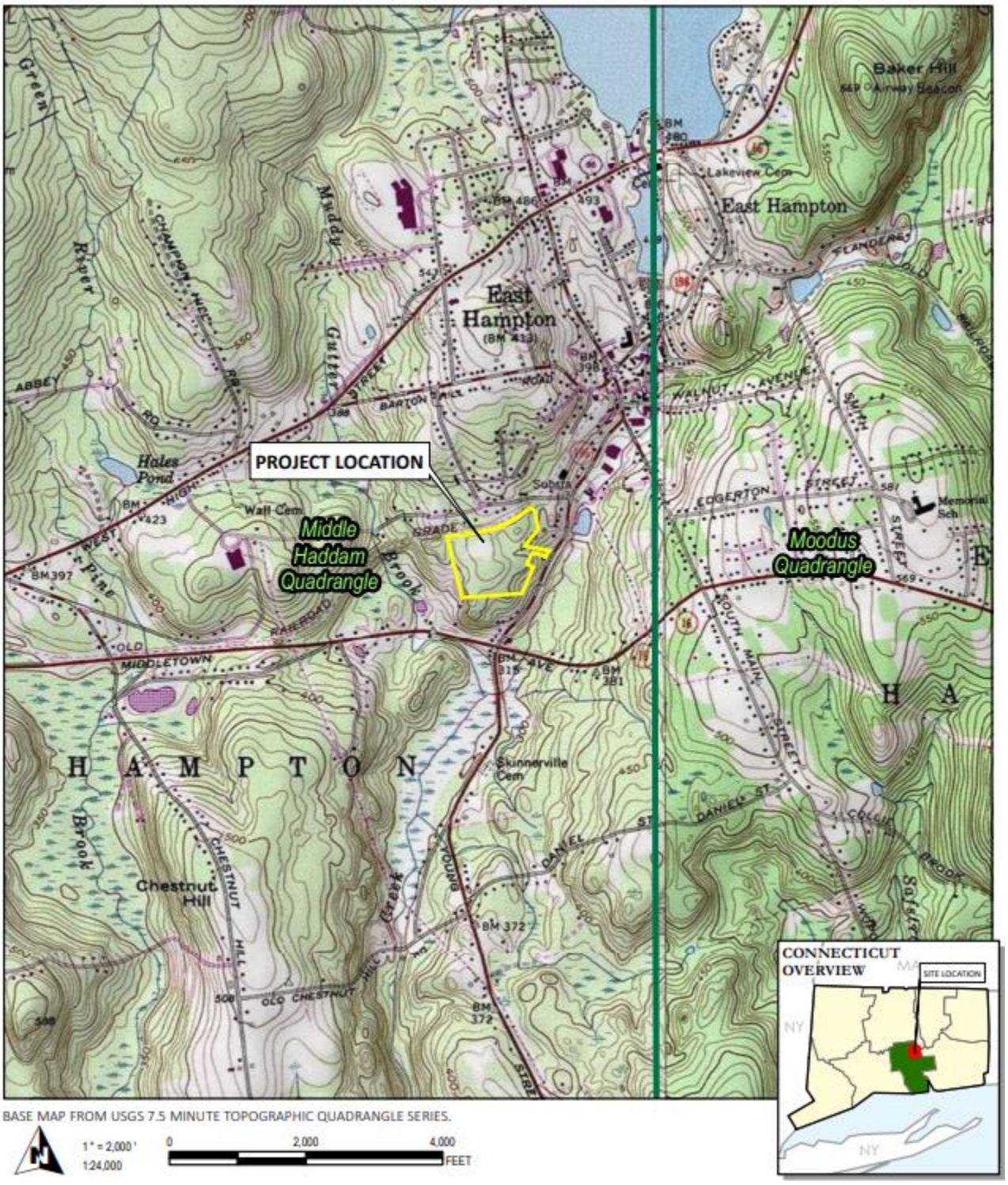
Conclusion

The BESF is a grid-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.

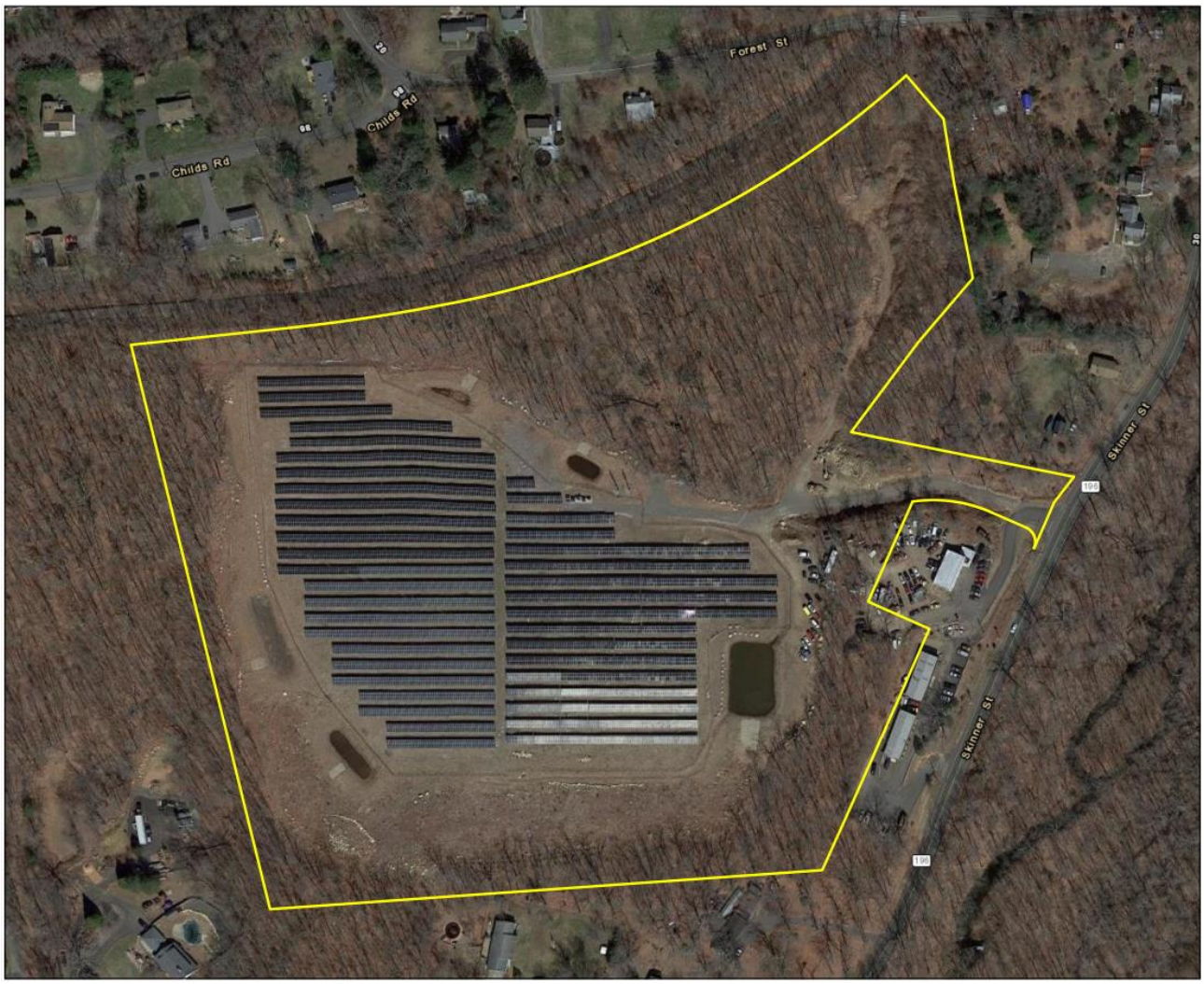
If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff;
2. Submission of a final Spill Protection Control and Countermeasures Plan prior to commencement of construction;
3. Provide the final fence and sound wall design/layout prior to commencement of construction;
4. Implement the DEEP-recommended eastern box turtle protection measures; and
5. Provide a copy of the final Emergency Operations Plan to local emergency responders, the Town and the owner of the adjacent solar electric generating facility prior to facility operation, and provide emergency response training.

Site Location



Host Parcel – Existing Conditions



Proposed Site Layout

LEGEND

- HOST PARCEL
- LEASE DEVELOPMENT AREA
- RIGHT OF WAY
- FC SURVEY AREA
- CULVERT
- DELINEATED INTERMITTENT STREAM
- DELINEATED WETLAND BOUNDARY
- DELINEATED WETLAND
- SKETCHED STREAM SEGMENT
- SKETCHED WETLAND BOUNDARY
- SKETCHED WETLAND
- EXISTING GRAVEL ACCESS
- SECURITY FENCE
- BATTERY STORAGE CONTAINER
- EDGE OF PAVEMENT
- STORMWATER BASIN
- EQUIPMENT PAD
- INTERCONNECTION ROUTE