DRAFT

Petition No. 1503
Bloom Energy Corporation
Milford Hospital
300 Seaside Avenue, Milford

Staff Report
May 20, 2022

Introduction

On March 31, 2022, the Connecticut Siting Council (Council) received a petition from Bloom Energy Corporation (Bloom) for a declaratory ruling, pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k, for the installation of a 750-kilowatt (kW) fuel cell facility and associated equipment to be located at Milford Hospital at 300 Seaside Avenue in Milford, Connecticut (Petition or Project).

Bloom provided Project plans to the City of Milford (City) Planner on March 15, 2022. The City did not comment on the Project.

On March 25, 2022, Bloom provided notice of the Project to abutting property owners, City officials, and required state agencies and officials. On May 10, 2022, the City Inland Wetland and Watercourses Agency provided comment to Bloom requesting that appropriate erosion and sedimentation controls be used during construction of the Project.

On April 1, 2022, the Council sent correspondence to the City stating that the Council has received the Petition and invited the municipality to contact the Council with any questions or comments by April 30, 2022. No comments were received.

Also on April 1, 2022, 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 April 30, 2022. No comments were received.

The Council issued interrogatories to Bloom on April 18, 2022. Bloom provided responses to the Council's interrogatories on May 4, 2022.

Public Benefit

The Project would be a "customer-side distributed resources" facility, as defined in CGS §16-1(a)(49). CGS §16a-35k establishes the State's energy policy, including the goal to "develop and utilize renewable energy resources…to the maximum practicable extent." The proposed facility is a distributed generation resource, and will contribute to fulfilling the State's Renewable Portfolio Standard as a low emission Class I renewable energy source. The Project was selected as part of the Low and Zero Emissions Renewable Energy Credit (LREC/ZREC) program. The Facility would be installed, maintained and operated by Bloom under a 15-year power purchase agreement with Yale New Haven Health Services Corporation (Yale).

Project Site

The proposed facility is to be located on a 9.05-acre parcel zoned Milford Center Design Development (MCDD) District. The parcel is developed as a hospital with several buildings and parking lots. The fuel cell installation would be located in a parking area in the southeastern corner of the parcel, opposite the emergency entrance, near the corner of Cricklewood Road and Seaside Avenue.

The surrounding area contains a mix of residential and commercial development. The nearest residential property line from the proposed facility is approximately 87 feet to the west (67 feet from the perimeter fence).

Proposed Project

The facility would consist of three Bloom Energy 250-kW ES-5 solid oxide fuel cell Energy Servers and associated equipment, including water deionizers, telemetry cabinets, disconnect switches, a transformer and utility cabinets. The energy servers comprising the fuel cell facility would be installed in a single row arrangement on an approximate 65-foot long by 15-foot wide concrete pad. The height of the energy servers would not exceed 7.1 feet. See Attached Site Plan for detail.

The proposed facility would be located in an area with eight parking spaces and an adjacent landscaped parking lot island. Parking lot lighting and curbing associated with the island would be relocated.

To protect the fuel cell from potential vehicle damage, bollards, raised curbing, and chain link fencing would be installed around the facility. These measures, as well as the distance of the facility from adjacent travel lanes, meet applicable safety codes.

Underground utilities (natural gas., electric, water, data) would extend through parking areas and driveways to interconnect with existing utility infrastructure adjacent to or within the Hospital Patient Care building.

The proposed facility would be a customer-side, distributed resources project, designed only to provide electricity. The proposed facility would operate in parallel with the utility grid and provide a portion of the electrical needs of the hospital. The proposed facility is sized to provide at least 65% of the average annual baseload of the hospital. Any excess electricity created during periods of low energy usage would be exported to the local electric grid under the net metering tariff. The interconnection application was submitted to United Illuminating in January 2022 for review.

The proposed Bloom fuel cell units are designed to optimize the electrical efficiency alone rather than operate as combined heat and power units. Heat generated by the proposed facilities is used internally to increase the electrical efficiency of the fuel cells, and consequently there is no useful waste heat generated.

The fuel cell facility has an operational life of 15 years. The solid oxide fuel cell media would be changed at five-year intervals. At the end of the 15-year contract, Yale may renew the contract, return the facility at no cost, or buy the facility at fair market value. If the facility is to be removed at the end of the contract, the fuel cell units and associated equipment and components would be dismantled and removed.

Bloom anticipates construction to start in the third quarter of 2022 and would occur over a four-month period. Construction hours would be Monday-Friday, 7 AM – 5 PM.

The estimated cost of the facility is $1,021,650.

Environmental Effects and Mitigation

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards as no water would be consumed or discharged once the facility is operational. The proposed fuel cell facility would operate without water discharge under normal operating conditions. Water consumption would only occur at system fill and during restart operations.

Air emissions produced during fuel cell operation would not trigger any regulatory thresholds and are shown below.

Fuel Cell Facility	
Compound	lbs/MWh
NOx	0.01
CO_2*	679-833

*DEEP amended its regulations in 2016 to eliminate the CO2 permit requirements from the New Source Review and Title V Programs as a result of a United States Supreme Court decision that overturned states' regulatory CO2 permit requirements (*Utility Air Regulatory Group v. U.S. Environmental Protection Agency*, 573 U.S. 302 (2014)

The proposed facility would emit no methane (CH_4), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs), which are greenhouse gases defined in RCSA §22a-174-1(49), and would emit negligible amounts of sulfur oxides, volatile organic compounds and particulate matter.

The fuel cell desulfurization system would remove sulfur that is used as an odorant in natural gas because it is a fuel cell system contaminant. Sulfur compounds would be collected within a desulfurization unit (desulf unit) using a filter media – a composite copper catalyst. The U.S. Department of Transportation has certified the desulf unit as an acceptable form of transport for the desulfurization material that meets hazardous waste shipment standards. When a desulf unit is taken out of service, it is transported by a Bloom contractor to an out of state facility where the composite copper catalyst within the unit is removed, and the copper is used for other products. The empty desulf units are the refurbished for reuse at other Bloom fuel cell locations.

Four landscape trees within the traffic island would be removed to construct the facility. Visual impact from the proposed Project would be minimal as it is located on the hospital campus among buildings and parking lots. The facility may be visible from portions of Seaside Avenue to the east and Cricklewood Road to the south; however, existing landscaping at the parking lot perimeter, would mitigate most of the views.

No wetlands, forest or prime farmland soils would be disturbed by the proposed Project as it is located entirely within paved areas on a developed property. Erosion and sedimentation controls for the proposed facility would comply with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

The Project is not within a DEEP Natural Diversity Database buffer area. The site is within the DEEP designated coastal boundary, defined under Connecticut's Coastal Management Act but development is within a mostly paved area and no coastal resources would be affected.

The site is not within a Federal Emergency Management Agency- designated flood zone nor within an Aquifer Protection Area (APA). The nearest APA is 7.8 miles to the north.

The site is previously disturbed and would not impact historic or cultural resources.

Public Safety

Before commissioning the proposed facility, Bloom would use compressed air as pipe cleaning media in accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

The fuel cell facility has internal and remote 24/7 operational monitoring. Abnormal operation would cause the facility to automatically shut down. The facility can also be shut down through a remote operations center as well as manually. The fuel cell facility is designed in accordance with American National Standards Institute and Canadian Standards Association (ANSI/CSA) America FC 1-2004 and the National Fire Protection Association, Inc. Standard 853 for stationary fuel cell power systems and includes extensive safety control systems, including both automatic and manual shutdown mechanisms that comply with pertinent engineering standards.

An emergency response plan for the facility is included within the Petition. Bloom would submit the ERP to the City Fire Marshal and would provide on-site training to local officials.

The fuel cell system is controlled electronically and has internal sensors that continuously measure system operation. If safety circuits detect a condition outside normal operating parameters, the fuel supply is stopped, and individual system components are automatically shut down. In addition, manual emergency shut down push buttons would be located at the site.

Noise associated with the construction of this Project would be temporary and exempt from DEEP Noise Control Regulations. Operation of the facility is expected to produce noise emissions no greater than 45 dBA at the nearest residential receptor located approximately 87 feet to the west of the fuel cell and would comply with DEEP Noise Control Regulations. The fuel cell would have a noise dampening foam material at the doors and exhaust of the fuel cell to lower its noise emissions by up to 5 dBA.

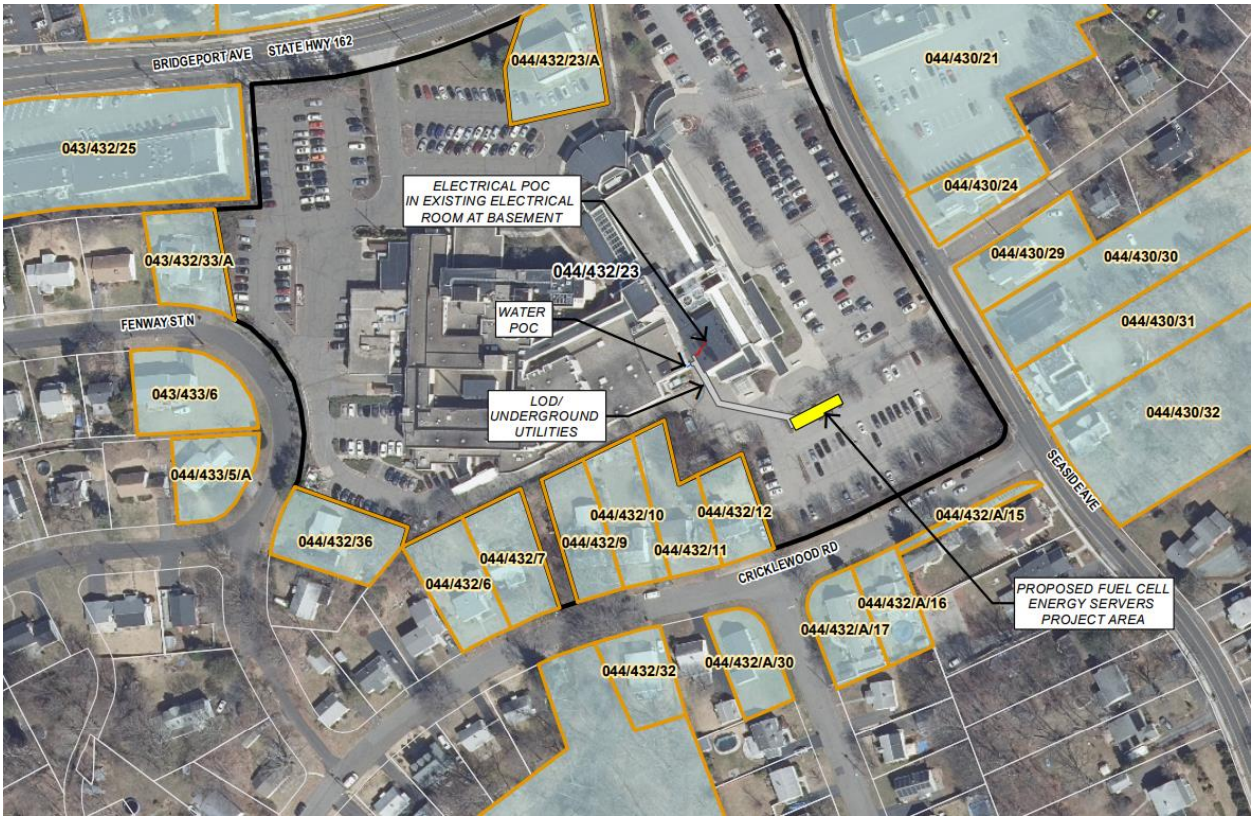
Conclusion

The Project is a distributed energy resource with a 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. It would reduce the emission of air pollutants that contribute to smog and acid rain, and to a lesser extent, global climate change, and furthers the State's energy policy by developing and utilizing renewable energy resources and distributed energy resources. Furthermore, the Project was selected under the state's LREC/ZREC Program.

If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff;
2. Provide a copy of the Fuel Cell Emergency Response Plan to local emergency responders prior to facility operation, and provide emergency response training; and
3. The Council shall be notified in writing at least two weeks prior to the commencement of site construction activities.

Fuel Cell Location



Legend

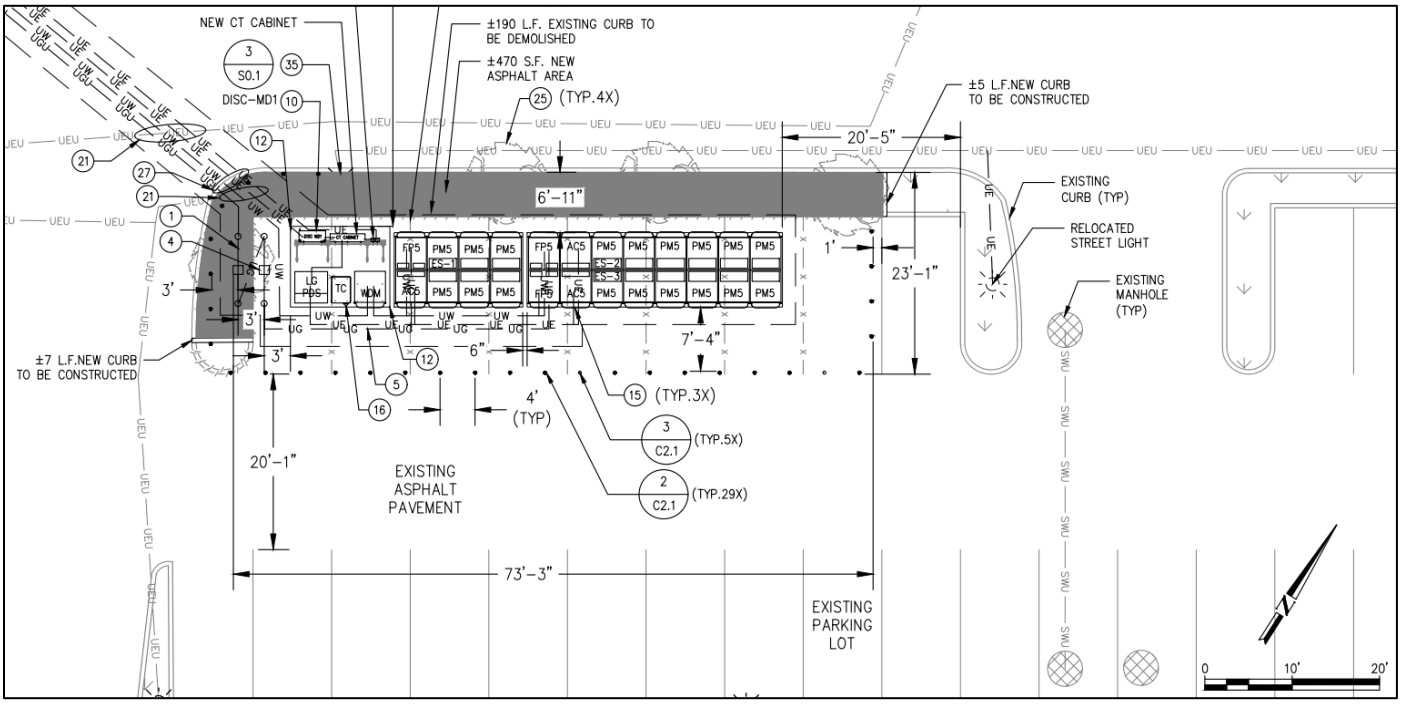
- Site
- Abutting Property
- Approximate Assessor Parcel Boundary
- Project Area
- Limit of Disturbance/Underground Utilities
- Electrical Service
- Water Service

Map Notes:
Base Map Source: CTECO 2019 Aerial Photograph
Map Scale: 1 inch = 200 feet
Map Date: March 2022

N W E S

200 100 0 200 Feet

Site Plan



Site Location Photograph

Looking toward Site from front of Emergency Department entrance