Petition No. 1441
Bloom Energy Corporation
Yale New Haven/Lawrence & Memorial Hospital
412 Ocean Avenue
New London, Connecticut
DRAFT Staff Report
April 30, 2021

Introduction

On February 1, 2021, the Connecticut Siting Council (Council) received a petition from Bloom Energy Corporation (Bloom) for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the installation of a 1,750-kilowatt fuel cell facility and associated equipment to be located at Yale New Haven/Lawrence & Memorial Hospital (YNH/LM Hospital), 412 Ocean Avenue, New London, Connecticut.

On January 27, 2021, Bloom provided notice of the project to abutting property owners, City of New London (City) officials, Town of Waterford (Town) officials (within 2,500 feet) and required state agencies and officials.

Bloom provided project plans to the City on December 23, 2020 and January 28, 2021. Bloom received no comments from the City.

On February 2, 2021, the Council sent correspondence to the City and the Town stating that the Council has received the Petition and invited the municipalities to contact the Council with any questions or comments by March 3, 2021. The Council has not received any comments to date.

Also on February 2, 2021, 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 March 3, 2021. The Connecticut Department of Transportation (DOT) submitted correspondence on March 8, 2021 stating it had no comment. No other comments were received.

The Council issued interrogatories to Bloom on March 5, 2021. Bloom provided responses to the Council's interrogatories on March 15, 2021.

Public Benefit

The project would be a "customer-side distributed resources" facility, as defined in Connecticut General Statutes (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.

Project Site

The proposed project site is located on the western corner of a 0.57-acre parcel that is owned by YNH/LM Hospital and hosts an out building and portion of the parking lot for the hospital. The hospital is situated on an adjoining 12.65 acre parcel identified as 365 Montauk Avenue located north of the facility that hosts the main building and parking lot. The subject property is located within the City's Institutional zoning district and abuts Ocean Avenue to the west, Montauk Avenue to the east, Fair Harbour Place to the north and a DOT rail right-of-way to the south. The surrounding area consists of commercial and residential properties some of which are owned or associated with the hospital. The nearest residential property line not owned or associated with the hospital is located approximately 135-feet northwest of the proposed facility.

Proposed Project

The facility would consist of seven Bloom Energy 250-kW ES-5 solid oxide fuel cell Energy Servers, model ES5-AA2AAL and associated equipment, including water deionizers, telemetry cabinets, disconnect switches, a transformer and utility cabinets. The fuel cell units would be approximately 28-feet 8-inches long by 4-feet 4-inches wide by 7-feet 2-inches tall and installed on concrete pads.

The facility would be installed within an existing cleared grassy area south of the hospital out building located between a parking lot and Ocean Avenue. The facility would be bordered by existing trees and vegetation to the south and the existing parking lot to the east. Bollards would be installed east of the facility along its border with the existing parking lot. The electrical and natural gas interconnections would run underground to new utility infrastructure to be located in the northwest portion of the adjoining parcel north of the facility as part of ongoing renovations and expansion of the hospital. The site would be accessed via the existing parking lot east of the proposed facility.

The proposed facility would be a customer-side, distributed resources project, designed only to provide electricity. The proposed facility would be microgrid capable. It is designed to provide grid-independent load support of up to 1,475 kW (86%) average base load demand of the hospital for its critical loads during grid outages/interruptions. Any excess electricity created during periods of low energy usage, would be exported to the grid under the net metering tariff.

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 facilities have 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, YNH/LM Hospital may renew the contract, return the facilities at no cost, or buy the facilities at fair market value. If the facilities are 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 2021 with approximately 12 - 18 weeks of total construction time, i.e. 4 to 6 weeks for site prep, 4 to 6 weeks for installation and 4 to 6 weeks for commissioning.

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 site is not located within a DEEP-designated Aquifer Protection Area. 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. Because the spent desulf units are used to make copper products, the desulf units are exempted from hazardous waste requirements as "excluded recyclable material."

Visual impact from the proposed project would be minimal as it is located behind the hospital outbuilding and visibility would be limited by mature tree growth to the south and fencing to the west. Visibility of the site would be mostly from within the hospital grounds and west along Ocean Avenue. Bloom intends to work with the hospital to replace or add landscaping as required to reduce the visual impact.

No wetlands would be disturbed by the proposed project. The nearest wetland is approximately 1,220 feet southwest of the proposed facility. The facility would be located on a previously disturbed area. Erosion and sedimentation controls for the proposed facility would comply with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

The site is not within a Federal Emergency Management Agency- designated flood zone nor within an Aquifer Protection Area (APA). The nearest APA is 4.7 miles to the west. The site is not located within a DEEP Natural Diversity Database (NDDB) buffered area. The site is located 1,064 feet northeast of Harbor Park and 1,598 feet east of the Green Harbor and the coast of the Thames River[1].

The site is previously disturbed and not expected to impact cultural resources.

[1] The proposed project site is located outside the coastal boundary, as defined under Connecticut's Coastal Management Act.

Public Safety

Before commissioning the proposed facility, Bloom would use atmospheric air under pressure 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 (ERP) for the facility is included within the Petition. Bloom would submit the ERP to the New London Fire Marshal and would provide any on-site training requested by 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.

Any noise associated with the construction of this project would be temporary in nature and exempt per DEEP Noise Control Regulations. Noise levels at the property boundary of the nearest residential property line 135-feet to the west of the facility are predicted to be 34 dBA. DEEP's Noise Control Regulations thresholds for a Class B (commercial) emitter to a Class A (residential) receptor is 55 dBA (day) and 45 dBA (night). The residential property is classified as a Class A receptor. Bloom would install noise dampening foam material at the doors and exhaust of the fuel cell to lower its noise emissions by up to 3 dBA.

Conclusion

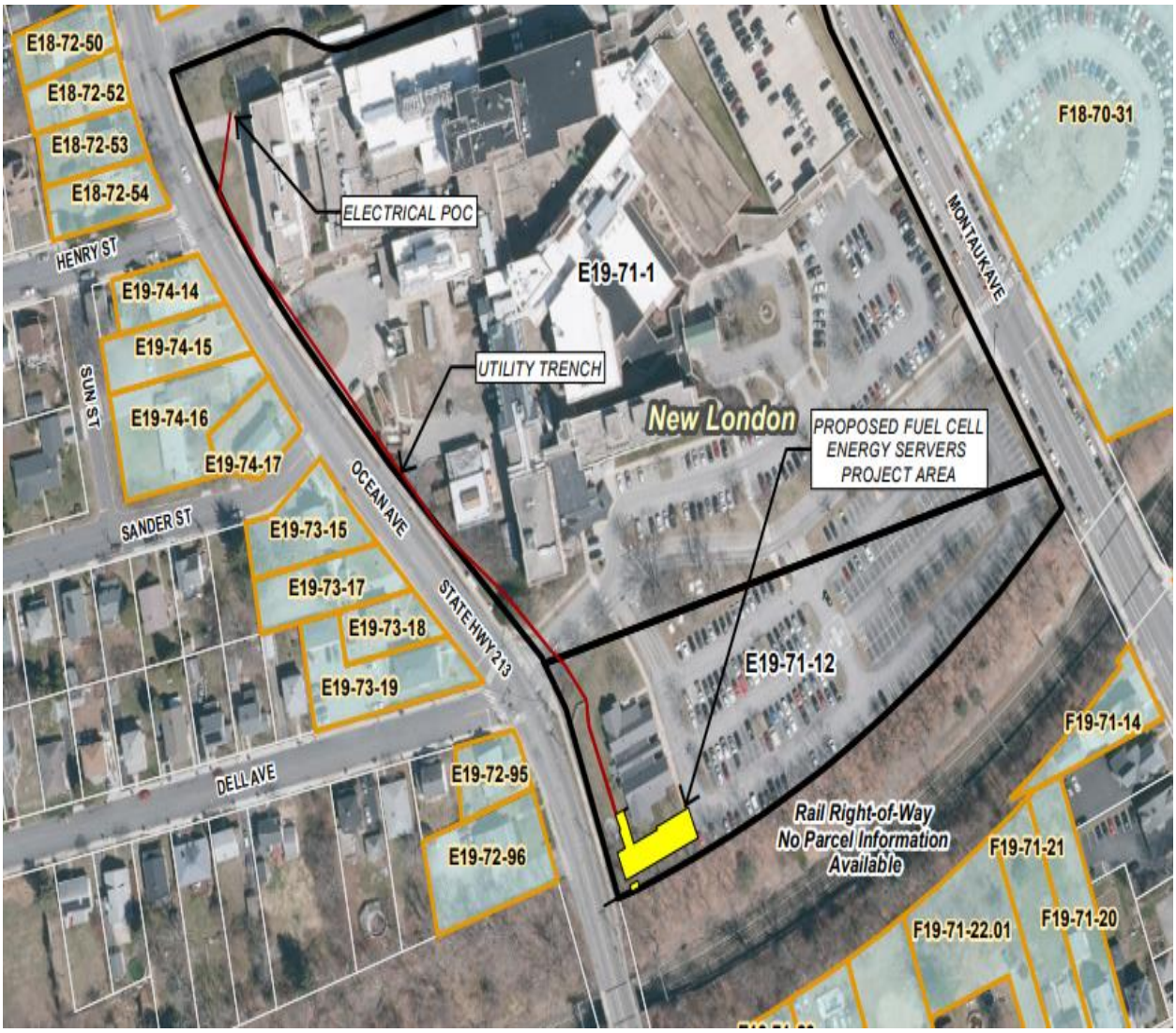
The project is a distributed energy resource with a capacity of not more than sixty-five megawatts, meets air and water quality standards of the DEEP, and would not have a substantial adverse environmental effect. It would reduce the emission of air pollutants that contribute to smog and acid rain, and 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.

Recommendation

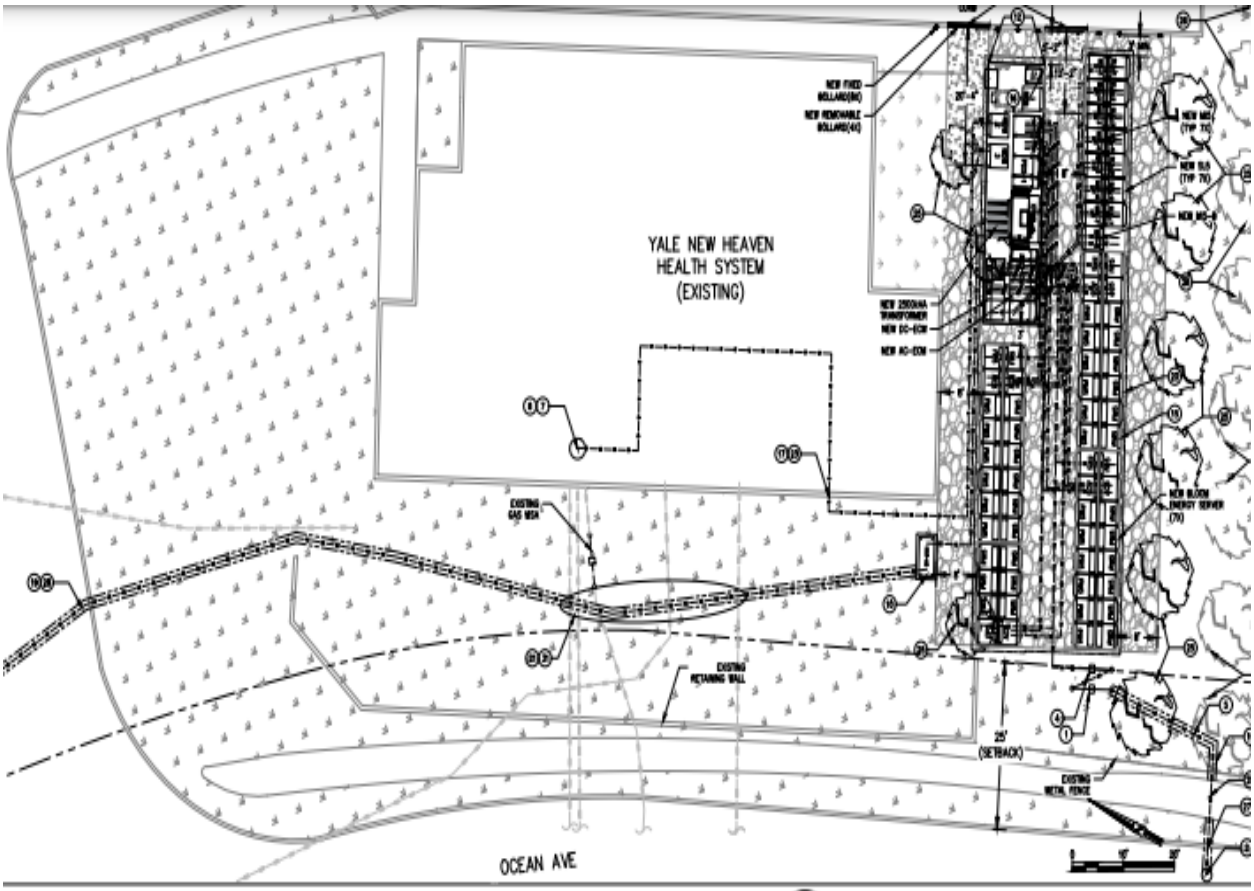
If approved, staff recommends the following conditions:

1. Approval of any project changes be delegated to Council staff; and
2. Provide a copy of the Fuel Cell Emergency Response Plan to local emergency responders prior to facility operation, and provide emergency response training, if requested.

Fuel Cell Location



Site Plan



DETAILED SITE PLAN 1
SCALE: 1" = 10' C1.1