

DRAFT

**Petition No. 1497
Bloom Energy Corporation
Bridgeport Hospital, 267 Grant Street
Bridgeport, Connecticut**

**Staff Report
May 6, 2022**

Introduction

On March 14, 2022, 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 2.0 megawatt (MW) fuel cell facility and associated equipment (Petition or Project) to be located at Bridgeport Hospital at 267 Grant Street in Bridgeport, Connecticut.

Bloom provided Project plans to the City of Bridgeport's (City) Zoning Administrator on December 8, 2021. The City did not comment on the Project.

On March 5, 2022, Bloom provided notice of the Project to abutting property owners, City officials, and required state agencies and officials. No comments were received.

On March 15, 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 13, 2022. No comments were received.

On March 16, 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 13, 2022. No comments were received.

The Council issued interrogatories to Bloom on March 29, 2022. Bloom provided responses to the Council's interrogatories on April 13, 2022.

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. 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 12.5-acre site comprised of five parcels that are owned by Bridgeport Hospital. The site is zoned Central Business District (CBD), and is developed with several buildings, a parking garage and parking lots. The fuel cell would be installed in the northwestern corner of the site, on a lawn area west of a parking lot.

The surrounding area contains a mix of residential, institutional and commercial development. The nearest residential property line from the proposed facility is approximately 345 feet to the west, beyond a large building and across Central Avenue.

Proposed Project

The facility would consist of seven 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 two-row linear arrangement on an approximate 91-foot long by 41-foot wide concrete pad. An 8-foot wide aisle would be between the two energy server rows. The height of the energy servers would not exceed 7.1 feet. See Attached Site Plan for detail.

The facility would be constructed in a lawn area adjacent to several parking spaces. A six-foot tall fence would enclose the fuel cell compound. A vehicle access gate would access the facility compound from the parking lot. A second pedestrian access gate would be installed on the south side of the compound to access the meter equipment. Accidental vehicle impact would be deterred by a raised curb three feet from the facility fence. The fence is anchored by steel posts set into concrete footings.

The natural gas interconnection would extend underground through a driveway to a gas main interconnection within Mill Hill Avenue. Electric and data connections would extend to the south using a mix of underground installations and interior and exterior building mounts, to a 15-kV switchgear within an existing building utility room. A water connection would extend underground to a connection point within an adjacent parking garage.

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 69% 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 second/third quarter of 2022 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. Construction hours would be Monday-Friday, 7AM – 5 PM and would conform to the City's construction hours ordinance.

The estimated cost of the facility is \$1,877,930.

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
NO _x	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 (CH₄), sulfur hexafluoride (SF₆), 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.

A few landscape shrubs at the edge of the parking area and a brushy area along the west edge of the lawn area 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. A wooded area would screen the facility from a former school building to the west. In addition, a woven screening treatment would be applied to the fence.

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 commercial property. 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 8.9 miles to the east. The site is not within a DEEP Natural Diversity Database buffer area. The site is not within the DEEP designated coastal boundary, defined under Connecticut's Coastal Management Act.

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 (ERP) for the facility is included within the Petition. Bloom would submit the ERP to the Bridgeport 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 of 37 dBA at the nearest residential receptor (a church) located approximately 325 feet to the east of the site 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. In addition, a fiberboard sound barrier would be installed on the west side of the facility fence to further reduce noise to an abutting school property to the west at 1734 Central Avenue.

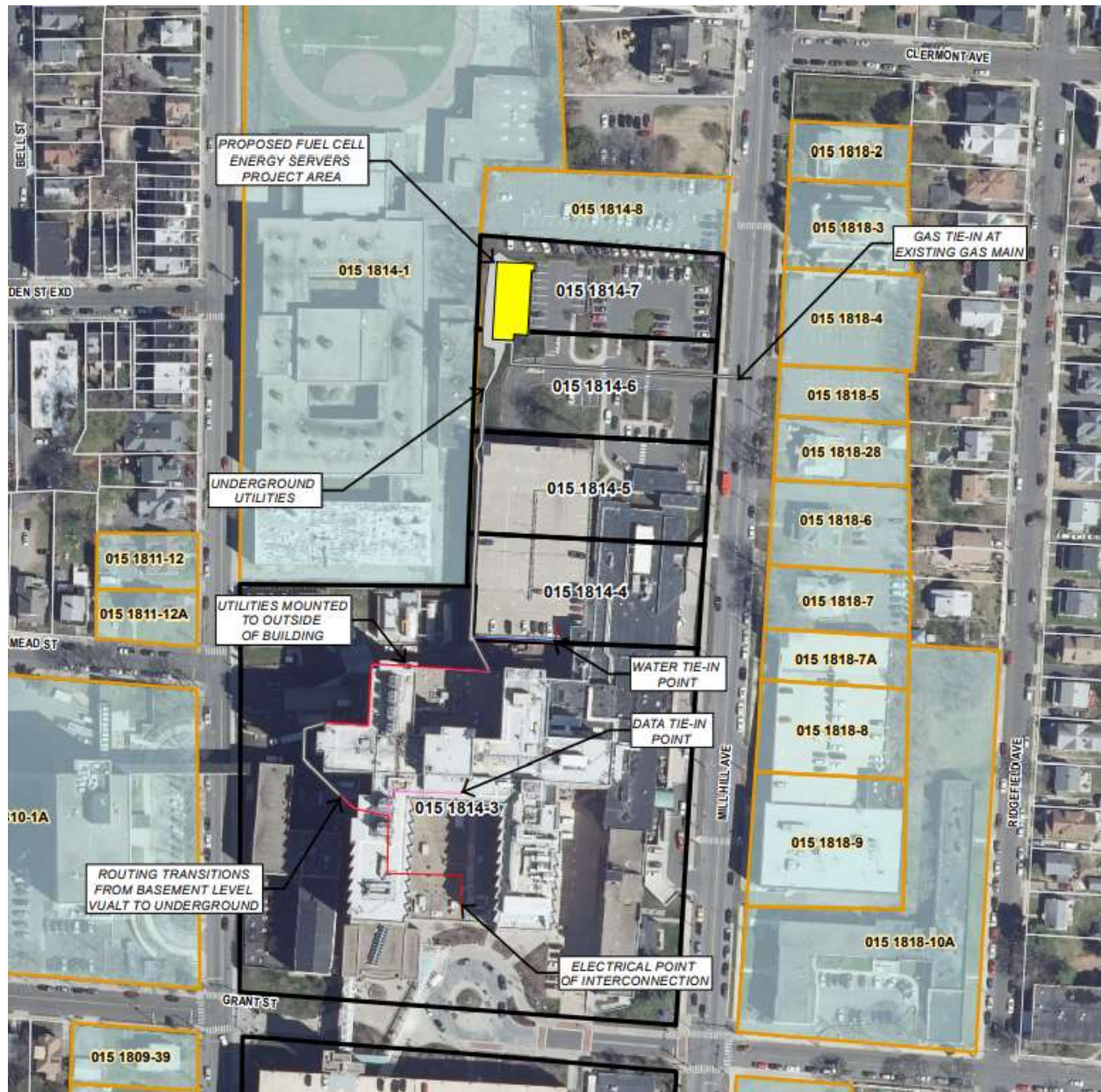
Conclusion

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; 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; 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 | Electrical Service |
| Abutting Property | Water Service |
| Approximate Assessor Parcel Boundary | Gas Service |
| Project Area | Data Service |
| Limit of Disturbance/Underground Utilities | |

Map Notes:
Base Map Source: CTECO 2019 Aerial Photograph



Site Plan

