

Petition No. 1482
Bloom Energy Corporation
Tully Health Center, 32 Strawberry Hill Court
Stamford, Connecticut
Draft Staff Report
March 18, 2022

Introduction

On January 31, 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 700-kilowatt fuel cell facility and associated equipment to be located at Tully Health Center, 32 Strawberry Hill Court, Stamford, Connecticut.

The City of Stamford (City) Zoning Board approved the proposed project plan application on June 21, 2021.

On January 24, 2022, Bloom provided notice of the project to abutting property owners, City officials and required state agencies and officials. One abutter contacted Bloom requesting general Project information. No other comments were received.

On February 2, 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 March 2, 2022. The Council has not received any comments to date.

Also on February 2, 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 March 2, 2022. No comments were received.

The Council issued interrogatories to Bloom on February 17, 2022. Bloom provided responses to the Council's interrogatories on February 25, 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 Stamford Hospital.

Project Site

The proposed facility is located on a 9.6-acre parcel zoned R-5, Multiple Family Medium Density Design, that is owned by Stamford Hospital and developed with a health center/medical building, a parking garage and parking lots. The host parcel abuts Strawberry Hill Avenue to the east, Strawberry Hill Court to the north, Morgan Street to the west and multiple family residential properties to the south.

The surrounding area consists of mostly high-density multi-unit residential development. The nearest residential property line from the proposed facility is approximately 155 feet to the south.

Proposed Project

The facility would consist of two Bloom Energy 250-kW ES-5 solid oxide fuel cell Energy Servers (model ES5-EAXAAN), one Bloom Energy 200-kW ES-5 solid oxide fuel cell Energy Server (model ES5-FAVAAN) and associated equipment, including water deionizers, telemetry cabinets, disconnect switches, a transformer and utility cabinets. The fuel facility would consist of two energy servers measuring approximately 28 feet 8 inches long by 4 feet 4 inches wide by 7 feet 2 inches tall and one energy server measuring 25 feet 1 inch long by 4 feet 4 inches wide by 7 feet 2 inches tall. See Attached Site Plan for detail.

The fuel cell facility would be installed on concrete pads within an existing paved parking area west of the health center building and adjacent to the parking garage.

To protect the fuel cell from potential vehicle damage bollards would be installed east of the facility along its border with the existing paved area. Bloom energy fuel cells are also tamper proof and can only be accessed by essential personnel with a unique access key.

The natural gas interconnection would run underground to existing utility infrastructure located southeast of the facility. Electric connections would extend east to an existing electrical room located within the health center building. New meters and other electrical equipment would be installed within the room. A water connection would also occur within the building. The site would be accessed via the existing paved area and driveway extending west to Morgan Street.

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 health center building. The proposed facility is sized to provide at least 60% of the average annual baseload of the building. Any excess electricity created during periods of low energy usage, would be exported to the grid under the net metering tariff. The interconnection application was submitted to Eversource on January 7, 2022, for review and final interconnection approval is anticipated in July of 2022.

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, Stamford Hospital 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 late second or early 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.

The estimated cost of the facility is \$1,276,418.00.

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	0.0017
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 then refurbished for reuse at other Bloom fuel cell locations.

Visual impact from the proposed project would be minimal as it is located between the health center building and the parking garage which would block views from the east and north respectively. Visibility from the west would be limited by the parking garage and the fence of the retaining wall adjacent to the proposed fuel cell location. Views from the south would be limited by mature tree growth and existing structures on adjoining properties south of the facility.

No wetlands would be disturbed by the proposed project as the facility would be 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 site is not within a Federal Emergency Management Agency-designated flood zone nor within an Aquifer Protection Area (APA). The nearest APA is 1.23 miles to the northeast. The site is not located within a DEEP Natural Diversity Database (NDDDB) buffered area. The site is not within the DEEP designated coastal boundary, defined under Connecticut's Coastal Management Act.

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

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 Stamford 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. Operational noise levels at the boundary of the nearest residential property (155 feet to the south) to the facility are predicted to be 41 dBA. Given the current use of the subject property, the proposed facility would be considered a Class B (commercial) emitter. 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. 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. The noise calculation included the noise dampening material.

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.

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.

Fuel Cell Location



Legend

- Site
- Abutting Property
- Project Area
- Underground Electrical Service
- Underground Water Service
- Underground Gas Service
- Approximate Assessor Parcel Boundary

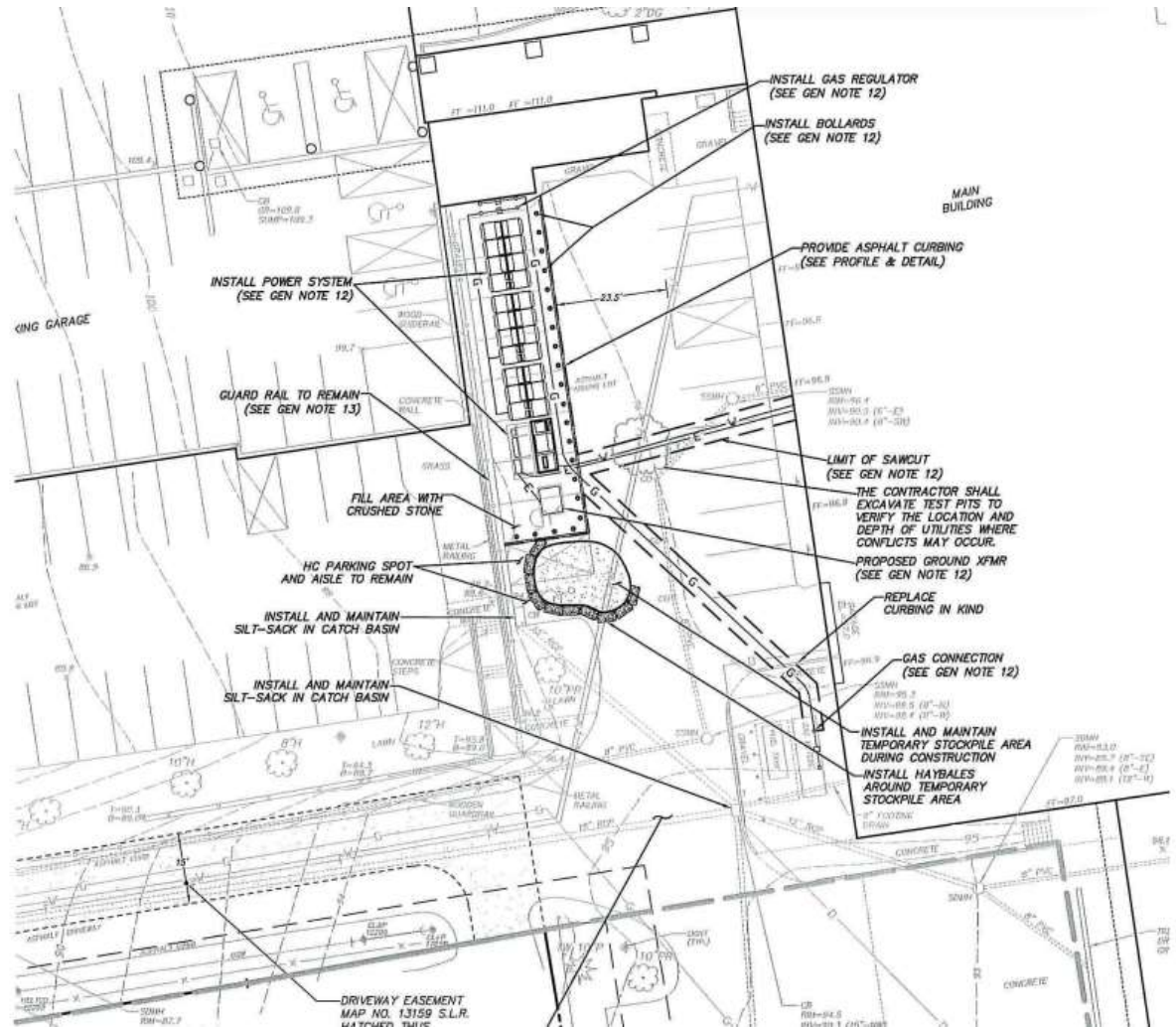
Map Notes:
Base Map Source: CT/CO 2019 Aerial Photograph
Map Scale: 1 inch = 250 feet
Map Date: January 2022



Exhibit 2 Site Vicinity

Proposed Bloom Energy Facility
Stamford Health Tully Center
32 Strawberry Hill Court
Stamford, Connecticut

Site Plan



Photograph of Site Plan Area

