

DRAFT

Petition No. 1493
Bloom Energy Corporation
Saint Mary's Hospital, 56 Franklin Street
Waterbury, Connecticut
Staff Report
May 6, 2022

Introduction

On March 2, 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 1.5 megawatt (MW) fuel cell facility and associated equipment to be located at Saint Mary's Hospital, 56 Franklin Street, Waterbury, Connecticut. (Petition or Project).

Bloom provided Project plans to the City of Waterbury's (City) Planning Department on February 15, 2022. The City inquired about alternative locations on the hospital property for the proposed facility on February 16, 2022. Bloom provided a list of alternative locations on the hospital property it explored for the facility and the reasons for concluding the proposed location has less impact on access and visibility than the City's suggested locations and is acceptable to St. Mary's Hospital on February 22, 2022.

On February 25, 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 3, 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 1, 2022. No comments were received.

Also, on March 3, 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 1, 2022. No comments were received.

The Council issued interrogatories to Bloom on April 4, 2022. Bloom provided responses to the Council's interrogatories on April 14, 2022.

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take action on a petition within 60 days of receipt. On April 21, 2022, 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 August 29, 2022, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

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 Trinity Health Corporation (Trinity).

Project Site

The proposed facility is to be located on a 4.75-acre site comprised of two adjoining parcels owned by St. Mary's Hospital. The site is zoned Central Business District (CBD) and is developed with the main Hospital building, a parking garage and parking lots. The facility would be located in the southern portion of the eastern parcel and utilities would be routed underground to the hospital building utility plant on the western parcel.

The surrounding area consists of commercial development. The nearest residential property line from the proposed facility is approximately 450 feet to the south beyond Interstate 84.

Proposed Project

The facility would consist of five Bloom Energy 300-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 fuel cell facility would consist of five energy servers measuring approximately 32 feet 3 inches long by 4 feet 4 inches wide by 7 feet tall installed on a concrete pad. See Attached Site Plan for detail.

The fuel cell facility would be constructed within an existing paved parking area. Three existing bollards and the existing asphalt curb would be removed to accommodate the proposed facility.

To protect the fuel cell from potential vehicle damage, removable bollards and concrete wheel stops would be installed north and south of the facility respectively along its border with the existing paved area. The fuel cells are tamper proof and can only be accessed by essential personnel with a unique access key.

The natural gas interconnection would run underground to nearby existing gas utility infrastructure located west of the facility. Electric connections would extend west to an existing electrical service box within the generator room located on the ground floor of the hospital building. New meters and other electrical equipment would be installed adjacent to the proposed facility. A water connection would also occur within the lower level of the hospital 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 health center building. The proposed facility is sized to provide at least 83% of the average annual baseload of the Hospital. 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 approved by Eversource in October of 2021.

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, Trinity 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 days/hours would be Monday-Friday, 7AM – 5 PM.

The estimated cost of the facility is \$1,690,359.

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 (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.

One existing landscape tree shall be trimmed and relocated to provide the required minimum clearance for the fuel cell. Visual impact from the proposed Project would be minimal as it is located on the hospital campus among existing vegetation, buildings and parking lots. The hospital building would block views from the west and northwest. Views of the facility from the east and southeast would be limited by the existing landscape trees and retaining wall supporting the ramp from Baldwin Street.

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 3.6 miles to the southeast. The site is not located within a DEEP Natural Diversity Database buffered area.

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 Waterbury 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 36 dBA at the nearest residential receptor located approximately 450 feet to the south 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.

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;
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	— Underground Electrical Service		Approximate Assessor Parcel Boundary
	Abutting Property	— Underground Water Service		Municipal Boundary
	Project Area			
	Switch			

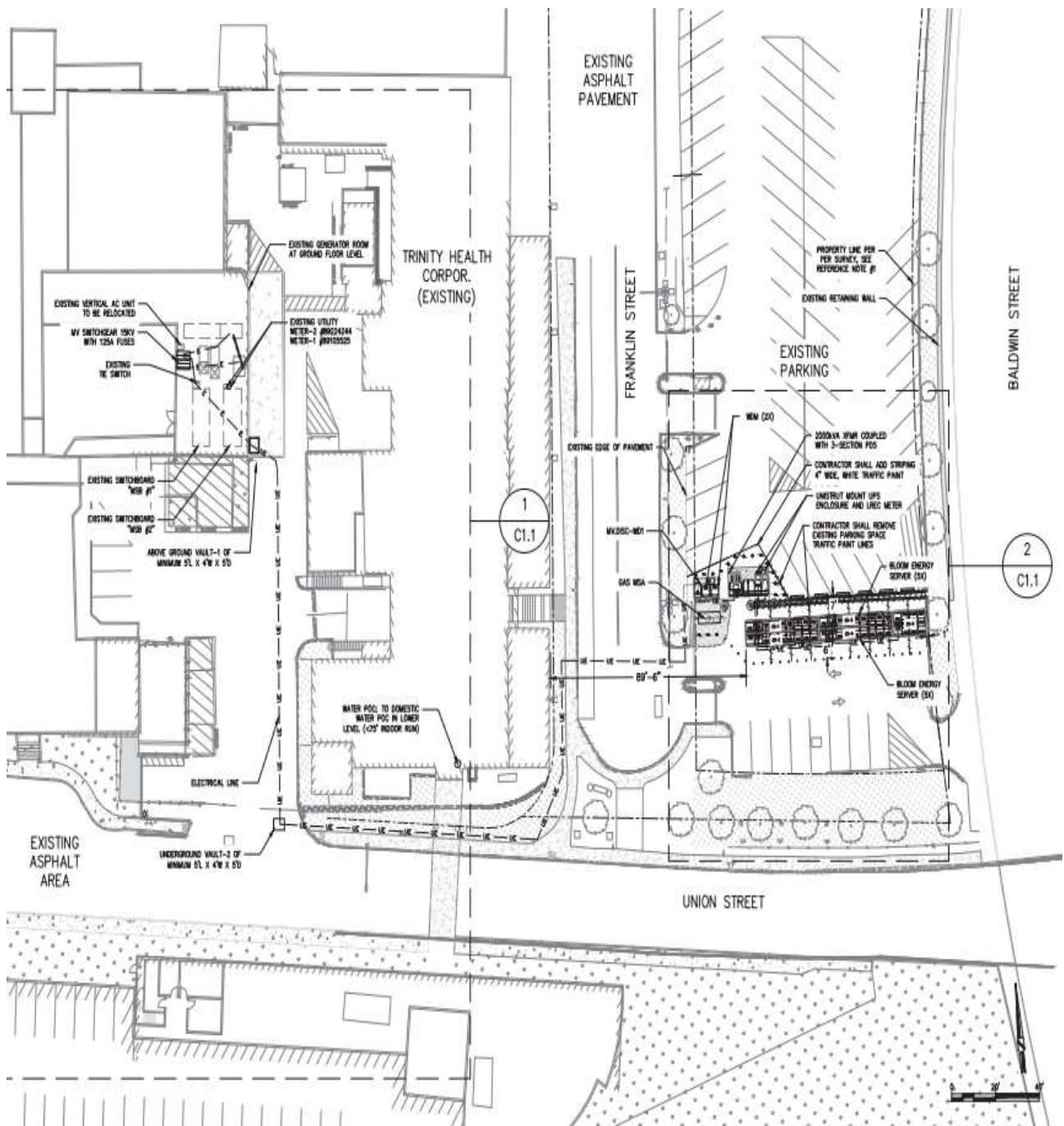
Map Notes:

Base Map Source: CTECO 2019 Aerial Photograph
Map Scale: 1 inch = 350 feet
Map Date: January 2022

350 175 0 350
Feet



Site Plan



Photographs of Site Plan Area



Looking west toward Hospital and former Franklin Street; proposed fuel cell location at right



Looking northeast toward proposed fuel cell location (left side of photo)