

DRAFT

**Petition No. 1548
Bloom Energy Corporation
Bristol Hospital
41 Brewster Road, Bristol, Connecticut**

**Staff Report
January 13, 2023**

Introduction

On November 14, 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 600-kilowatt (kW) fuel cell facility and associated equipment to be located at Bristol Hospital, 41 Brewster Road in Bristol, Connecticut (Petition or Project).

Bloom provided Project plans to the City of Bristol (City) Planning Officer on September 30, 2022. No comments were received from the City.

On November 4, 2022, Bloom provided notice of the Project to abutting property owners, City officials, and required state agencies and officials. On November 9, 2022, Bloom received a request from an abutting property owner for additional information on the Project. Bloom provided electronic copies of the site plan, photographs of the proposed location and its equipment specifications sheet. No further comments were received.

On November 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 December 14, 2022. No comments were received.

Also on November 15, 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 December 14, 2022. No comments were received.

The Council issued interrogatories to Bloom on November 20, 2022. Bloom provided responses to the Council's interrogatories on December 22, 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 December 22, 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 May 13, 2023, 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 Emissions Renewable Energy Credit (LREC) program. The Facility would be installed, maintained and operated by Bloom under a 20-year power purchase agreement with Bristol Hospital.

The Project is not proposed to be undertaken by state departments, institutions or agencies, and is not to be funded in whole or in part by the state through any contract or grant. Bloom did not participate in any state or utility-sponsored renewable energy procurement programs for the Project. It is a privately funded Project.

Project Site

The proposed facility would be located on a 12.03-acre parcel owned by Bristol Hospital Inc. The parcel is zoned Single-Family Residential (R-15) and is developed with the main hospital building, an adjoining emergency medical center, other hospital buildings and parking lots. The facility would be located in the central portion of the parcel within an existing lawn area adjacent to the emergency medical center and utilities would interconnect with existing utility infrastructure within the main hospital building.

The surrounding area contains a mix of residential and commercial development. The nearest residential property line from the proposed facility is approximately 225 feet to the north.

Proposed Project

The facility would consist of two Bloom Energy 300-kW ES-5 solid oxide fuel cell Energy Servers and associated equipment, including water deionizers, telemetry cabinets, disconnect switches, and utility cabinets. The fuel cell facility would consist of two energy servers measuring approximately 32 feet 3 inches long by 4 feet 4 inches wide by 7 feet 2 inches tall and installed on concrete skids. See Attached Site Plan for detail.

The fuel cell facility would be installed within an approximate 53-foot 9 inch long by 26-foot 3 inch wide paved area. A service path would also extend north from the facility along the edge of the existing access drive to an existing walkway. The fuel cell facility would be located outside of a designated vehicle travel path in accordance with applicable safety codes. Bloom would install a retaining wall and a chain link fence with privacy slats on the north side of the paved area. Associated equipment would be installed to the south within an existing utility area.

Utilities (electric, water and data) would extend south via a proposed wall attached conduit to interconnect with existing utility infrastructure located within the main hospital building. The facility's natural gas interconnection would run underground along the emergency medical center access drive to an existing natural gas point of connection on Goodwin Street west of the facility site.

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 Bristol Hospital. The proposed facility is sized to provide at least 72% 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 Eversource in December 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 20 years. The solid oxide fuel cell media would be changed at five-year intervals. At the end of the 20-year contract, Bristol 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 decommissioned 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 quarter of 2023 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 \$524,886.

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.

One landscaping tree would be removed to construct the facility. Visual impact from the proposed Project would be minimal as it is located on a developed area near existing buildings, parking lots and utility and mechanical infrastructure. Views of the facility would be screened by existing buildings to the north, east and south. Partial views of the facility would be possible within the immediate area and from Goodwin Street to the west.

No wetlands, forest or prime farmland soils would be disturbed by the proposed Project as it is located entirely within paved/previously disturbed 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 DEEP Natural Diversity Database buffer area. The site is not within a Federal Emergency Management Agency-designated flood zone nor within an Aquifer Protection Area (APA). The nearest APA is approximately 0.8 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 Nitrogen 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 City Fire Marshal and would provide on-site training to local officials. The fuel cell components are contained within a metal enclosure that is locked with a unique key and would prevent unauthorized access.

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 26 dBA at the nearest residential receptor located approximately 225 feet to the north 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.

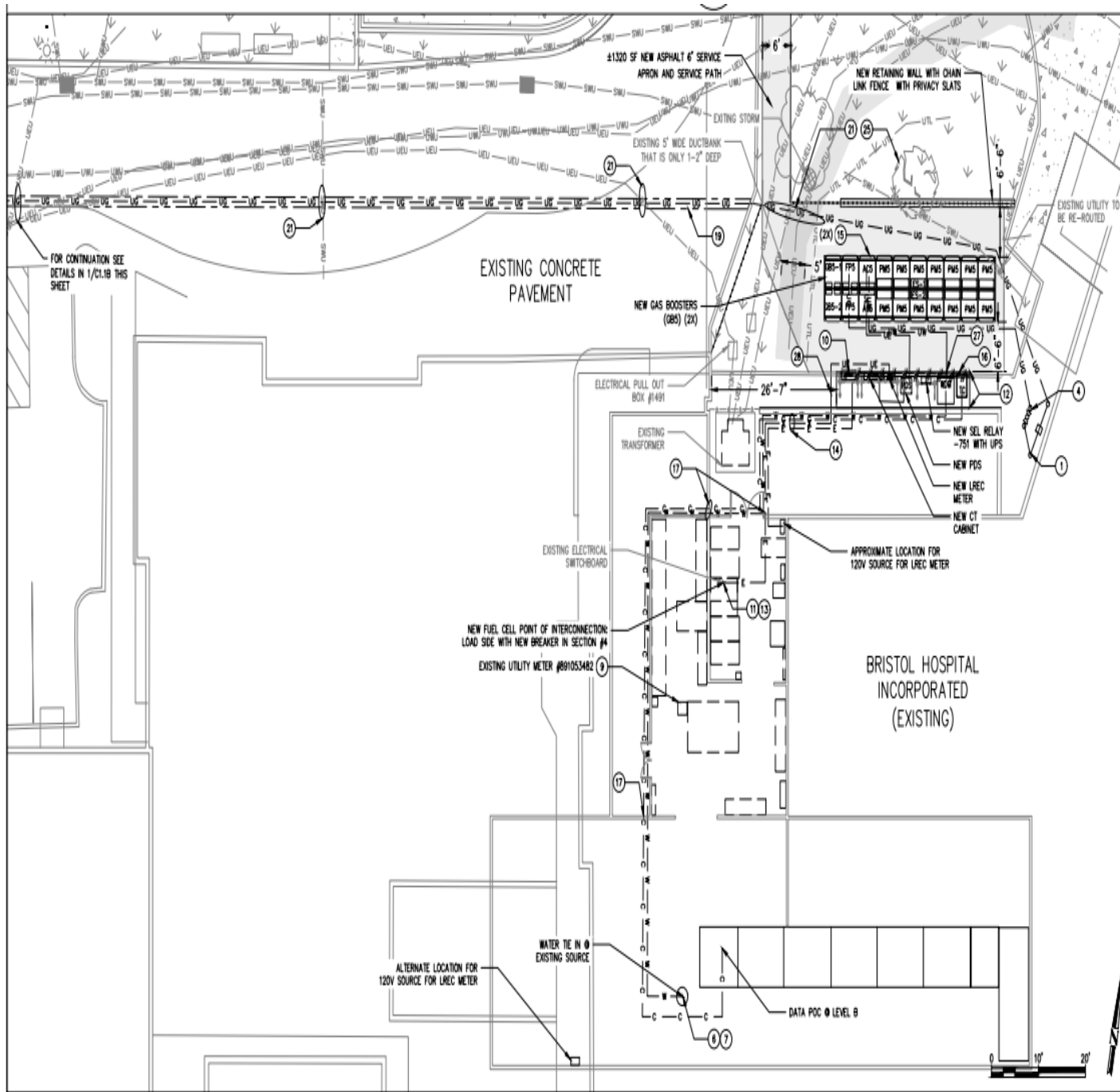
If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff; 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



Site Plan



DETAILED SITE PLAN

SCALE: 1" = 10'

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C1.1 /

Site Location Photographs



Looking west toward Goodwin Street; Facility location in foreground



Looking southeast toward Facility location at left of photo