

**Petition No. 1485**  
**Bloom Energy Corporation**  
**Stamford Hospital, 1 Hospital Plaza**  
**Stamford, Connecticut**  
**Draft Staff Report**  
**April 1, 2022**

**Introduction**

On February 7, 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 to be located at Stamford Hospital, 1 Hospital Plaza, Stamford, Connecticut.

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

On January 28, 2022, Bloom provided notice of the project to abutting property owners, City officials and required state agencies and officials. No comments were received.

On February 8, 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 9, 2022. The Council has not received any comments to date.

Also on February 8, 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 9, 2022. No comments were received.

The Council issued interrogatories to Bloom on March 2, 2022. Bloom provided responses to the Council's interrogatories on March 11, 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 28.48-acre parcel zoned HCDD, Hospital Complex Design District, that is owned by Stamford Hospital and developed with three medical buildings, an outbuilding, a utility plant and multiple surface parking lots. The host parcel abuts West Broad Street and single family residential properties to the north, multiple family residential properties to the east and west, and a Village Commercial District to the south. The fuel cell facility would be located in the southern portion of the host property.

The surrounding area consists of mostly high-density multi-unit residential development and commercial properties. The nearest residential property line from the proposed facility is approximately 175 feet to the south.

### **Proposed Project**

The facility would consist of five Bloom Energy 300-kW ES-5 solid oxide fuel cell Energy Servers (model ES5-YASAAN), two Bloom Energy 250-kW ES-5 solid oxide fuel cell Energy Server (model ES5-EAXAAN) and associated equipment, including water deionizers, telemetry cabinets, disconnect switches, a transformer and utility cabinets. The fuel facility would consist of five energy servers measuring approximately 32 feet 3 inches long by 4 feet 4 inches wide by 7 feet 2 inches tall and two energy servers measuring 28 feet 8 inches 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 a landscaped area bounded by the main medical building to the north, a parking area to the west, Finney Lane to the south and the access drive for the Hospital Emergency Room to the east.

To protect the fuel cell from potential vehicle damage, removable bollards would be installed west of the facility along its border with the existing paved area. Bloom energy 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 existing utility infrastructure located southeast of the facility. Electric connections would extend north to an existing electrical service box located within the basement of the main hospital building. New meters and other electrical equipment would be installed adjacent to the proposed facility. A water connection would also occur within the main medical 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 56% 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 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 \$1,579,265.00.

### 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 <sub>x</sub>	<del>0.0017</del> 0.01 see P.7 petition
CO <sub>2</sub> *	679-833

\* DEEP amended its regulations in 2016 to eliminate the CO<sub>2</sub> 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 CO<sub>2</sub> 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<sub>4</sub>), sulfur hexafluoride (SF<sub>6</sub>), 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.

The facility would be visible from the immediate surrounding area to the west and south of the facility; however, the main medical building would block views from the north and northwest. Views of the facility from the east and southeast would be limited by the existing medical office building and the utility plant.

Eight ornamental plantings would be removed to construct the facility. Once construction is complete, Bloom would plant a deciduous tree and 63 shrubs along the north, east and south sides of the facility.

No wetlands were identified within or proximate to the proposed project. The facility would be located entirely within paved areas on a highly 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 2.29 miles to the northeast. The site is not located within a DEEP Natural Diversity Database (NDDB) 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 (175 feet to the south) to the facility are predicted to be 45 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
- Existing Basement Wall
- Abutting Property
- Project Area
- Existing Equipment
- Approximate Assessor Parcel Boundary
- Underground Electrical Service
- Underground Water Service
- Underground Gas Service

Map Data  
 Base Map Source: CTECO 2019 Aerial Photograph  
 Map Scale: 1 inch = 200 feet  
 Map Date: December 2021



### Exhibit 2 Site Vicinity

Proposed Bloom Energy Facility  
 Stamford Hospital  
 1 Hospital Plaza  
 Stamford, Connecticut



# **Site Plan**



**Photograph of Site Plan Area**

