



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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### **CERTIFIED MAIL RETURN RECEIPT REQUESTED**

April 28, 2017

Justin Adams  
Bloom Energy Corporation  
1299 Orleans Drive  
Sunnyvale, CA 94089

RE: **PETITION NO. 1292** - Bloom Energy Corporation, as an agent for Digital Realty, petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, operation and maintenance of a Customer-Side 2 Megawatt Fuel Cell Facility to be located at the Digital Realty building, 80 Merritt Boulevard, Trumbull, Connecticut.

Dear Mr. Adams:

At a public meeting held on April 27, 2017, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k would not require a Certificate of Environmental Compatibility and Public Need, with the following conditions:

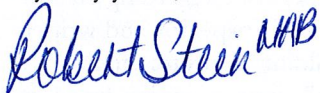
1. Approval of any minor project changes be delegated to Council staff;
2. The use of natural gas as a fuel system cleaning medium during fuel cell construction, installation or modification shall be prohibited;
3. Submit the following information to the Council 15 days prior to any fuel pipe cleaning operations related to fuel cell construction, installation, or modification:
  - a. Identification of the cleaning media to be used;
  - b. Identification of any known hazards through use of the selected cleaning media;
  - c. Description of how known hazards will be mitigated, including identification of any applicable state or federal regulations concerning hazard mitigation measures for such media;
  - d. Identification and description of accepted industry practices or relevant regulations concerning the proper use of such media;
  - e. Provide detailed specifications (narratives/drawings) indicating the location and procedures to be used during the pipe cleaning process, including any necessary worker safety exclusion zones;
  - f. Identification of the contractor or personnel performing the work, including a description of past project experience and the level of training and qualifications necessary for performance of the work;
  - g. Contact information for a special inspector hired by the project developer who is a Connecticut Registered Engineer with specific knowledge and experience regarding electric generating facilities or a National Board of Boiler and Pressure Vessel Inspector and written approval of such special inspector by the local fire marshal and building inspector; and
  - h. Certification of notice regarding pipe cleaning operations to all state agencies listed in General Statutes § 16-50j(h) and to the Department of Consumer Protection, Department of Labor, Department of Public Safety, Department of Public Works, and the Department of Emergency Management and Homeland Security;

4. Compliance with the following codes and standards during fuel cell construction, installation or modification, as applicable:
  - a. NFPA 54
  - b. NFPA 853; and
  - b. ASME B31;
5. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;
6. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the Towns of Trumbull and Stratford;
7. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
8. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;
9. This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and
10. If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated February 24, 2017, and additional information received on March 13, 2017 and April 3, 2017, and in compliance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,



Robert Stein  
Chairman

RS/RDM/lm

Enclosure: Staff Report dated April 27, 2017

- c: The Honorable Timothy M. Herbst, First Selectman, Town of Trumbull
- Rob Librandi, Land Use Planner, Town of Trumbull
- Douglas Wenz, Zoning Enforcement Officer, Town of Trumbull
- The Honorable John A. Harkins, Mayor, Town of Stratford
- Jay Habansky, Planning & Zoning Administrator, Town of Stratford
- Joseph Udinsky, Bloom Energy Corporation



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### Petition No. 1292

**Bloom Energy Corporation – Digital Realty  
80 Merritt Boulevard, Trumbull, Connecticut**

**Staff Report**

**April 27, 2017**

On February 27, 2017, the Connecticut Siting Council (Council) received a petition (Petition) from Bloom Energy Corporation (Bloom), as an agent for Digital Realty Trust (DRT), for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the installation of a two megawatt (MW) solid oxide fuel cell facility at the DRT building located at 80 Merritt Boulevard in Trumbull, Connecticut.

Prior to filing the Petition, Bloom discussed the proposed facility with the Town of Trumbull Land Use Planner. Bloom provided formal notification of the project to abutting property owners, Town of Trumbull officials, Town of Stratford officials (within 2,500 feet) and required state agencies and officials on or about February 4, 2017. Based on consultations with the Town of Trumbull, Bloom submitted a revised site plan on March 13, 2017. The Council submitted interrogatories to Bloom on March 17, 2017. Bloom responded to the Council's interrogatories on April 3, 2017 that included additional project information and a new site plan.

The project site is located on an 8.2-acre parcel that is developed with a commercial building used as a data center. The parcel is zoned Light Industrial (I-L3) and abuts other I-L3-zoned property. The nearest residential property is located approximately 1,200 feet to the east along Huntington Road.

Bloom and DRT have entered into an agreement whereby Bloom would install, operate and maintain eight Bloom 250 kW ES-5 Energy Server fuel cells that would provide approximately 80 percent of the building's electric needs under normal operating conditions. Any surplus electricity that is generated would feed into United Illuminating's local electric distribution system for use by the grid. The facility would have uninterruptable power modules (UPMs) that would allow the fuel cell facility to provide 400 kW of power to critical building load in the event of a utility power outage.

The Connecticut Public Utilities Regulatory Authority classifies the Bloom ES-5 Energy Server fuel cell as a Class I renewable energy source. The Bloom fuel cell uses non-combustion solid oxide technology that consumes natural gas as fuel to generate electrical power. The facility would be a customer-side, distributed resources project, designed only to provide electricity. The fuel cell 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, the facility would either be dismantled and removed from the property or maintained on-site under a new contract.

The fuel cell facility would be located at the rear of the building (northwest corner), accessed by an existing driveway extending from Nutmeg Drive. The fuel cell facility would be located partially within an existing gravel surfaced mechanical area and partially in a paved driveway that serves a rear parking area. The gravel area would be expanded by 1,340 square feet into the paved area. The expansion of the mechanical area would remove some landscaping and several parking spots. Bloom has coordinated with DRT to install replacement parking spots elsewhere on the property in order to ensure no net loss of parking spaces.

The eight ES-5 units would be arranged in three rows, each composed of power modules and associated utility cabinets mounted on concrete pads. Two of the equipment rows would include two UPMs and three water deionizers. Each row would be approximately 55 feet long, 8.5 feet wide and 7 feet tall and separated from each other by an eight-foot wide maintenance access way. A fourth, approximately 30-foot long row of additional equipment cabinets would be located on the south end of the facility, adjacent to the DRT building. Two gas interconnection regulators would be located on the north side of the facility. Electric and gas connections would extend underground to the fuel cell facility from existing service on the property.

Site safety features include bollards to protect the facility from accidental vehicle impact and locking outer fuel cell panels to prevent unauthorized access to interior components. An existing ten-foot tall chain link fence enclosing the existing mechanical area would be extended to include the fuel cell facility. Warning and contact signs would be placed at interconnection points and at appropriate locations on the fuel cell facility.

The fuel cell facility has internal and remote 24/7 operational monitoring. Abnormal operation would cause the unit to automatically shut down. The fuel cell can also be shut down through a remote operations center as well as by manual switches on the unit. The fuel cell facility is designed in accordance with American National Standards Institute and Canadian Standards Association (ANSI/CSA) America FC 1-2014 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 for the facility has been developed by Bloom and is included within the Petition.

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards. Bloom’s design requires an initial input of approximately 752 gallons of water for facility startup or restart operations. Water deionizers would be installed to treat the incoming water using an ion exchange resin. During normal operation, no additional water is consumed or discharged. The water deionizers would be regularly maintained through the life of the project. The proposed facility is not located within an aquifer protection area. The site is not within a designated 100-year or 500-year flood zone or within a DEEP designated Coastal Management Area. The nearest wetland area is located 1,000 feet to the west of the facility.

The fuel cell facility would not require a DEEP air permit as operational air emissions would be below applicable DEEP limits, as shown in the table below:

Comparison of the Fuel Cell Facility with Applicable Air Emission Criteria		
Compound	Fuel Cell Facility (lbs/MWh)	Emission Standard (lbs/MWh)
NO <sub>x</sub>	<0.01	0.07 <sup>1</sup>
CO	<0.05	0.1 <sup>1</sup>
CO <sub>2</sub>	679-833	1,650 <sup>2</sup>

<sup>1</sup> Low Emissions Renewable Energy Credit Program

<sup>2</sup> Regulations of Connecticut State Agencies Section 22a-174-42(b)(3)(C); 22a-174-42(d)(2)(B)(ii) & Table 42-2

The project would result in a net carbon dioxide reduction for the environment because it would displace emissions from traditional fossil-fueled generation. The proposed facility would reduce net CO<sub>2</sub> emissions for the environment by at least 25 percent per year when compared to the ISO-NE fossil fuel output emissions rate.

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 gasses defined in Regulations of Connecticut State Agencies Section 22a-174-1(49), and would emit negligible amounts of sulfur oxides, a component of acid rain.

The fuel cell facility has a desulfurization process to remove sulfur compounds added to the natural gas as an odorant by the supplier. There are no air emissions related to the desulfurization process and sulfur compounds would be collected within a canister containing a filter media. When a desulfurization canister is taken out of service, typically after five years, it is transported by a Bloom contractor to a licensed out of state facility. The U.S. Department of Transportation has certified the desulfurization canister as an acceptable form of transport for the desulfurization material.

Bloom utilizes an U.S. Environmental Protection Agency (EPA) exemption that provides for the regulation of the desulfurization canisters up to the point of removal of any waste. The EPA exemption has also been incorporated into Connecticut's Hazardous Waste Management Regulations. Thus, Bloom would dispose of desulfurization canister substances at an EPA-permitted Transportation, Storage and Disposal Facility in Texas.

Any noise associated with the construction of this facility would be temporary in nature and exempt per DEEP noise regulations. According to Bloom, the operation of the facility would result in a projected noise value of approximately 59.7 dBA at the nearest abutting property line, located 40 feet to the west and zoned I-L3. The projected noise value is below the DEEP Noise Control regulatory level of 62 dBA for a commercial emitter to a commercial receptor (Class B). Facility noise would not exceed regulatory limits at the residential area to the east due to the buildings orientation that would direct noise to the west.

The proposed project is not within a DEEP Natural Diversity Database marked area. The visual impact of the proposed project to area residents would be minimal as it is located in a developed commercial and industrial area known as the Trumbull Corporate Park.

Appropriate erosion and sedimentation controls would be established prior to construction. Bloom anticipates commencing construction in the fourth quarter of 2017 with construction taking approximately 12 to 14 weeks. Construction work hours would conform to Town of Trumbull construction ordinances.

The Town of Trumbull expressed eight concerns to Bloom regarding the facility. These concerns and Blooms' response to each are as follows;

- 1) The new parking is in an underutilized area- Bloom consulted with DRT to determine the best location for additional parking;
- 2) New parking is near an existing transformer, potentially creating an impact hazard – Bloom would install bollards to protect the transformer;
- 3) Submit a landscape plan with plants 4 to 6 feet high – Bloom intends to install Glossy Buckthorn, 3 gallon size, consistent with the building's 2012 Town approved landscape plan;
- 4) What is the facility noise level? – facility complies with DEEP criteria;
- 5) Parking turn radius must be adequate – Bloom contacted the Senior Deputy Fire Marshal who stated the proposed distance would suffice;
- 6) Is new lighting for the facility proposed? – no lighting is proposed;
- 7) A site plan modification application should be submitted to the P& Z Commission – no such filing is required due to the Council's exclusive jurisdiction over of the project; and
- 8) Will safety signage be installed? – Bloom has submitted a safety sign plan for the facility.

The proposed installation would not have any substantial adverse environmental effect and would meet DEEP air and water quality standards. It would reduce the emission of air pollutants that contribute to smog and acid rain, and to a lesser extent, global climate change.

Staff recommends the following condition:

- 1) Approval of any minor project changes be delegated to Council staff.

**Location of Fuel Cell Facility**

