



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

May 26, 2017

Justin Adams  
Bloom Energy  
1299 Orleans Drive  
Sunnyvale, CA 94089

RE: **PETITION NO. 1298** - Bloom Energy Corporation, as an agent for Home Depot, 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 200 Kilowatt Fuel Cell Facility and a 100 Kilowatt Auxiliary Battery Storage Facility to be located at the Home Depot building, 440 Boston Post Road, Orange, Connecticut.

Dear Mr. Adams:

At a public meeting held on May 25, 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. Provide a copy of the Emergency Response Plan to local emergency responders prior to facility operation and provide, if requested, Emergency Response Training;
2. Installation of the ABS shall only occur after Underwriters Laboratories (UL) completes its safety evaluation and written notification shall be provided to the Council regarding completion of the UL listing;
3. Approval of any minor project changes be delegated to Council staff;
4. The use of natural gas as a fuel system cleaning medium during fuel cell construction, installation or modification shall be prohibited;
5. 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;



CONNECTICUT SITING COUNCIL  
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- 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.
6. 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.
  7. 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;
  8. 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 Town of Orange, and the City of Milford;
  9. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
  10. 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;
  11. 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
  12. 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 April 17, 2017, and additional information dated May 1, 2017 and May 9, 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 MAB*

Robert Stein  
Chairman

RS/MAB/bm

Enclosure: Staff Report dated May 25, 2017

- c: The Honorable James M. Zeoli, First Selectman, Town of Orange
- Paul Dinice, Zoning Enforcement Officer, Town of Orange
- The Honorable Benjamin G. Blake, Mayor, City of Milford
- David Sulkis, City Planner, City of Milford
- Paul Evan, Bloom Energy





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### Petition No. 1298

#### Bloom Energy Corporation

440 Boston Post Road, Orange, Connecticut

#### Staff Report

May 25, 2017

On April 19, 2017, the Connecticut Siting Council (Council) received a petition (Petition) from Bloom Energy Corporation (Bloom), as an agent for Home Depot, for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the installation of a 200-kilowatt (kW) solid oxide fuel cell facility and a 100-kW auxiliary battery system at the Home Depot building located at 440 Boston Post Road in Orange, Connecticut.

The project would be a "customer-side distributed resources" facility, as defined in Connecticut General Statutes (CGS) § 16-1(a)(34). 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 2013 Connecticut Comprehensive Energy Strategy emphasizes low- or no-emission sources of electric generation and development of more distributed generation. The proposed facility is distributed generation. Specifically, the proposed facility will contribute to fulfilling the State's Renewable Portfolio Standard as a low emission Class I renewable energy source. In its final decision in Docket No. 12-02-09, the Connecticut Public Utilities Regulatory Authority determined that the Bloom Energy Server qualifies as a Class I renewable energy source under CGS §16-1(a)(20)(A).

Prior to filing the Petition, Bloom discussed the proposed facility with the Town of Orange Zoning Administrator and Enforcement Officer. Bloom provided formal notification of the project to abutting property owners, Town of Orange officials, City of Milford officials (within 2,500 feet), and required state agencies and officials on or about April 14, 2017. No comments have been received to date. The Council submitted interrogatories to Bloom on April 25, 2017. Bloom responded to the Council's interrogatories on May 1, 2017. Additional information was submitted on May 9, 2017.

The project site is on a 14.9-acre parcel, zoned Commercial (C-2), located south of Route 1 that is developed with a Home Depot store and a second building housing multiple commercial tenants. Surrounding land uses include commercial and residential. The nearest residential property is located approximately 480 feet to the north on Orange Center Road.

Bloom and Home Depot have entered into an agreement whereby Bloom would install, operate and maintain one Bloom 200 kW ES-5 Energy Server fuel cell that would provide approximately 91 percent of the building's electric needs under normal operating conditions. In addition, Bloom would install an Auxiliary Battery System (ABS) consisting of one 90-kW battery and one 60-kW battery that would operate during peak demand periods or at other times to shift energy loads. During non-peak energy usage times, the energy server would charge the auxiliary batteries. The total production from the facility would be a maximum of 300 kW due to the maximum output rating of the facility inverter. 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 an uninterruptible power module that would allow the fuel cell facility to provide power to critical building load in the event of a utility power outage.

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. The batteries have a 10 year life span, at which time they would be replaced. 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 along the north side the building, occupying five parking spaces adjacent to the building's electrical room and exterior mechanical equipment. The facility would consist of two rows of cabinets arranged in a power block approximately 26 feet long and a battery block approximately 32 feet long. The rows would be eight feet apart and approximately eight feet wide and seven feet tall. Utility and gas connections would extend underground to the fuel cell facility from existing service at the rear of the building.

Site safety features include the installation of bollards to protect the facility from accidental vehicle impact and locking outer fuel cell and battery panels to prevent unauthorized access to interior components. The ABS features interior doors to reduce exposure to electrical hazards. The property is monitored by a security camera system. No fencing is proposed.

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. The ABS system is currently being reviewed by Underwriters Laboratories (UL) with the battery cells to be listed under UL 1642 and the battery modules listed under UL 1973. The ABS features layered safety protections including battery overcharge prevention, over pressure vents, temperature sensitive shutdown, and fuses. 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 75 gallons of water for facility startup or restart operations. A water deionizer would be installed to treat the water using an ion exchange resin that removes water impurities. During normal operation, no additional water is consumed or discharged. The site is not within a designated 100-year or 500-year flood zone or within a DEEP designated Aquifer Protection Area. The nearest wetland area is 380 feet east of the fuel cell site, beyond the edge of the parking lot. The site is not within the coastal boundary as defined in the Connecticut Coastal Management Act. The project site is not within a marked DEEP Natural Diversity Database Area.

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 Independent System Operator-New England 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 a 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.

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 fuel cell and battery systems would result in a projected noise value of approximately 35.1 dBA at the nearest residence, approximately 480 feet north of the site. This value is below the DEEP Noise Control regulatory levels of 55 dBA/day – 45 dBA/night for a commercial emitter to a residential receptor.

The visual impact of the proposed project would be minimal as it is located adjacent to existing exterior mechanical equipment. The side of the building where it is located abuts other developed commercial properties.

Appropriate erosion and sedimentation controls would be established prior to construction. Bloom anticipates commencing construction in the third quarter of 2017 with construction taking approximately 8 weeks. Construction work hours would occur during daytime hours Monday through Friday, consistent with Town of Orange construction ordinances.

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 conditions:

1. Provide a copy of the Emergency Response Plan to local emergency responders prior to facility operation and provide, if requested, Emergency Response training;
2. Installation of the ABS shall only occur after Underwriters Laboratories (UL) completes its safety evaluation and written notification shall be provided to the Council regarding completion of the UL listing; and
3. Approval of any minor project changes be delegated to Council staff.

Location of Fuel Cell Facility

