



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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www.ct.gov/csc

February 21, 2017

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

RE: **PETITION NO. 1284** - Bloom Energy Corporation, as an agent for FedEx Ground, 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 250-Kilowatt Fuel Cell Facility to be located at the FedEx Ground building, 40 Kennedy Road, South Windsor, Connecticut.

Dear Mr. Adams:

At a public meeting held on February 16, 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;

February 21, 2017

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 Town of South Windsor;
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/transferee 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 December 22, 2016, and additional information received on January 26, 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 February 16, 2017

- c: The Honorable Carolyn Mirek, Mayor, Town of South Windsor
Michele R. Lipe, AICP, Director of Planning, Town of South Windsor
Matthew B. Galligan, Town Manager, Town of South Windsor
Joseph Udinsky, Bloom Energy Corporation



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Petition No. 1284

Bloom Energy Corporation

40 Kennedy Road, South Windsor, Connecticut

Staff Report

February 16, 2017

On December 28, 2016, the Connecticut Siting Council (Council) received a petition (Petition) from Bloom Energy Corporation (Bloom), as an agent for FedEx Ground (FedEx), for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the installation of a 250-kilowatt (kW) solid oxide fuel cell facility at the FedEx building located at 40 Kennedy Road in South Windsor, Connecticut.

Prior to filing the Petition, Bloom discussed the proposed facility with the Town of South Windsor Planning and Zoning Department. Bloom provided formal notification of the project to abutting property owners, Town of South Windsor officials and required state agencies and officials on or about December 22, 2016. The Council submitted interrogatories to Bloom on January 23, 2017. Bloom responded to the Council's interrogatories on January 26, 2017. The Council has not received any written comments on this Petition to date.

The project site is located on a 60.8-acre parcel that is developed with a warehouse/distribution facility. The parcel is zoned Industrial (I) and abuts other industrially-zoned property to the south, east and west. Residential zoning abuts the property to the north/northeast with the nearest residential property approximately 1,700 feet to the northeast.

Bloom and FedEx have entered into an agreement whereby Bloom would install, operate and maintain one Bloom ES-5 Energy Server fuel cell that would provide approximately 73 percent of the building's electric needs under normal operating conditions. Any surplus electricity that is generated would feed into Eversource's electric distribution system for use by the grid.

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 would not have an Uninterruptible Power Module and would not provide backup or grid-isolated power. 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 in a lawn between a parking lot and a warehouse access road in the southwestern portion of the property. The ES-5 250-kW Energy Server fuel cell measures approximately 14.75 feet long by 8.5 feet wide by 7 feet high and would be installed on a concrete pad surround by a gravel access area. Utility equipment would be installed on an approximate 5.75-foot by 9.5-foot concrete pad adjacent to the fuel cell. Utility and gas connections would extend underground to the fuel cell facility from existing service adjacent to the west side of the building.

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. The fuel cell would be within an existing secured area.

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards. Bloom's design only requires an initial input of approximately 94 gallons of water, after which no additional water is consumed or discharged during normal operation. 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 proposed project is not within a DEEP Natural Diversity Database marked area. The nearest wetland consists of a manmade stormwater detention basin located approximately 200 feet west of the proposed facility.

Air emissions produced during fuel cell operation would be below the applicable DEEP limits, as shown in the table below – thus, no air permit is required:

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

¹ Low Emissions Renewable Energy Credit Program

² 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 CO₂ 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 (CH₄), sulfur hexafluoride (SF₆), hydrofluorocarbons (known as HFCs) or perfluorocarbons (known as PFCs), which are greenhouse gasses defined in Regulations of Connecticut State Agencies Section 22a-174-1(49), and emit negligible amounts of sulfur oxides, a component of acid rain.

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

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.

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 38 dBA at the nearest abutting property line, zoned industrial, and is well below the DEEP Noise Control regulatory level of 70 dBA.

Visual impact from the proposed project would be minimal as it is remote from public roads and is located in a developed industrial area.

Construction of the facility would require minimal grading and the removal of one landscape tree. Appropriate erosion and sedimentation controls would be established prior to construction. Bloom anticipates commencing construction in the Spring of 2017 with construction taking approximately 8 weeks. Construction work hours would conform to Town of South Windsor 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 condition:

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



Location of Site – 40 Kennedy Road, South Windsor