STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: www.ct.gov/csc

VIA ELECTRONIC MAIL

May 26, 2020

Justin Adams
Nedal Sumrein
Bloom Energy Corporation
4353 North First Street
San Jose, CA 95134
Justin.adams@bloomenergy.com
Nedal.sumrein@bloomenergy.com

RE: **PETITION NO. 1400** - Bloom Energy Corporation petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 1150-kilowatt customer-side fuel cell facility and associated equipment to be located at Eastern Connecticut State University, 165 Windham Street, Windham, Connecticut.

Dear Mr. Adams and Mr. Sumrein:

At a public meeting held on May 21, 2020, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal meets air and water quality standards of Department of Energy and Environmental Protection and 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. Provide a copy of the Emergency Response Plan to local emergency responders prior to facility operation, and provide emergency response training, if requested;

3. The use of natural gas as a fuel system cleaning medium during fuel cell construction, installation or modification shall be prohibited;

4. 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;

5. Compliance with the following codes and standards during fuel cell construction, installation or modification, as applicable:
    a. NFPA 54
    b. NFPA 853; and
    c. ASME B31;

6. Submit a copy of an Emergency Response/Safety Plan within 90 days of the date of this decision that includes, but is not limited to the following:
    a. A description of the results of any simulated emergency response activities with any state and/or local emergency response officials;
    b. Details of any facility site access system; and
    c. Establishment of an emergency responder/local community notification system for on-site emergencies and planned construction-related activities that could cause community alarm. The system shall include notification to the following: local emergency responders, city or town officials, state legislators, and local residents that wish to participate.

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 Windham;

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 13, 2020, and additional information received April 27, 2020 and May 7, 2020, 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.

Sincerely,

s/ Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/emr

Enclosure: Staff Report dated May 21, 2020

c: The Honorable Victor Funderburk, Mayor, Town of Windham
James Rivers, Town Manager, Town of Windham
Matthew Vertefeuille, Director of Code Enforcement, Town of Windham
Michael Licata, Fire Marshal/Emergency Management Director, Town of Windham

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: www.ct.gov/csc

Petition No. 1400
Bloom Energy Corporation
Eastern Connecticut State University
165 Windham Street
Windham, Connecticut
Staff Report
May 21, 2020

Introduction

On April 13, 2020, 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 proposed construction, maintenance and operation of a customer-side 1,150 kilowatt (kW) fuel cell facility and associated equipment to be located at Eastern Connecticut State University (ECSU) at 165 Windham Street in Windham, Connecticut.

Prior to submitting the Petition, a Bloom representative contacted Matthew Vertefeuille, Director, Department of Development, Town of Windham (Town) and provided plans for the Town's review. Mr. Vertefeuille responded by email and requested that landscape screening be provided between any residential structures and the proposed fuel cell facility. On April 3, 2020, Bloom provided notice of the project to abutting property owners, Town officials, and required state agencies and officials.

On April 13, 2020, the Council sent correspondence to the Town stating that the Council has received the Petition and invited the Town to contact the Council with any questions or comments by May 13, 2020. The Council has not received any comments to date.

Also on April 13, 2020, pursuant to Regulations of Connecticut State Agencies §16-50j-40, the Council notified all state agencies listed therein, requesting comments regarding the proposed project be submitted to the Council by May 13, 2020. No comments were received.

The Council issued interrogatories to Bloom on April 22, 2020. On April 27, 2020, Bloom submitted responses to the Council's interrogatories. On May 6, 2020, the Council issued a second set of interrogatories to Bloom. On May 7, 2020, Bloom submitted responses to the second set of interrogatories.

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. 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). The project was selected as part of the Low and Zero Emissions Renewable Energy Credit (LREC/ZREC) program.

Project Site

The proposed site would be located on a portion of the ECSU campus that consists of a 22.1-acre parcel and other smaller lots totaling 1.0 additional acre in the Residential R-6 Zone. The northern portion of the site contains a parking area, and the southern portion of the site contains a substation yard. The ECSU campus extends to the north, south and west of the proposed site. High Street is located to the east of the proposed site. The opposite side of High Street (farther to the east) is residential. The nearest residentially developed property is located approximately 158 feet east of the proposed facility.

Proposed Project

The facility would consist of three 300-kW and one 250-kW Bloom Energy ES-5 solid oxide fuel cells. These units each have dimensions of approximately 28'8" long by 4'4" wide by 7'2" high. The fuel cell facility would be installed on an existing mostly paved parking area located north of the existing substation yard. The associated equipment includes water deionizers, telemetry cabinets, disconnect switches, and utility cabinets. The proposed fuel cells and equipment would be located within a new compound (with an approximately 1,170 square foot gravel surface) that would be attached to the substation yard. The fuel cell facility compound would have an 8-foot tall chain link fence with privacy slats. Bollards would be installed on the north, east and west sides to protect the facility. Arborvitae/Leyland cypress bushes would be planted along the southern and eastern limits of the proposed compound to provide visual screening from off-site residential areas.

The electrical connection would run underground to the south to the existing substation yard. Natural gas would be supplied underground from the east from an existing gas main on High Street. Water would be supplied underground from an existing building on the ECSU campus to the north.

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 about 70 percent of the average ECSU annual baseload of 1,650 kW. Electricity generated by the facility would be consumed primarily by ECSU, and any excess electricity would be exported to the grid.

The proposed Bloom fuel cell units are designed to optimize the electrical efficiency alone rather than operate as combined heat and power (CHP) units. Bloom discussed the possibility of CHP with ECSU. However, a CHP facility would not result in increased efficiency of the electrical output and would also have a negative impact on the costs associated with installing the system. Thus, ECSU did not wish to pursue a CHP option.

The fuel cell facility has an operational life of 20 years equal to the 20-year contract with the state. The solid oxide fuel cell media would be changed at approximately five year intervals. At the end of the 20-year contract, the state 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 fourth quarter of 2020 with 14 weeks of total construction time, i.e. 6 weeks for site prep, 4 weeks for installation and 4 weeks for commissioning. Construction hours are expected to be Monday to Friday from 7:00 a.m. to 5:00 p.m.

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 site is not located within a DEEP-designated Aquifer Protection Area. 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 be below DEEP applicable limits for a new distributed generator, as shown below, and thus, no DEEP air permit is required.

Comparison of the Fuel Cell Facility with RCSA Criteria *		
Compound	Fuel Cell Facility (lbs/MWh)	Emissions standards (lbs/MWh)
NOx	<0.01	0.15
CO_2	679-833	1,650

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

The proposed facility would emit no methane (CH_4), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs), which are greenhouse gases defined in Regulations of Connecticut State Agencies Section 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. Because the spent desulf units are used to make copper products, the desulf units are exempted from hazardous waste requirements as "excluded recyclable material."

Visual impact from the proposed project would be minimal as it would be located adjacent to an existing utility installation. In general, any off-site visibility would be minimized by distance, existing structures and mature trees, and proposed landscape plantings. The proposed landscape plantings would have an initial height of six feet and would be expected to grow to at least the height of the proposed 8-foot fence. Privacy slats on the proposed fence would also provide screening.

No wetlands would be disturbed by the proposed project. The site is not within a Federal Emergency Management Agency-designed flood zone. The site is not located within ¼-mile of a DEEP Natural Diversity Database (NDDB) buffered area. The site is previously disturbed and not expected to impact historic resources.

Any noise associated with the construction of this project would be temporary in nature and exempt per DEEP Noise Control Regulations. The operation of the proposed facility would meet DEEP Noise Control Regulations at the nearest off-campus property line.

Public Safety

Before commissioning of the proposed facility, Doosan would use nitrogen gas 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 the 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 (ERP) for the facility is included within the Petition. Bloom provided the ERP to ECSU and the Town Fire Department. As part of the building permit application review process, the Windham Fire Marshal/Emergency Management Department would review the project. During this review, Bloom would provide any on-site training requested by 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.

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.

Recommendation

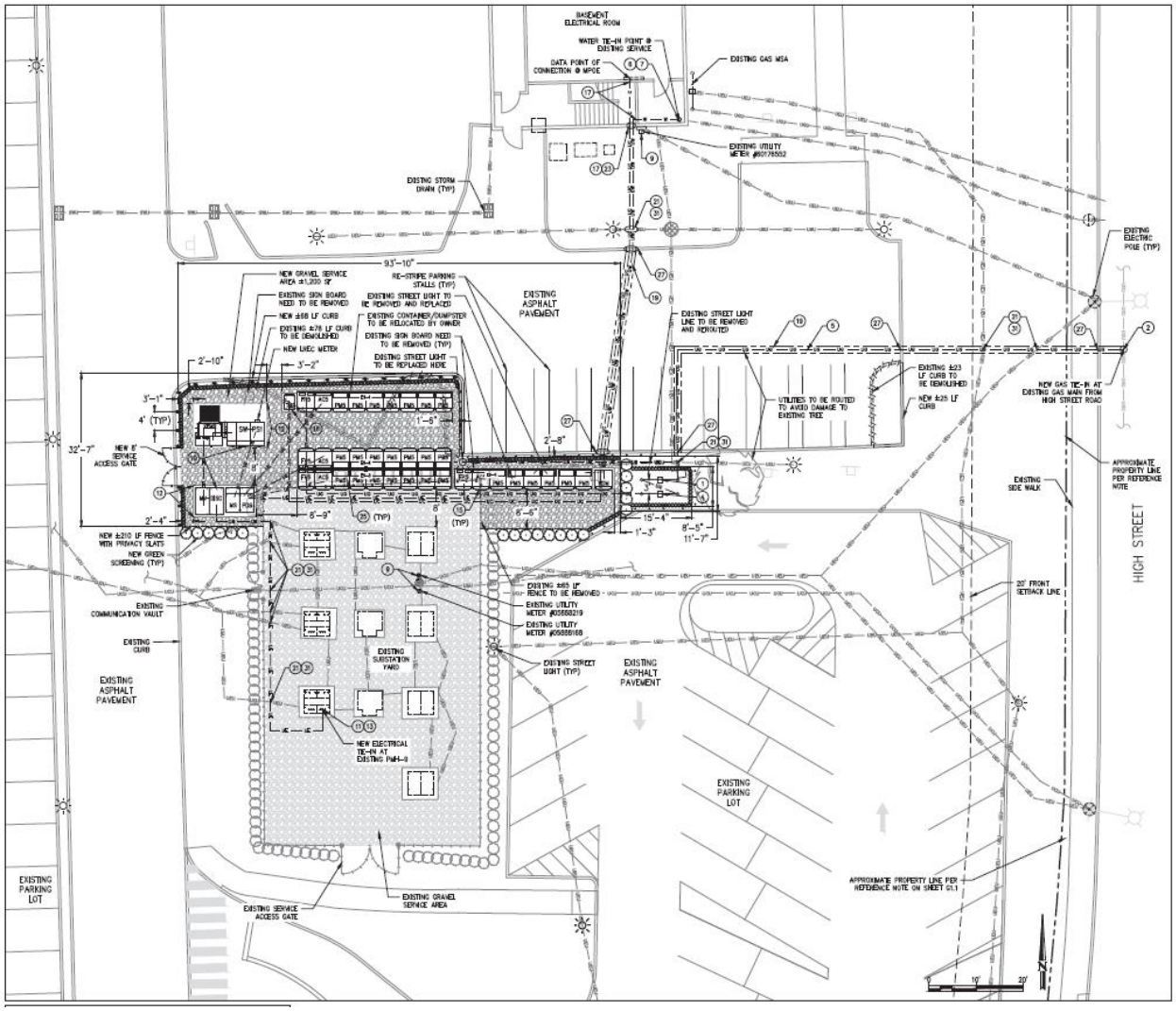
If approved, staff recommends the following conditions:

1. Approval of any minor project changes be delegated to Council staff; and

2. Provide a copy of the Emergency Response Plan to local emergency responders prior to facility operation, and provide emergency response training, if requested.

Fuel Cell Location

Site Plan


BASEMENT ELECTRICAL ROOM
WATER TIE-IN POINT @ EXISTING SERVICE
DATA POINT OF CONNECTION @ MPOE
EXISTING GAS MSA
EXISTING UTILITY METER #007795502
EXISTING STORM DRAIN (TYP)
EXISTING ELECTRIC POLE (TYP)
93'-10"
NEW GRAVEL SERVICE AREA ±1,000 SF
EXISTING SIGN BOARD NEED TO BE REMOVED
NEW ±68 LF CURB
EXISTING ±78 LF CURB TO BE DEMOLISHED
NEW LNEC METER
RE-STRIPE PARKING STALLS (TYP)
EXISTING STREET LIGHT TO BE REMOVED AND REPLACED
EXISTING CONTAINER/DUMPSTER TO BE RELOCATED BY OWNER
EXISTING SIGN BOARD NEED TO BE REMOVED (TYP)
EXISTING STREET LIGHT TO BE REPLACED HERE
EXISTING ASPHALT PAVEMENT
EXISTING STREET LIGHT LINE TO BE REMOVED AND REROUTED
UTILITIES TO BE ROUTED TO AVOID DAMAGE TO EXISTING TREE
EXISTING ±23 LF CURB TO BE DEMOLISHED
NEW ±25 LF CURB
NEW GAS TIE-IN AT EXISTING GAS MAIN FROM HIGH STREET ROAD
APPROXIMATE PROPERTY LINE PER REFERENCE NOTE
EXISTING SIDE WALK
HIGH STREET
2'-10"
3'-2"
3'-1"
4' (TYP)
32'-7"
NEW 6' SERVICE ACCESS GATE
1'-6"
2'-8"
2'-4"
5'-9"
6'
6'-6"
15'-4"
1'-3"
8'-5"
11'-7"
NEW ±210 LF FENCE WITH PRIVACY SLATS
NEW GREEN SCREENING (TYP)
EXISTING ±65 LF FENCE TO BE REMOVED
EXISTING UTILITY METER #06666219
EXISTING UTILITY METER #06666168
EXISTING COMMUNICATION VAULT
EXISTING CURB
EXISTING STREET LIGHT (TYP)
EXISTING SUBSTATION YARD
EXISTING ASPHALT PAVEMENT
20' FRONT SETBACK LINE
NEW ELECTRICAL TIE-IN AT EXISTING PMH-8
EXISTING PARKING LOT
EXISTING PARKING LOT
EXISTING SERVICE ACCESS GATE
EXISTING GRAVEL SERVICE AREA
APPROXIMATE PROPERTY LINE PER REFERENCE NOTE ON SHEET G1.1
N
0'
10'
20'