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

June 8, 2020

Justin Adams
Nedal Sumrein
Bloom Energy Corporation
4353 North First Street
San Jose, CA 95134

RE: **PETITION NO. 1403**- 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 600-kilowatt customer-side fuel cell facility and associated equipment to be located at Southern Connecticut State University, North Campus, 201 Wintergreen Avenue, New Haven, Connecticut**.**

Dear Mr. Adams and Mr. Sumrein:

At a public meeting held on June 4, 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. 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;

7. 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 City of New Haven:

8. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

9. 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;

10. 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

11. 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 24,

2020, and additional information received on May 18, 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/MP/lm

Enclosure: Staff Report dated June 4, 2020

c: The Honorable Justin Elicker, Mayor, City of New Haven
Scott Jackson, Acting Chief Administrative Officer, City of New Haven
Aicha Woods, A.I.A. Executive Director, City Plan Development, City of New Haven
John Alston, Jr., Fire Chief, City of New Haven
The Honorable Curt B. Leng, Mayor, Town of Hamden
Dan Kops, Planning & Zoning, Town of Hamden

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Petition No. 1403
Bloom Energy Corporation
Southern Connecticut State University
201 Wintergreen Avenue
New Haven, Connecticut
Staff Report
June 4, 2020

Introduction

On April 24, 2020, the Connecticut Siting Council (Council) received a petition (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 600 kilowatt (kW) fuel cell facility and associated equipment to be located at Southern Connecticut State University (SCSU) at 201 Wintergreen Avenue in New Haven, Connecticut.

On April 22, 2020, Bloom provided notice of the project to abutting property owners, City officials, and required state agencies and officials. On April 22, 2020, Bloom also provided notice to the Town of Hamden (Town) because it is located within 2,500 feet of the proposed facility.

On April 27, 2020, the Council sent correspondence to the City and the Town stating that the Council has received the Petition and invited the City and Town to contact the Council with any questions or comments by May 24, 2020. The Council has not received any comments to date.

Also on April 27, 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 24, 2020. On May 22, 2020, the Connecticut Department of Transportation responded that it has no comments. No other comments were received.

The Council issued interrogatories to Bloom on May 12, 2020. On May 18, 2020, Bloom submitted responses to the Council's 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 the SCSU North Campus on the western portion of a 22.62-acre parcel in the Cemetery zoning district. The northern portion of the site is a grass area that contains existing tadpole pools. The southern portion of the site contains the existing Energy Center[1] building and tennis courts. The Town landfill and transfer station is located north of the subject property. A cemetery is located west of Wintergreen Avenue. SCSU development is located to the south and east of the proposed site. The nearest residentially developed property is located approximately 1,171 feet northeast of the proposed facility.

Proposed Project

The facility would consist of three 200-kW Bloom Energy ES-5 solid oxide fuel cells. The "block" of three fuel cell units would have overall dimensions of approximately 37' long by 9' wide by 7' high. The fuel cell facility would be installed on an existing grass area located north of the existing Energy Center building and south of tadpole pools area. The associated equipment includes water deionizers, telemetry cabinets, disconnect switches, a transformer, and utility cabinets. The proposed fuel cells and equipment would be located within a new roughly 2,000 square foot equipment area. Although no fence is proposed, the subject property has existing perimeter fencing in the vicinity of the proposed project. Bollards would be installed along the northwest corner of the facility footprint to protect the facility.

The electrical connection would run underground to the southwest to the switchgear room of the existing Energy Center building. Natural gas would be supplied underground from the southwest from a service tap located adjacent to the Energy Center building. Water would be supplied underground from the Energy Center 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 nearly 62 percent of the average SCSU West Campus annual baseload of nearly 1,000 kW. Electricity generated by the facility would be consumed primarily by SCSU, 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 SCSU. 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, SCSU 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 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.

[1] The Energy Center is located on the North Campus but also provides power for the West Campus.

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 the Energy Center building is located to the south, and there is existing mature tree growth to the north and west. While there may be limited visibility of the proposed facility from the SCSU tennis courts to the east, the addition of the facility would be consistent with the existing development at the site.

No wetlands would be disturbed by the proposed project. Erosion and sedimentation controls for the proposed facility would comply with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. Specifically, silt fence would be used to demarcate the limits of the disturbance for the project and to be protective of the existing tadpole pools located directly to the north. No construction would occur within the existing tadpole pool area.

The site is not within a Federal Emergency Management Agency-designed flood zone. The site is located within ¼-mile of a DEEP Natural Diversity Database (NDDB) buffered area. By letter dated May 1, 2020, DEEP notes that no negative impacts to state-listed species are anticipated. The site is previously disturbed and not expected to impact cultural 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 853 – Standard for the Installation of Stationary Fuel Cell Power Systems (NFPA 853) 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 SCSU and the City Fire Department. As part of the building permit application review process, the City 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**.** All valves, switches and insulated components are secured within locked panels and cabinets. A perimeter fence around the facility is not required per NFPA 853 or the 2020 National Electrical Code, Article 692 – Fuel Cell Systems.

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.

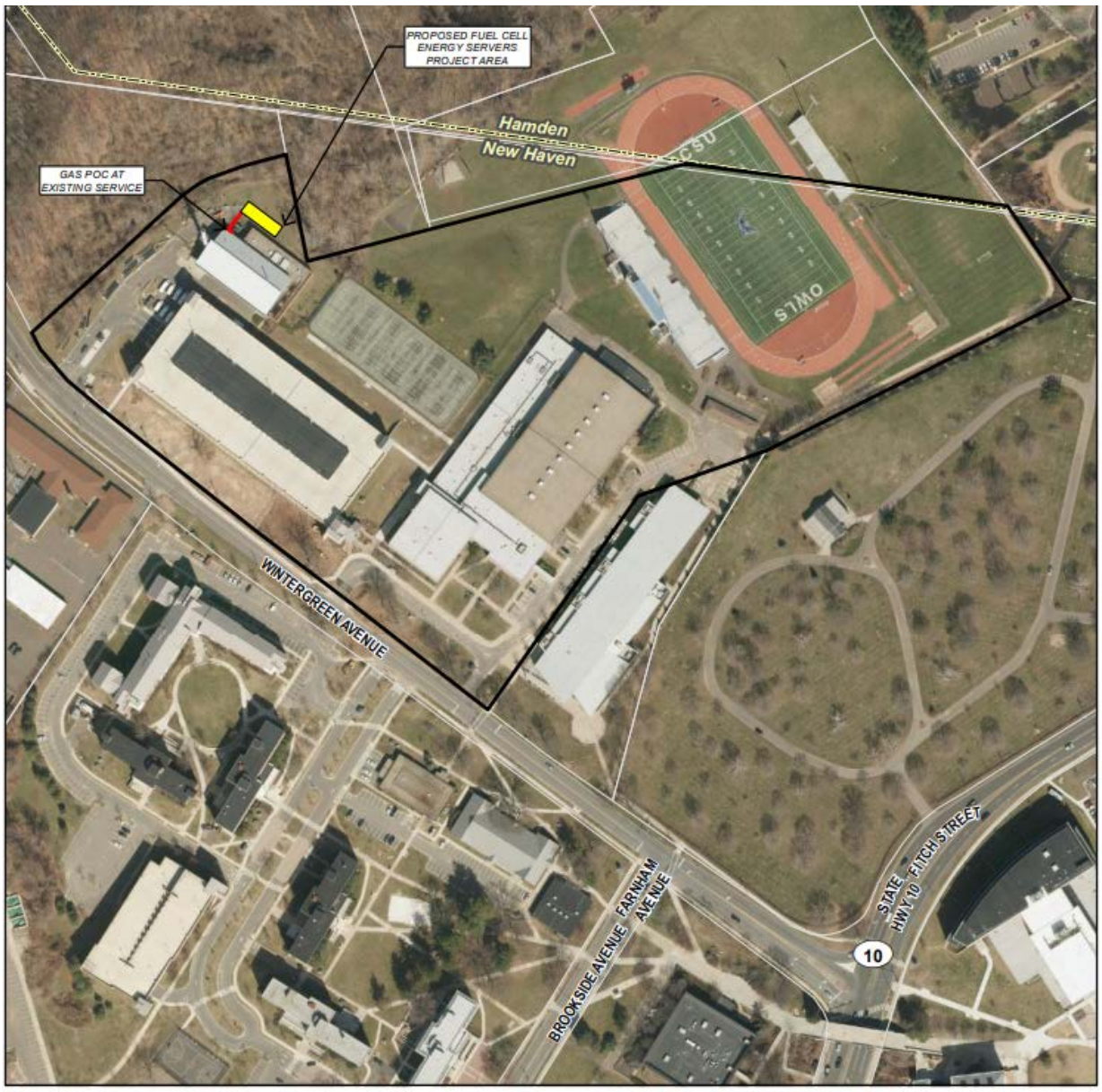
Recommendation

If approved, staff recommends the following conditions:

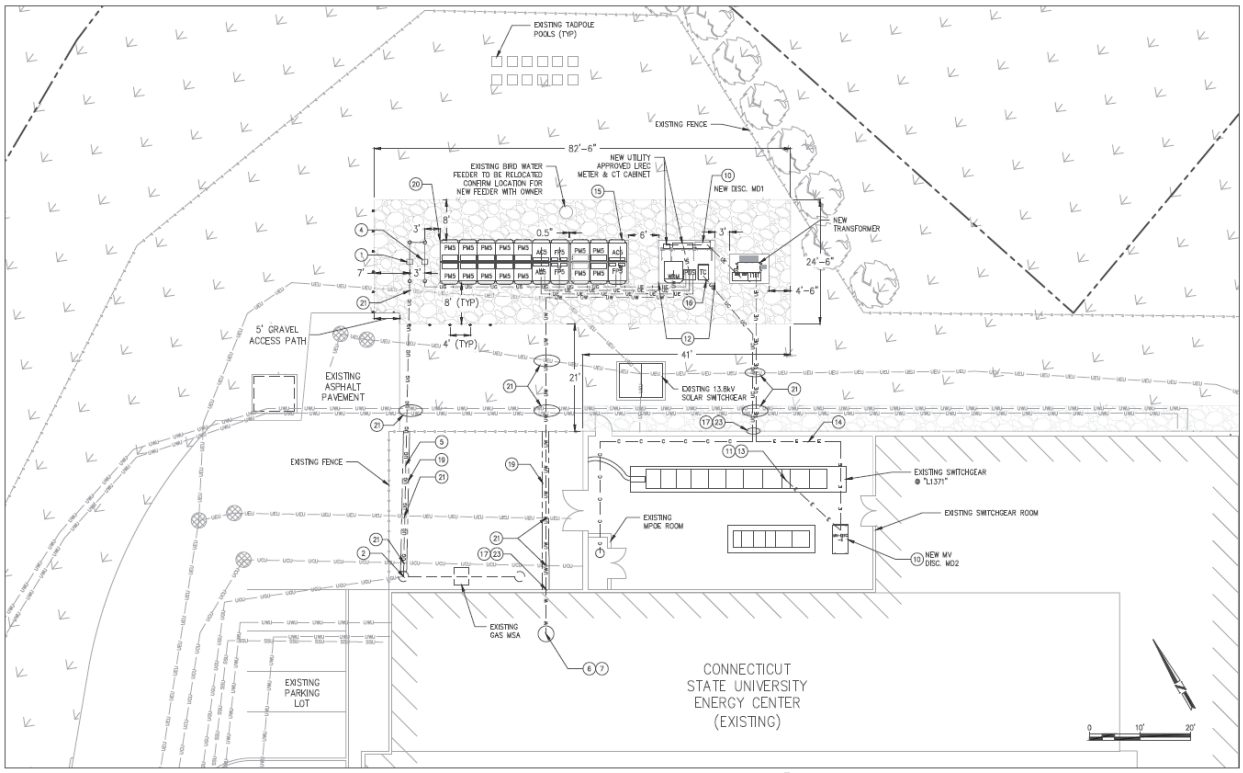
1. Approval of any minor project changes be delegated to Council staff; and

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

Fuel Cell Location



Site Plan


EXISTING TADPOLE POOLS (TYP)
EXISTING FENCE
82'-6"
EXISTING BIRD WATER FEEDER TO BE RELOCATED CONFIRM LOCATION FOR NEW FEEDER WITH OWNER
NEW UTILITY APPROVED LREC METER & CT CABINET
NEW DISC. MD1
NEW TRANSFORMER
24'-6"
4'-6"
5' GRAVEL ACCESS PATH
EXISTING ASPHALT PAVEMENT
EXISTING 13.8kV SOLAR SWITCHGEAR
EXISTING FENCE
EXISTING SWITCHGEAR @ "L137I"
EXISTING SWITCHGEAR ROOM
EXISTING MPOE ROOM
NEW MV DISC. MD2
EXISTING GAS MSA
EXISTING PARKING LOT
CONNECTICUT STATE UNIVERSITY ENERGY CENTER (EXISTING)
0
10'
20'