STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 12, 2016

Dawn Mahoney, Esq.
General Counsel
Doosan Fuel Cell America Inc.
195 Governor's Highway
South Windsor, CT 06074

RE: **PETITION NO. 1257** – Doosan Fuel Cell America, Inc. petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required to replace an existing customer-side 400-kW fuel cell with a 440-kW customer-side combined heat and power fuel cell located at the Eastern Connecticut State University Science Building, 83 Windham Street, Willimantic, Connecticut.

Dear Attorney Mahoney:

At a public meeting held on December 8, 2016, 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. Use of off-road construction equipment that meets the latest EPA or California Air Resources Board standards, or in the alternative, equipment with the best available controls on diesel emissions, including, but not limited to, retrofitting with diesel oxidation catalysts, particulate filters and use of ultra-low sulfur fuel;

2. Compliance with the provisions of Section 22a-174-18(b)(3)(C) of the Regulations of Connecticut State Agencies that limit the idling of mobile sources to 3 minutes;

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;

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 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 October 14, 2016, additional information received October 21, 2016, November 10, 2016, and November 28, 2016, 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/MP/cm

Enclosure: Staff Report dated December 8, 2016

c: The Honorable Ernest S. Eldridge, Mayor, Town of Windham
Neal Beets, Town Manager, Town of Windham
James E. Finger, Town Planner, Town of Windham

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Petition No. 1257
Doosan Fuel Cell America, Inc.
Eastern Connecticut State University
Willimantic (Windham), Connecticut
Staff Report
December 8, 2016

On October 14, 2016, the Connecticut Siting Council (Council) received a petition from Doosan Fuel Cell America, Inc. (Doosan) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the replacement of an existing 400 kilowatt (kW) fuel cell facility with a new 440 kW fuel cell facility at Eastern Connecticut State University (ECSU) at 83 Windham Street in Willimantic (Windham), Connecticut. The Council approved the initial fuel cell in Petition No. 1014 on December 9, 2011.

Doosan mailed notification of the project to abutting property owners, Town of Windham officials, and required state agencies and officials on or about October 19, 2016. The Council has not received any written comments to date.

The site is located within the R6 Residential/Professional Office Zone in the Town of Windham. The proposed replacement facility would be located on the same footprint as the existing 400-kW fuel cell to be replaced on the ESCU campus immediately to the west of the Science Building.

The proposed replacement fuel cell facility uses non-combustion phosphoric acid technology that consumes natural gas as a fuel and uses water for fuel processing to generate electrical power. The facility would operate as a baseload facility at ECSU and not as a backup power facility nor a black start unit. Doosan does not expect that surplus power would be sold to the grid. The fuel cell's waste heat would be used for domestic heating.

Doosan would utilize the existing concrete pad and fencing for the replacement fuel cell facility. The proposed replacement fuel cell unit is 8 feet 4 inches wide by 27 feet 4 inches long by 9 feet 11 inches tall. The cooling module would have dimensions of 15 feet 11 inches long by 7 feet 10 inches wide by 6 feet high. The cooling module would be installed on the same existing concrete pad as the fuel cell and located between the fuel cell and building. Bollards would be used to protect the fuel cell facility from being struck by a vehicle.

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards. The initial water fill would be 350 gallons, but no additional water would be required except when the ambient temperature exceeds 86 degrees Fahrenheit. Even under such conditions, the water consumption rate would be modest and up to one gallon per minute. The proposed fuel cell facility would not discharge water under normal operating conditions.

Air emissions produced during fuel cell operation would be below the DEEP applicable limits, as shown in the table below – thus, no 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
PM_{10}	negligible	0.03
CO_2	495 With waste heat recovery	1,650
CO_2	1049 Without waste heat recovery	1,650

* Regulations of Connecticut State Agencies Section 22a-174-42(b)(3), 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 the existing generation portfolio which includes traditional fossil-fueled generation. Furthermore, when the waste heat is being used, the fuel cell's CO_2 emissions rate is roughly cut in half, and by supplementing the building's heating system, the net CO_2 emissions for the environment is further cut. The proposed facility would reduce net CO_2 emissions for the environment by over 300 metric tons per year compared to the ISO-NE fossil fuel output emissions rate.

The proposed facility would emit no methane (CH_4), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs), which are greenhouse gasses defined in Regulations of Connecticut State Agencies Section 22a-174-1(49).

The proposed fuel cell would remove sulfur that is used as an odorant in natural gas and create zinc sulfide, a non-hazardous waste. The zinc sulfide would collect in a sealed vessel within the fuel cell and would remain until a fuel cell overhaul is required, nominally after 10 years. At such time, the zinc sulfide storage vessel would be removed and shipped to the catalyst vendor for recycling.

The visual impact associated with the proposed replacement facility is not expected to be significant because the site already contains a fuel cell; the replacement fuel cell (like the existing) would have a box-like shape; and the replacement fuel cell would be located adjacent to the much taller Science Building.

The proposed facility is not within the Connecticut Department of Energy and Environmental Protection (DEEP) Natural Diversity Database shaded area. No wetlands are located in the vicinity of the proposed project. No trees would be removed to construct the project.

The proposed project would have a noise level of not more than 62 dBA at 100 feet. Under Section 22a-69-2.4 of the DEEP Noise Control Standards, "Educational Services" are considered a Class B land use. The nearest noise receptor (administration/classroom building) is more than 100 feet away. The daytime and nighttime DEEP noise control limits are 62 dBA for a Class B emitter to a Class B receptor. Thus, the proposed replacement fuel cell facility is expected to comply with DEEP noise control standards.

The facility would be remotely monitored by Doosan on a 24/7 basis to detect abnormalities in operation. The fuel cell facility is designed in accordance with American National Standards Institute and Canadian Standards Association (ANSI/CSA) America FC 1-2014 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 has been developed and submitted by Doosan.

If approved, the project is expected to be completed within a roughly six week window. Doosan's work hours are anticipated to be Monday through Friday 7:00 a.m. to 5:00 p.m. However, such hours may be adjusted to meet the needs of ECSU.

The proposed installation would not have any 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.

Staff recommends the following conditions:

1. Use of off-road construction equipment that meets the latest EPA or California Air Resources Board standards, or in the alternative, equipment with the best available controls on diesel emissions, including, but not limited to, retrofitting with diesel oxidation catalysts, particulate filters and use of ultra-low sulfur fuel;
2. Compliance with the provisions of Section 22a-174-18(b)(3)(C) of the Regulations of Connecticut State Agencies that limit the idling of mobile sources to 3 minutes; and
3. Approval of any minor project changes be delegated to Council staff.

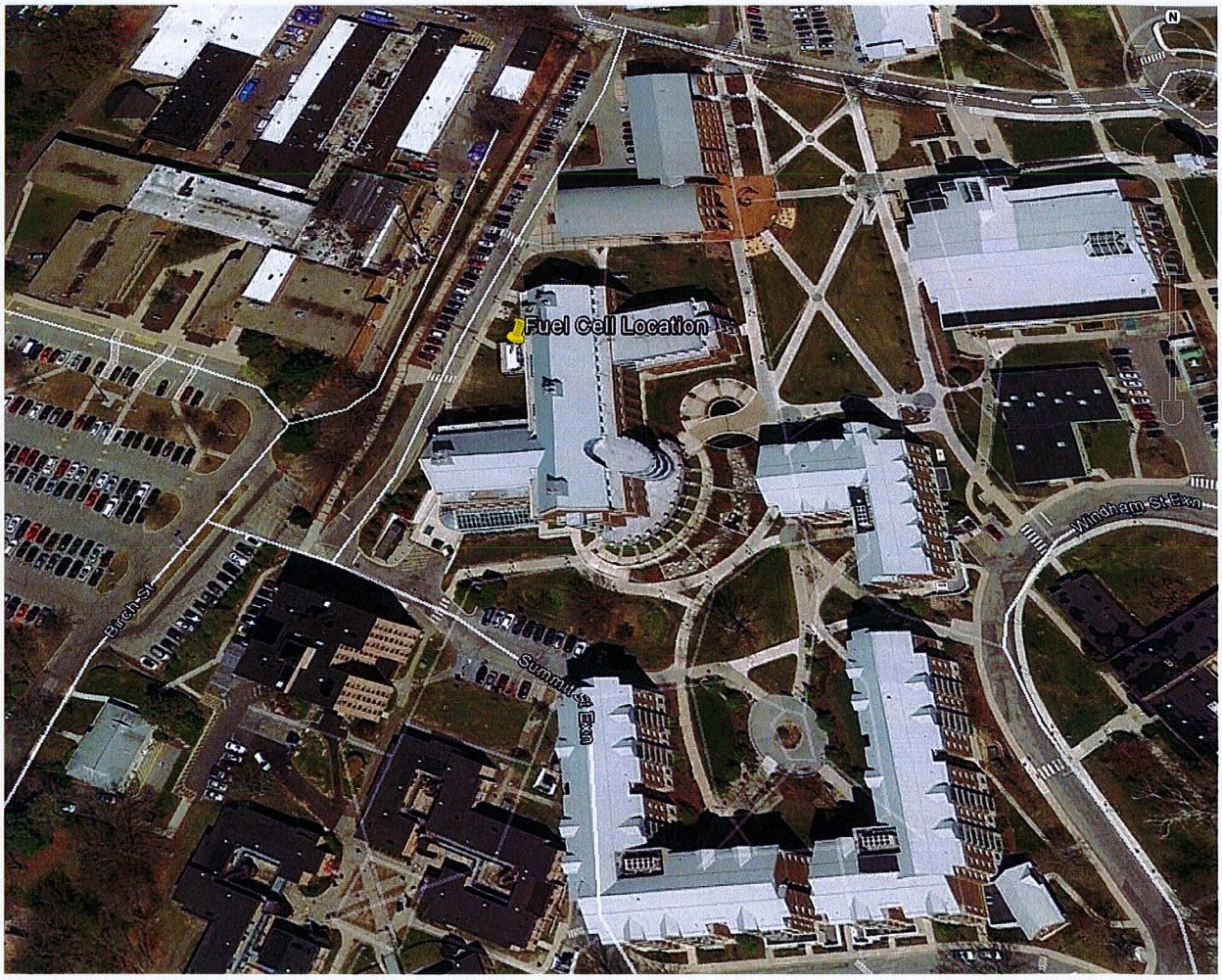

Figure 1. Location of proposed replacement fuel cell facility.