STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 20, 2017

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

RE: **PETITION NO. 1265** - Doosan Fuel Cell America Inc. 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 460-kilowatt fuel cell facility to be located at the Norwich Inn and Spa, 607 West Thames Street, Norwich, Connecticut.

Dear Attorney Mahoney:

At a public meeting held on March 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. Acoustical barrier material shall be installed in accordance with the report prepared by Acoustical Technologies dated February 7, 2017 to ensure compliance with DEEP noise control standards;

3. Doosan shall submit post-construction noise measurements with any further mitigation measures necessary to ensure noise control standard compliance;

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 City of Norwich;

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 25, 2016, and additional information received on November 8, 2016, December 15, 2016, January 30, 2017, and February 24, 2017, and in compliance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

PETITION NO. 1265
March 20, 2017

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,

Robert Stein MAR

Robert Stein
Chairman

RS/FOC/lm

Enclosure: Staff Report dated March 16, 2017

c: The Honorable Deb Hinchey, Mayor, City of Norwich
John L. Salomone, City Manager, City of Norwich
Deanna Rhodes, City Planner, City of Norwich
The Honorable Ronald K. McDaniel, Mayor, Town of Montville
Marcia Vlaun, Town Planner, Town of Montville
Claudio Borea, Doosan Fuel Cell America, Inc.
Norwich Inn and Spa- The Mashantucket Pequot Tribe

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Petition No. 1265
Doosan Fuel Cell America, Inc.
Norwich Inn & Spa
Norwich, Connecticut
Staff Report
March 16, 2017

On October 28, 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 installation of a 460 kilowatt (kW) fuel cell facility at the Norwich Inn & Spa located at 607 West Thames Street, Norwich, Connecticut. A field review of the project site occurred on December 2, 2016. Council member Jerry Murphy; Council staff member Fred Cunliffe; Doosan representatives Claudio Borea and Steve Kowalski; Norwich Public Utilities representatives Fawn Walker and Jeff Brining; and Connecticut Municipal Electric Energy Cooperative (CMEEC) representative Michael Rall attended the field review.

Doosan mailed notification of the project to abutting property owners, Town of Norwich officials, and required state agencies and officials on or about October 28, 2016. On November 4, 2016, the Council deemed the petition incomplete and requested Doosan provide proof of service of a copy of the petition on the Town of Montville as Montville is within 2,500 feet of the proposed facility. On or about November 7, 2016, Doosan provided proof of service of the petition on the Town of Montville. Doosan sent notice again via Certified Mail, Return Receipt Requested to all abutting property owners on December 14, 2016.

On November 23, and December 28, 2016, the Council sent interrogatories to Doosan for more project information. Doosan provided responses to the interrogatories on December 15, 2016, and January 30, and February 24, 2017. The Council has not received any written comments to date.

The Norwich Inn & Spa is located within the Planned Commercial Zone area of Norwich. The facility would be located to the rear and downslope of the Norwich Inn & Spa buildings. Surrounding land is zoned Recreational Open Space, Multifamily, and Waterfront Development.

Doosan proposes to install one 460 kW fuel cell. The proposed 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 fuel cell would operate in parallel with the utility grid and will provide both base load, and in the event of a power outage, grid-independent power to the Norwich Inn & Spa. Under normal conditions, 100% of the building's energy usage will be provided by the fuel cell facility. The fuel cell will be owned and operated by the utility generation provider CMEEC. Excess fuel cell electrical generation will go to the grid offsetting CMEEC's other means of providing electrical generation to Norwich Public Utilities. Waste heat will be utilized for building heating purposes.

The proposed fuel cell facility is totally enclosed and measures 8 feet 4 inches wide by 28 feet 11 inches long by 9 feet 11 inches tall. The cooling module measures 15 feet 11 inches long by 7 feet 10 inches wide by 6 feet high. The fuel cell and cooling module would be placed south of the paved area at the rear of the Norwich Inn and Spa building presently occupied by a waste management container. This container will be relocated. The fuel cell and cooling module would encompass a 16 foot by 48 foot area surrounded by an acoustical barrier. No fence is proposed and bollards would be installed to protect the fuel cell facility from being accidently struck by a vehicle.

Electric and natural gas connections would extend from existing mechanical equipment located adjacent and west of the proposed fuel cell.

Doosan's fuel cell product has a 20 year operational life. The fuel cell stacks have a 10 year life and would be replaced after such time.

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards. The proposed fuel cell facility would not discharge water under normal operating conditions. A minimal amount of water may occasionally overflow and would consist of de-ionized water that would be directed to a site sanitary drain or dry well.

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)	CT Emissions standards (lbs/MWh)
NOx	0.01	0.15
CO	0.02	1
CO_2	815 With waste heat recovery	1,650
CO_2	1050 Without waste heat recovery	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 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 reduced by about 22 percent. The proposed facility would reduce net CO_2 emissions for the environment on the order of 466 metric tons per year when compared with the ISO-New England Inc. (ISO-NE) Fossil Fuel Emission Rate. Also, by using waste heat to supplement the building's boiler, this would result in an additional carbon reduction benefit (unrelated to the ISO-NE emissions rates).

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. The zinc sulfide storage vessel is designed to last for 10 years. At the end of the life of the zinc sulfide storage vessel, it would be removed and shipped to the catalyst vendor for reclaim at their facility or disposal at a licensed vendor. The sealed vessel is deemed safe for transport in accordance with U.S. Department of Transportation requirements.

The visual impact from the proposed facility would be minimal as it is located downslope behind the Norwich Inn & Spa adjacent to other mechanical equipment and mature vegetation surrounds the property. The nearest residence is approximately 180 feet south and downslope of the proposed facility.

The proposed facility is not within a DEEP Natural Diversity Database shaded area. The nearest wetland area (Trading Cove of the Thames River) is 825 feet southeast of the project. No trees would be removed for the installation of the facility. The proposed facility would not be within the 100-year or 500-year Federal Emergency Management Agency-designated flood zone nor within a DEEP-designated Coastal Management area.

Any noise associated with the construction of this project would be temporary in nature and exempt per DEEP noise regulations. Doosan's noise consultant (Acoustical Technologies, Inc.) expects the highest nighttime noise level of 51 dBA would occur at a residence, 2 Trading Cove Road, approximately 300 feet southeast of the proposed fuel cell facility. Two other residences at 656 and 665 West Thames Street, approximately 180 feet south and 275 feet south of the proposed fuel cell facility, respectively, would have nighttime noise levels of 46 dBA and 50 dBA, respectively. Acoustical Technologies recommends an eight-foot high acoustical barrier be installed on the west, south and east sides of the fuel cell facility to mitigate nighttime noise levels to or below the DEEP Noise Control regulatory nighttime noise limit of 45 dBA for residential receptors. Noise is expected to be below the DEEP Noise Control regulatory daytime limit of 55 dBA for a commercial emitter to a residential receptor for all residences. Accordingly, the fuel cell facility would comply with the DEEP Noise Control regulatory noise limit of 62 dBA from a commercial emitter to a commercial receptor.

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.

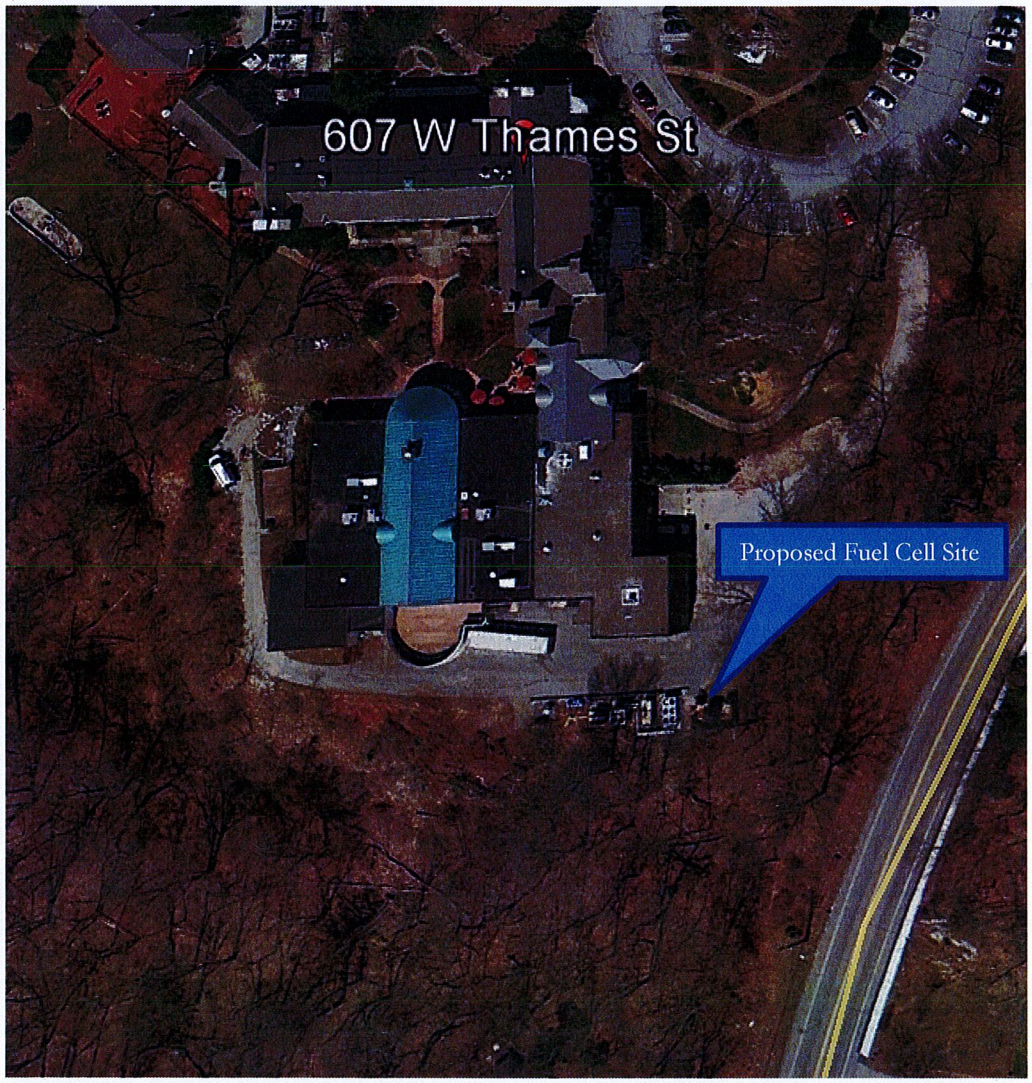
In accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission, Doosan would use atmospheric air under pressure as the media for pipe cleaning procedures at the proposed facility.

Doosan anticipates project construction to begin April 2017 with construction expected to be completed by October 2017. Construction work hours would be Monday through Friday 7 am to 5 pm. A decommissioning plan has been provided.

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. Approval of any minor project changes be delegated to Council staff;
2. Acoustical barrier material shall be installed in accordance with the report prepared by Acoustical Technologies dated February 7, 2017 to ensure compliance with DEEP noise control standards; and
3. Doosan shall submit post-construction noise measurements with any further mitigation measures necessary to ensure noise control standard compliance.



Location of proposed project – Norwich Inn & Spa