



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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CERTIFIED MAIL RETURN RECEIPT REQUESTED

February 21, 2016

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

RE: **PETITION NO. 1266** - Doosan Fuel Cell America, Inc. petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of a 1840-kilowatt customer-side fuel cell facility to be located at the Waterbury Water Pollution Control Plant, 210 Municipal Road, Waterbury, Connecticut.

Dear Attorney Mahoney:

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;

February 21, 2017

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;
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 City of Waterbury;
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/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
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 received October 28, 2016, and additional information received on December 16, 2016, January 18, 2017, and February 10, 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/FOC/lm

Enclosure: Staff Report dated February 16, 2017

- c: The Honorable Neil M. O'Leary, Mayor, City of Waterbury
James A. Sequin, AICP, City Planner, City of Waterbury
Walter Bonola, Doosan Fuel Cell America Inc.
Patricia Walker, Doosan Fuel Cell America Inc.



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Petition No. 1266

Doosan Fuel Cell America, Inc.

Waterbury Water Pollution Control Plant

Waterbury, Connecticut

Staff Report

February 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 an 1,840 kilowatt (kW) fuel cell facility at the Waterbury Water Pollution Control Plant (WPCP) located at 210 Municipal Road in Waterbury, Connecticut. A field review of the project site occurred on November 29, 2016. Council member Larry Levesque; Council staff members Christina Walsh and Michael Perrone; Doosan representatives Claudio Borea and Walter Bonola; and WPCP representatives Denis Cuevas, Karl Knightly, Joe McCann and Art Daigle attended the field review.

Doosan mailed notification of the project to abutting property owners, City of Waterbury officials, and required state agencies and officials on or about October 27, 2016. Doosan sent notice again via Certified Mail, Return Receipt Requested to all abutting property owners on December 14, 2016. The Council has not received any written comments to date.

The WPCP is located within a General Industrial Zone area of Waterbury. The facility would be located on a grassy area of the property near WPCP's existing substation building and transformers. Surrounding land is zoned Limited Industrial and General Commercial.

Doosan proposes to install four 460 kW fuel cells at the WPCP to comprise a 1,840 kW fuel cell facility. The proposed 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 in parallel with the utility grid and provide base load power to the WPCP. Electric connections would extend north to the existing electrical building and waste heat will be utilized for heating purposes via a connection to the boiler building located south of the proposed fuel cells.

In the event of a power outage, the facility would automatically disconnect from the electrical system using an internal breaker. The proposed facility would not provide backup power. Once power is restored, the fuel cell facility would automatically reconnect to the grid after a five minute delay.

Each of the proposed fuel cell units are totally enclosed and measure 8 feet 4 inches wide by 28 feet 11 inches long by 9 feet 11 inches tall. Each fuel cell has a cooling module which measures 15 feet 11 inches long by 7 feet 10 inches wide by 6 feet high. The fuel cells and cooling modules would be placed south of the electrical building surrounded by an approximate 60 foot wide by 100 foot long by six foot high anti-climb fence. A single removable bollard would be installed in the center of the access drive in front of the 12-foot swing gate of the fenced compound as a protective measure from approaching vehicles.

Doosan's fuel cell product has a 20 year operational life with a projected 10 year overhaul.

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)
NO _x	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 CO₂ emissions rate is reduced by about 49 percent, and by supplementing the building's boilers, the net CO₂ emissions for the environment is further cut. In total, the proposed facility would reduce net CO₂ emissions for the environment on the order of 1,864 metric tons per year.

The proposed facility would emit no methane (CH₄), sulfur hexafluoride (SF₆), 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 on a parcel of property situated between State Route 8 and the Naugatuck River and within an industrially developed area. The nearest residence is approximately 1,200 feet to the southeast of the proposed facility.

The proposed facility is not within a DEEP Natural Diversity Database shaded area. The nearest wetland area is the Naugatuck River which is 200 east 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 zones. Also, the City of Waterbury contains no aquifer protection areas.

A noise analysis for this facility was to be submitted no later than February 10, 2017.

Any noise associated with the construction of this project would be temporary in nature and exempt per DEEP noise regulations. According to Doosan, the operation of the four fuel cells would result in a projected noise value of 68 dBA at the nearest property line (Naugatuck River). This property is also within the industrial zone and approximately 80 feet southeast of the fuel cells. The projected 68 dBA noise level would be below the DEEP Noise Control regulatory level of 70 dBA for an industrial emitter to an industrial receptor. Noise is not expected to be heard at the nearest residences located over 670 feet northeast of the proposed fuel cells.

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 January 2017 with construction taking approximately four months. 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.



Location of proposed project - Waterbury Water Pollution Control Plant