



# 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](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### **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. 1268** - 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 460-kilowatt customer-side combined heat and power fuel cell facility to be located at the Unilever Research and Development Center building, 20 Merritt Boulevard, Trumbull, 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. 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;

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 Town of Trumbull;
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 October 19, 2016, and additional information received on November 8, 2016, January 20, 2017, and February 24, 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/RDM/lm

Enclosure: Staff Report dated March 16, 2017

- c: The Honorable Timothy M. Herbst, First Selectman, Town of Trumbull
- Rob Librandi, Land Use Planner, Town of Trumbull
- Douglas Wenz, Zoning Enforcement Officer, Town of Trumbull
- The Honorable John A. Harkins, Mayor, Town of Stratford
- Jay Habansky, Planning & Zoning Administrator, Town of Stratford
- Patricia Walker, Doosan Fuel Cell America Inc.





# 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](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### Petition No. 1268

**Doosan Fuel Cell America, Inc.**

**Unilever - Trumbull, 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-kW fuel cell facility at the Unilever Research and Development Center building at 20 Merritt Boulevard in Trumbull, Connecticut. Doosan would own and maintain the facility.

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 Stratford as Stratford is within 2,500 feet of the proposed facility. On November 7, 2016, Doosan provided proof of service of the petition on the Town of Stratford. On December 5, 2016, the Council sent interrogatories to Doosan for more project information. Doosan provided responses to the interrogatories on January 20 and February 24, 2017.

A Council field review of the project was held on March 8, 2017 that was attended by Council member Larry Levesque, Council staff member Robert Mercier, Doosan representative Walter Bonola, and Unilever representative George Guigno. Doosan provided notice of the petition to abutting property owners, the Town of Trumbull, and required state agencies and officials on or about October 25, 2016 and again on December 20, 2016 via certified mail.

The project site is located on a 5.2-acre parcel, zoned industrial, developed with a three story building. The property abuts a second property owned by Unilever to the southeast and developed industrial and commercial properties are located to the east and the southwest. Route 8 is located to the north and west. A residential area is located approximately 825 feet to the northwest, across Route 8.

At the site, Doosan would install one 460 kW fuel cell unit (PureCell Model 400) on a concrete pad on the west side of the building in an area with paved parking and maintained lawn. The fuel cell unit measures approximately 8.3 feet wide by 27.3 feet long by 9.9 feet tall. An associated cooling module, measuring approximately 15.9 feet long by 7.8 feet wide by 6.0 feet high, would be installed on the west side of the fuel cell unit. The fuel cell facility would interconnect with the existing electrical and natural gas service located on the southwest side of the building. The fuel cell facility would be enclosed by a six-foot tall chain link fence of two-inch mesh. Bollards would be installed to provide vehicle impact protection.

The fuel cell 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 provide a portion of Unilever's electricity needs. Excess electricity is not anticipated to be available to export to the grid. If there is a power loss on the grid, the fuel cell can operate independently, supplying power to certain, pre-selected building electric loads. When needed, approximately 25 percent of the waste heat from the fuel cell process would be utilized for operation of nearby rooftop air handling units.

The fuel cell has an operational life of 20 years. After 10 years, Doosan would replace the fuel cell media and refurbish the processing system. An end-life decommissioning plan was provided by Doosan that specifies the removal of all fuel cell equipment once the facility is at the end of the contract term.

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards. The fuel cell would require an initial input of approximately 350 gallons of water for use in a closed loop system. When temperatures exceed 86 degrees Fahrenheit, a water input of up to one gallon per minute would be required to maintain fuel cell operation. 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 Applicable Air Emission Criteria		
Compound	Fuel Cell Facility (lbs/MWh)	Emission Standard (lbs/MWh)
NO <sub>x</sub>	0.01	0.07 <sup>1</sup>
CO	0.02	0.1 <sup>1</sup>
CO <sub>2</sub>	899 with waste heat recovery	1,650 <sup>2</sup>
CO <sub>2</sub>	1038 without waste heat recovery	1,650 <sup>2</sup>

<sup>1</sup> Low Emissions Renewable Energy Credit Program

<sup>2</sup> 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 emission reduction because it would displace emissions from traditional fossil-fueled generation. The proposed fuel cell facility would reduce net CO<sub>2</sub> 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 Emissions Rate. Doosan would utilize waste heat generated by the fuel cell unit for use in the rooftop air handling units on the adjacent building, when needed. When waste heat is used, CO<sub>2</sub> emissions from the fuel cell would be reduced by 13 percent.

The proposed facility would emit no methane (CH<sub>4</sub>), sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs), which are greenhouse gasses defined in Regulations of Connecticut State Agencies Section 22a-174-1(49).

The phosphoric acid within the fuel cell is bound within a matrix and the amount utilized complies with State and Federal regulations. 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 life, the zinc sulfide storage vessel would be removed and shipped to the catalyst vendor for reclamation or disposed of at a licensed vendor. The sealed vessel is deemed safe for transport in accordance with U.S. Department of Transportation requirements.

The visual impact of the proposed facility would not be significant because the site property is already developed and secured from public access. Additionally, the fuel cell facility would be blocked from view from off-property locations by existing buildings, existing vegetation and by the Route 8 expressway.

A review of DEEP's Natural Diversity Database indicates the project is not within an area known to contain State endangered, threatened or special concern species. The nearest wetland or watercourse is a small, unnamed stream approximately 270 feet north of the fuel cell site, adjacent to the Unilever parking lot. The proposed fuel cell facility would not be located within a DEEP-designated Aquifer Protection Area or within a Federal Emergency Management Agency-designated flood zone. Water vapor plumes from facility operation would disperse in close proximity to the fuel cell and would not constitute an aviation hazard. One ornamental tree would be removed for the installation of the facility.



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.

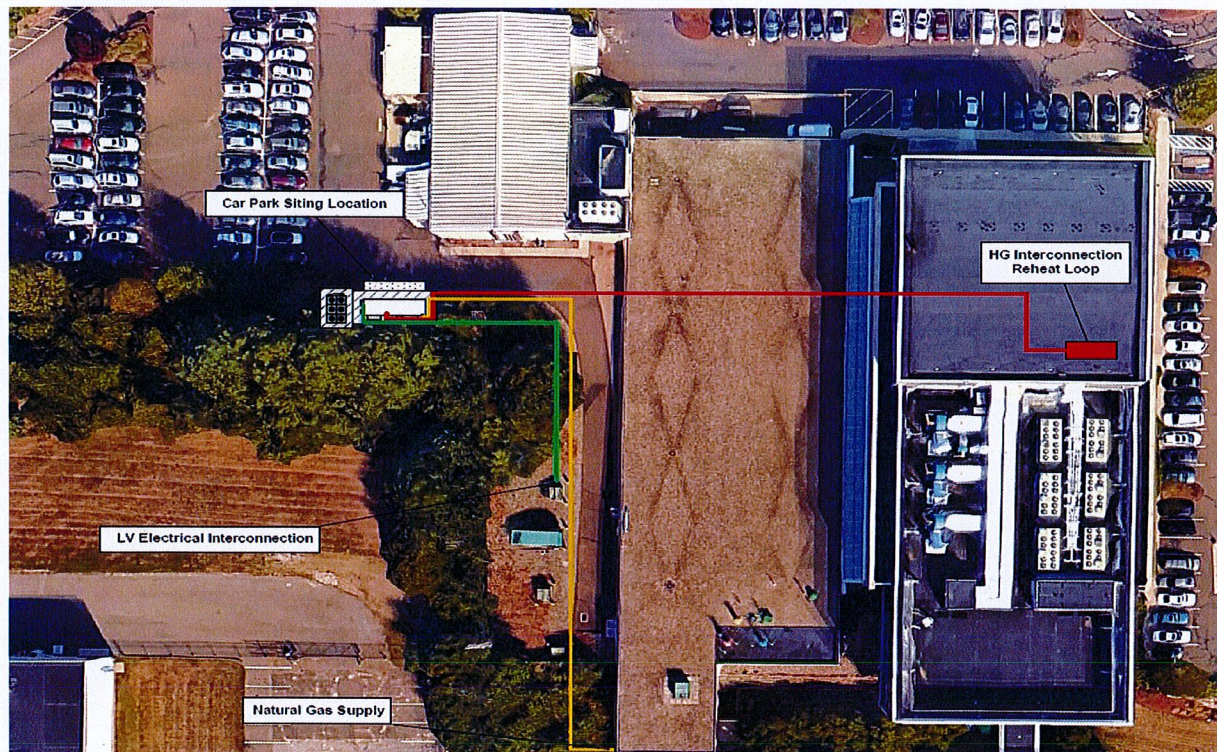
Project construction noise would be temporary in nature and exempt from DEEP Noise Control regulations. Noise from facility operations would not exceed the DEEP Noise Control regulatory threshold of 62 dBA for a commercial emitter to a commercial receptor.

If approved, Doosan anticipates the commencement of construction by the end of April 2017, with completion and operation by the end of October 2017. Construction work hours would be Monday through Friday, 7:00 a.m. to 5:00 p.m.

The proposed fuel cell installation would not have a substantial adverse environmental effect and would meet DEEP air and water quality standards. 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 condition:

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



Location of proposed project – Unilever Research & Development Facility, Trumbull