



FuelCell Energy

Ultra-Clean, Efficient, Reliable Power

August 25, 2016

VIA EMAIL AND U.S. MAIL

Ms. Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

PETITION NO. 1248 - TRS Fuel Cell, LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of a 3.7 megawatt combined heat and power fuel cell facility to be located at 64 Triangle Street, Danbury, Connecticut

Dear Ms. Bachman:

During the August 18, 2016 publicly-noticed field review in connection with the above-referenced proceeding, Dr. Michael W. Klemens of the Connecticut Siting Council asked for supplemental information to be submitted in connection with questions he had relative to stack emissions from the proposed project. Attached please find the response of TRS Fuel Cell, LLC to that request.

Respectfully submitted,

A handwritten signature in black ink that reads "Jennifer D. Arasimowicz".

Jennifer D. Arasimowicz
Vice President, Managing Counsel

Encl.

- c: The Honorable Mark D. Boughton, Mayor, City of Danbury
- Sharon Calitro, Director of Planning & Zoning, City of Danbury
- Robin Edwards, Esq., Corporation Counsel, City of Danbury
- Craig Stevenson, Project Manager, FCE
- S. Derek Phelps, Market & Project Development, FCE
- J.A.R. Associates (property owner)

Question: Dr. Klemens asked whether the stack emissions from the fuel cell might pose any potential air hazard concerns for aircraft.

Answer: No. The exhaust plume from the proposed project is not a source of concern for aircraft in the surrounding area.

The design conditions for the exhaust stack that define the resulting exhaust plume are as follows:

- Stack height will be no taller than 30 feet above grade. For the purposes of addressing the present concern, an actual 30 feet will be assumed.
- Exhaust flow will be 8444SCFM of gas at 28.3 lbs./lb./mole molecular weight and 350F. This represents the worst case scenario when no waste heat is being recovered and the exhaust is at its hottest. These figures are derived from the fundamental process design of the plant.
- The exhaust stack will be 24 inches in diameter at its exit. This diameter was selected for flow similarity with FuelCell Energy, Inc.'s ("FCE") existing (but less electrically efficient) DFC3000 design.

For purposes of exhaust plume physical characterization, FCE uses the US EPA SCREEN3 point source computer plume model. This model is used principally for air quality modeling and as a result can provide plume height as a function of distance from the stack for a range of meteorological conditions. For the current purpose, the greatest plume height would be directly over the stack in relatively still air. Given the input conditions above and a -4F ambient (lowest ambient temperature is the worst case) and a modeling an urban setting, SCREEN3 predicts a plume height of 380 feet above grade. (Relative to the conditions above the initial exhaust velocity at the top of the stack is 70 feet per second).

The proposed fuel cell installation is 2.7 miles from the Danbury municipal airport. The airspace classification at the airport is the same as that above the power plant; FAA class D when the airport tower is open and G when it is not. When the tower is not open and there is no landing activity, air traffic is at 1,000 feet as prescribed by 14 CFR Part 91.119 (b), which states that "Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft." This is well above the calculated exhaust plume height.

When the tower is open and the airspace is class D, 14 CFR Part 91.119 (b) still applies, however landing (approach) and takeoff (departure) operations as outlined in 14 CFR Part 91.129 (e), (f), and (g) govern lower altitude occupancy. On approach, the typical glideslopes are 3-degree. At 2.7 miles from the airport, for a 3-degree glideslope, at no time should an aircraft be less than approximately 750 feet above ground level, well above the plume height for the proposed installation.

Upon departure (governed by 14 CFR Part 91.129(g)) aircraft climb as quickly as practical, in the current case to at least 1,200 feet above ground level following the direction of the runway before turning, as per published takeoff minimums for Danbury. As the current project site is not in line with either runway at Danbury airport, departing traffic will never be below 1,200 feet above the project site.

Lastly, it is noted that the current site owner has indicated that he cannot recall ever seeing a flyover of the site by any low-flying aircraft.

With regard to the stack itself, 14 CFR Part 77.9 states that notice must be filed with the FAA if requested by the FAA or when anyone proposes any of the following types of construction or alteration:

- any construction or alteration exceeding 200 feet above ground level
- any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:
- 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in 14 CFR 77.9(d) with its longest runway more than 3,200 ft. in actual length, excluding heliports.
- 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in 14 CFR 77.9(d) with its longest runway no more than 3,200 ft. in actual length, excluding heliports.
- 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in 14 CFR 77.9(d)
- any highway, railroad or other traverse way for mobile objects, of a height which, if adjusted upward as defined in 14 CFR 77.9(c) would exceed a standard of 14 CFR 77.9 (a) or (b).
- any construction or alteration located on an airport described in 14 CFR 77.9(d).

The 30-foot height of exhaust stack, at its location 2.7 miles from the airport runways, falls well outside any of these thresholds described above. Accordingly, the proposed project does not require FAA notification.

In conclusion, the exhaust stack and resulting plume as proposed for this project cause no concern for aircraft operations in the area, nor is any FAA notification required.